



## **The Relationship among Brain Executive Function, Reading Comprehension and Vocabulary Learning with the Impact of Self-Regulatory English Learning Strategies**

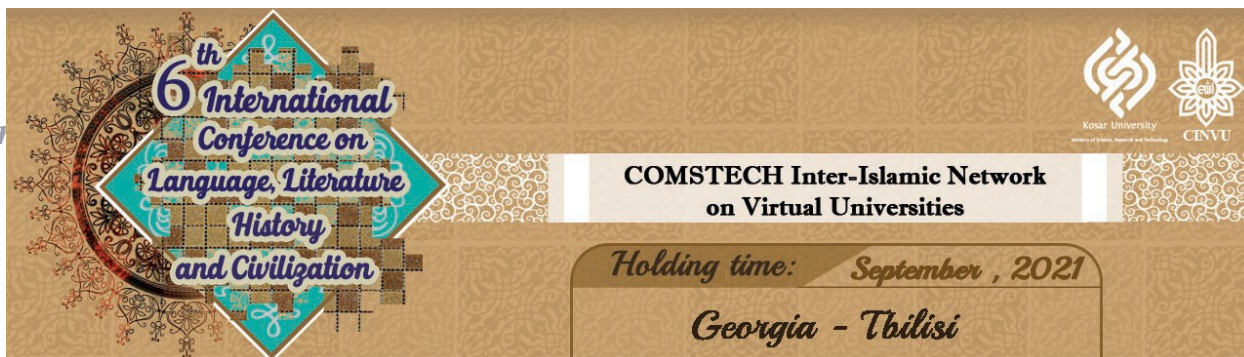
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### **Abstract**

According to Miyake's [1] integrated and unique perspective, Executive Functions are a set of comparable and different processes that aid humans in self-regulation, emotions, and behavior for the goal of Special assistance. Flavell [2] Characterized self-regulation as metacognitive awareness, and Dornyei [3] called for an emphasis on psychological perspectives in language learning. The goal of this study was to investigate if there was a link between executive function impairments, reading comprehension, and vocabulary development, as well as whether self-regulatory strategies mediated the association. 200 Iranian EFL university students were chosen in this regard. Simple random sampling was utilized on a population of 1200 participants. Students were asked to complete a Wang & Bai [4] self-regulatory strategy questioner as well as a Barkley [5] questioner of brain executive function deficit and also studied seven pieces of reading comprehension and about 500 vocabularies during the course. A descriptive form of correlation was used as the study design. The data were interpreted using structural equation modeling. The research model's factor structure was acceptable, and the research model is well-fitting. According to the study's findings, there is a 0.01 connection between research variables. When improving vocabulary and reading comprehension abilities, various executive functions of the brain should be considered, and these differences can be enhanced by using English language learning strategies.

**Keywords:** "brain executive function", "self-regulatory English learning strategies".



## Introduction

### 1.1 brain executive function

The phrase "executive action" refers to a collection of procedures that employ superior brain cognition to control certain behaviors. Executive functions include self-control/inhibition, working memory, self-organizing/problem solving, self-monitoring, self-motivation, emotional self-regulation, and time management. The executive function of this portion of the brain is controlled by the performance of the forehead, particularly the prefrontal cortex. Many neurological diseases, including autism spectrum disorders, attention-deficit/hyperactivity disorder, dysfunction, and learning impairments, have been related to insufficient executive functions and their components. Executive function is a term that was coined in the field of neuroscience to define conscious functions as well as the processes involved in conscious regulation of thinking, behavior, and emotion [6]. Planning, organizing, problem-solving, working memory, and decision-making are among these functions [7], as well as neurological processes related to information acquisition, processing, storage, and use [8], which provide a link between behavior and brain anatomy [9].

Several theories have been suggested to explain how executive functions (EF) are organized. Some see executive functions as a single process that helps organize high-level cognitive abilities [10]. Other studies advocated for a multifaceted view of executive functions [12]. Anderson [13] developed a four-process model for constructing an executive control system, which combines four subsystems, including (1) cognitive flexibility (working memory and distributed attention), (2) goal setting (planning and initiating), (3) information processing (fluidity and processing speed), and (4) attention control (self-regulation and self-monitoring). [14] Presented a three-factor model of executive function in which inhibition, working memory, and cognitive flexibility interact to impact high-level executive functions including thinking, planning, and problem-solving. An integrated view, based on Miyake's [15] integrated and distinct view is an alternative to views based on the executive functions of the unit and multiple. Executive functions are a collection of interconnected and unique systems that aid humans in self-regulating their thoughts and activities toward a common objective.

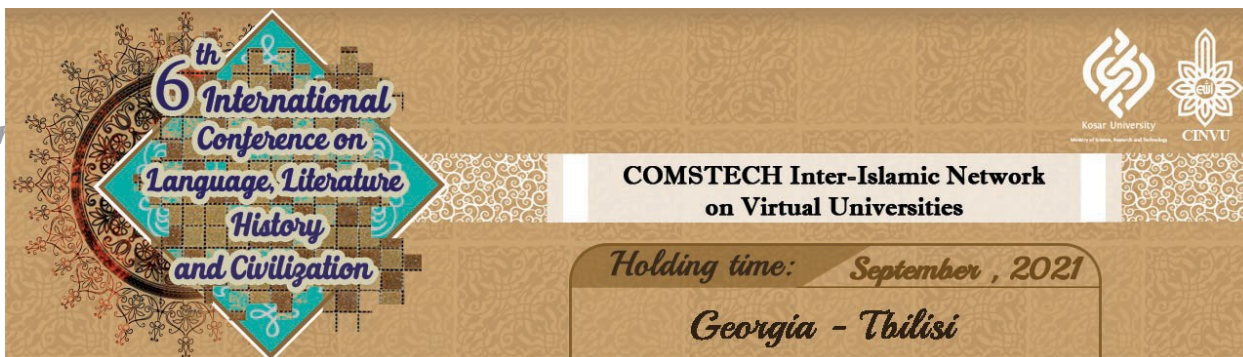
### 1.2 self-regulatory strategies

Another construct studied in this research is self-regulation, which comprises the following sub-constructs: Self-evaluation, Organization, and transformation, Rehearsal, and memorization, Seeking social assistance, Persistence when faced with challenges, Seeking opportunities to practice English, Recordkeeping and monitoring, Self-consequences, Goal setting, and planning, Review of records, Interpretation guessing.

In foreign language acquisition, autonomous learning and effective self-regulation mechanisms are becoming increasingly crucial; without them, students may be unable to take advantage of learning opportunities outside of language classrooms.

Zimmerman and Schunk's [15] notion of self-regulation, which is based on English and English (1958), may be beneficial in separating the seemingly inextricably linked concepts of motivation and self-regulation. According to Zimmerman and Schunk, self-regulation is the control of one's current behavior for reasons related to a future goal or ideal that an individual has set for himself. Learners' control over their concepts (e.g., competency beliefs), emotions (e.g., anxiety experienced while learning), behaviors (e.g., how they complete a learning task), and the learning environment are all included in many definitions [16]. For a long time, the focus of SLA research has been on how learning strategies are used to achieve language learning goals [17,18,19,20]. In contrast to current educational psychology tendencies, Dornyei [21] has called for the need to investigate the processes through which learners exercise control over their learning.

Dornyei also proposes a unique theoretical model of self-regulation in SLA, based on Kuhl [22] and the taxonomies of Corno and Kanfer [23]. Tseng, Dornyei, and Schmitt [24] conducted an empirical study that backs up [25] classification of five fundamental types of control strategies: Commitment control regulates goal commitment; metacognitive control regulates metacognitive control, which helps learners



maintain focus and concentration; satiation control, which helps learners manage and alleviate boredom; emotion control, which helps learners manage emotions; and environmental control, which helps learners create a suitable study environment.

### 1.3 Reading skills

Reading comprehension is defined as a process that involves the extraction and production of meaning through text-reader interaction, as well as a general interest in written language [26].

Reading comprehension, according to [27], is the process of extracting meaning from linked text. Reading comprehension has long been seen as a valuable source of information in second/foreign language assessments and examinations. It also plays an important part in a student's educational and professional life.

Teachers must be able to communicate not just what is needed, but also how to accomplish it, according to Sterzik and Farser [28], to teach children how to read. Bernhardt [29] goes on to say that how one helps students become better comprehenders is essential.

### 1.4 Vocabulary

The frequency with which English vocabulary is presented in an EFL context to students at an English-medium university is influenced to some extent by their academic subject of study. Technical writings need a high degree of fundamental vocabulary knowledge [30], but the texts themselves are a source of learning, as Wesche and Paribakht [31] point out.

Even if no language instruction is provided, L2 texts can help students learn vocabulary by providing a foundation of information from which they can learn through lexical inference, a key step in incidental learning [32]. O'Sullivan [33] emphasized the relevance of a larger spectrum of experience effects as a form of exposure in addition to scholarly literature [34]. In both academic and non-academic contexts, experiential effects impact learners' reactions to words.

The first is concerned with the subject of study; not every scholarly jargon applies to all disciplines. The academic word list (AWL) [35], which is commonly utilized by material makers to describe fundamental academic words, favors economics and low-level mathematics [36].

To meet the goals of the study, the following research subject was explored. Is there a relation between Self-Regulatory English learning strategies, Brain Executive Function, Reading Comprehension, and Vocabulary Learning?

## 2. Method

### 2.1 Participant

The study included female university students between the ages of 18 and 25. In General English classes, 200 EFL University students from Iran participated. The study population was 1200 individuals, and the sample size was 200 people, as calculated using the Cochran method [37].

### 2.2 Instrument

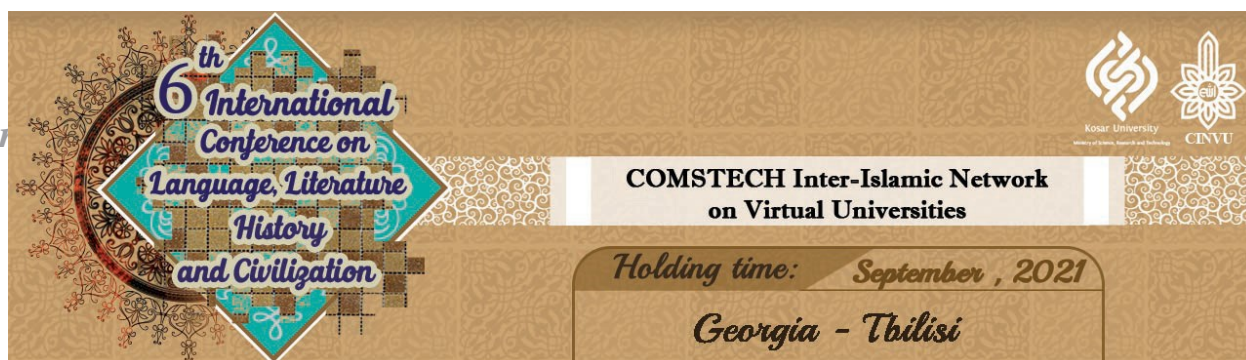
The Psychometric Properties of the Barkley Deficits in Executive Functioning Scale (BDEFS)

The Barkley Deficits in Executive Functioning Scale (BDEFS) in a College Student Population is utilized. This questionnaire contains 89 items and five subscales or subsets that were devised and refined by Barkley [38]. High scores on any measure might indicate a problem with executive function in everyday tasks. The Likert scale is used to score the questionnaire. The response "never or seldom" receives a score of one, whereas "most of the time" receives a score of four. Items 1, 6, 14, 16, 24, 49, 50, 55, 60, 65, and 69 have a reversal score: "most of the time" gets a 4, and "never or seldom" gets a 1. Individual scores are obtained from the sum of each of these subscales. High scores on any measure might indicate a problem with executive function in everyday tasks.

The Questioner of English Self-Regulated Learning Strategy (QESRLS)

Wang Bai [39] developed the Questionnaire of English Self-Regulated Learning Strategies (QESRLS), which includes 65 items in 11 categories and was developed using the self-regulation cyclical loop. The context includes goal-setting, making adjustments, and seeking social assistance. The students were





instructed to select one of the four options to answer: 0 (I never use it), 1 (I seldom use it), 2 (I sometimes use it), and 3 (I often use it).

#### Reading comprehension Test

At the end of the course, participants completed a reading comprehension test in the general genre. This test consisted of 8 multiple-choice reading comprehension questions that students had to complete in 10 minutes after reading passages from the coursebook. The split-half test, which yielded a 0.65 score, was used to confirm the test's reliability. The test's validity has been confirmed by experts.

#### Vocabulary Test

Participants were given 20 minutes to complete a 30-item multiple-choice vocabulary exam. The coursebook's target vocabulary was chosen. They were general words. A total of 40 items were chosen with a facility index of less than 0.50.

### 2.3 Data Collection and Procedure

The Psychometric Properties of the Barkley Deficits in Executive Functioning Scale (BDEFS) in a College Student Population and Questioner of English Self-Regulated Learning Strategy (QESRLS) in an Online Setting were used to collect data from students. Students were asked to respond to two questionnaires: an English Self-Regulated Learning Strategy questionnaire and an English Self-Regulated Learning Strategy questionnaire (QESRLS). QESRLS had a high level of internal consistency (Cronbach's alpha).

Both the first (QESRLS 1) and second (QESRLS 2) assessments yielded a score of 0.92. The reliability of the test-retest was 0.79. In the online context, the Psychometric Properties of the Barkley Deficits in Executive Functioning Scale (BDEFS) for College Students were employed. Cronbach's alpha coefficients for sub-scales ranging from 0.80 to 0.92, for all individuals of 0.96, and sub-scales ranging from 0.87 to 0.96 were obtained; this result implies that the scale is valid. Confirmatory factor analysis revealed a five-component scale model as well. Scale validity is desirable because failure in the Barclays Executive Council (time self-management, self-organization/problem solving, self-motivation, self-control/inhibition, emotion self-regulation issue) fits well in Iranian society. Students were expected to complete self-study of the materials used in their online e-Learning course by a certain date. Then, students were asked to take a reading comprehension and a vocabulary test.

### 3. Result

The current research focuses on the impact of self-regulatory English learning strategies in the study of the relationship among brain executive function, reading comprehension, and vocabulary learning in the general English course of students of Teacher Education University in Tehran.

#### 3.1 Inferential findings of the research

-Evaluation of data normality using Kolmogorov-Smirnov test:

The k-s-z statistic was not significant at the 0.05 level for any variables, indicating that the study variables follow a normal distribution.

#### 3.2 Findings related to the research hypothesis

Estimation and testing of measurement patterns (confirmatory factor analysis patterns) Separate measurement patterns were first created and computed to assess how acceptable the indicators are for the measurement patterns.

**Table 1: General indicators of fit of measurement patterns**

indicator	The impaired executive function of the brain	Self-regulatory strategies for learning English	Reading Comprehension	Vocabulary learning	Optimal amount	Condition
$\chi^2$	37.81	142.58	۱۰,۷۸	۴,۳۶	-	Optimal
RMR	0.048	0.040	۰,۰۲۲	۰,۰۳۲	0.05<	Optimal
CFI	0.97	0.91	۰,۹۰	۰,۹۹	0.90>	Optimal



IFI	0.97	0.91	۰,۹۰	۰,۹۹	0.90>	Optimal
PGFI	0.67	0.68	۰,۵۶	۰,۹۸	0.50>	Optimal
RMSEA	0.068	0.090	۰,۰۴۸	۰,۰۷۷	0.1<	Optimal
CMIN/DF	2.45	2.39	۱,۴۵	۲,۱۸	1 to 3	Optimal

The measurement patterns show a good match, according to the table above; in other words, the broad indications confirm that the data well supports the patterns. Given that the number of factor loads is usually always greater than 0.50, as well as the partial index P (with a value of Sig 0.05 for all items) and general indications, it may be concluded that items accurately measure data.

### 3.3 Analysis of research hypothesis

The link between the anatomical pattern of brain executive dysfunctions and the capacity to grasp and acquire vocabulary in students, as well as the intervening role of self-regulatory English learning techniques, is suitable and important

**Table 2: Correlation matrix between variables of research hypothesis**

Variable	Statistics	The impaired executive function of the brain	Self-regulatory strategies for learning English	Ability to understand	Vocabulary learning
The impaired executive function of the brain	Correlation	1			
	Sig	0.000			
Self-regulatory strategies for learning English	Correlation	**0.555	1		
	Sig	0.000			
Ability to understand	Correlation	**0.386	**0.601	1	
	Sig	0.000			
Vocabulary learning	Correlation	**0.693	**0.459	**0.204	1
	Sig	0.000			

The symbol \*\* implies that there is a 0.01 degree of correlation between the research variables, as seen in the preceding matrix. That is, there is a link between impaired brain executive functions and self-regulatory strategies for learning English and the ability to comprehend and learn vocabulary. The structural equation model was then utilized to explore the influence and link between brain executive dysfunctions and reading comprehension and vocabulary learning, as well as the intervening role of English language self-regulatory techniques in students. Table 3 shows the general indications derived from the structural equation model's fit to the study hypothesis. Figure 1 also depicts the relevant structural model.

**Table 3: General indicators of structural equation model fit of research hypothesis**



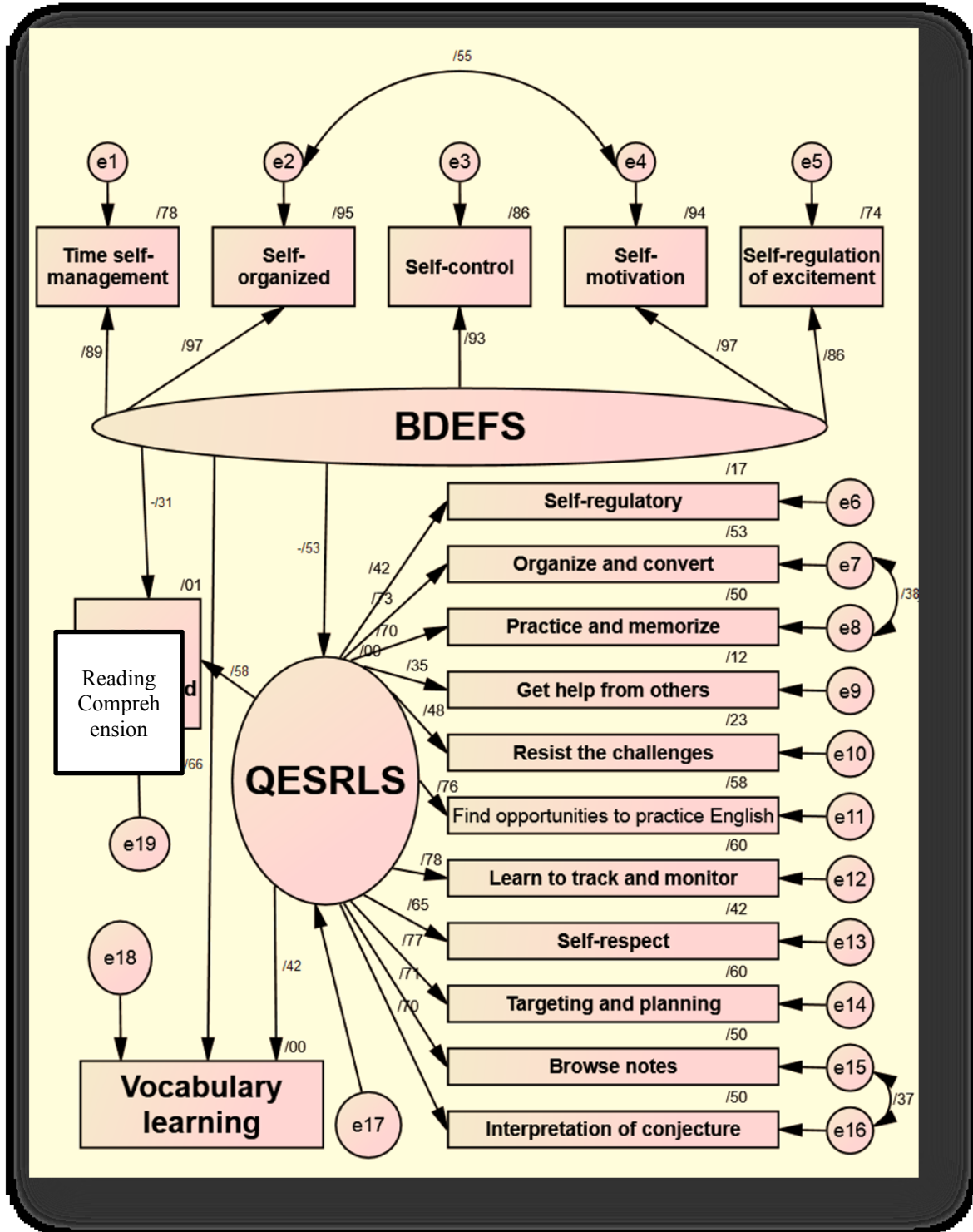
Indicator	Amount	Optimal amount	Condition
$\chi^2$	353.51	-	Optimal
RMR	0.044	0.05<	Optimal
CFI	0.91	0.90>	Optimal
IFI	0.91	0.90>	Optimal
PGFI	0.68	0.50>	Optimal
RMSEA	0.093	0.1<	Optimal
CMIN/DF	2.71	1to 3	Optimal

Table(3) shows that the CMIN / DF chi-square to degree of freedom ratio is 2.71, the absolute RMR fit index is less than 0.05, the adaptive fit indices CFI and IFI are more than 0.90, the PGFI good fit index is equal to 0.68, and the RMSEA index of 0.093 is acceptable, indicating that the research model has a good fit and the factor structure considered for it is acceptable.





Figure 1: Structural equation model of research hypothesis





**Table 4: Regression coefficients and critical values for the research hypothesis**

Path of variables	Regression Weights	C.R	P
The impaired executive function of the brain → Self-regulatory strategies for learning English	-0.53	-5.52	0.001
Self-regulatory strategies for learning English → Reading Comprehension	0.58	5.67	0.001
Self-regulatory strategies for learning English → Vocabulary Learning	0.42	4.65	0.001
The impaired executive function of the brain → Reading Comprehension	-0.31	-3.83	0.001
The impaired executive function of the brain → Vocabulary learning	-0.66	-6.22	0.001

The regression coefficients and crucial values for the research hypothesis are shown in Table (4). The connection between the variables is, as it turns out, accepted.

To study the direct and indirect impacts of independent variables on dependents, total, direct, and indirect effects for the model's endogenous variable must be provided, as shown in the tables below.

**Table 5: Separation of direct and indirect effects for the research hypothesis**

independent variable	The dependent variable	Effect		
		direct impact	Indirect effect	General effect
The impaired executive function of the brain	Self-regulatory strategies for learning English	-0.53	-	-0.53
Self-regulatory strategies for learning English	Reading Comprehension	0.58	-	0.58
Self-regulatory strategies for learning English	Vocabulary learning	0.42	-	0.42
The impaired executive function of the brain	Reading Comprehension	-0.31	-	-0.31
The impaired executive function of the brain	Vocabulary learning	-0.66	0.040= 0.31	*0.42*- 0.58 * -0.70

The influence and link between executive functions of the brain, Reading Comprehension, and learning Vocabulary with the intervening role of self-regulatory strategies for learning English in students is -0.70, as shown in Table (5).

#### 4. Conclusion

The goal of this study was to see if there was a relationship among executive function in the brain, reading comprehension, and vocabulary development, as well as the influence of self-regulatory English learning strategies. According to the research, these elements have a positive relationship. The findings of the study suggest that there is a 0.01 degree of correlation between the research variables. That is, there is a connection between executive function deficits and self-control strategies for learning English, learning vocabulary, and reading comprehension.

According to the findings, it can be said that the measurement patterns have a good fit, in other words, the general indicators confirm that the data good support the patterns. Considering that the amount of factor





loads is almost higher than 0.50 in most cases and considering the partial index P (with a value of Sig <0.05 for all items) and general indicators, it can be inferred that items measure data well. the CMIN / DF chi-square to the degree of freedom ratio is 2.71, the absolute RMR fit index is less than 0.05, the adaptive fit indices CFI and IFI are more than 0.90, the PGFI good fit index is equal to 0.68, and the RMSEA index of 0.093 is acceptable, indicating that the research model has a good fit and the factor structure considered for it is acceptable. To study the direct and indirect impacts of independent variables on dependents, the endogenous variable of the model must be provided with total, direct, and indirect effects. The effect and relationship between executive functions of the brain, reading comprehension, and vocabulary development in students, as well as the intervening role of self-regulatory strategies for learning English, is -0.70. The outcome of this research is consistent with prior findings. . Mistar [40] classifies self-evaluation strategies for learning a new language as a discrete category of learning strategies, which is explored by the first sub-scale of the current study. Self-monitoring and self-evaluation procedures are classified as metacognitive strategies by Oxford [41].

According to the findings of a study conducted by Vincent Malik Dehili [42], the BDEFS, which was employed in this investigation, progressively and substantially predicted symptoms of inattention and impulsivity throughout a search task. Their research backs up Barkley's claims that utilizing self-report scales to assess executive function impairment is more effective than using executive function tests to assess cognitive skills in a collegiate population.

The influence of self-regulatory English learning strategies on Iranian Teacher Education university students was investigated in this study, which looked at the relationship between brain executive function, reading comprehension, and vocabulary learning. The results of this study might likely change if it were conducted in a different setting. Additional research could also focus on how Brain Executive Function concerning Self-Regulatory English Learning Strategies concerning other English language skills. Furthermore, different types of participants can be studied in future research. This study focused on Iranian female teacher education university students only. It is possible to replicate it with various genders and in other settings. The current study concentrated on reading comprehension and vocabulary development. Other language skills should be taken into consideration.

#### **Acknowledgment**

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#### **Reference**

- [1,15] Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., & Wager, T. D. 2000. The unity and diversity of executive functions and their contributions to complex “frontal lobe” tasks: A latent variable analysis. *Cognitive Psychology*, 41, 49-100.
- [2] Flavell, J. H. 1979. Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, 34, 906–911.
- [3] Dornyei, Z. 2000. The psychology of the language learner: Individual differences in second language acquisition. Mahwah, NJ: Lawrence Erlbaum.
- [4] Wang, C.H., & Bai, B., 2016. Validating the Instruments to Measure ESL/EFL Learners’ Self-Efficacy Beliefs and Self-Regulated Learning Strategies. *Tesol Quarterly*, 51,( 4), 355.
- [5] Barkley RA. Deficits in executive functioning scale (BDEFS). New York: Guilford Press; 2011.
- [6] Baddeley, A. 1996. Exploring the central executive. *Quarterly Journal of Experimental Psychology: Human Experimental Psychology* (special issue: Working Memory), 49A, 5–28.



[7] Lezak MD, Howieson DB, Loring ED, Tranel D. 2014. *Neuropsychological assessment*, 5th ed. New York: Oxford University.

[8] Shettleworth, S. J. 2010. *Cognition, Evolution, and Behavior*. 2nd Ed. New York: Oxford University Press.

[9] Hill, B., Elliott, E. M., Shelton, J. T., Pella, R. D., O'Jile, J., & Gouvier, D. 2010. Can we improve the clinical assessment of working memory? An evaluation of the Wechsler Adult Intelligence Scale- Third Edition using a working memory criterion construct. *Journal of Clinical and Experimental Neuropsychology*, 32, 315-323.

[10] Della, S., Gray, C., Spinnler, H., & Trivelli, C. 1998. Frontal lobe functioning in man: The riddle revisited. *Archives of Clinical Neuropsychology*, 13, 663-682.

[12] Hill, E. L. 2004. Evaluating the theory of executive dysfunction in autism. *Developmental Review*, 24, 189-233.

[13] Anderson, P. 2002. Assessment and development of executive function (EF) during childhood. *Child Neuropsychology*, 8, 71-82.

[14] Diamond, A. 2013. Executive functions. *Annual Review of Psychology*, 64, 135-168.

[15] Zimmerman, B. J., & Schunk, D. H. 2001. *Self-regulated learning and academic achievement*. Mahwah, NJ: Erlbaum.

[16] Pintrich, P. R. 2000. The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 451-502). San Diego & London: Academic Press. <https://doi.org/10.1016/B978-012109890-2/50043-3>.

[17] Macaro, E. 2001. *Learning strategies in foreign and second language classrooms*. London, England: Continuum.

[18] O'Malley, J., & Chamot, A. 1990. *Learning strategies in second language acquisition*. Cambridge, England: Cambridge University Press.

[19] Oxford, R. L. 1990. *Language learning strategies: What every teacher should know*. Boston, MA: Heinle & Heinle.

[20] Wenden, A. 1998. Metacognitive knowledge and language learning. *Applied Linguistics*, 19, 515-537. doi:10.1016/S0346-251X(99)00043-3.

[21] Dornyei, Z. 2005. *The psychology of the language learner: Individual differences in second language acquisition*. Mahwah, NJ: Lawrence Erlbaum.

[22] Kuhl, J. 1985. Volitional mediators of cognition-behavior consistency: Self-regulatory processes and action versus state orientation. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 101-128). Berlin, Germany: Springer.

[23] Corno, L., & Kanfer, R. 1993. The role of volition in learning and performance. *Review of Research in Education*, 21, 301-341. doi:10.2307/1167345

[24] Tseng, W. T., Dornyei, Z., & Schmitt, N. 2006. A new approach to assessing strategic learning: The case of self-regulation in vocabulary acquisition. *Applied Linguistics*, 27, 78-102. doi:10.1093/aopl/am046.

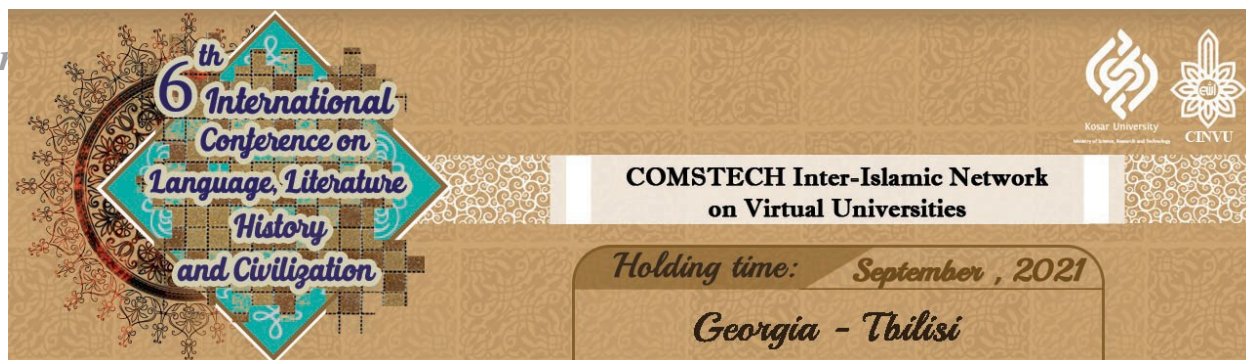
[25] Dornyei, Z. 2001. *Teaching and researching motivation*. Harlow, England: Longman.

[26] Snow. 2002. *Reading for understanding: Toward a research and development program in reading comprehension*. RAND. (pp.33)

[27] Sadeghi, N., Karim, Z. M., Tan, B. H., & Abdullah, F. S. 2012. Learning styles, personality types, and reading comprehension performance. *English Language Teaching*, 4(5), 116-123.

[28] Sterzik, A. M., & Farsler, C. 2012. RC-Maps: Bridging the comprehension gap in EAP reading. *TESL Canada Journal*, 29(2), 103-119.

[29] Bernhardt, E. B. 2005. Progress and procrastination in second language reading. *Annual Review of Applied Linguistics*, 25, 133-150.



- [30] Waring, R., & Nation, P. 2004. Reading and incidental vocabulary learning. In D. Albrechtsen, K. Hastrup & B.
- [31] Wesche, M. B., & Paribakht, T. S. 2009. Lexical inferencing in a first and second language: Cross-linguistic dimensions. Bristol, UK: Multilingual Matters.
- [32] Laufer, B., and Hulstijn, J. 2001. 'Incidental vocabulary acquisition in a second language: the construct of task-induced involvement. *Applied Linguistics* 22/1; 1-26.
- [33] O'Sullivan, B. 2000. *Towards a model of performance in oral language testing*. Unpublished Ph.D. thesis. University of Reading, UK.
- [34] Elliott, M. 2013. Test-taker characteristics. In A. Geranpayeh & L. Taylor (Eds.), *Examining listening: Research and practice in assessing second language listening*. Studies in Language Testing, 35,36-76. Cambridge: Cambridge University Press.
- [35] Coxhead, A. 2000. A new academic word list. *TESOL Quarterly*, 34(2), 213-238.
- [36] Hyland, K., & Tse, P. 2007. Is there an "Academic Vocabulary?" *TESOL Quarterly*, 41(2), 235-253.
- [37] Sarmad, Z., Bazargan, A. & Hijazi, A. 1999. *Research methods in the behavioral sciences*. Agah Publications, Tehran. (In Farsi)
- [38] Barkley RA. *Deficits in executive functioning scale (BDEFS)*. New York: Guilford Press; 2011.
- [39] Wang, C.H., & Bai, B. 2016 Validating the Instruments to Measure ESL/EFL Learners' Self-Efficacy Beliefs and Self-Regulated Learning Strategies. *Tesol Quarterly*, 51,( 4), 355
- [40] Mistar, J. 2011. Learning strategies by Indonesian senior high school EFL learners. *Korea TESOL Journal*, 10, 52-74.
- [41] Oxford, R. L. 1990. *Language learning strategies: What every teacher should know*. Boston, MA: Heinle & Heinle.
- [42] Vincent M. D., Frances P., and Theodora P. C. 2013 An Analysis of the Barkley Deficits in Executive Functioning Scale in a College Population: Does It Predict Symptoms of ADHD Better Than a Visual-Search Task?. *Journal of Attention Disorders*, 2017 21(7):567-574.  
DOI: 10.1177/1087054713498932.