

Modeling the Effect of Cognitive and Metacognitive Strategies, and L1 Reading Ability on Reading Comprehension in an EFL Context through Structural Equation Modeling

¹Seyedeh Niloufar Tabatabaei

²Firooz Sadighi*

³Mohammad Sadegh Bagheri

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Abstract

The recent developments in social sciences consider our understanding of the phenomena as meager and emphasize the chaos we may face in understanding the relationships among the variables of studies in language teaching (Larsen-Freeman, & Long, 2014). This study is an attempt to develop a model of EFL reading comprehension based on the pertinent factors reported in the literature. Thus, a default model of EFL reading comprehension encompassing first language reading comprehension and cognitive and metacognitive strategies together with their subcomponents was developed. To validate the model, the data gathered through convenient sampling from 280 male and female senior and junior students of Azad University of Shiraz were analyzed by AMOS. First, the model was checked by AMOS to see if the software can identify it. Then, the strength of each parameter was calculated and the non-significant parameters were discarded from the model. Finally, goodness-of-fit indices, comparative indices, and parsimonious indices were compared in the default and the revised model, all of which showed an improvement in the fitness of the revised model. A remarkable result was that the parameter from metacognitive strategies to EFL reading comprehension was discarded in the revised model, but the parameters from cognitive strategies to EFL and first language reading comprehension were maintained. This suggests that metacognition exerts its influence over EFL reading comprehension via cognitive strategies. The revised model can be useful for materials developers, teachers and examiners to have a better understanding of the variables contributing to EFL reading comprehension.

Keywords: Structural Equation Modeling, Reading Comprehension, Cognitive Strategies, Metacognitive Strategies

1. Introduction

Being a critical skill, reading comprehension is the process of understanding meaning through interacting with the written text (Wong, 2011). Guessing the meaning of the new words, interpreting the author's main idea, and making inferences are some of the main reading skills required to comprehend a text (Ruiz, 2015). Understanding the written text is significant in all academic courses and it increases by students' moving from one level to the other (Almutairi, 2018). Thus, reading comprehension is an essential skill to successfully achieve the academic aims during the educational program. Gaining the meaning of the written script is critical in helping students to rapidly differentiate between the relevant and the irrelevant information, and recognize the key information to focus on.

Several researchers have focused their attention on the importance of teaching reading comprehension strategies from the very beginning stages (Slavin, Lake, Chambers, Cheung, & Davis, 2009). Hence, training successful readers deeply depends on the familiarity of the classroom

¹ PhD Candidate in TEFL, niloufar.tabatabaei@yahoo.com; Department of English Language, Shiraz Branch, Islamic Azad University, Shiraz, Iran.

² Professor in TEFL (Corresponding Author), firoozsadighi@yahoo.com; Department of English Language, Shiraz Branch, Islamic Azad University, Shiraz, Iran.

³ Assistant Professor in TEFL, bagheries@gmail.com; Department of English Language, Shiraz Branch, Islamic Azad University, Shiraz, Iran.

teachers with different reading strategies and the methodology used by them (Chatman, 2015). Therefore, full awareness of the factors influencing reading comprehension can be helpful for teachers in determining the methodology of which they avail themselves in classroom context. Different aspects of reading comprehension have been under study for several years. For example, various studies have laid emphasis on the usefulness of specific reading comprehension strategies. As an example, Purpura (1997) investigated the influence of metacognitive and cognitive strategies on reading comprehension.

Some other studies have focused on the manipulation of reading comprehension performance by transferring L1 reading ability skills (e.g., Bernhardt & Kamil, 1995; Bossers, 1991; Brisbois, 1995; Carrell, 1991; Lee & Schallert, 1997; Perkins & Salomon, 1989; Taillefer, 1996). For instance, Yamashita (2002) investigated the effects of L1 reading ability and EFL proficiency on the level of EFL reading comprehension achievement. Moreover, Jahangard, Moieenzadeh, and Tavakoli (2010) explored whether students who gained Persian lexical knowledge through the translation method could transfer their L1 knowledge to EFL reading comprehension.

However, few studies have investigated the effects of multiple factors on reading comprehension (e.g., Guo, 2018; Ülper, Çetinkaya, & Dikici, 2018), and, to the best of the researchers' knowledge, no study has investigated the effects of both strategy use and L1 reading ability on EFL reading comprehension. Therefore, the deficiency that I have identified encouraged me to conduct a study which had an almost comprehensive look over several factors affecting reading comprehension ability in an EFL context.

Moreover, minimal research attention (e.g. Ekadini & Rukmini, 2018, Guo, 2018) has been directed toward examining the effects of several factors on reading comprehension in *EFL contexts*. Most of the previous studies (e.g., Dabarera, Renandya, & Zhang, 2014, Osuji, 2017), though very useful, are not conducted in EFL contexts. Therefore, the other difference between the present study and the previous ones is the context in which the study has been conducted. That is to say, as far as we, the researchers of the present study, know, there does not exist a comprehensive research in Iranian context, examining and modeling the degree of the influence of the factors which are to be considered in the current study, i.e. cognitive and metacognitive strategies, and L1 reading ability. Few studies are conducted in the Iranian context which have considered just some of the above variables. For example, Tavakoli (2014) found a positive relationship between metacognitive strategy use and reading comprehension considering gender and proficiency level of the participants. In another study, Ghahari, and Basanjideh (2017) investigated the effect of strategy awareness on EFL reading comprehension in Iran through SEM. Results of the study indicated the predictive power of strategy use.

Furthermore, few studies (e.g., Choi, Moon, Paek, & Kang, 2018; Özyeter & Kutlu, 2018; Ülper, Çetinkaya, & Dikici, 2018) have centered their analysis upon the use of SEM in language teaching. To fill this gap, the current study aims at modeling the relationship among the variables affecting reading comprehension through SEM.

To wrap this section up, it is worth mentioning that reading comprehension skill is used as a significant element of this body of research. Cognitive and metacognitive strategies as the influential factors affecting the processing of reading comprehension (Anderson, 2002; Mehrdad, Ahghar, & Ahghar, 2012) were also considered as essential elements of the study. Moreover, transferring L1 reading skills into target language reading comprehension is said to be a determinant factor in comprehension of target language texts (Lee & Schallert, 1997). That's why L1 reading ability was decided to be the other component of the model developed in this study.

2. Review of Literature

2.1. Reading Comprehension

Patel and Jain (2008) stated that reading is a significant movement in life with which one can refresh his/her knowledge. However, in fact, to reach the expectation in reading, students ought to grasp more when reading to draw meaning or get data from printed or written text. Reading

comprehension often “forms the basis for learning in many academic subjects” (p.122). If students should almost certainly understand a particular content that they are reading, then they must “perform well” at reading comprehension assignments (Kostons & van der Werf, 2015, p. 265).

2.2. Models of Reading Comprehension

Various models have been developed for different language skills. However, since the focal point of this investigation is on reading comprehension skill, some of the models developed for reading comprehension are discussed in this section. This can provide the readers with a better understanding of the determining factors in comprehending a passage.

The influential model of reading comprehension devised by RAND Reading Study Group (2002) touches the interactive processes taking place among the reader, the content, and the reading movement within a range of socio-cultural factors. The reader component of the model alludes to factors that a reader carries to the reading comprehension process. This element embraces reading and cognitive skills (e.g., critical analytic ability, memory, attention, visualization, inferencing), together with psychosocial and biological factors that impact the reading process. The textual component consists of factors integrated into the reading passage. Text genre (i.e., narrative vs. expository), level of text (e.g., introductory vs. advanced) and features such as font, graphics, and layout are some of the examples of the textual element. The activity element includes the reader's drive and objectives (e.g., leisure reading vs. reading to learn). Even though these components are characterized independently and fairly statically, the RAND group highlighted that they are interrelated and dynamic. The impact of the reader, reading passage, and activity elements will fluctuate over the pre-reading, reading, and post-reading stages of the reading process (RAND Reading Study Group, 2002).

The RAND heuristic is valuable for clarifying the focus of the present study and emphasizing the aspects that should be considered as the study is going forward. The factor called *reader* and its subcomponent *cognitive skill* motivated us to include cognitive abilities as a determining factor in reading comprehension in the present study.

Shibasaki, Tokimoto, Ono, Inoue, and Tamaoka (2015) created a model of L2 reading, considering working memory capacity and L1 knowledge as variables within SEM. A sample of 120 Japanese L1 high school students was given the following tests: a) English reading span tests (one of them on general topics and the other on specific themes demanding related background knowledge to compensate for the impacts of the familiarity of the topic), b) English grammar tests, c) English vocabulary size tests, d) literacy tests, and e) two tests of English reading comprehension. The results reported by SEM demonstrated that L2 grammatical knowledge, L2 vocabulary knowledge, and L2 working memory essentially predicted general L2 reading. It was also stated that general L2 reading, together with L1 knowledge, significantly predicted L2 reading on a specific topic. Moreover, L1 knowledge was a predictor for L2 vocabulary knowledge, and expert L1 readers exceeded expectations at making situation model for L2 reading comprehension, even when they did not have enough topical knowledge.

2.3. Cognitive and Metacognitive Strategies

Using efficient strategies is typical of good language learners, as Rubin (1975) mentioned. He highlighted that such learners are eager and precise guessers, are willing to communicate, and have intention to take risks while they are not afraid of making mistakes, analyze patterns by focusing on form, exploit all practice chances, monitor their own language and their peers', and concentrate on the semantic aspect of the language.

Cognitive strategies have been defined as conscious moves readers make when perception issues are created for the learners (Sheorey & Mokhtari, 2001). Cognitive strategies are summoned to make ‘cognitive progress’ in the process of linguistic analysis (Flavell, 1979, p. 909). Some examples of cognitive strategies that can be applied in the text could be to underline some parts of a passage, reread parts of or a whole text to increase comprehension, or reduce reading speed when comprehension is compromised.

Metacognition includes examining the brain's processing; therefore, teachers' duty is to make students concentrate on how they process information. This way, they can train learners who are strategic thinkers. Visualizing, questioning, and synthesizing information are but some of the ways that readers can utilize to observe their thinking process. Explicit teaching of the relevant strategies and scaffolding can help learners practice the skills that actually contribute to improving their automaticity and unconscious state (Fountas & Pinnell, 2006).

Although few studies like Guo and Roehrig (2011) found no significant effect for cognitive and metacognitive strategy use in L2 or FL reading comprehension, many studies have indicated that cognitive and metacognitive strategy use has a significant effect on reading performance (e.g., Nergis, 2013; Phakiti, 2003a, 2003b; Sheorey & Mokhtari, 2001; Yau, 2009). For example, Sheorey & Mokhtari (2001) examined cognitive and metacognitive strategy use by native and non-native English-speakers. Participants were students of two universities in the US enrolled in ESL composition courses. In addition to filling in the strategy questionnaire, participants reported their overall TOEFL score, and self-rated their reading comprehension ability in English. The results indicated that the L1 and ESL readers were only significantly different in their reported use of support reading strategies. The study also found an effect of reading ability on reading strategy use: L1 and ESL readers with high reading ability reported higher usage levels for cognitive and metacognitive strategies than L1 and ESL lower-reading ability readers, respectively. Finally, while L1 readers with high reading ability consider support reading strategies as relatively more valuable than L1 readers with low reading ability, ESL readers in the study, irrespective of their reading ability, attributed high value to support reading strategies.

In a study, Anjomshoaa, Golestan, and Anjomshoaa, (2012) examined the relationship between metacognitive strategy use and EFL reading comprehension in Kerman, Iran. 81 Iranian students of English language from Azad university of Kerman were participated in the study. Pearson Correlation analyses indicated a positive correlation between the variables of the study.

Moreover, Phakiti (2003a) investigated how cognitive and metacognitive strategy use relates to EFL reading achievement test performance using a strategy questionnaire and retrospective interviews. 384 Thai students enrolled in a university in Thailand participated in the study in which data was collected during the participants' final examination in an English reading comprehension course. Participants read a total of eight passages with gap-filling cloze questions. All participants answered the strategy questionnaire, while four highly successful and four unsuccessful participants participated in the retrospective interviews. Results indicated that cognitive and metacognitive strategy use was significantly positively related to participants' performance at the reading test. The study also suggested that metacognitive strategy use distinguished highly successful readers from moderately successful ones and moderately successful readers from unsuccessful ones. Highly successful readers reported significantly more use of metacognitive strategies than moderately successful readers, while the moderately successful readers reported significantly more use of metacognitive strategies than unsuccessful readers.

According to Asmara (2017), although in high schools most of the students are exposed to different types of texts, they still find problems comprehending the text. The reason may lie in the fact that they are not familiar with the strategies that may come handy in improving comprehension of the text. In his study, Asmara attempts to find the most frequent strategies used by first graders in high school, which can improve reading comprehension. In this study, he used a self-report questionnaire to gather data about the strategies used by 30 participants of the study. An adapted form of Format Cognitive Reading Strategies instrument was used to analyze data. The results indicated that only 8 strategies were ranked as the most frequent ones used by students, which can suggest that the students should be familiarized with different strategy types that can help them in reading comprehension.

Ekadini and Rukmini (2018) explored the usefulness of cognitive and Structure-Proposition-Evaluation (SPE) strategies use by students who have high and low level of motivation in responding to reading section of TOEFL test. Cognitive strategies and SPE were utilized in the two

groups respectively. To classify students into high and low motivated, a motivation questionnaire was conducted. Applying Two-Way ANOVA, their results showed a significant effect of cognitive strategy and SPE strategy use by both high and low motivated learners.

2.4. L1 Reading Ability

According to transfer hypothesis, suggested by Goodman (1975), L2 reading comprehension requires the transfer of L1 reading skills. Thus, any weakness in reading comprehension can be attributed to inapt strategies and habits carried over from first to second language. This idea is in line with Coady's (1979) Reading Universal Hypothesis proposing the similarity of the reading comprehension processes across languages to the point that it neglects the differences between L1 and L2 reading. This may fortify the stance that good habits rooting in the first language can result in better performance in L2 reading comprehension. Cummins's (1980) Language Interdependence Hypothesis is the other hypothesis along this line. Carey and Cummins (1978) maintain that the correspondence between reading ability in L1 and L2 may be attributed to the common core of knowledge underlying both.

Jiang and Kuehn (2001) tested L1 transfer in the development of English academic language proficiency on low-intermediate ESL students. A sample of twenty-two young and adult learners was selected from two ESL courses. The mean scores of each group from pre-and post-test showed that adult immigrants possessed higher LI cognitive and academic language proficiency, and they made significant progress on their development of English language skills-both reading and writing. The results provided both quantitative and qualitative evidence on the positive transfer of prior linguistic and cognitive skills from L1 to L2.

A couple of studies have indicated that good language learners are more likely to have good L1 reading skills (e.g., Brantmeier, Hammadou, & Strube, 2014; Yamashita, 2002). Possessing L1 reading skills works as the influential basic strategies for L2 reading (Pichette, Segalowitz, & Connors, 2003). This is congruent with Bernhardt's (2011) proposal, which states that weak L2 readers are mostly less successful L1 readers.

However, what is lacking in the previous studies reviewed above is that they have not included all the variables considered in the current research in a single study. Modelling the effect of different variables in one study may give the researcher a more comprehensive view of how the variables function. Moreover, few studies (Anjomshoaa, Golestan, & Anjomshoaa, 2012; Sheorey & Mokhtari, 2001) have focused on modelling the relationships among some of these variables in an EFL context such as Iran, which may make the current study distinct from the previous ones reviewed above.

3. The Present Study

Despite the existence of many studies on reading comprehension, as was mentioned above, lack of an almost comprehensive model in reading comprehension made me conduct a study on reading comprehension. Thus, the main purpose of the study was to develop and confirm a model of reading comprehension with the focus on investigating the effects of cognitive and metacognitive strategies, and L1 reading ability on EFL reading comprehension. Among the cognitive strategies, comprehending, memory, and retrieval strategies are included in this study. Planning, monitoring, and evaluation strategies are considered as subcomponents of metacognitive strategies. Thus, five hypotheses were posited:

Research Hypothesis One: Cognitive strategies do not predict reading comprehension ability for EFL Learners.

Research Hypothesis Two: Metacognitive strategies do not predict reading comprehension ability for EFL Learners.

Research Hypothesis Three: First language reading comprehension ability does not predict reading comprehension ability in EFL context.

Research Hypothesis Four: Cognitive strategies do not predict L1 reading ability.

Research Hypothesis Five: Metacognitive strategies do not predict L1 reading ability.

This study was an attempt to test these five hypotheses based on the collected data from EFL university students in Iran. The model was developed with the theorized interrelationships based on the prior research in the field of L2 and EFL reading comprehension, cognitive and metacognitive knowledge. Figure 1 below represents the default model.

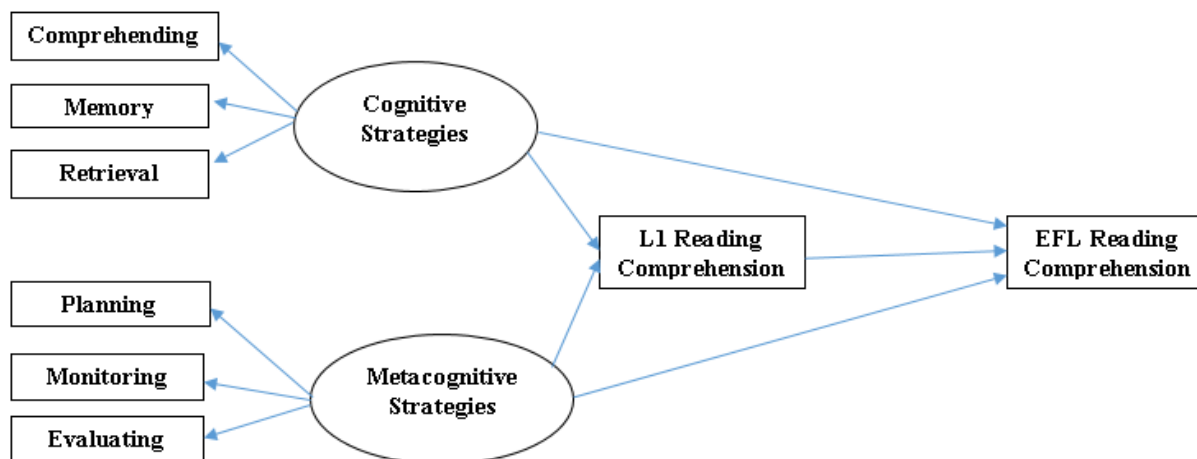


Figure 1: The Default Model for EFL Reading Comprehension

4. Methodology

4.1. Participants

Since too large or too small a sample endangers the validity of the interpretations made in the studies employing structural equation modeling, choosing the right sample size is a sensitive matter. “The sample size needed for a study depends on many factors including the size of the model, distribution of the variables, amount of missing data, reliability of the variables, and strength of the relationships among the variables” (Muthén & Muthén, 2002, p. 599). General sample size recommendations used in SEM studies focus mainly on the number of observable variables or the number of data points in the variance-covariance matrix. Kline (1998) recommended five times as many variables used in the model for the number of participants necessary for conducting a SEM study. Nunnally (1967), furthermore, suggests that in SEM estimation, a good rule is to have at least ten times as many subjects as variables. Stevens (1992) argues that in SEM research a sample size of 15 participants per variable is a good rule of thumb. Loehlin (1987) explains that researchers should choose at least 100 participants for measurement models with two to four factors. Most researchers employ a sample size of 150 to 250. This research employed 280 male and female students from among a pool of some 500 students available to the researcher to be on the safe margin. The participants were the junior and senior students of English teaching and translation, aged from 21 to 36, studying at the Azad University of Shiraz, Iran. All the participants were selected based on convenient sampling and they were informed that they are going to participate in a study. To control for the history of the participants of the study, they were asked if they participated in any English classes outside the university and only those who did not take any grammar or vocabulary-related courses outside the university were included in the study.

4.2. Instruments

Instruments of this study consisted of a questionnaire with two subcomponents (i.e., cognitive and metacognitive strategies), the reading section of the TOEFL test, and a test of first language reading comprehension including two texts taken from the book entitled “Educational Talent” by Masikhah and Vakili (2013). Each of the aforementioned instruments is elaborated on below:

4.2.1. Cognitive and Metacognitive Strategy Questionnaire

This questionnaire was developed by Purpura (1999), and was revalidated and reduced to 30 items by Phakiti (2008) to be suitable for an EFL context and reading comprehension test. She measured the construct validity of the questionnaire using factor analysis, and the reliability of cognitive and metacognitive scales used in this questionnaire measured by Cronbach alpha was reported to be 0.74 and 0.85 respectively. 30 items that provided a clear structure of cognitive and metacognitive strategies remained in the final version of her questionnaire. The cognitive strategies section of this questionnaire measures the subscales of comprehending, memory, and retrieval, which makes 13 items of the questionnaire. The metacognitive strategies section of the questionnaire encompasses the subsections of planning, monitoring, and evaluating and makes the other 17 items of the whole questionnaire (see Table 1).

Table 1: The Items Included in Cognitive and Metacognitive Strategy Subscales

<i>Scales and Subscales</i>	<i>No. of Items</i>	<i>Items</i>
1. Cognitive Strategies		
Comprehending	4	7, 8, 9, 10
Memory	4	11, 12, 13, 15
Retrieval	5	14, 16, 17, 18, 19
Subtotal	13	
2. Metacognitive Strategies		
Planning	6	1, 2, 3, 4, 5, 6
Monitoring	5	20, 21, 24, 29, 30
Evaluating	6	22, 23, 25, 26, 27, 28
Subtotal	17	
Total	30	

In this study, using Cronbach Alpha, the reliability of each section of the questionnaire (i.e., cognitive and metacognitive strategies) as well as that of the subcomponents were estimated separately. The reliability estimates of cognitive and metacognitive strategies sections were reported to be 0.86 and 0.78, respectively. For comprehending, memory, and retrieval as subcomponents of cognitive strategies' reliability estimates were 0.79, 0.84, and 0.86, respectively. These estimates for the subcomponents of the other section of the questionnaire, say, metacognitive strategies, were 0.81 for planning, 0.85 for monitoring, and 0.83 for evaluating.

This questionnaire allows learners to mark strategy use on a 5-point Likert scale: 1 (Never), 2 (Sometimes), 3 (Often), 4 (Usually), and 5 (Always). The length of time needed to complete the questionnaire ranges from approximately 10-15 minutes (see Appendix A).

4.2.2. Reading Comprehension Test

EFL reading comprehension instrument included four texts selected from TOEFL PBT exam. The reliability of the reading comprehension test was measured through KR-21 and was reported to be 0.78. The whole section of reading comprehension could take a long time to complete, which could affect the performance of students, and consequently, the results of the study. Therefore, we decided to use these four passages, selected from the TOEFL test and validated by Khoii and Shamsi (2012). The participants should answer the 20 items following four texts. All the items are MC and measure the main ideas, meaning of words, reference of pronouns, and inferencing on the part of students. The students were supposed to read 4 almost general texts of English and respond to the items that followed each (see Appendix B).

4.2.3. First Language Reading Comprehension Test

Two texts taken from the Persian book "Educational Talent" written by Masikhah and Vakili (2013) are used as measures of first language reading ability (See Appendix C). The test of L1 reading comprehension was piloted and its reliability was measured using KR-21 (R=0.74). Moreover, three experts were asked to go over the items to see if they are suitable for the purpose

they are used. The problem is that, to the best of researcher's knowledge, in Persian, there is no valid and reliable measure of reading comprehension, and even the previous studies have followed the same procedure for selecting and using Persian texts (e.g., Talebi, Maghsoudi, Mahmoudi, & Samadi, 2014).

4.3. Data Analysis

The AMOS 24 for Windows software was used to analyze the structural model developed in this study. Structural Equation Modeling is a statistical technique for testing and estimating causal relations using a combination of statistical data and quantitative causal assumptions (Haavelmo, 1943 & Wright, 1921).

In the current study, SEM was used to ascertain the effects of cognitive and metacognitive knowledge, and L1 reading ability on EFL reading comprehension. To test the model, first the chi-square and degree of freedom should be measured to ensure that the model can be identified by AMOS, which is the software used to analyze the structural equation models. After that, the parameters shown in the form of arrows are estimated to see if they are significant or not. If the P values for the parameters are below 0.05, the parameters are significantly different from zero and should be kept. If not, that parameter should be eliminated from the model. For the significant parameters, their estimates will also show the regression load, by which the predictive load of each variable over the others can be explained. When the non-significant parameters are omitted from the model, it is time to see if the whole model is a fit one. To this end, three types of indices are used. First, absolute fit indices show if the whole model is fit compared to that of the population. Moreover, comparative fit indices show if the default model is any different from the independent model, in which none of the parameters are involved. And the last type of indices which is called parsimony indices shows whether the modifications proposed in the output for the model are worth being applied. Generally speaking, these indices indicate what parameters to be eliminated and what to be added to have a final fit model. After reviewing these indices, the revised final model for reading comprehension is proposed.

5. Results

For the model to be identified, it should have rank and order condition. Based on the rank condition, the degree of freedom for the model should be positive. This is the most crucial element for the model to be identified by AMOS. The order condition states that the chi-square should be shown in the output of the model. The output indicates that df is positive (35) and chi-square was also calculated by AMOS, which shows the software identifies the model.

In model estimation, the parameters and their regression loads are shown. This way, we can understand how much of the target construct can be predicted by one variable. The values for the parameters, together with the significance of each parameter, are presented in Table 2.

Table 2: The Estimates for Parameters of EFL Reading Comprehension Model

Parameter			Estimation	P-value
Cognitive	→	Comprehending	0.62	0.03
Cognitive	→	Memory	0.43	0.02
Cognitive	→	Retrieval	0.54	0.03
Metacognitive	→	Planning	0.57	0.03
Metacognitive	→	Monitoring	0.65	0.02
Metacognitive	→	Evaluating	0.62	0.01
Cognitive	→	L1 Reading	0.31	0.04
Cognitive	→	EFL Reading	0.57	0.03
Metacognitive	→	L1 Reading Comprehension	0.36	0.04
Metacognitive	→	EFL Reading	0.21	0.30
L1 Reading	→	EFL Reading	0.34	0.02
Cognitive	↔	Metacognitive	0.45	0.03

Table 2 shows that all the directions are significant except for the ones from Metacognitive strategies to EFL reading comprehension. For testing the model, we should see if the elimination of the above-mentioned parameter may make the model fit. Three separate types of evidence are used to guarantee the fitness of the proposed model. The first group of these indices is called Absolute Fit Indices. The indices reported from this group are chi-square, CMIN, and RMR. The chi-square measured for the default model is 36.43, which is far away from the chi-square for the independent model (98.34).

The more the chi-square distance from the chi-square of the independent model and the more it approaches zero, which is the chi-square of the saturated model, the better the model fits the data gathered. However, chi-square is not said to be that reliable, and instead, the CMIN, which is the relative chi-square, can be checked. The relative chi-square for the default model is 1.04, which is within the desirable range of 1 to 5 proposed for relative chi-square. It is worth mentioning that all the acceptable range for the criteria of the models are taken from Ghasemi (2010). The RMR measured in the model is 0.6, which is almost close to zero. RMR compares the matrix for the default model and the matrix for the population. RMR is acceptable when it is lower and closer to zero.

The second group of the indices to be used is called comparative fit indices. These indices actually compare the default model and the independent model. In this group, RFI, IFI, and TLI are reported here. These indices were calculated to be 0.69, 0.903, and 0.784, respectively. The numbers are needed to be above 0.9 to be considered acceptable. Only IFI reaches this level; thus, it shows that the model may need modification.

The third group of indices called Parsimonious Fit Indices shows if adding or eliminating a parameter from the model is worth applying it. PRATIO, PNFI, and PCFI are checked in this group of indices. The amount of these three were 0.462, 0.54, 0.47, with the measures above 0.5 acceptable. The more these measures are, the better they will be evaluated. Because the comparative indices were not totally acceptable, the researcher decided to modify the model.

Based on the data given above, and based on the modifications provided in model estimation section, this model can be modified. As can be seen in the model estimation section, the unidirectional parameter from metacognitive strategies to EFL reading comprehension is not significant, which made us eliminate this parameter from the default model of the study. Furthermore, the output of AMOS shows that a bidirectional parameter between cognitive and metacognitive strategies should be added. The modified model after the deletion of the non-significant parameter and the addition of the suggested parameter can be seen in Figure 2.

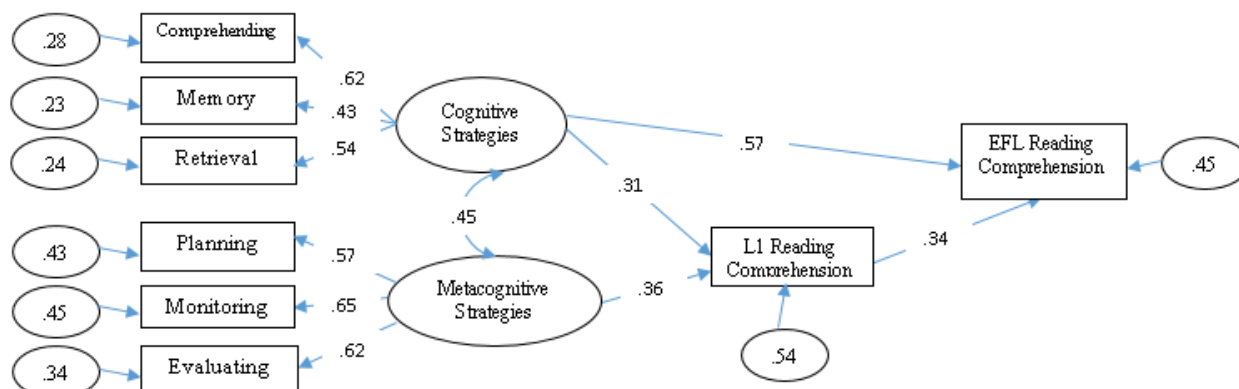


Figure 2: The Revised Model for EFL Reading Comprehension After Elimination and Addition of Parameters

The above model shows the finalized model after the elimination of the non-significant parameters and the addition of the recommended parameters in the output of AMOS. Moreover, Figure 2. bears the regression load among the variables as well as the errors which each observable variable bears.

Also, the changes made to each estimate of indices for the whole model after the elimination of non-significant parameters and the addition of necessary parameters are reported in Table 3.

Table 3: Changes in the Model Indices after Adding or Removing the Parameters

Index	Default model	Revised model
Df	35	34
Chi square	36.43	21.3
CMIN/df	1.04	1.59
RMR	0.6	0.5
RFI	0.69	0.85
IFI	0.903	0.912
TLI	0.784	0.901
PRATIO	0.462	0.52
PNFI	0.54	0.5
PCFI	0.47	0.49
AIC	34.8	27.5

Abbreviations:

Df: Degree of Freedom; CMIN: Normed Chi-Square; RMR: Root Mean Square Residual; RFI: Relative Fit Index; TLI: Tucker-Luies Index; PRATIO: Parsimony Ratio; PNFI: Parsimonious Normed Fit Index; PCFI: Parsimonious Comparative Fit Index; AIC: Akaike Information Criterion

From Table 3, it can be seen that the chi-square in the revised model has decreased, which is a positive indication that the revised model is working better. RMR has also decreased in the revised models, which shows the difference between the default model and the model taken from the population is getting less. Interestingly enough, we see that the comparative indices, namely IFI and TLI, approach the acceptable level of 0.9 in the final revised model. Only, RFI is estimated to be 0.85, which is again close to the acceptable level of 0.9, and as the other two indices reach 0.9, and as the whole parameters should be appraised together, this discrepancy can be ignored. Generally, the changes in the comparative indices are another positive sign that the model is being rectified in the right way.

Furthermore, the parsimonious indices (PRATIO, PNFI, PCFI) have also rubbed on the 0.5 as an acceptable level. Being above 0.5, the parsimonious indices show if the changes and modifications brought about to the model are worth being applied. The only index in this set which is below but close to 0.5 is PCFI with the reported level of 0.49, which has a negligible discrepancy with 0.5. Therefore, the results of parsimonious indices support the changes made to the model. The AIC index is also used to compare the default model with the revised models. The revised model's AIC has decreased, which shows that the revised model is better than the default one. As the indices for the second default model better approximate the acceptable or desirable levels, and as it comes from the AIC index, this revised model seen in Figure 2 can be proposed for the cognitive and metacognitive strategies, linguistic factors, and L1 reading ability affecting EFL reading comprehension ability. The decrease in the AIC is a positive point to show that the model is functioning better.

6. Discussion

This study explores the interrelationships among cognitive and metacognitive knowledge, L1 reading ability, and EFL reading. As the results show, the first null hypothesis was rejected in this study. The results show that cognitive strategies predict reading comprehension ability with a regression load of 0.57, which was significantly different from zero ($p=0.03$). This result of the study is in line with that of Purpura (1998) who found a significant and direct influence of cognitive strategy use on L2 reading performance. Similar results have been reported by Phakiti (2003b, 2006, & 2008). Phakiti (2003b) found a strong association between cognitive strategy use and reading achievement. Hsu (2008) conducted a study to determine whether there were differences in

cognitive strategies used by EFL learners depending on their level of proficiency while performing on a reading comprehension task. The finding of this study, conducted in an EFL context, is in line with that of our study. Hsu, also, found that the contribution of students' strategy use to their reading test performance was smaller than the contribution of the level of proficiency. However, Singhal (2001) ruled out the possibility that the differences found between different ability groups were simply a by-product of reading comprehension level.

However, the second hypothesis was accepted as the regression load for the parameter from metacognitive strategies to reading comprehension was not significantly different from zero ($p > 0.05$). That is to say, the regression load of 0.21 calculated here is not statistically high, and that is why this parameter can be eliminated from the model. This, however, can show that metacognitive knowledge exerts indirect effects on EFL reading through cognitive strategies and L1 reading skills, which confirms the notions that strategy use is a tool that mediates between the individual qualities and text features. Theoretically, the results of this part of the study also support the view of Bachman and Palmer (2010). Bachman and Palmer (2010) explained that metacognitive strategies, together with language knowledge and relevant background knowledge, work as key to achieve communicative goals or to complete reading tasks. Moreover, Lin, Lam, and Tse's (2019) study well supports the findings of the present study. They explored the relationships between students' metacognitive, cognitive, and affective strategy use and their Chinese reading ability performance. A sample of 552 L2 Chinese learners completed a high-stakes reading test and a self-reported strategy use questionnaire in China. Structural equation modeling analysis showed that while cognitive strategy use had a direct impact on Chinese reading performance, both metacognitive and affective strategy use exerted indirect effects on the reading test. Additionally, metacognitive strategy use directly and strongly influenced cognitive processing.

Findings of this study based on the validation of the model reject the third hypothesis. The results indicated that L1 reading ability well predicted reading comprehension in an EFL context. The regression load was reported to be 0.34, which was significant at $P=0.02$. Many reading comprehension strategy use studies investigated L1 and L2 reading have been conducted to test the *Linguistic Threshold Hypothesis* (LTH) and the *Linguistic Interdependence Hypothesis* (LIH). The LTH theorizes that there may be a threshold of linguistic competence that detracts from the effect of bilingualism on cognitive ability (Cummins, 1976). This, therefore, suggests that in order to read in a second language, a level of second language linguistic ability must be achieved (Bernhardt & Kamil, 1995). The LIH, on the other hand, posits that L1 and L2 reading share the same underlying dimension (Cummins, 1979). According to the LIH, once learners are competent in their L1 reading, they possess the ability to transfer such reading competence to their L2 reading (Coady, 1979; Koda, 2005). By contrast, according to the LTH, such transfer of strategic competence is only possible when one's L2 proficiency has also reached a certain threshold (Cziko, 1980; Devine, 1987). Brisbois (1995, p. 577) claims that "language skills do transfer, allowing language learners, particularly upper-level students, who have reached the necessary language threshold, to capitalize upon their L1 skills in order to make sense of the L2".

Among several studies comparing the L1 and L2 reading processes, some are in line with the present study which found a positive relationship between L1 and L2 reading processes (e.g., Sarig, 1987; Upton & Lee-Thompson, 2001; van Gelderen, Schoonen, de Glopper, Hulstijn, Snellings, & Simis, 2007), thereby suggesting support for the LIH, while others found no such relationship (e.g., Schoonen, Hulstijn, & Bossers, 1998; Stevenson, Schoonen, & De Glopper, 2007; Young & Oxford, 1997), indicating support for the LTH.

Moreover, according to the results of the study, the fourth hypothesis is also rejected because cognitive strategies predict L1 reading ability with the regression load of 0.31, which is significantly different from zero ($p=0.04$). This parameter is therefore kept in the revised model. The ability to learn, recall, and convey thoughts reflexively is what cognitive strategy deals with. In other words, by mastering the internal process, the learner will be responsible for his own learning and, thus, will learn independently. Gagne and Briggs (1979) state that cognitive strategy is the organization of thoughts that influences the intellectual processes of the learner, which consists of

finding problems, learning, recalling, and thinking. The account infers that cognitive involvement required in different activities can happen via using cognitive strategies, including cognitive strategies in reading comprehension, in learning, in recall, and in thinking or solving problems.

The results of Rothkopf and Bisbicos' study cited by Gagne (1977), being in line with the present study, indicate that employing cognitive strategies helps readers to control their thoughts while reading, which leads to understanding a text. Moreover, Block (1986) highlights that definition of cognitive strategy in comprehending a passage refers to how the reader attempts to understand the text, how to realize the meaning of what they read, and what to do in case of encountering problems and difficulties.

The findings of the study suggest that whereas, metacognitive awareness cannot predict EFL reading comprehension (which was a parameter deleted based on the second hypothesis of the study), it is a good predictor of L1 reading ability with the regression load of 0.36, which is significant at $P=0.04$. Thus, it may indicate that metacognitive awareness has an indirect impact on EFL reading comprehension by being transferred from L1 reading ability. This part of the result approves Geva and Ryan's (1993) findings that child's transferred L1 proficiency is the underlying factor in attaining skills in another language. That is to say, it is possible to transfer the metacognitive strategies used in L1 reading comprehension, e.g., text organization, cohesion, and coherence, to improve L2 ability and as these strategies are well entrenched in L1, the learner will find it easier to transfer his ability to second language context. Regarding the fact that the learners' literacy was at an acceptable level before starting learning English, they could find it easier to avail themselves of the strategies learned in Persian in the process of acquiring EFL language reading comprehension. The learners try to use their metacognitive awareness to evaluate their L1 repertoire and transfer the pertinent knowledge of their first language in addressing L2 tasks (Bachman & Palmer, 2010). Using strategies institutionalized in L1 reading for resolving EFL tasks is also seen in Chinese reading comprehension context. The transferred L1 reading skills of Chinese EFL learners are said to reduce the ambiguities and difficulties in L2 reading ability (Jiang, 2011; Tsai, Ernst, & Talley, 2010).

Concurring with previous studies (e.g., Cohen & Upton, 2006; Karimi, 2015; Mokhtari & Reichard, 2004; Rupp, Ferne & Choi, 2006), findings of this study revealed that metacognitive strategy use significantly affects EFL reading comprehension. It can be deduced that the indirect effect of metacognitive awareness on EFL reading comprehension can be attributed to the executive function it bears in the process of learning. The use of metacognitive strategies related to the higher-order type of processing enables us to show more flexibility in relating the details of the text and improves our inhibition for closing a blind eye to unimportant and impertinent information in the passage (Cartwright, 2015). Studies on metacognition suggest that the executive control plays a crucial role in resolving the discrepancies in presenting information and providing alternatives in construing the knowledge (Vuong & Martin, 2014). The executive function of metacognition over cognitive strategies can also be attributed to the studies by Purpura (1997, 1998) and it can affect L2 reading comprehension via the use of cognitive strategies.

Bachman and Palmer (2010) defined strategic competence as a set of metacognitive strategies, with a hierarchical influence on the executive processes that lead to cognitive control over the task in language use and other cognitive activities. This means that metacognitive processing can execute a controlling function over cognition, which can justify the addition of a two-way parameter between cognitive and metacognitive strategy.

7. Conclusion and Implications

This study aimed at delineating the effects of metacognitive and cognitive strategies and L1 reading ability on EFL reading comprehension. In so doing, a default model including 8 observable variables and two latent variables was developed. This model was then analyzed based on the goodness of fit indices and was revised accordingly. The revised model showed that cognitive strategies could affect L1 reading and EFL reading comprehension. Besides supporting the direct effects of each factor on EFL reading comprehension, this piece of research found out that

metacognitive knowledge had an indirect impact on EFL reading ability via its effects on L1 reading ability. The findings corroborate the communicative language ability model, proposed by Bachman and Palmer (2010) in which language knowledge and other cognitive activities are under the control of metacognitive strategies which are considered as higher-order skills.

It may also be concluded that metacognition collaborates with the ability in L1 comprehension to establish the ground for resolving the difficulties encountered in EFL reading ability. Hence, it may be claimed that metacognition functions as the focal point for mobilizing the pertinent abilities in reading comprehension. Thus, the results show how the executive function of metacognitive strategies is exerted in the process of resolving the difficulties in EFL reading comprehension. This point implies that the teachers should work on and explain the metacognitive strategies for their students and their tasks should also entail the use of such strategies. Material developers can also include such strategies in the content of the book they write.

One of the other significant implications of this study is to inject instruction of cognitive strategies into EFL curriculum to boost EFL reading comprehension. The results also imply concentrating more on the L1 resources in teaching EFL reading comprehension, which may be ignored by the methods focusing on the new realm to be created for learning a foreign language. Thus, in some cases, comparing the new English structures to their counterparts in Persian by teachers may prove quite helpful in promoting students' level of understanding.

This study had some limitations which may hinder the generalizability of the results. First, as a rule of thumb, the more participants, the more confident we can be in the results of the study. Although some established rules for selecting the number of participants were followed in this study, it can be claimed that with a wider sample, the results can be more valid. Moreover, this study did not consider the effect of gender in validating the final model, which can be effective in its turn. These are the factors which can be the focus of the following studies as well.

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Appendix A

Cognitive and Metacognitive Strategy Questionnaire

No	Your thinking	0	1	2	3	4	5
1.	I plan what to do before I begin to read English texts or tasks.						
2.	I make sure I clarify the goals of the reading tasks.						
3.	I consider steps needed to complete the reading.						
4.	I make sure I understand what has to be done and how to do it.						
5.	I know what to do if my plans do not work efficiently.						
6.	I scan through the reading and tasks before I actually begin doing it.						
7.	I try to understand the relationships between ideas in the text.						
8.	I try to understand the content without looking up every word.						
9.	I think what is going to happen next while reading.						
10.	I analyze what the author means or tries to say.						
11.	I try to interpret hidden ideas/meanings in texts.						
12.	I translate text or reading tasks into my first language.						
13.	I summarize the main information in the text.						
14.	I relate the information from the reading or tasks to my prior knowledge or experience.						
15.	I reread texts or tasks several times when I feel I do not understand them.						
16.	I know which information is more or less important.						
17.	I identify or guess meanings of unknown words using context clues.						
18.	I apply my learned grammar rules while reading or completing reading tasks.						
19.	I guess meanings of unknown words using root words.						
20.	I am aware of time limitation and constraint.						
21.	I know how much the reading and tasks remain to be done while reading.						
22.	I check if I understand the text or task.						
23.	I check my own performance and progress as I move along the reading tasks.						
24.	I know when I lose concentration while reading.						
25.	I evaluate my plans or goals of my reading constantly.						
26.	I know when I should read more quickly or carefully.						
27.	I double-check my reading comprehension or performance.						
28.	I immediately correct my misunderstanding or mistakes in reading tasks when found.						
29.	I notice when and where I am confused in the text.						
30.	I know when I feel worried, tense or unmotivated while reading.						

Appendix B

EFL Reading Comprehension Test, TOEFL PBT

Passage 1

Bacteria are extremely small living things. While we measure our own sizes in inches or centimeters, bacterial size is measured in microns. One micron is a thousandth of a millimeter a pinhead is about a millimeter across. Rod shaped bacteria are usually from two to four microns long, while rounded ones are generally one micron in diameter. Thus if you enlarged a rounded bacterium a thousand times, it would be just about the size of a pinhead. An adult human magnified by the same amount would be over a mile (1.6 kilometers) tall.

Even with an ordinary microscope, you must look closely to see bacteria. Using a magnification of 100 times, one finds that bacteria are barely visible as tiny rods or dots. One cannot make out anything of their structure. Using special stains, one can see that some bacteria have attached to them wavy - looking "hairs" called flagella. Others have only one flagellum. The flagella rotate, pushing the bacteria through the water. Many bacteria lack flagella and cannot move about by their own power while others can glide along over surfaces by some little understood mechanism.

From the bacterial point of view, the world is a very different place from what it is to humans. To a bacterium, water is as thick as molasses is to us. Bacteria are so small that they are influenced by the movements of the chemical molecules around them. Bacteria under the microscope, even those with no flagella, often bounce about in the water. This is because they collide with the water molecules and are pushed this way and that. Molecules move so rapidly that within a tenth of a second the molecules around a bacterium have all been replaced by new ones even bacteria without flagella are thus constantly exposed to a changing environment.

1. Which of the following is the main topic of the passage?
 (A) The characteristics of bacteria (B) How bacteria reproduce
 (C) The various functions of bacteria (A) How bacteria contribute to disease
2. Bacteria are measured in
 (A) inches (B) centimeters (C) microns (D) millimeters
3. Which of the following is the smallest?
 (A) A pinhead (B) A rounded bacterium
 (C) A microscope (D) A rod-shaped bacterium
4. According to the passage, someone who examines bacteria using only a microscope that magnifies 100 times would see
 (A) tiny dots (B) small "hairs"
 (C) large rods (D) detailed structures
5. The relationship between a bacterium and its flagella is most nearly analogous to which of the following?
 (A) A rider jumping on a horse's back (B) A ball being hit by a bat
 (C) A boat powered by a motor (D) A door closed by a gust of wind

Passage 2

One of the most popular literary figures in American literature is a woman who spent almost half of her long life in China, a country on a continent thousands of miles from the United States. In her lifetime she earned this country's most highly acclaimed literary award: the Pulitzer Prize, and also the most prestigious form of literary recognition in the world, the Nobel Prize for Literature. Pearl S. Buck was almost a household word throughout much of her lifetime because of her prolific literary output, which consisted of some eighty - five published works, including several dozen novels, six collections of short stories, fourteen books for children, and more than a dozen works of nonfiction. When she was eighty years old, some

twenty - five volumes were awaiting publication. Many of those books were set in China, the land in which she spent so much of her life. Her books and her life served as a bridge between the cultures of the East and the West. As the product of those two cultures she became as the described herself, "mentally bifocal." Her unique background made her into an unusually interesting and versatile human being. As we examine the life of Pearl Buck, we cannot help but be aware that we are in fact meeting three separate people: a wife and mother, an internationally famous writer and a humanitarian and philanthropist. One cannot really get to know Pearl Buck without learning about each of the three. Though honored in her lifetime with the William Dean Howell Medal of the American Academy of Arts and Letters in addition to the Nobel and Pulitzer prizes. Pearl Buck as a total human being, not only a famous author is a captivating subject of study.

6. What is the author's main purpose in the passage?
- (A) To offer a criticism of the works of Pearl Buck.
 (B) To illustrate Pearl Buck's views on Chinese literature
 (C) To indicate the background and diverse interests of Pearl Buck
 (D) To discuss Pearl Buck's influence on the cultures of the East and the West
7. According to the passage, Pearl Buck is known as a writer of all of the following EXCEPT
- (A) novels (B) children's books (C) poetry (D) short stories
8. Which of the following is NOT mentioned by the author as an award received by Pearl Buck?
- (A) The Nobel Prize (B) The Newberry Medal
 (C) The William Dean Howell medal (D) The Pulitzer prize
9. According to the passage, Pearl Buck was an unusual figure in American literature in that she
- (A) wrote extensively about a very different culture
 (B) published half of her books abroad
 (C) won more awards than any other woman of her time
 (D) achieved her first success very late in life
10. According to the passage, Pearl Buck described herself as "mentally bifocal" to suggest that she was
- (A) capable of resolving the differences between two distinct linguistic systems
 (B) keenly aware of how the past could influence the future
 (C) capable of producing literary works of interest to both adults and children
 (D) equally familiar with two different cultural environments

Passage 3

When we accept the evidence of our unaided eyes and describe the Sun as a yellow star, we have summed up the most important single fact about it-at this moment in time.

It appears probable, however, that sunlight will be the color we know for only a negligibly small part of the Sun's history. Stars, like individuals, age and change. As we look out into space, we see around us stars at all stages of evolution. There are faint blood-red dwarfs so cool that their surface temperature is a mere 4,000 degrees Fahrenheit, there are searing ghosts blazing at 100, 000 degrees Fahrenheit and almost too hot to be seen, for the great part of their radiation is in the invisible ultraviolet range. Obviously, the "daylight" produced by any star depends on its temperature; today (and for ages to come) our Sun is at about 10,000 degrees Fahrenheit, and this means that most of the Sun's light is concentrated in the yellow band of the spectrum, falling slowly in intensity toward both the longer and shorter light waves.

That yellow "hump" will shift as the Sun evolves, and the light of day will change accordingly. It is natural to assume that as the Sun grows older, and uses up its hydrogen fuel-which it is

now doing at the spanking rate of half a billion tons a second- it will become steadily colder and redder.

11. What is the passage mainly about?
 (A) Faint dwarf stars (B) The evolutionary cycle of the Sun
 (C) The Sun's fuel problem (D) The dangers of invisible radiation
12. What does the author say is especially important about the Sun at the present time?
 (A) It appears yellow (B) It always remains the same
 (C) It has a short history (D) It is too cold
13. Why are very hot stars referred to as "ghosts"?
 (A) They are short-lived. (B) They are mysterious.
 (C) They are frightening. (D) They are nearly invisible.
14. According to the passage as the Sun continues to age, it is likely to become what color?
 (A) Yellow (B) Violet (C) Red (D) White
15. In line 15, to which of the following does "it" refer?
 (A) yellow "hump" (B) day (C) Sun (D) hydrogen fuel

Passage 4

If by "suburb" is meant an urban margin that grows more rapidly than its already developed interior, the process of suburbanization began during the emergence of the industrial city in the second quarter of the nineteenth century. Before that period the city was a small highly compact cluster in which people moved about on foot and goods were conveyed by horse and cart. But the early factories built in the 1830's and 1840's were located along waterways and near railheads at the edges of cities, and housing was needed for the thousands of people drawn by the prospect of employment. In time, the factories were surrounded by proliferating mill towns of apartments and row houses that abutted the older, main cities. As a defense against this encroachment and to enlarge their tax bases, the cities appropriated their industrial neighbors. In 1854, for example, the city of Philadelphia annexed most of Philadelphia County. Similar municipal maneuvers took place in Chicago and in New York. Indeed, most great cities of the United States achieved such status only by incorporating the communities along their borders.

With the acceleration of industrial growth came acute urban crowding and accompanying social stress conditions that began to approach disastrous proportions when, in 1888, the first commercially successful electric traction line was developed. Within a few years the horse - drawn trolleys were retired and electric streetcar networks crisscrossed and connected every major urban area, fostering a wave of suburbanization that transformed the compact industrial city into a dispersed metropolis. This first phase of mass - scale suburbanization was reinforced by the simultaneous emergence of the urban Middle class whose desires for homeownership in neighborhoods far from the aging inner city were satisfied by the developers of single-family housing tracts.

16. Which of the following is the best title for the passage?
 (A) The growth of Philadelphia (B) The Origin of the Suburb
 (C) The Development of City Transportation (D) The Rise of the Urban Middle Class
17. The author mentions that areas bordering the cities have grown during periods of
 (A) industrialization (B) inflation
 (C) revitalization (D) unionization
18. In line 10 the word "encroachment" refers to which of the following?
 (A) The smell of the factories (B) The growth of mill towns
 (C) The development of waterways (D) The loss of jobs
19. Which of the following was NOT mentioned in the passage as a factor in nineteenth-century suburbanization?

- (A) Cheaper housing
(B) Urban crowding
(C) The advent of an urban middle class
(D) The invention of the electric streetcar
20. It can be inferred from the passage that after 1890 most people traveled around cities by
(A) automobile
(B) cart
(C) horse-drawn trolley
(D) electric streetcar

Appendix C

L1 Reading Comprehension

درباره تغییراتی که در سازمان رخ می‌دهد دلایل متعددی ارائه می‌شود. کافمن (۱۹۷۱) به این نتیجه رسید که تغییر در سازمان از مجرای جابه‌جایی کارکنان رخ می‌دهد. با وجود این که سازمان افراد را گزینش می‌کند، به آنها آموزش می‌دهد و بدان گونه که می‌خواهد می‌پروراند، ولی نیروهایی که پستی در سازمان جایگزین می‌شوند به نسل‌های متفاوت تعلق دارند.

گاهی عوامل محیطی، سازمان را مجبور می‌کند که در خود تغییراتی ایجاد کند. طرفداران محیط زیست، حمایت از مصرف‌کنندگان و سایر گروه‌های مختلف اجتماعی فشارهای زیادی بر سازمان‌ها وارد می‌آورند و آن‌ها را در مسیرهای خاصی قرار می‌دهند. گاهی سازمان‌ها مجبور می‌شوند مرام یا اصول اخلاقی رایج در جامعه خاص (که خود جزئی یا بخشی از آن هستند) را رعایت کنند و آنها را به صورت سیاست‌ها و روش‌های اجرای خود درآورند (به نوشته مایر و رووان، ۱۹۷۷ مراجعه کنید). نیروهای حاکم بر محیط و نظام‌های مستقر در جوار سازمان، قوانینی را بر سازمان تحمیل می‌کنند و سازمان را وادار می‌سازند در مسیری که مورد قبول سایر نهادهای فعال اجتماعی است، گام بردارد. تحقیقی تجربی درباره اصطلاحاتی که سازمان‌های خدماتی در شهرها، طی سال‌های ۱۸۸۰ تا ۱۹۳۵ اعمال کرده‌اند، انجام شد. نتیجه تحقیق نشان داد سرعتی که سازمان‌ها، سیاست‌های رایج در جامعه را می‌پذیرند یا برنامه‌های مورد قبول محیط و جامعه را به اجرا درمی‌آورند، به این امر بستگی دارد که قوانین ایالتی و ولایتی تا چه اندازه از قدرت اجرایی برخوردارند، سازمان‌ها با چه سرعتی باید خود را با شرایط جدید وفق دهند و ضمانت اجرایی قوانین و مقررات تا چه اندازه است (به نوشته تالیر و زاگر، ۱۹۸۳ مراجعه کنید).

گاهی دستوراتی صادر می‌شود که سازمان باید در جهت اجرای آنها تغییرات را بپذیرد، ولی باید گفت که در مرحله اجرا، کار به همین سادگی انجام نمی‌شود. در این مورد بر روی سازمان پست ایالات متحده آمریکا تحقیقی در طی سال‌های ۱۹۷۰ تا ۱۹۷۱ انجام شد. این سازمان بایستی مقررات خاصی را به اجرا درمی‌آورد و خود را تجدید سازمان می‌کرد (به نوشته بی‌گارت، ۱۹۷۷ مراجعه کنید). بی‌گارت به این نتیجه می‌رسد که تجدید ساختار در سازمان پست ایالات متحده آمریکا باعث شد که نیروهای بسیار زیادی در داخل و خارج سازمان پدید آید. هدف این نیروها حمایت و تحکیم قدرت گروه‌های متعدد و ذی‌نفع بود. این نتیجه‌گیری همانند نتیجه‌ای است که سایر پژوهشگران به آن رسیدند و بر نقش اصلی و اهمیت گروه‌های ذی‌نفع در درون سازمان تأکید کردند. گروه‌های ذی‌نفع اصولاً با توجه به تخصص‌های مربوط و یا براساس ساختار سلسله مراتب سازمانی به وجود می‌آیند (به نوشته هیچ، ۱۹۸۰ مراجعه کنید).

۱. بهترین عنوان برای این متن چیست؟

- (۱) انواع تغییرات سازمانی
 (۲) عوامل مؤثر بر تغییرات سازمانی
 (۳) علل جابه‌جایی کارکنان در سازمان‌ها
 (۴) تقابل نظرات چهار محقق در مورد سازمان

۲. پژوهش در مورد سازمان پست ایالات متحده آمریکا نشان‌دهنده چیست؟

- (۱) دستورات خلاف منافع سازمان است.
 (۲) گروه‌های ذی‌نفع در مورد مدیریت سازمانی تخصص دارند.
 (۳) ایجاد نیروهای درونی و بیرونی سازمان، ماحصل تجدید سازمان است.
 (۴) گروه‌های ذی‌نفع را باید در درون و نه در بیرون آن تقویت کرد.
 ۳. نمونه اصلاحات سازمان‌های خدماتی در شهرها با چه هدفی ارائه شده است؟

- (۱) تأثیر عوامل محیطی بر تحولات در سازمان‌ها
 (۲) میزان ضمانت اجرایی مقررات سازمان‌ها
 (۳) تأثیرپذیری طرفداران محیط زیست از تغییرات آن
 (۴) آشنایی با نظام‌های مستقر در جوار سازمان در سال‌های ۱۸۸۰-۱۹۳۵

۴. پاراگراف سوم چه هدفی را دنبال می‌کند؟

- (۱) بررسی میزان اتفاق نظر بین «بی‌گارت» و «هیج»
 (۲) توصیف یکی از انواع تغییرات سازمانی در آمریکا
 (۳) تبیین یکی از دلایل تغییرات در سازمان‌ها
 (۴) ارائه خلاصه‌ای از کل متن

۵. با توجه به متن، کدام گزینه صحیح است؟

- (۱) فشار متقابل سازمانی و نیروهای بیرونی تابع گروه‌های ذی‌نفع است.
 (۲) مایر و رووان اخلاق را اصل بقای سازمان می‌دانند.
 (۳) تغییر ساختاری در سازمان‌ها گاهی جنبه جبری دارد.
 (۴) صدور دستورات، کاری بسیار دشوار است.

متن زیر را به دقت بخوانید و صحیح‌ترین گزینه را برای سؤالات شماره‌های ۱ تا ۵ انتخاب کنید.

در دورنمای راهبردی پرورش منابع انسانی، تجزیه و تحلیل محیطی به مثابه ابزار تشخیص مدیریت راهبردی مورد استفاده قرار گرفته است. استدلال این بحث، این است که اگر فرد (سازمان) مایل به اتخاذ تصمیمات واقع‌گرایانه و آگاهانه درباره آینده باشد، باید به طور منظم و متمرکز به خارج از حوزه عملیاتی و سازمانی خود توجه کند. این اقدام، عنصر ضروری فرآیندی است که در آن از یک طرف، تهدیدات مربوط به رشد و حیات سازمان پیش‌بینی و از طرف دیگر، راه‌های جدیدی برای تفکر و عمل کشف می‌شود. تجزیه و تحلیل رقیب، یک فن حمایتی است که سازمان به آن وسیله به اقدامات بازیگران موجود و آتی فعال در عرصه فعالیت‌های خود توجه ویژه‌ای معطوف می‌دارد. بهینه‌کاوی، هم با تجزیه و تحلیل محیط - در تعریف وسیع و جامع آن - و هم با تجزیه و تحلیل رقیب به طور خاص سر و کار دارد.

فاولر (۱۹۹۷) یادآوری می‌کند که معنی لغت‌نامه‌ای بهینه‌کاوی، شیار کوچک ایجاد شده بر روی کتیبه سنگی یک بنا یا ساختمان است که ارتفاع آن از سطح دریا به دقت اندازه‌گیری شده است. زمانی که ارتفاع مکان‌های مجاور سنجیده می‌شود، از این علامت به عنوان یک مرجع استفاده می‌شود. به نظر فاولر، بهینه‌کاوی در سازمان نیز شبیه همین قضیه است. به نظر وی بهینه‌کاوی شامل واری (مقایسه) عملکرد، فرآیندها و نظام‌های یک سازمان مشخص با عملکرد، فرآیندها و نظام‌های سازمان‌های دیگر است تا مشخص شود که استانداردهای سازمان در مقایسه با دیگر سازمان‌ها در چه وضعیتی (بالتر یا پایین‌تر) قرار دارد؟

بهینه‌کاوی صرفاً یک مقایسه با سایر سازمان‌ها، بدون توجه به ویژگی‌های سازمان‌های مورد مقایسه - نیست، بلکه شناسایی سازمان‌های مورد مقایسه بسیار مهم است. بنابراین بهینه‌کاوی در واقع فرآیند مستمر سنجش محصولات، خدمات و اقدامات سازمان در برابر سرسخت‌ترین و قوی‌ترین رقبای شرکت‌هایی است که به عنوان رهبران صنعت شناسایی شده‌اند (کیرنز، ۱۹۹۰). در این تعریف به ماهیت دائمی و مستمر فرآیند اشاره شده است. البته این کار در مقایسه با بازتاب عینی و عملی فرآیند، کاری نمادین است. این کار کمک می‌کند که توجه ما به اهمیت بررسی محیط جلب شود. انجام مستمر این کار در واقع آرزویی بلندپروازانه است مگر اینکه سازمان یک اداره کنکاش محیطی داشته باشد که البته در صورت وجود چنین اداره‌ای هنوز کل فرآیندها، رویه‌ها و نظام‌های سازمان به طور واقع‌گرایانه مورد توجه نمی‌شود. با این حال، بیشتر نویسندگان ادعا می‌کنند که بهینه‌کاوی نباید فعالیت موقت و اتفاقی، بلکه باید تلاشی مداوم برای کسب اطلاعات تطبیقی از هر جای ممکن تلقی شود.

منطق پشتیبان بهینه‌کاوی، جستجوی اطلاعات تطبیقی عملکرد است. ولی بهینه‌کاوی فراتر از نظارت بر استانداردها و نقشه‌برداری منفعلانه از فعالیت‌های دیگر سازمان‌ها - و مقایسه آن با سازمان خودی - است. بهینه‌کاوی باید موجب درس گرفتن از موفقیت‌ها و شکست‌های دیگران شود. بهینه‌کاوی اقدامی است برای شناسایی فعالیت‌هایی که دیگران انجام می‌دهند و فعالیت‌هایی که یک سازمان باید انجام دهد. بنابراین هدف اصلی بهینه‌کاوی باید انجام چنین کشفیاتی جهت تأثیرگذاری بر اقدامات خویش باشد. این بحث، در

تعریفی دیگر به این ترتیب ارائه شده است: بهینه‌کاوی جستجوی بهترین اقدامات انجام شده در صنعت است که منجر به انجام عملکرد متعالی می‌شود (کمپ، ۱۹۸۹).

فرآیند بهینه‌کاوی به طور محازی و در هر حوزه‌ای از زنجیره ارزش سازمان، فرآیندها و کارکردهای اصلی آن، مثل تولید، فروش، توزیع و همچنین فرآیندها و کارکردهای پشتیبانی مثل پرورش منابع انسانی قابل انجام است. فعالان پرورش منابع انسانی باید بدانند که هدایت بهینه‌کاوی و انجام مقایسه با دیگران می‌تواند برای آنان مزایایی اساسی در پی داشته باشد. بهینه‌کاوی، عملی ضروری است. اگر اطلاعات و آگاهی کافی درباره بهینه‌کاوی نداشته باشیم، اعتبار پرورش منابع انسانی به مخاطره می‌افتد. بهینه‌کاوی در سازمان‌هایی که آن را پذیرفته‌اند، به طور روزافزون به عنوان یک امر اثرگذار و شریک اصلی یادگیری سازمان تلقی می‌شود (ویلیامز، ۱۹۹۵). در این بحث‌ها، متخصصان پرورش منابع انسانی کجا قرار می‌گیرند؟

۱. قیاس مطرح شده در پاراگراف دوم، به چه منظور است؟

(۱) نشان دادن اهداف سازمانی بهینه‌کاوی

(۲) تبیین افق بلند بهینه‌کاوی در باستان‌شناسی

(۳) توضیح عملکرد سازمان‌ها در سطوح پایین و بالا

(۴) تأیید دقیق بودن نظرات فاولر

۲. در بهینه‌کاوی عمدتاً به کدام حیطة پرداخته می‌شود؟

(۱) نحوه شکست سرسخت‌ترین رقبا

(۲) شناسایی راهبران برجسته صایع

(۳) مقایسه سازمان‌ها به منظور دستیابی به رویه‌های عالی

(۴) تقویت زنجیره توزیع

۳. دو رکن اصلی در روش بهینه‌کاوی، کدام است؟

(۱) یافتن نقطه قوت سازمان خودی و نقاط ضعف سازمان‌های بیگانه

(۲) تجزیه و تحلیل محیط و یافتن مدیران راهبردی

(۳) تربیت منابع انسانی و یافتن شریک اصلی مناسب

(۴) کشف سازمان‌های مورد مقایسه و مقایسه آنها

۴. همه موارد زیر، با آنچه در متن به صراحت عنوان شده است، مطابقت دارند، به جز:

(۱) توجه بیش از حد به محیط بیرون سازمان، مغایر واقع‌گرایی است.

(۲) بازی در عرصه رقابت، نیازمند شناخت سایر سازمان‌ها است.

(۳) تصمیم‌گیری واقع‌گرایانه، مستلزم تحلیل خود و رقیب است.

(۴) بهینه‌کاوی فراتر از تقویت فرآیند تولید است.

۵. در ادامه متن فوق، نویسنده به احتمال زیاد به کدام مفهوم می‌پردازد؟

(۱) طبقه‌بندی فعالان پرورش نیروهای انسانی

(۲) دورنمای راهبردی پرورش منابع انسانی

(۳) جایگاه خبرگان تربیت منابع انسانی در بهینه‌کاوی

(۴) چگونگی تجزیه و تحلیل محیط