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The Relationships between Individual Differences (Aptitude, Motivation, and Level of Proficiency) and Iranian EFL learners' Vocabulary Learning Strategy Use: A Think-aloud Protocol Study

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ABSTRACT: In the sphere of second language learning, vocabulary is an indispensable part of the four language skills. This way, the specific purpose of the present study was to examine the relationships between individual differences (aptitude, motivation, and level of proficiency) and Iranian EFL learners' utilization of vocabulary learning strategies. In this regard, after two exclusion phases, 58 participants were selected. The main data collection instruments were: a) Vocabulary Level Test, b) Motivation Questionnaire, c) Vocabulary Learning Strategies Questionnaire, d) Pimsleur Language Aptitude Battery (PLAB), and d) think-aloud protocol. This way, the present study was correlational in nature with a mixed-methods perspective. The results of descriptive and inferential statistics showed that Iranian EFL learners' levels of aptitude, motivation, and proficiency can predict their utilization of a number of strategies. The data obtained from think-aloud protocol substantiated the findings. Moreover, the data showed that participants tend to create context for themselves via the input they received from media.

Keywords: Individual Differences, Vocabulary Learning Strategies, Think-aloud Protocol, Aptitude, Motivation.

INTRODUCTION

1. Introduction:

A core issue in formal education and of prime importance for those who learn a second or foreign language is vocabulary knowledge. Generally, vocabulary knowledge or lexical knowledge could be defined as the knowledge of spoken or written form of a given word, its meaning and morphology.

Considering the difficulties of vocabulary learning in a second or foreign language, one would expect that vocabulary instruction would be at the top of the agenda for language teachers. However, the reverse is the case. That is, vocabulary is not explicitly taught in most language classes and students are expected to learn vocabulary on their own without any guidance. Many cases of a so-called formal vocabulary instruction involve merely giving students lists of words to memorize or providing limited opportunities for practicing, with no further association which in turn would overwhelm the learners.

With respect to strategy use, in order to learn or even master a language, learners make use of learning strategies. Rubin (1987) defines learning strategies as "the process by which information is obtained, stored, retrieved, and used" (p.27). Oxford's (1990) taxonomy of learning strategies is inclusive of two main strategies: direct and indirect. Direct strategies include memory, cognitive, and compensation strategies. Indirect strategies encompass metacognitive, affective, and social strategies.

Various researchers have studied factors related to choice of language learning strategies, as shown in a review by Oxford (1989). These factors include: (a) the language being learned; (b) the level of language learning, proficiency; (c) the degree of metacognitive awareness; (d) gender; (e) affective variables such as attitudes, motivation, and language goals; (f) specific personality traits; (g) overall personality type; (h) learning style; (i) career

orientation or field of specialization; (j) national origin; (k) aptitude; (l) language teaching methods; (m) task requirements, and (n) type of strategy training.

Among language learning strategies, vocabulary learning strategies are one of the most important areas of investigation. Oxford (1990) classified vocabulary learning strategies into four main categories: cognitive, metacognitive, memory, and social strategies. In fact, in an EFL environment like Iran, vocabulary learning strategies play a more crucial role in language learning and acquisition since L2 learners are not exposed to L2 context frequently and naturally. In addition, since different learners adopt different strategies, individual differences seem to influence the choice of vocabulary learning strategies.

A number of classifications of individual differences (IDs) are given in the literature by different scholars; for instance, Dörnyei (2005, p. 3-4) simply defined individual differences as "anything that marks a person as a distinct and unique human being", and considered personality, intelligence, abilities, attitudes, motivation as subcomponents of individual differences, to name but a few. De Raad (2000) proposed a similar, but broad specification with possible characteristics including "attitudes, values, ideologies, interests, emotions, skills, socioeconomic status, gender, height, and so forth" (p. 41).

Dörnyei believes that "one needs to select *personality, ability/aptitude*, and *motivation* to start with as these are invariably seen as principal learner variables" (2005, p. 8). Motivation and aptitude, they now appear, are but two of many individual variables that indeed influence the success of language learning (Leaver and Shekhtman, 2002). But, few if any studies consider these variables in relation to learning strategies, and more specifically, vocabulary learning strategies. Moreover, to date most of the studies examined one of the subcomponents of individual differences in relation to vocabulary learning strategy use.

The specific purpose of this study is to examine the relationships between individual differences and Iranian EFL learners' vocabulary learning strategy use, focusing on aptitude and motivation. This study also aims at identifying the most-frequently used strategies employed by high and low proficient learners through think-aloud protocol analysis.

2. Review of the Literature
2.1. Studies on Vocabulary Learning Strategies

Vocabulary learning strategies waxed and waned in the history of language teaching research. A number of studies have investigated the ways learners utilize VLS. Some aimed at determining the strategies learners consider to be more helpful than others. Other studies have put emphasis on the relationships between strategy use and the degree of success in learning a language according to various measures. All in all, the main theme and the main goal of studies on VLS is to discover how words are learnt, which part might be at work by different processes (such as lexical simplification, guessing from the context, memory processes, etc.), and which strategies are more at the learners' disposal and preferable by them. This way, studies show that there is a great variation among the learners with respect to the strategies they use and the effectiveness of these strategies employed by them.

The inception of studying vocabulary learning strategies dates back to 1990s. For example, in Schmitt's (1997) study, a total of 600 Japanese junior and senior high school students, university students, and adult learners were surveyed in order to assess which VLS the learners actually used and how helpful they believed them to be. The findings revealed that a bilingual dictionary was the most used and helpful strategy followed by verbal repetition, written repetition, studying the spelling, and guessing from context. In contrast, the least commonly used strategies were the use of physical action, L1 cognates, semantic map, and the keyword method. There was also some evidence that more advanced learners tended to use more complex and meaning-focus strategies than less advanced learners.

In another study, Kudo (1999) investigated the frequency use of vocabulary learning strategies employed by 325 Japanese senior high school students. The results indicated that participants did not actively use VLS, nor did they know about so many strategies for learning vocabulary.

In the new millennium, the issue of investigating vocabulary learning strategies gained more and more attention. Gu's (2003) detailed case studies on the VLS of two successful Chinese EFL students (who were not English majors) used reading tasks, think-aloud protocols, and interviews in order to document their observed use of VLS. Building on their preferred learning styles (auditory and visual), Gu's participants were highly motivated and employed a range of cognitive and metacognitive strategies and approaches in their EFL vocabulary learning. Gu (2003) concluded that the combination of these strategies and approaches created a 'vocabulary-learning art' in which each participant exhibited "...the flexible and skillful analysis, choice, deployment, execution, and orchestration of all strategies at their disposal in accordance with their own preferred style of learning" (p. 99). Gu's (2003) study also revealed the value of think aloud protocol for VLS research, which is employed in the present study.

Regarding the use of vocabulary learning strategies by the EFL students, Kung (2004) investigated the use of vocabulary learning strategies by Taiwanese EFL elementary school students. The results indicated that more proficient learners used vocabulary learning strategies significantly more often than less proficient learners. The author suggested that EFL teachers needed to understand students' vocabulary learning characteristics, offer more reading materials to help cultivate students' vocabulary learning strategies, and develop strategy-based teaching methods to promote their English learning.

Akbari and Tahririan (2009) investigated the vocabulary learning strategies used by Iranian EFL learners while learning specialized and non-specialized vocabularies in different ESP courses. A triangulation of the data; that is, interview, observation, and questionnaire showed that the most frequent used VLS and language learning strategies were bilingual dictionary use and oral and written repetition, respectively.

Fahim and Komijani (2010) carried out a study to examine the relationship between Iranian EFL learners' critical thinking ability, L2 vocabulary knowledge, and L2 vocabulary learning strategies. The results demonstrated that Iranian EFL learners' L2 vocabulary knowledge was related to their critical learning ability. Moreover, the learners' critical learning ability also positively correlated with their self-assessed degree of determination, memorization, cognitive and metacognitive strategies of L2 vocabulary learning. In addition, the results revealed a positive relationship between the learners' L2 vocabulary knowledge and their vocabulary learning strategies use.

In a more recent study, Zoghi and Maleki (2015) compared the effects of two different vocabulary learning strategies (i.e. keyword method and semantic mapping strategy instruction) on the learning of new lexical items in an Iranian EFL context. To achieve this end, the authors selected 63 Iranian EFL learners majoring English as a foreign language at Islamic Azad University in Maragheh, Iran. The analysis of the data revealed the participants in the Keyword Method group performed better than the other two groups. Between the two remaining groups, the Semantic Mapping Strategy Instruction group outperformed the control group. Therefore, it can be concluded that the instruction based on vocabulary learning strategies is effective in an Iranian EFL context.

In sum, the previous studies on VLS would indicate that this line of research have dominated the subject of language learning for over two decades and that most of these studies have been conducted in EFL contexts.

2.2. Aptitude

Experience tells us that some learners learn a language, no matter whether it is second or foreign, successfully, with greater ease, and more quickly than others. Even a simple observation in our daily life revels that some people, or some learners learn another language/s better or faster than others do (Grigorenko, Sternberg & Ehrman, 2000). Foreign Language Aptitude (FLA) is one possible perspective for this phenomenon.

Wen, Biedroń, and Skehan (2017) define the notion of foreign language aptitude as "… a specific talent for learning a foreign or second language (L2)" (p. 1). However, the definition of foreign language aptitude conveys different things to different people. As Dörnyei states:

"Most scholars would agree that the concept covers a range of different cognitive factors making up a composite measure that can, in turn, be referred to as the learner's overall capacity to master a foreign language" (2010, p. 249).

Delving into researching aptitude, and more specifically, foreign language aptitude, dates back to the late 1950s and early 1960s (Spolsky, 1995). However, the first attempts to investigate foreign language aptitude occurred in 1920s and 1930s. The major concern at that period was the construction of prognosis tests by language specialists (Sparks & Ganschow, 2001). These tests were developed to examine two fundamental issues: 1) who might not benefit from foreign language instruction, and 2) how well one might perform in foreign language learning situation (ibid.: p. 91).

For example, Stoddard and Vander Beke (1925) developed a test which was inclusive of English grammar and Esperanto words. Also, Hunt, Wallace, Doran, Buynitzky, and Scarz (1929), at George Washington University, designed and developed a test that involved learning components of an artificial language. Luria's (1930) test of foreign language aptitude included exercises regarding vocabulary and grammar translations in French and Spanish. The last attempts in the 1920s was Symonds (1930a, b) designed a test for foreign language prognosis and suggested three important types of aptitude: quick learning tests in the new language, and ability in the students' native language, and general intelligence. Symond's test was favored by some scholars at that time (e.g. Michel, 1934, 1936) for its potential and usefulness for predicting performance in French high school classes.

After World War II, and more precisely during the late 1950s and the early 1960s, could be considered as the heyday of foreign language aptitude. According to Carroll and Sapon (1959), a groundbreaking achievement in this period was the *Modern Language Aptitude Test (MLAT)*, which was developed to specifically examine the aptitude of younger learners and military personnel via using a simulated format (i.e. a fake foreign language) and English gram mar to provide an indication of one's probable degree of success in learning a foreign language. In 1962, Carroll

conducted a series of studies on foreign language aptitude based on two propositions of facility to learn to speak a foreign language is a specialized talent, or group of talents, independent of intelligence; and strong foreign language aptitude is rare in the general population (p. 89). The results of his factor analysis yielded four independent variables proved to be most relevant to FL learning:

Table 1. Carroll's four-factor aptitude model (based on Dornyei and Skehan, 2003)

Aptitude components	Definitions
Phonetic coding ability	Capacity to code unfamiliar sound so that it can be retained
Grammatical sensitivity	Capacity to identify the functions that words fulfil in sentences
Inductive language learning ability	Capacity to extrapolate from a given corpus to create new sentences (not measured in the MLAT)
Associative memory	Capacity to form associative links in memory

In 1966, Pimsleur developed another measure of foreign language aptitude, the *Language Aptitude Battery (LAB).* The *LAB* was inclusive of a Verbal Ability score (tests of Vocabulary and Language Analysis) along with an Auditory Ability score (tests of Sound Discrimination and Sound-Symbol Association).

From the 1970s onwards, research into foreign language aptitude began to fade, with what Skehan believes "relatively little empirical work and little theorizing" (2002, p. 69). William and Burden (1997) believe that the reason for this was due to the developments happened in mainstream educational psychology. Skehan (2002) and Skehan and Dörnyei mention some possible reason for this including the anti-egalitarian nature of foreign language aptitude in the sense that a low aptitude score labels a language loser of complete no hope; and the indecent origin of foreign language aptitude (i.e. the outdated audio-lingual methodologies) that ran anathema to the increasingly dominating communicative classrooms.

However, after experiencing a prolonged period of being marginalized, studying foreign language aptitude regained momentum in the new millennium (Ellis, 2004). This way, several lines of research appeared. Sparks and Ganschow (2001) encourage the reconsideration of foreign language aptitude in terms of 'Linguistic Coding Differences Hypothesis' (LCDH). The notion advocates the importance of analyzing L1 skills (mostly orthographic decoding skills employed in reading comprehension).

Another development proposed by Grigornko, Sternberg, and Ehrman (2000). The authors proposed the 'Cognitive Ability for Novelty in Acquisition of Language (Foreign)' (or CANAL-F theory). This theory highlights learners' cognitive ability to handle some fresh linguistic materials in new learning contexts or situations. Therefore, it can be concluded that this theory and that of Sparks and Ganschow (2001) mentioned above are in tandem with each other in terms of emphasizing the importance of skills and skills development as part of foreign language aptitude.

The most recent line of research with respect to aptitude is that of Skehan's (2016) *Macro SLA Aptitude* model. The author based the model on the accumulating SLA research and stipulated that different putative components of the notion of aptitude should be effectively linked to various SLA developmental stages and their associated cognitive processes. For example, it can be argued that the aptitude components of 'phonetic coding ability' and working memory are most likely to be linked to the initial stages of input processing and to noticing. With respect to language analytical ability (a combination of Carroll's original 'grammar sensitivity' and 'inductive language learning' as well, again, as working memory), the author believes they should be related to the stages of pattern identification and restructuring, and extending.

However, as the above explanations show, the issue of researching aptitude and its possible relationships with vocabulary learning strategy use, especially in an EFL context like Iran receives few (if any) attention. This is a driving factor to include this variable in this study.

2.3. Motivation

According to Van Lier (2014), understanding human nature is a key issue in illuminating the meaning of motivation. The author made a distinction between mechanistic and organismic theories. To him, in mechanistic theories, the human being is seen as passive (e.g. behaviorism), but in organismic theories, the human being is seen as active (in the sense of having the ability to choose and to start behaviors). Gardner (1985) is in favor of the second view and defines motivation to learn a second language as "the extent to which the individual works or strives to learn the second language because of the desire to do so and to the satisfaction experienced in this activity" (p. 89).

The genesis of motivation backs to the end of the 1950s in Canada by the work of Robert Gardner and Wallace Lambert (1959) in Canada. In 1972, Gadner and Lanbert introduced a theory of motivation which draws an important relationship between motivation and orientation or "goal". As a result, they proposed two terms that are now commonly used in the field of motivation: *Integrative orientation* which refers to the positive disposition of an individual

to learn a language, its culture, and its community. Integratively-motivated learners might have a significant and strong reason to learn a second language. On the other hand, *instrumental orientation* refers to the practical reasons of an individual to learn a language. For example, some people might be motivated to learn a second language as a required part of their studies, or to get a higher salary.

Another attempt related to motivation is that of Schumann (1986). The author proposed the *acculturation theory* which conveys the integration of the learner into the L2 community. However, the simple intercultural contact with the L2 community is only the first step in this learning process. Being part of this environment allows the learner to interact with L2 speakers and provides the learner with the necessary input for the learning to take place.

Guerrero (2015) considers the period from 1959 to 1990 as the *social psychological period* of researching motivation, and from 1990s onwards as the *Cognitive-Situated Period*. To him, in the former period, the focus was on the importance of attitudes and feelings of language learners towards the L2 communities and the L2 itself. But, in the latter period, the focus of the investigation backed to the psychological field emphasizing mainly cognition (or mental processes).

Delving into motivation strategies is a line of research appeared in the social psychological period (i.e. from 1990s onward). In this regard, Dörnyei and Csizér (1998), after asking 200 Hungarian teachers, compiled a concise set of ten motivational macro-strategies which they have named "Ten commandments for motivating language learners" (p. 203). These commandments are: "1) set a personal example with your own behavior, 2) create a pleasant, relaxed atmosphere in the classroom, 3) present the tasks properly, 4) develop a good relationship with the learners, 5) increase the learners' linguistic self-confidence, 6) make the language classes interesting, 7) promote learner autonomy, 8) personalize the learning process, 9) increase the learners' goal-orientedness, and 10) familiarize learners with the target language culture" (p. 215).

In one of the most recent studies on motivation strategies, Tavakoli, Yaghoubinejad, and Zarrinabadi (2016) employed a sequential explanatory mixed-methods design to investigate the use of motivational strategies by Iranian English teachers and to see whether there were any culture-specific strategies. A motivational strategies questionnaire was distributed among 185 teachers to examine their attached importance along with the actual frequency of use of motivational macro strategies. To obtain comprehensive data, a set of semi-structured interviews with 10 volunteer teachers were also conducted. The results were reminiscent of some culture-specific differences with respect to strategy importance and use were traced, particularly in terms of promoting learners' autonomy and goal-orientedness. This way, the teachers devalued the motivational load of these variables due to the authoritarian sense of respect in their local context.

Another trend with respect to motivation was learner motivation. In this regard, Bernaus, Wilson, and Gardner (2009) studied student motivation and achievement in English along with their relation to teacher motivation and strategy use in the classroom. The participants of the study were 31 teachers in Catalonia (Spain) together with 694 students in their classes. The results of the study showed that teachers' motivation is in line with the teachers' use of motivating strategies, which in turn are related to student motivation and English achievement.

Direct Motivational Currents (DMCs) could be considered to be the most recent line of research. The concept was developed by Dörnyei and his collegues (e.g. Dörnyei, Henry, and Muir, 2016; Dörnyei, Ibrahim, and Muir, 2015). Dörnyei et al. (2015) define a DMC as "a prolonged process of engagement in a series of tasks which are rewarding primarily because they transport the individual towards a highly valued end" (p. 98). According to Dörnyei et al. (2016), the concept has three main characteristics which are: a) being goal oriented, b) having a prominent identifiable structure, and c) experiencing supportive and positive feelings.

With respect to this concept, Zarrinabadi and Tavakoli (2016) examined motivational surges among Iranian EFL teacher trainees with the focus on DMCs. A group of individuals who took part in an English teacher training program in a language institute in Iran were selected. In the first phase, the first author asked five teacher trainers of the teacher training program to identify those individuals they trained whom they thought to be particularly motivated. The teacher trainers introduced eight teachers at this stage. Then, the further analysis of an interview with two participants showed that both participants (as representatives of teacher-trainees) experienced positive feelings such as happiness, excitement, self-confidence, and self-efficacy while describing their motivational experience as pleasant and joyful.

With respect to the relationship between motivation and vocabulary learning strategy use, Nikoopour, Salimian, Salimian, and Farsani, (2012) aimed at examining the relationship between intrinsic/extrinsic motivation and language learning strategy use among Iranian EFL learners. The results indicated that intrinsic motivation was significantly related to cognitive and metacognitive strategies. However, extrinsic modes of motivation, namely, identified and external types of motivation were not significantly related to the use of language learning strategies. Moreover, it was shown that Iranian learners were mainly intrinsically motivated towards learning English language, and used metacognitive strategies more frequently than other types of strategies.

However, the issue of investigating motivation and its possible relationships with vocabulary learning strategies, especially in an EFL context like Iran, has been neglected by the researchers. And, this was a motive to include this variable in this study.

3. Methodology
3.1. Participants:
The population from which the participants of this study were selected were B.A. sophomore and junior university students all majoring in English Translation and TEFL in the Faculty of Foreign Languages at the University of Isfahan and Sheikhbahaee University. The initially-selected participants were 88 Iranian EFL learners which were selected via convenient sampling. However, there were two exclusion phases in this study which reduced the number of the participants to 58. The two phases will be discussed below.

3.2. Research questions and hypothesis:
This study was designed to address the following research questions:
1. To what extent can Iranian EFL learners' high and low levels of aptitude predict their VLS use?
2. To what extent can Iranian EFL learners' high and low levels of motivation predict their vocabulary learning strategy use?
3. How do high and low proficient learners of English differ in their vocabulary learning strategy use?

In relation to research questions 1 and 2 mentioned above, the following null hypotheses can be made:
1. Hypothesis: Iranian EFL learners' high and low levels of aptitude cannot predict their VLS use.
2. Hypothesis: Iranian EFL learners' high and low levels of motivation cannot predict their VLS use.

3.3. Instruments:
Based on the theoretical considerations of the field of methodology and language teaching, five instruments (i.e. Vocabulary Level Test, Motivation Questionnaire, Vocabulary Learning Strategies Questionnaire, Pimsleur Language Aptitude Battery, and think-aloud protocol) were chosen and employed for achieving the purposes of the present study because they were supposed to be valuable complementary tools to gather data on the relationships between Iranian EFL learners' individual differences and their choices of vocabulary learning strategies. They will be described in detail below:

3.3.1. Vocabulary Level Test
In order to check the homogeneity of the participants at the intermediate level, and further, to divide the selected participants into high and low level, a Vocabulary Level Test developed by Mashhadi, Hayati, and Jalilifar (2016) was administered to the participants. The test is inclusive of 100 English words and the participants are supposed to write the meaning of the ones they know in Persian. Some of the words in the test were employed during the qualitative phase of the study (i.e. during think-aloud protocol procedure) to investigate strategies used by learners with high and low levels of proficiency.

3.3.2. Vocabulary Learning Strategies Questionnaire (VLSQ)
The Vocabulary Learning Strategies Questionnaire developed by Gu and Johnson (1996) was used to determine the strategies Iranian EFL learners tend to employ most. The questionnaire is inclusive of sections such as 1) beliefs about vocabulary learning, 2) metacognitive regulation, 3) self-initiation, 4) guessing strategies, 5) dictionary strategies, 6) note-taking strategies, 7) memory strategies: rehearsal, 8) memory strategies: encoding, and 9) activation strategies. However, considering the purpose of the study, the first three parts (i.e. beliefs about vocabulary learning, metacognitive regulation, and self-initiation) were excluded and the rest was administered.

3.3.3. Motivation Questionnaire
To investigate Iranian EFL Learners level of motivation, the Motivation questionnaire developed by Taguchi, Magid, and Papi (2009) was utilized. The study in which the questionnaire was developed is a comparative one in that three versions of this questionnaire were developed for use with learners of English in China, Japan, and Iran, respectively. In all the three context, the questionnaire was inclusive of three parts. However, considering the third research question in the present study regarding Iranian EFL learners' high and low level of motivation, the first part of the questionnaire was employed.

3.3.4. *Pimsleur Language Aptitude Battery*

To examine Iranian EFL Learners' level of aptitude, the Pimsleur Language Aptitude Battery (PLAB) was employed. The test developed by Pimsleur, Reed, and Stansfield (2004) and is inclusive of six sections, each one testing different aspects. The authors of the test believe that:

"… it is intended, first, for predicting students success in foreign language learning and, second, for diagnosing language learning difficulties" (p. 1).

The six parts or sections of the test are as follows:

Part 1: Grade Point Average (in academic areas other than foreign languages)
Part 2: Interest (in learning a foreign language)
Part 3: Vocabulary (word knowledge in English)
Part 4: Language Analysis (ability to reason logically in terms of a foreign language)
Part 5: Sound Discrimination (ability to learn new phonetic distinctions and to recognize them in different contexts)
Part 6: Sound-Symbol Association (an association of sounds with their written symbols).

In addition to the above-mentioned parts, the testing materials also consist of answer sheets, test booklets, and some sound clips recorded on a tape which altogether were shipped to Iran.

One of the main advantages of this test comparing with its rivals like Modern Language Aptitude Test (MLAT), besides its being up-to-date and authentic, is that it is easy to administer, because the instructions for Parts 3, 4, 5, and 6 are on the recording. The timing of the test is also automatically controlled by the recording, thus leaving the teacher free to proctor the test.

3.3.5. *Think-aloud Protocol*

"Protocol analysis" or "think-alouds" or have been extensively employed in the fields of psychology and cognitive science as a verbal-report method of producing concurrent verbalization. Think-alouds require participants to tell researchers what they are thinking and doing while performing a task. The participants are usually instructed to keep thinking aloud, acting as if they are alone in the room speaking to themselves. Think-aloud protocols are tape- and/or video-recorded and then transcribed for content analysis. The think-aloud protocols are, in many cases, coded for specific categories which have previously been developed by the researcher (Yoshida, 2008).

Ericsson and Simon (1993) could be considered as the first scholars who utilized think-aloud procedure. They believed that verbalizations that follow an intervention might lead to unreliability. On the contrary, they argued that, for those participants who remain silent for a longer period of time, the verbalization may become inefficient and unusable since significant proportions of the cognitive processes in the short-term memory might not be tracked down. To avoid these problems, they asked their participants to think aloud if s/he falls silent. In order to circumvent the potential unnaturalness of the think-aloud procedure, Ericsson and Simon suggested an initial practice session during which participants are taught to verbalize their thoughts. Thereafter, the method became a widely used instrument to study cognitive processes, such as problem solving, reading, human–computer interaction, and writing.

Like any other types of data collection instruments, think-aloud protocol has its own advantages and disadvantages. The following table adopted from Collins (2014, p. 111) summarizes the merits and demerits of this procedure:

Table 2. advantages and disadvantages of think-aloud protocol:

Advantages	Disadvantages
• It is relatively easy to train participants to think aloud. • Think aloud collects participant-initiated rather than interviewer-initiated data. Reports of problems initiated by participants may be more reliable, compared to problems elicited by probing. • Think-aloud data is collected at the point at which the question is answered. When data is collected retrospectively (e.g. through probing) participants may be more likely to forget or over elaborate on the problems they encountered.	• Not all participants feel comfortable thinking aloud. Think-aloud data can vary in quality between individuals. • Thinking aloud would interfere with the task being undertaken. • Participants may not be providing an actual stream of consciousness when thinking aloud. Their monologue may be edited and refined prior to verbalization. This means problems could still be overlooked. • The think-aloud data, in itself, may not address all the research questions you wish to explore.

In the present study, think-aloud protocol procedure was employed to prompt the EFL participants to verbalize their preference for vocabulary learning strategies. This way, it was utilized to elicit more qualitative data from the

participants during their performance on the test. The obtained qualitative data may become clearer when some quantitative analysis is included. In other words, the analysis should be a mixture of quantitative and qualitative ones, because, one method, in and of itself, may not provide adequate and dependable results. This way, it reduces the observer or the interviewer bias and enhances the validity and reliability of the information. Dörnyei (2007, p. 45-46) states the advantages of using a mixed methodology as follows:

1) Increasing the strength while eliminating the weaknesses,
2) Multi-level analysis of complex issues,
3) Improved validity,
4) Reaching multiple audiences.

In this study, during the think-aloud procedure, the participants were periodically asked to verbalize and articulate their use of strategies and comment about it as they are performing on the test. The responses to think-aloud probes were transcribed verbatim, and were analyzed with the purpose of answering the forth research question.

3.4. Data-collection procedure
3.4.1. Pilot study
Although the instruments and the procedures for data collection were carefully planned, it was necessary to make sure that each of the instruments would work well in practice. This way, some pilot studies were conducted. First, the Vocabulary Learning Strategies Questionnaire was piloted. This served several purposes including a) to ensure the feasibility of the main study, b) to check if there existed potential problems such as ambiguous or inaccurate instructions or items, c) to determine the administration procedure (including the anticipated length of time for completion), d) to determine the index of reliability index of the VLSQ. In this regard, the reliability of the sections of the VLSQ is provided in the following table:

Table 3. The reliability of the sections of the VLSQ

Strategy	Cronbach's Alpha
Guessing strategies	.74
Dictionary strategies	.765
Note-taking strategies	.75
Memory strategies: rehearsal	.79
Memory strategies: encoding	.805
Activation strategies	.73

Besides determining the reliability index, since the participants were asked to write their comments regarding the items on the VLSQ either in English or in Persian, the piloting of the VLSQ revealed that none of the items was difficult to comprehend in English. Therefore, no revision was done on the items on VLS questionnaire. Based on the pilot study, 45 minutes was enough for the students to complete the VLS questionnaire.

As discussed above, considering the purpose of the study, the first part of motivation questionnaire was employed. Before conducting this part in the main phase, it was piloted to 20 students. The reliability of this was acceptable (alpha= .81) and no item was modified.

3.4.2. The main study
3.4.2.1. Administration of Questionnaires
One week after piloting the questionnaires on motivation and vocabulary learning strategies, the questionnaires were by the researcher distributed to the selected participants. The process proceeded by a brief oral explanation with respect to the purpose and the nature of the study and the way to complete them. In addition, the confidentiality issues were promised to the participants.

3.4.2.2. Administration of the aptitude test
Care was taken to have all the participants as a whole and to administer the PLAB in one session. This was fulfilled and the aptitude test was administered to all the participants in one session which took about 90 minutes. As discussed above, the test has some sound clips. As a result, the supposed devices for displaying these voices were employed.

3.4.2.3. Think-aloud protocol procedure
Before completing the vocabulary level test, the participants were told that their comments about their use of vocabulary learning strategies would be extremely helpful for conducting this study. They were also informed of how

to describe their flow of their thoughts in their minds while performing the test. With their permission, the process of think-aloud were recorded. In order to have all of the participants' ideas, they were asked to record their articulations on their cellphones for further sending them to the researcher. Also, specific attention was paid to some aspects which could not be recorded (e.g. their facial expressions, gestures, etc.).

This way, three participants from each proficiency group were randomly selected. The participants were given the tests and they were asked to verbalize and articulate their thoughts and their identification of the vocabulary learning strategies that helped them to learn and to cope with the English vocabularies. Their talks were recorded and later transcribed by the researcher.

In order to have more ideas, especially the ideas of those participants who seemed to be reticent, the researcher prompted the participants by asking them some questions, either in Persian or in English, like:
1) Do you know the meaning of this word?
2) Are you facing any challenge regarding coping with the word?
3) What helped you understand this word? Did you use any trick?
4) Do you have any alternative way of answering this word other than what you used now?
5) Did this word convey something positive or negative to you without knowing its meaning?

3.5. Data analysis procedure
In this study, both qualitative and quantitative methods were used to analyze the data.

3.5.1. Qualitative analysis
In order to obtain a comprehensive understanding of the (possible) differences between high and low proficient Iranian learners of English in terms of their vocabulary learning strategy use, the students' think-aloud protocols and their answers to following questions were recorded. Then, the recorded data obtained from the think-aloud protocol method were segmented, coded, and transcribed. This way, attempts were made to find some patterns in the students' talk. This way, the type and frequency of vocabulary learning strategies used by Iranian EFL learners were identified.

In sum, the researcher used a variety of methods, that is, vocabulary learning questionnaire, vocabulary test, and think-aloud protocol to achieve triangulation and to maximize the validity of this results of the study. Triangulation, as defined by Maxwel (1996), refers to "collecting information from a diverse range of individuals, and settings, using a variety of methods" (p. 93).

3.5.2. Quantitative analysis
Statistical Package for Social Science (SPSS) version 21 was employed in order to compute and to analyze the quantitative data.

Point-biserial correlation coefficient was used to examine the relationship between gender as a dichotomous variable and the students' scores on vocabulary learning strategies questionnaire as a continuous variable.

Chi-square analysis was also done to see whether any significant difference existed between the high- proficient and low- proficient learners regarding their choices of vocabulary learning strategies.

It is worth mentioning that the maximum score in the aptitude test one could achieve was 117. So, in order to achieve fairness in dividing the participants into those with high and low level of aptitude, the scores fell within one standard deviation above and below the mean were not considered. This was the second exclusion phase (after the first exclusion of the participants in the Vocabulary Levels Test) in this study which reduced the final number of the participants into 58.

4. Results:
4.1. Analysis of the first RQ
To answer the first research question, product-moment correlation was run to probe whether or not there exists any relationship between the participants' levels of aptitude and their choices of vocabulary learning strategy use. Table7 below represents the results:

Table4: Correlation between aptitude levels and choice of VLS

	Guessing Str.	Dictionary Str.	Note-taking Str.	Memory Str. (Rehearsal)	Memory Str. (Encoding)	Activation Str.
Low-level	0.15	0.30	0.63*	0.2	-0.30	-0.55*
High-level	0.30	0.18	0.38	0.68*	0.18	0.5*

*Correlation is significant at the 0.5 level (2-tailed)

Cohen (1988) provides a framework for correlation analysis and considers the correlation coefficients from 0.1 to 0.29 to be small, 0.3 to 0.49 to be moderate/medium, and above 0.5 as large/significant. As the table shows, there exists a strong correlation between learners with low level of aptitude and their utilization of Note-taking Strategy (r=0.63). They also tend to use Dictionary Strategy moderately (r=0.30). However, among this group (low-level aptitude group), there is a negative correlation between their level of aptitude and their use of Memory Strategies under the category of encoding. However, the correlation is moderate (r= -0.30). An extreme case among learners with low level of aptitude could be observed in their use of Activation Strategies (r= -0.55) in that there is a negative strong correlation between their level and their use of this strategy. In other words, the lower their level of aptitude is, the more would be their tendency not to choose this strategy. This group of learners tend to employ Guessing Strategy (r=0.15) and Memory Strategy (r=0.2) rarely.

With respect to high-aptitude level learners, there are strong positive correlations between their levels of aptitude and their utilization of Memory Strategy (r=0.68) and Activation Strategy (r=0.5). This type of learners tend to use Guessing Strategy (r=0.30) and Note-taking Strategy (r=0.38) moderately. Moreover, they tend to employ Dictionary Strategy (r=0.18) and Memory Strategy (r=0.18) rarely.

4.2. Analysis of the second RQ

With respect to the second research question regarding the relationship between the participants' levels of motivation and their choices of vocabulary learning strategies, product-moment correlation was run. The results are represented in Table10 below:

Table 5. Correlation between motivation level and choice of VLS

	Guessing Str.	Dictionary Str.	Note-taking Str.	Memory Str. (Rehearsal)	Memory Str. (Encoding)	Activation Str.
Low-level	0.1	0.61*	0.16	0.2	0.11	0.23
High-level	0.31	0.22	0.5*	0.27	0.16	0.48

*Correlation is significant at the 0.5 level (2-tailed)

As the table indicates, learners with low level of motivation tend to use Dictionary strategy (r=0.61) significantly. However, their utilization of other strategies is rare (Guessing Strategy: r=0.1; Note-taking Strategy: r=0.16; Memory Strategy (Rehearsal): r=0.2; Memory Strategy (Encoding): r=0.11; and Activation Strategy: r=0.23).

However, learners with high level of motivation tend to employ Note-taking Strategy significantly (r=0.5) significantly. They also tend to utilize Activation Strategy (r=0.48) and Guessing Strategy (r=0.31) moderately, while their preference towards using Dictionary Strategy (r=0.22) and Memory Strategy under the category of encoding (r=0.27) and rehearsal (r=0.16) is low.

4.3. Analysis of the third RQ

In order to answer the third research question with respect to investigating the differences between high and low proficient learners, both quantitative and qualitative analysis were employed:

3.1.1. Quantitative analysis

Table11 below represents the descriptive statistics of participants with high and low levels of proficiency:

Table 6. Descriptive statistics of high and low proficient learners and their utilization of VLS

	Guessing Str.	Dictionary Str.	Note-taking Str.	Memory Str. (Rehearsal)	Memory Str. (encoding)	Activation Str.
Low	15%	33%	10.8%	17.7%	10%	13.5%
High	25%	12.5%	14%	20%	13%	15.5%

As the table shows, the most frequently used strategy for low-proficient learners is Dictionary Strategy, followed by Memory Strategy (rehearsal), Guessing Strategy, Activation Strategy, Note-taking Strategy, and Memory Strategy (encoding), respectively.

However, the most frequently used strategy for high-proficient learners is Guessing Strategy, followed by Memory Strategy (rehearsal), Activation Strategy, Note-taking Strategy, Memory Strategy (encoding), and Dictionary Strategy, respectively.

In this regard, the following figure depicts a comparative representation of strategies employed by learners with high and low levels of proficiency:

Figure 1. Comparative representation of strategies employed by high-and-low-level proficient learners
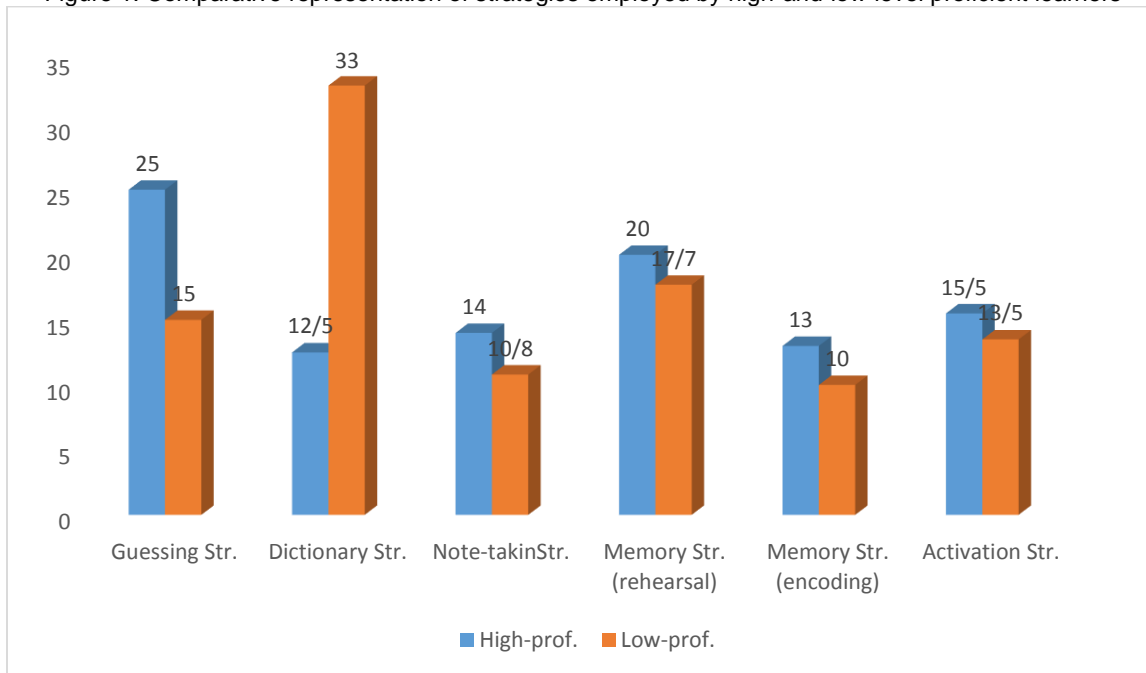
In order to understand whether or not there exists any significant difference between learners with high and low levels of proficiency, inferential statistics was run using Chi-square. The results of the analysis is represented in the following table:

Table 7. The results of Chi-square analysis:

Chi-sq.	Low-prof.	High-prof.
Observed X^2	0.031*	0.001**
Std. error of mean	1.341	1.833

*P<0.05, **P<0.01

As it is evident in the information provided in the table, the difference between students with high and low levels of proficiency is significant. However, considering the critical p-value, the difference is more significant for the high-level group.

3.1.2. Qualitative analysis using think-aloud protocol

As it was mentioned before, in order to have a comprehensive understanding of what goes on the mind of the learners, in the qualitative phase of the study, 6 of the participants from the two groups of high and low levels of proficiency (i.e. 3 from each group), were randomly asked to answer the vocabulary level test while their thoughts in an audible manner. Then, the data obtained through conducting think-aloud protocol were recorded and transcribed. The obtain data from low-level participants are presented below (the question-and-answer process was based on the answers and feedbacks the researcher received from them):

Q1: Do you know the meaning of this word (simulation)?

(Participant1): *I have no tool answering this! Is this word an original English word*?
(Participant2): *I think this word is… shall I use my cell-phone dictionary to give you the meaning?*
(participant3): (remains silent, although the facial expression of this participant presented some sort of challenge)

Q2: are you facing any challenge answering this word? Do you have any alternative way to answer this word?

(Participant1): *If you let me check my saradic I will tell you the meaning.* (saradic is a Persian-to-English and English-to-English dictionary)
(Participant2): (after using the dictionary said it in Persian) /*tazahor*/

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(Participant3): *please go to another word and I can answer other questions*.

The same word was given to learners with a high level of proficiency. Again, it is worth mentioning that the process of think-aloud continued based on the answers and feedbacks the researcher received from the participants:

Q1: Do you know the meaning of this word (simulation)?

(Participant1): *We have had this word in our Reading1 mid-term exam, I remember I marked the option with the word 'arousal'*.
(Participant2): *I just know that it is a noun, since the 'tion' changes a noun into a verb.*
(Participant3): *This noun is used as a technical term in football. Have you watched 90 /navad/ program? They use it for a player who divings [sic].*

Q2: Did you use any trick?
(Participant1): *In my exam, I choose arousal by chance.*
(Participant2): *What makes me answer in this way is that I am a little bit familiar with prefixes and suffixes.*
(Participant3): *I have a good knowledge in football and its specialized terms.*

In the second round, another word was asked from learners with low level of proficiency):

Q1: Do you know the meaning of this word (sarcastic)? Does it convey anything to you?
(Participant1): *sarcastic? [….] Bitter. A criticize is sarcastic.*
(Participant2): *sarcastic could be in the same category as pessimistic.*
(Participant3): (immediately says) *it means /tond/ in Persian.*

The same word as that of the low-level group was asked from high-level group:

Q1: Do you know the meaning of this word (sarcastic)? Does it convey anything to you?
(Participant1): *sarcastic is negative, [….] although I can tell you exactly the meaning.*
(Participant2): (immediately says) *it means bitter, severe, biting. I search these words in the website 'www.synonms.net' and memorize the synonyms.*
(Participant3): *[….] would you please use it in a sentence?*

In the third round, another word was asked from learners with low level of proficiency:

Q1: what about the meaning of this word (remedy)? If you know, explain.
(Participant1): *it means cure. It means /darman/.*
(Participant2): *I don't know. My knowledge tells me that it is technical.*
(Participant3): *in our textbook, as I read it in advance, there is a sentence 'the usual remedy is to segregate this type of students'. But I don't know the meaning. I know segregate means dividing into two. Remedy could be process.*

The same word as that of the low-level group was asked from the high-level group:

Q1: what about the meaning of this word (remedy)? If you know, explain.
(Participant1): *It means food and facilities. Vaghar Rezvi, in press TV, says Syria people are in the need for remedy*. (Vaqar Rezvi is a TV host at Press TV)
(Participant2): *Please go to another word. Could you give me clue?*
(Participant3): *it means cure. The doctor gives you a remedy to cure your pains.*

As it is evident from the questions and answers between the groups, insightful results can be inferred. Learners in both groups knew some of the words, via using different strategies. However, they still use some old strategies like using dictionary. They also rely to some extent on their L1. However, they use chunks, expressions, and sentences said in the media.

4.   Discussion and conclusion:
4.1.   The relationships between Iranian EFL learners' level of aptitude and their choice of VLS

The first research question of the study dealt with the relationship between the participants' level of aptitude and their utilization of vocabulary learning strategies. The results, based on Cohen's (1988) framework, showed that low-level aptitude learners tend to use Note-taking Strategy significantly while the correlation coefficient of this strategy for high-aptitude learners was moderate (r=38). According to Gu and Johnson (1996), this strategy, in itself, includes meaning-oriented note-taking strategy and usage-oriented Note-taking Strategy. This inconsistency is similar to Bonner and Holliday's (2006) study. However, according to the authors, the justification for this might be that students' current idea (i.e. what goes on in their minds now) is totally different with what they actually would perform in real learning situations.

Learners with low level of aptitude also tend to use Activation Strategy significantly. This result was unpredictable because this strategy has some subcategories like mapping up one's own sentences, using newly-learned words in real situations, etc. However, the significance of this strategy for high-aptitude learners was predictable. Also for high aptitude learners, the tendency was towards using Memory Strategy (rehearsal). This result is in line with that of Mohabat (2001), since, after using a different questionnaire, the author concludes that the high-aptitude group used memory strategies including association and elaboration.

Compared to low-aptitude learners, high aptitude learners tend to employ Guessing Strategy more while low-aptitude learners tend to use Dictionary Strategy more. Again the result is congruent with that of Mohabat (2001) in that, in her study, participants with low level of aptitude tended to use Dictionary Strategy and Metacognitive Strategy more to circumvent their lack of knowledge and to inspire themselves for future attempts.

Overall, a possible justification for the results obtained from strategies used by high and low levels of aptitude is that according to Biedroń (2015), learners who are gifted and possess a high level of aptitude prefer to attend to sophisticated activities while having other less-sophisticated strategies at their disposal.

4.2.   The relationships between Iranian EFL learners' level of aptitude and their choice of VLS

With respect to the third research question regarding the relationship between the participants' levels of motivation and their choices of vocabulary learning strategies, product-moment correlation was run and the results showed that there is a positive relationship between learners with low level of motivation and their use of Dictionary Strategy. In other words, learners with low level of motivation tend to use Dictionary Strategy significantly while those who possess a high level of motivation rarely employ this strategy. However, this group of learners (low-level motivation) tend to use other strategies rarely, not even moderately.

A possible explanation for this scarcity in strategy use among learners with low level of motivation, according to Dörnyei (2001), is that lack of motivation leads to decrease in self-confidence and self-esteem. To Dörnyei's belief, these three concepts (i.e. motivation, self-esteem, and self-confidence) are in tandem with each other.

This result is in line with that of Delzendehrouy, Zamanian, and Tayyebi's (2014) experimental study. Using Schmitt's VLSQ and Gardner's questionnaire on motivation, they concluded that motivation and vocabulary learning strategy are interwoven features. Their study also showed that less-motivated learners used VLS less than high-motivated learners. This revealed that they are less effective learners in learning foreign language especially in vocabulary due to their less motivation.

In the present study, learners with a high level of motivation tend to utilize Note-taking Strategy significantly. In this regard, Haghverdi, Biria, and Karimi (2010) believe that, note-taking strategy, in and of itself, is a motivating factor that leads to an increase in academic achievement and overall learning. In the same vein, according to Larsen-Freeman and Long (2014), writing down the main ideas, important points, outline or summary of information presented orally or in writing.

While low-level motivation learners prefer to use Activation Strategy and Guessing Strategy rarely, their counterparts (i.e. learners with a high level of motivation) tend to employ these two strategies moderately. It is also worth mentioning that both group used Memory Strategies under the category of encoding and rehearsal rarely.

This last result is not in line with Delzendehrouy, Zamanian, and Tayyebi's (2014) study in that their results showed that highly-motivated learners used Memory Strategy significantly. The reason for this, according to Dörnyei (2001), could be that learners with high and/or low level of motivation, integrative and/or instrumental motivation, and intrinsic and/or extrinsic motivation prefer to rely less on their memory and focus more on the goal/s, whether or not it is achievable.

Gardner and Lambert (1972), after adopting a classification other than low and high levels, reached the conclusion that instrumental motivation may be more frequently associated with the successful high-level acquisition of some languages.

4.3.   Difference in Strategy Use among High-proficient and Low-proficient Learners

The results of descriptive statistics revealed that the most frequently-used strategy for learners with a low level of proficiency is Dictionary strategy. Sarani and Kafipour (2008) pointed to this problem. They said the students are offered a course namely "study skills" in the first semester of their studies. The lecturers talk a lot about the importance of using a monolingual rather than bilingual dictionary but they don't provide enough information on how to use monolingual dictionary more appropriately. Lecturers of other courses also instructs the students to bring monolingual dictionary at classroom to use when necessary but they don't talk at all about how to use monolingual dictionary to fit their different academic needs.

In order to examine the significance of this difference between high and low levels of proficiency learners, Chi-square analysis was run. The results showed a significance between the differences between the two levels. However the significance was higher for learners with a high level of proficiency. According to Green and Oxford (1995), in studies conducted in a wide variety of geographical and cultural settings, students who were better in their language performance generally reported higher levels of overall strategy use and frequent use of a greater number of strategy categories.

The superiority of higher levels over lower ones is reported in the study of Boonkongsaen and Intaraprasert (2014) on Thai students. However, in a different camp, Jafari and Kafipour (2013) concluded that, regardless of level of proficiency, Iranian EFL learners are generally medium users and there is no significant difference between them in this regard. Similar to the results obtained from Jafari and Kafipour (2015), Noormohamadi and Amirian (2015) found that almost three out of five most and two out of five least frequently used strategies were commonly shared by students of all groups though their rank sometimes varied. The results of t-test also indicated that there were no significant differences between high and low proficient English translation students in the case of overall strategy use.

Qualitative data obtained from think-aloud protocol would enrich the obtained results. This way, both groups prefer to use and to provide context which, according to Gu and Johnson (1996), is a kind of Guessing Strategy. They also tend to use media (e.g. Press TV) and webpages (e.g. synonyms.net) to facilitate their learning, and specifically, to enhance their lexical knowledge. However, the overreliance of the low-level group on Dictionary Strategy (and specifically Looking Up strategy) cannot be ignored.

To conclude, this study draws on several conclusions regarding Iranian EFL learners' individual differences (namely, aptitude, gender, motivation, and level of proficiency) and their vocabulary learning strategy use:

First, there was a strong relationship between learners with a high level of aptitude and their preference to employ rehearsal memory strategy and activation strategy. However, low-level ones tend have their ideas at their disposal in the form of note (i.e. note-taking strategy).

Second, learners with low level of motivation rarely used vocabulary learning strategies, except using dictionary. Therefore, in order to learn words in L2, learners should be motivated.

Third, significant differences existed among the learners of the two proficiency groups in terms of variety in their strategy use and how they combined different types of strategies.

As a result of the qualitative phase indicated, this study reached the conclusion that there is a compelling need for vocabulary learning strategies instruction in the Iranian context. If the present study only relied on the data obtained from the quantitative methods for answering the research questions raised, we would have made claims and found results not matching the present results obtained according to a mixed- method design.

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