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The Implementation of a Linguistic Ability Test as a Selection Basis in Learning English as a Foreign Language

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Abstract
The aim of the current paper was twofold: first, to design a test of linguistic ability on the basis of a cognitive perspective; and second, to examine its effects on success in foreign language learning. Two cognitive linguistic abilities, namely language aptitude and working memory, were highlighted and predicted to be components of the target measure. To this end, a test of each of the so hypothesized components was administered to sixty subjects (freshmen) at the department of Letters and the English language, university of Mentouri Brothers, Constantine 1. Correlations were subsequently made between the obtained scores in both tests, and principal component analysis was conducted to determine the final linguistic ability measure. A further correlational study was carried out to investigate the relationship between this latter, as with its hypothesized components, and foreign language learning achievement. The results substantiated significant interrelationships between all the variables. These results would recommend the implementation of this test in foreign language learning.

Keywords: cognitive perspective, correlation, language aptitude, linguistic ability measure, working memory

Introduction

There is clear evidence of failure in achieving success in a foreign language caused by cognitive and linguistic disabilities at the department of letters and the English Language -University of Mentouri Brothers, Constantine 1. This calls upon a prompt implementation of an entry test for learners who wish to engage into a tertiary language instruction. In the early 1980s, a test of proficiency was administered at the University of Constantine as a procedure for selecting learners who opt to learn English as a foreign language (EFL); the results were rather successful. The test was no longer taken for unknown reasons. The present study came as a reaction to resurrect the idea of implementing a test before engaging into a language program; however, the scope was somehow different. More explicitly, the current test aimed at assessing a set of cognitive linguistic capacities rather than proficiency. To this end, two abilities, that is language aptitude and working memory, were opted for and were predicted to be components of the overall linguistic ability measure. Before starting the analysis, a literature review of the opted components was provided.

1. Review of the literature

1.1. Language aptitude

The concept of aptitude, or language aptitude, is used to refer to the ability to learn a foreign language (Carroll & Sapon, 1959). Debates have raged back and forth about the nature of this capacity. While some linguists (e.g. Dörnyei, 2005) have asserted that aptitude is a general ability associating it with the overall cognitive capability intelligence (IQ), others (e.g. Carroll & Sapon, 1959; Skehan, 1998) have emphasized its componential nature through highlighting a set of distinct capacities that underlie it, namely phonemic ability, grammatical sensitivity, inductive language learning ability, and memory ability.

Another debate has been on whether this construct is a fixed or developed ability. Some experts (e.g. Carroll, 1993; Skehan, 1998; Ellis, 1998) have speculated that aptitude is a fixed capacity which develops very early in the child's life and allows individuals to acquire additional languages, whereas others (e.g. Grigorenko et al., 2000; Sáfár & Kormos, 2008; Gass & Selinker, 2008) have advocated that it is relative to development putting emphasis on the role of learning experience.

Owing to the rudimentary need to learn foreign languages for military purposes, aptitude measures flourished mainly between the 1950s and 1960s (Urbina, 2004). Two tests have emerged to become recognized as prominent measures of aptitude: the Modern Language Aptitude Test (MLAT) (Carroll & Sapon, 1959), and the Pimsleur Language Aptitude Battery (PLAB) (Pimsleur, 1966). The MLAT test comprises five subtests that are language-bound, namely, number learning, phonetic script, spelling clues, words in sentences, and paired associates (Carroll and Sapon, 1959). The PLAB subcomponents, on the other hand, are not entirely linked to the assessment of language aspects but also to some psychological factors such as motivation. The PLAB components are, hence, the following: grade point average, interest in foreign language learning, vocabulary, language analysis, sound discrimination, and sound-symbol association. (Pimsleur, 1966)

The role of language aptitude in foreign language learning has long been an intriguing issue in SLA research. A debate has been on whether or not this ability has an impact on learning an L2. Some researchers (e.g. Ehrman, 1998; Bowden, Sanz & Stafford, 2005; Sáfár & Kormos, 2008) have affirmed that aptitude tests are only associated with traditional methods of language teaching, mainly the audio-lingual method, and that they have no influence on communicative language teaching classrooms. Other experts (e.g. Skehan, 1998; Ellis, 2003, etc.) have

contended that aptitude remains to play a role in communicative language teaching practices. For instance, Skehan (1998) and Ellis (2003) have emphasized that aptitude components have a noticeable impact on learning different aspects of the foreign language (e.g. phonetics, grammar, and vocabulary). Similarly, Krashen (1981) and Robinson (2005) have emphasized the impact of this capacity in different learning contexts. While Krashen has claimed that aptitude functions more under formal settings, i.e. when attention is required, Robinson has asserted that it functions more under informal settings when learning takes place unconsciously.

1.2. Working memory

The term working memory (WM) is defined as "a limited capacity system allowing the temporary storage and manipulation of information necessary for such complex tasks as comprehension, learning, and reasoning" (Baddeley & Hitch, 2000, p.418). It was introduced in 1974 as a reaction to Atkinson and Shiffrin model of information processing (1968) which centered the simple process of storage. Baddeley and Hitch model of WM (1974) has divided this system into three main subcomponents referring to them as the phonological loop, the visuo-spatial sketchpad, and the central executive. A further subcomponent, that is the episodic buffer, has been recently added to the model (Baddeley, 2000).

As far as working memory capacity (WMC) is concerned, although there has been agreement that the construct of WM is a limited-capacity-system, researchers have disagreed on the number of items that can be stored or processed in it. Some psychologists (e.g. Miller, 1956) have claimed that an individual's working memory capacity is $7(\pm 2)$ chunks; others (e.g. Cowan, 2000) have advocated that this capacity is unitary and cannot hold more than $4(\pm 1)$ items.

Measures of working memory vary. However, two major tasks have been proved reliable, viz. Reading Span Tasks or RSPAN (Daneman & Carpenter, 1980), and Operation Span Tasks or OSPAN (Turner & Engle, 1989). In these tasks, two main processes of memory are assessed: recall-process, i.e. recalling unrelated items, and manipulation of information process, i.e. doing something that interrupts recall such as reading in RSPAN (Daneman and Carpenter, 1980), or judging the accuracy of sentences or mathematical operations in OSPAN (Turner and Engle, 1989).

The active process of working memory plays an important role in learning in general and language learning in particular. Regarding the latter, Miyake and Shah (1999) have averred that WMC is quite focused on notably in beginning levels where there is a control of attention. In advanced levels, however, individuals depend less on this ability because of automaticity in processing information.

The association between language aptitude and memory capacity is not a recent issue. Since the emergence of aptitude research (Carroll & Sapon, 1959), memory ability has been tabulated as an indistinguishable component. Nevertheless, it was the passive recall of information that was considered. Recently, attention has shifted to the active process of working memory, basically after the emergence of Baddeley and Hitch model (1974). Some researchers (e.g. Miyake and Friedman, 1998; Sawyer and Ranta, 2001) have proposed working memory as an important aspect of aptitude. Besides, Robinson (2002) as well as Kormos and Sàfàr (2008) have provided empirical evidence on the relationship between the two constructs where their findings have revealed close associations. Since then, the link between aptitude and working memory has triggered the consideration of working memory as the central component of aptitude

(e.g. Wen & Skehan, 2011) putting heavy load on the phonological loop subcomponent (e.g.Chan, Skehan & Gong, 2011).

The provided literature review of the aforementioned cognitive linguistic capacities substantiates their crucial role in foreign language learning. Despite the fact that SLA research calls attention to the application of aptitude tests as a selection basis for students who engage in foreign language learning, criticisms have been directed to these tests emphasizing their failure to predict success. Therefore, the present study has come with a new perspective in language ability testing through not only considering traditional aptitude measures but also through involving the active capacity system that is 'working memory'. In so doing, a correlation between these variables is required, and an examination of their impact on foreign language learning achievement is also stipulated.

2. The study

2.1. Method

2.1.1. Subjects

A representative sample of sixty participants was drawn from a population of 300 freshmen learning English as a foreign language at the department of Letters and English, Faculty of Letters and Languages, University of Mentouri Brothers, Constantine 1. The sample comprised fifty females (≈ 83%) and ten males (≈ 17%). It is noteworthy that the idea of between-sex differences was not taken into consideration, for the essential reason that this would take us too far from the purposes of the present study. The age of the participants ranged between 19 and 20 with the mean (M=19.61).

The reason behind opting for this sample was twofold: first, assessing one's language aptitude requires him/her to be new in the foreign language (the chosen participants were made sure to have just passed their baccalaureate and have their first year of exposure with EFL program at university); and second, there is a claim (Schneider & Detweiler, 1987, in Miyake & Shah, 1999) that working memory capacity is better revealed at beginning and intermediate levels where the process of attention is highly controlled in comparison to advanced levels where the process becomes automatic.

2.1.2. Measures and procedures

1. Language aptitude measure

Language aptitude measure was a paper-and-pencil measure that included four subtests assessing phonemic ability, memory ability, grammatical sensitivity, and inductive language learning ability, respectively. This test was taken from the MLAT measure (Stansfield, 2013) with some adaptations to fit the participants' proficiency level.

a. Phonemic ability subtest

In this subtest, the subjects were given six tasks to solve. These tasks measured sensitivity to the different sounds of the foreign language as with memory ability. In the first task, which assessed the individuals' awareness of different pronunciations, the subjects were asked to cross the differently-pronounced word. In the second task, which was a multiple choice task, they were instructed to select the correct spelling of the given words in order to evaluate their recognition of the form of these words. In the third task, which assessed the ability to associate sounds with symbols, they were given phonetic transcriptions and were told to write corresponding words.

In the fourth task, they were asked to write transcriptions for given pseudowords[1] to assess their ability to distinguish between long vowels, short vowels, and diphthongs. In the fifth task, which was also a measure of sound-symbol association, the participants were instructed to read

words that were not spelled in a usual way (i.e., they were written approximately as they were pronounced). It is worth mentioning that this task assessed the students' vocabulary as well. In the sixth task, which measured primarily auditory memory ability, the subjects listened individually to a set of sentences produced by a native speaker; then, after each sentence, they were asked to write down what they could remember. This task was also a measure of vocabulary skill.

b. Grammatical sensitivity subtest

This subtest was a multiple choice task that measured the individuals' sensitivity to foreign language structures. The subjects were asked to select the correct grammatical function of the given words. Here a variety of grammatical functions were presented (e.g. subject, verb, object, conjunctions (coordinating and subordinating), simple past tense, interrogatives, perfect tenses, conditional, Prep+ noun, Not+ infinitive, and discrimination between "wh" questions and between relative pronouns, etc.).

c. Inductive language learning subtest

This subtest assessed the subjects' sensitivity to foreign language structures as well as their inductive reasoning skills. A set of words and sentences were given in the foreign language (an invented language in this case), and the subjects were told to infer their corresponding counterparts in English or do the opposite task.

Time allocation for this test was 60 minutes. Concerning the scoring procedure, the score 100 was given as the score of perfection and was distributed on the three subtests. Phonemic ability subtest received the highest score (i.e. 50) for encompassing a large number of tasks in comparison with the other subtests. The second subtest was scored out of 30 and the third out of 20 as it contained the least number of tasks.

2. Working memory test

WM test was displayed on a data show. It contained four subtests that measured the subjects WMC: Reading Span tasks (RSPAN), Operation Span tasks (OSPAN), Anagrams, and Listening Span Tasks (LSPAN).

a. RSPAN subtest

This subtest assessed two capacities, viz. reading capacity and recall capacity. In this subtest the participants were asked to read an increasing number of sentences (2 to 8) with an element at the end of each sentence to recall. This element might be a letter, a number, or a word. To mention, the sentences were taken from Daneman and Carpenter (1980) reading span tasks and were adapted to fit the Algerian socio-cultural context. This means that the words that seemed unfamiliar to our participants' culture were omitted and were replaced by more familiar words to ensure the results. Fifteen tasks were given to the participants with an increasing number of sentences in each task (2 to 8) to read and elements to recall.

b. OSPAN subtest

This subtest measured the students' mathematical ability and recall capacity. In this task the participants were presented with simple arithmetic equations to judge or solve with a letter, number or word to recall. In this subtest, eleven tasks were given with an increasing number of items to recall (2 to 7). This subtest was taken from Turner and Engle (1989) and Kane and Engle (2003) operation span.

c. Anagrams subtest

In this task, the participants were exposed to lists of jumbled letters for a short time (5 seconds for each), and were asked to remember the letters and make meaningful words out of them. This task was taken from Carter's book of intelligence tests (2005). This task was included

under working memory test as it measured both recall ability (i.e. remembering the jumbled letters) and manipulation of information capacity (i.e. making meaningful words). This subtest measured the participants' vocabulary as well.

d. LSPAN subtest

In this task, the participants were asked to listen to an increasing number of sentences (1 to 7) and judge whether or not they were meaningful, then they were asked to recall the last word in each sentence. This task was also adapted from Daneman and Carpenter WM tasks (1980). Time allocation for this test was 60 minutes. Concerning the scoring procedure, the score 100 was given as the score of perfection. Although the participants used two processes, viz. attention process (reading, counting, or judging) and recall-process, the scores were devoted to recall only. The score 40 was given to RSPAN, 25 to OSPAN and LSPAN, and 10 to anagrams.

As for the administration procedure, it is worthy to state that both working memory and aptitude measures were handed to the subjects during the same days. The period devoted to these measures was nine consecutive days (the number reflected the division of the subjects into nine subgroups). This stems from the belief that taking the tests at the same time allows for providing the same conditions to the test takers. Working memory was administered the first early in morning (at 8.30) so that higher cognitive processes were activated, and was followed with a break of 30 minutes; then, the second measure was handed out. The participants were given a break between the two measures to decrease boredom and increase their motivation to carry out the tests.

3. Foreign language learning achievement

The subjects' language learning achievement was assessed through taking their average in the modules they were taught during a whole year in learning English as a foreign language. The overall average gave insights about general linguistic and communicative skills of the students at specific proficiency levels. This means that the students were assessed according to the standards and objectives of learning. The students overall achievement was, hence, the sum of the obtained average in both semesters of learning EFL. As far as scoring is concerned, similar to the previous variables, the highest average point (20) was converted into the value 100 and the individuals scores were also converted and explained according to this value.

2.1.3. Statistical analysis

In designing a linguistic ability test and scrutinizing its effects on foreign language learning achievement, two statistical techniques were carried out, viz. correlation and principal component analysis (or PCA). Correlation was used between a set of variables: aptitude and working memory, aptitude and foreign language learning achievement, working memory and foreign language learning achievement, and the final linguistic ability test and foreign language learning achievement. Principal component analysis was conducted to investigate the final overall linguistic ability measure.

2.2. Results and discussions

2.2.1. The correlations between language aptitude and working memory

The first step we went through in our analysis is examining whether there is a strong linear relationship between the two predicted components of the overall dimension 'linguistic ability measure'. In doing so, a correlation between these variables was required. To measure this correlation, we adopted the technique of the Pearson Product Moment Coefficient of Correlation between aptitude scores and working memory scores. (Field, 2005)

Having used the formula $r=\frac{\Sigma xy}{\sqrt{(\Sigma x^2)(\Sigma y^2)}}$, the results revealed a correlation of (.54). The critical value of *r* for one-tailed test at (0.05) level of significance and with 59 degrees of freedom is (.25). As the obtained value for the correlation between aptitude and working memory (.54) is higher than the critical value (.25), we would say that the results are indeed significant. This means that these capacities are interrelated and, hence, allow us to predict that aptitude and working memory would decompose an underlying dimension that is referred to as linguistic ability measure. The confirmation of this prediction demanded the application of the principal component analysis (PCA) technique. An explanation of this technique and the procedure used to conduct it are discussed below.

2.2.2. Principal component analysis

Principal component analysis (PCA) is a dimension reduction technique. It is used in exploratory factor analysis (Field, 2005). This technique is utilized to reduce the number of observed correlated variables into a smaller set of obtained variables called components. In the present study two measures were administered, and each measure encompassed a number of subtests: three subtests in aptitude measure and four subtests in working memory measure. As we hypothesized that these measures intend to measure a common construct (linguistic ability), all the subtests must also assess the very same construct.

The first step in PCA was checking whether the seven subtests in aptitude and WM tests were interrelated. The same technique of correlation (i.e. Pearson correlation) was applied to evaluate the strength of association between them. SPSS was used in measuring this correlation. The results are displayed in the following table. The first part of the table exhibits the value of r between each subtest, and the second part demonstrates the levels of significance in each case. This is a list of abbreviations used in the following correlation matrix and the subtests they refer to:

PC* phonetic coding ability **GS*** grammatical sensitivity **ILLA*** inductive language learning ability **RSPAN***reading span tasks **OSPAN*** operation span tasks **ANG*** anagrams **LSPAN*** listening span tasks

***Table* 1.** Correlation matrix of aptitude subtests and working memory tasks

		PC	GS	ILLA	RSPAN	OSPAN	ANG	LSPAN
Correlation	PC	1,000	,546	,528	,192	,558	,470	,354
	GS	,546	1,000	,322	,268	,281	,405	,298
	ILLA	,528	,322	1,000	,206	,368	,380	,247
	RSPAN	,192	,268	,206	1,000	,496	,273	,369
	OSPAN	,558	,281	,368	,496	1,000	,531	,241
	ANG	,470	,405	,380	,273	,531	1,000	,219
	LSPAN	,354	,298	,247	,369	,241	,219	1,000
Sig.(1-tailed)	PC		,000	,000	,071	,000	,000	,003
	GS	,000		,006	,019	,015	,001	,010

	ILLA	,000	,006		,057	,002	,001	,028
	RS	,071	,019	,057		,000	,017	,002
	OS	,000	,015	,002	,000		,000	,032
	ANG	,000	,001	,001	,017	,000		,046
	LS	,003	,010	,028	,002	,032	,046	

Determinant: ,114

The data in the above table indicate that most of the correlations are significant. Only one variable (RSPAN) is observed to show a weak relationship with two other variables: PC (.19) and ILLA (.20). Before proceeding further, one needs to examine whether there are any issues of multicolleniarity (values close to 1) or singularity (values close to 0) that might cause problems in PCA and, accordingly, entails the omission of variables (RSPAN in this case). Since almost all the significance levels are below 0.05, and all the values of correlation are less than (.90), one would say that there is no singularity in the data; similarly, the value of the determinant (0.000114) is observed to be higher than the required value (0.0001), which indicates that there is no issue of multicollinearity as well. This means that PCA is appropriate and all the variables will be kept.

The appropriateness of PCA depends also on the adequacy of the chosen sample. In checking whether the sample fits this type of analysis, two methods are selected in SPSS software in the box of descriptive statistics: the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and the Bartlett's test of sphericity. The following table exhibits KMO and Bartlett's findings.

Table 2. *KMO and Bartlett's test*

Kaiser-Meyer-Olkin measure of sampling adequacy		,706
Bartelett's test of spericity	Approximate Chi-Square	121,209
	Df	21
	Sig.	,000

KMO values vary between 0 and 1. Field (2005) stipulates that values near 0 indicate diffusion in the pattern of correlations, while values near 1 indicate that patterns of correlations are relatively strong and that factor analysis (PCA in this case) would yield to reliable components. Similarly, Kaiser (1974, in Field, 2005) recommends that acceptable values should be greater than (.5). The data in table 2 show that the value of KMO is .70 (>.5) for the Chi

square of distribution with 21 degrees of freedom and (,000) significance level. Therefore, the high value of KMO confirms the appropriateness of PCA.

Having assessed the appropriateness of PCA, I moved to the next step which is extracting factors from variables. In order to extract factors, the method of Principal component analysis is chosen in SPSS, for the aim is to investigate whether a single component would be revealed or some hidden factors would emerge. SPSS software identified 7 initial eigenvalues at first (i.e., the same number of variables). The following table demonstrates the results of extraction.

Table 3. *Total variance explained*

Components	Initial eigenvalues			Extraction Sums of squared loadings		
	Total	% of variance	% cumulative	Total	% of variance	% cumulative
1	3,199	45,697	45,697	3,199	45,697	45,697
2	,996	14,231	59,928			
3	,852	12,167	72,095			
4	,680	9,714	81,809			
5	,553	7,898	89,707			
6	,494	7,062	96,769			
7	,226	3,231	100,000			

The above table demonstrates that the first variable represents a large amount of variance (45.69%), while the six remaining variables represent small amounts. One factor greater than 1 is, thus, extracted as an eigenvalue[2]. This eigenvalue is displayed again and the percentage of variance is explained in the column of Extraction, Sums of squared loadings. The value is the same as the one before extraction, what was different is that values lower than 1 were discarded. The results, accordingly, confirm our prediction of a common existing component. More explicitly, language aptitude and working memory will be, subsequently, considered as subcomponents of the overall dimension 'linguistic ability measure'.

The final step in PCA is loading the variables (i.e. the seven subtests) onto the obtained component (i.e. linguistic ability measure) in order to examine interrelationships with it. In so doing, SPSS software requests that loadings that are less than 0.4 should be discarded. The following table represents the loadings of each variable onto the final component.

Table 4. *Component matrix.*

	components
	1
PC	,802
GS	,665
ILLA	,653

RSPAN	,562
OSPAN	,756
ANG	,713
LSPAN	,541

The data in table 4 reveal that all the seven subtests in aptitude and WM measures (i.e. phonetic coding ability subtest, grammatical sensitivity subtest, inductive language learning ability subtest, RSPAN, OSPAN, anagrams, and LSPAN) load highly onto the final component. This means that these subtests will all be kept for the final linguistic ability measure. The latter will, therefore, encompass two general subtests and seven tasks. The following diagram is, accordingly, designed to summarize the final linguistic ability measure with its two decomposing subtests and seven tasks.

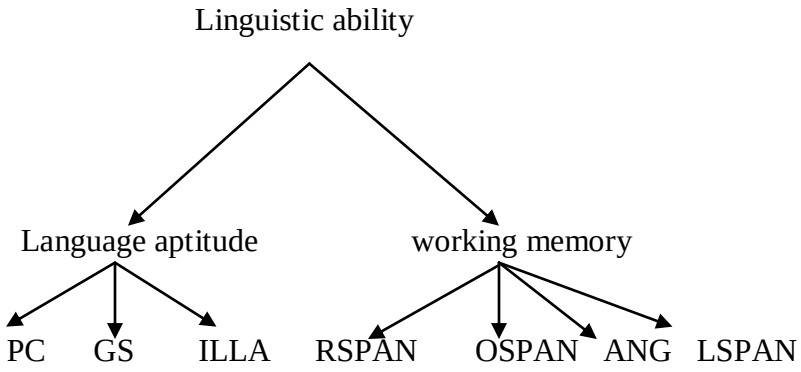

Figure 1. The final linguistic ability measure and its subcomponents

2.2.3. The correlation between linguistic ability and foreign language learning achievement

Having proved the existence of a general linguistic ability and its corresponding measure, one should study its effects on learners' foreign language learning achievement. The technique of correlation was used to examine these effects. As indicated previously, linguistic ability was but an outcome of a set of correlations and principal component analysis between two administered measures. This means that there was no determined score for this measure. Therefore, a common score should first be given to both aptitude and WM tests before carrying on the analysis. The procedure followed to score this test was to set the value 100 as the score of perfection and to divide it onto the two subtests. This means that aptitude and WM received equal scores (50). After setting a score, the subjects' scores in the two measures were themselves converted into the value 50 and their general linguistic ability was determined by the sum of these measures.

The link between the learners' linguistic ability and their language learning achievement was, then, measured using the same adopted statistical technique. Pearson correlation results display an r of .43 (> .25). The results, therefore, reveal a significant relationship between linguistic ability measure and foreign language learning achievement.

After having proved a significant association between linguistic ability and foreign language learning achievement, the relationship between this latter and the composed subtests of linguistic ability measure was assessed.

2.2.4. The correlation between aptitude and achievement and working memory and achievement

The same statistical technique was used to examine the effects of the confirmed linguistic ability subcomponents (i.e. language aptitude and working memory) on foreign language learning achievement. After using the formula $r=\frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$, these are the results exhibited in table 5:

Table 5. *The correlation between aptitude, WM and language learning achievement*

	Language aptitude	Working memory
Language learning achievement	.43	.29

The critical value of *r* for one-tailed test at (0.05) level of significance and with (59) degrees of freedom is (.25). As the obtained value for the correlation between language aptitude and foreign language learning achievement is (.43), and between working memory and foreign language learning achievement is (.29), one would conclude that both variables show a significant link with foreign language learning achievement.

Conclusion

The current article provided empirical evidence on the existence of an overall human cognitive linguistic capacity. This capacity was the result of strong established relationships between two predicted abilities, namely language aptitude and working memory. The study demonstrated also a close association between the umbrella construct (linguistic ability) as with its constituent factors and foreign language learning achievement. The significant proved results would recommend the implementation of a linguistic ability test as an entry test for learners who engage in learning EFL to ensure success. The article might also provide suggestions for future research to expand this linguistic ability measure through an integration of additional components that are related to other cognitive capacities.

Notes

[1] **SLA:** an abbreviation of second language acquisition.

[2] **Pseudo-word**: a made up word, that is, a string of letters resembling a real word in terms of its phonological structure but doesn't really exist in the language.

[3] **Eigenvalue:** it is calculated in factor analysis to find the number of factors.

About the Author

I am a teacher assistant at the department of Arts and the English Language, University of Constantine 1. I hold an MA in Language Sciences and currently pursuing my PhD studies (I am in my fourth year of PhD studies) in Didactics of Foreign Languages. My research inquiry involves a combination of Psychology, Linguistics and Second Language Acquisition. The title of my thesis is 'the Effects of Language Aptitude, Working Memory, and Verbal Reasoning as Aspects of Linguistic Intelligence on Foreign Language Learning Achievement'.

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