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On the Effects of Linguistic, Verbal, and Visual Mnemonics on Idioms Learning

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Abstract

Despite their substantial role in natural discourse, idioms often intimidate EFL students. Therefore, finding effective ways of mitigating students' frustration has been a fundamental consideration in language teaching. Mnemonics, as associative memory tools, are largely acknowledged to be instrumental in reducing the cognitive load involved in language learning, particularly in learning lexical items. This study was conducted to explore the effects of linguistic, verbal, and visual mnemonics on empowering language learners in the recall and recognition of English idioms. Two-hundred seventy intermediate-level EFL learners preparing themselves for IELTS took part in this study. The participants were in nine groups of 30 members each. They were divided into three main groups, each of which was taught idioms using one of the above-mentioned mnemonics. The MANOVA procedure was used to analyze the collected data. The results revealed statistically significant differences among these instructional strategies in case of recall, with linguistic mnemonics being the most influential. The findings of the study can have theoretical implications for researchers in that they can shed light on some of the dark corners of the field and spark interest for further research. The findings can also have some pedagogical implications for teaching programs, curriculum developers, educational policymakers, teachers, and language learners. Developing a clearer understanding of how these mnemonics influence idiom learning can help the stakeholders make more informed decisions about how to treat idioms.

***Keywords*:** idioms recall, idioms recognition, linguistic mnemonics, verbal mnemonics, visual mnemonics

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1. Introduction

Attaining fluency is one of the primary objectives language learners pursue. This goal, however, cannot be achieved without conforming to some standards. Knowledge of idioms has a considerable impact on learners' fluency (Lim et al., 2009). From the pedagogical point of view, idioms constitute an indispensable component of language and language learning, particularly in oral communication (Nevisi et al., 2020). O'Dell and McCarthy (2010) acknowledge that comprehending English movies and reading journals seem to be unattainable without having a good command of idioms. Besides, proper deployment of figurative language is commonly believed to be one of the hallmarks of native-like speech in every language (Boers et al., 2006; Teodorescu, 2015; Wray, 2000). Nevertheless, EFL students are usually faced with the predicament of disambiguating the implicit figurative meanings of idioms, and learning L2 idioms remains a daunting task. Therefore, the formal teaching of idioms should be given due attention.

The structural-generative paradigm has been one of the dominant approaches in language learning. According to this long-standing tradition, idioms are seen as 'dead metaphors (Caillies & Declercq, 2011). For the most part, adherents of this perspective rely on rote-learning and translation for learning idioms as they believe there is no association between the form and metaphorical meaning of idioms (Boers et al., 2007; Chen & Lai, 2013). However, thanks to insights provided by cognitive linguistics, some underlying links between the literal and metaphorical meanings of idioms enable idiomatic representation, and the total arbitrariness of figurative meaning is 'not' completely justifiable (Boers et al., 2004; Boers & Webb, 2015).

Establishing connections and associations between the literal/compositional and non-literal/ figurative meanings of idioms enhances learners' comprehension of idioms (Sprenger et al., 2006). Mnemonic devices are one of the essential tools used for the establishment and maintenance of these links. Mnemonic devices are effective memory tools in different fields, including teaching/learning a second/foreign language. Many studies have investigated the impact of mnemonic instructional techniques on learning L2 vocabulary and idioms (Bagheri & Fazel, 2010; Peters & Webb, 2018; Zarei & Keysan, 2016). However, most of these studies have compared mnemonics with either a control condition or other ways of teaching. Therefore, there is a need to compare the effects of various mnemonic devices (linguistic, visual, and verbal) on the recall and recognition of idioms. The

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main objective of this study was to partially fill the existing knowledge gap. Therefore, it addressed the following question as the main line of research:

RQ: Which mnemonic devices (linguistic, visual, and verbal mnemonics) are more effective on EFL learners' recognition and recall of English idioms?

2. Literature Review

2.1. Idioms

The fallacy that language is merely confined to individual words still pervades some educational contexts. Larger lexical items such as idioms, however, are also included in the lexicon. In addition, lexical competence is way beyond the simple knowledge of the denotative sense of lexical items (Derakhshan & Shakki, 2019). Connotative meaning also needs to be considered (Cacciari & Corradini, 2015). In other words, speakers should be equipped with the knowledge of figurative language and pragmatic competence. The complexity of idioms stems primarily from their semantic unpredictability, i.e., the fact that their figurative or metaphorical meaning, in many cases, cannot be extracted from the literal translation of these expressions (Liontas, 2017; Vespignani et al., 2010). By way of illustration, the literal meaning of *'shoot the breeze'*, *'tie the knot'*, and *'a bundle of nerves'* has little or no role in the interpretation of their figurative meanings. Many EFL learners feel confused by what they describe as an insurmountable rift between the compositional and metaphorical meanings of idioms. From the pragmatic point of view, non-natives are not familiar with the socio-cultural norms of idioms use.

Native speakers use a plethora of idioms almost subconsciously and effortlessly every day. Therefore, it is important to systematically introduce idioms to non-native students. That is why instruction of figurative language, specifically idioms, has begun to receive attention in ESL/ EFL systems after a long time of neglect (Tărcăoanu, 2012). Traditionally, teachers used to teach idiomatic expressions separately, and language learners had to memorize those idioms included in interminable lists (Boers, 2001). Blind memorization of idiomatic expressions imposes a substantial amount of cognitive load on working memory, often leading to loss of motivation and failure in comprehension, production, and retention of idioms (Boers, 2000). However, recent studies in cognitive semantics have shown that mnemonic devices can boost comprehension and production of lexical items,

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including idioms. Mnemonics can empower learners to transcend compositional meaning and comprehend the metaphorical meaning of idioms (Zarei & Ramezankhani, 2018).

2.2. Mnemonic Devices

Improving memory requires using some strategies. Memory-related techniques are traditionally regarded as mnemonic devices (Schmitt, 2008). The use of mnemonics is a supplementary mechanism for enhancing memory that entails training students to somehow relate unfamiliar materials to the body of knowledge they are already familiar with (Scruggs & Mastropieri, 2000). According to Bakken and Simpson (2011), mnemonic devices expedite the process of recollection of information by making new information more purposeful and tangible. Berkeley and Scruggs (2010) and Saricoban and Başibek (2012) have already confirmed the facilitative role of mnemonic instruction in the recognition and recall of new lexical items. Many different classifications have been offered for mnemonic devices. Thompson (1987) puts mnemonic techniques into five subtypes: linguistic, spatial, visual, verbal, and physical responses mnemonics. Linguistic, visual, and verbal mnemonic devices are explored in this study.

Etymological elaboration is the first linguistic mnemonic. Many researchers have confirmed the usefulness of etymological information for teaching vocabulary and idioms (Bagheri & Fazel, 2010; Zolfagharkhani & Ghorbani Moghadam, 2011). Additionally, according to Zarei and Rahimi (2012), the etymology of words can raise learners' awareness. Besides, Bagheri and Fazel (2010) confirmed that etymological elucidation positively affected the comprehension and retension of idioms. Razmjoo et al. (2016) found that using etymology can enhance the retention and recall of English idioms. Similar reports were made by Noroozi and Salehi (2013) and Haghshenas and Hashemian (2016).

The keyword method is the second linguistic mnemonic. Rodriguez and Sadowski (2000), Sagarra and Alba (2006), and Shapiro and Waters (2005) attest the efficiency of using the keyword method (KWM) as a cognitive strategy for learning new vocabulary. Zarei and Keysan (2016) reported a similar finding. As for idioms, Zarei and Ramezankhani (2018) found that the KWM was more fruitful than semantic organization and storytelling. Furthermore, Köksal and Çekiç (2014) reported the promising results of the combination of the keyword and context

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methods, although a study conducted by Wei (2015) revealed that the word-part strategy could lead to better results than the keyword method.

The third linguistic mnemonic device is translation. Many scholars such as Peters and Webb (2018), and Webb and Chang (2015) have already acknowledged that language learning can be positively affected by translation in EFL contexts. Structures, lexical resources, and idiomatic expressions can be learned utilizing translation (Liao, 2006). As for boosting the writing skill, Bagheri and Fazel (2011) found that university students in Iran acknowledged the facilitative role of translating from Persian. Carrol and Conklin (2017) used translated idioms in a story with Chinese-English participants. Their findings showed that, even in the case of advanced language learners, it is difficult to process an L1 idiom in an L2 context, implying that if learners have a similar idiom in their own language, it certainly helps them in learning it in another language.

Pictures are the first subtype of visual mnemonic devices used in this study. Mayer and Moreno (2003) posited that pictures facilitate better comprehension of texts. Eitel and Scheiter, (2015) reported that pictures clarify abstract concepts and facilitate the creation of mental representations. Pictorial instruction has grounds in Dual Coding Framework, which specifies verbal and visual channels for committing information into long-term memory (Welcome et al., 2011). Zarei and Salimi (2012) supported the effectiveness of pictures in vocabulary learning. Several studies have scrutinized the role of pictorial input in associating the meaning and form of idioms (Abbasi et al., 2015; Boers et al., 2009). Szczepaniak and Lew (2011) found that pictorial re-enforcement promoted the acquisition of both idiomatic meaning and linguistic forms of idioms. The promising effect of pictures on enhancing the recollection and retention of idioms can be accredited to the fact that pictures enable learners to make meaningful links between images and verbal information (Vasiljevic, 2015).

Mental imagery is the second visual technique used in this study. Nippold and Duthie (2003) provided evidence for the instructional benefits of using this method. Contrary to the previous technique, learners are stimulated to shape and form mental illustrations of concepts and/or vocabulary being instructed in this method. This visualization can considerably improve the learning outcomes (Boers et al., 2009)

The third visual mnemonic is animations and movie clips. Movie clips and

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animations can help learners understand complex ideas more easily. Learners can develop their communicative skills when they are exposed to the authentic language used in movies (Qiang et al., 2007). As regards idioms, Ghaderi and Afshinfar (2014) found that retention and intake of idioms would be enhanced via animated pictures.

Grouping is the first subcategory of verbal techniques in our study. Learners can put semantically-related idioms in special groups. This method can boost the interpretation and comprehension of idioms. Zarei and Adami (2013) studied the impact of employing semantic mapping, keeping a notebook, and thematic classification on vocabulary production and recognition. The findings indicated that the experimental groups outperformed the control group.

Stories can also be classified under verbal mnemonics. By providing meaningful contexts, stories play a key role in meaningful and enjoyable learning (Mayer & Moreno, 2003). Implementing idioms in texts equips learners with proper information to go beyond the surface meaning (Cain et al., 2005). Mohamadi Asl (2013) showed that stories could significantly affect the learning of idioms. Kalantari and Hashemian (2016) explored the impact of storytelling on the improvement of vocabulary knowledge and found a consequential increase in the students' knowledge of lexical resources in the experimental group.

Conceptual metaphor is the third verbal mnemonic device. Conceptual metaphor can prompt and promote the comprehension of idioms. A considerable number of idioms can be tracked down to a shared conceptual metaphor on the basis of *Conceptual Metaphor Theory*. As an example, one can refer to

'Anger representing a hot fluid' in idioms like 'to boil with anger' and 'she flipped her lid'.

Familiarizing students with conceptual metaphors can enhance students' comprehension, production, and retention of idioms (Boers, 2000). Samani and Hashemian (2012) acknowledge that conceptual metaphor provides a platform for learners to reflect their feelings and express their thoughts. Feng (2007) holds that using conceptual metaphor improves EFL learners' comprehension of idioms. Due to the pedagogical significance of conceptual metaphor, Chen and Lai (2013) recommend that EFL teachers employ this strategy in English classes.

From the above review, it can be noted that several studies have considered the effects of different mnemonic devices on learning L2 vocabulary and idioms. These studies have largely confirmed the facilitative role of mnemonics in comparison to

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either a control condition or other teaching techniques. However, few studies, if any, have compared the effectiveness of different mnemonic devices, especially on L2 idioms learning. This study is undertaken with the aim of addressing this gap.

3. Methodology

3.1. Participants

A total of 270 Iranian language learners comprised the participants of the study (117 males and 153 females). They were enrolled at Afarinesh IELTS House in Tehran, and were intermediate-level students according to their educational profiles at the institute. The age range of the participants was between 18-28 years old. The initial number was 350. The data from several participants were not included in data analysis for the reason that they failed to cooperate fully with the researchers, and a few participants were not present on some of the data collection sessions, and some were discarded during the homogenization process. The final participants were in nine groups of 30 participants each.

3.2. Instrumentation

Two pretests and posttests and the pre-selected teaching materials described below were utilized to collect data. First, the Oxford Placement Test (OPT) was used to get a homogenous group of participants. In this 50-item multiple-choice pretest, each student's linguistic ability was estimated based on their scores in different sections, including grammar, vocabulary, and reading comprehension. The students had a total of 75 minutes to respond to the items. The reliability of the test, estimated using the KR-21 formula, was .81.

To control for the effect of the participants' prior familiarity with idioms, another pretest (the idioms test) consisting of 140 items was given to all the participants. The idioms were selected from several sources, including *Dictionary of Idioms and Their Origin* (Flavell, 1992), *The American Heritage Dictionary of Idioms* (Ammer, 1997), and *Idioms in Use* (O'Dell & McCarthy, 2010). In each item, an idiom was incorporated in a sentence and bold-faced. The students were asked to write the corresponding Persian forms of the idioms. The time allocated for the test was 85 minutes. Idioms with which more than 10 percent of the participants were familiar

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were excluded from subsequent posttests. The reliability of this pretest was estimated using the KR-21 formula, and the result was .79. The content validity of the test could be taken for granted since the test items were the same as the instructed idioms. Still, the validity of the test was confirmed by a panel of experts.

To achieve the goal of the study, two posttests were also utilized. A multiple-choice test containing 30 items was used to investigate the effects of each type of mnemonic devices on the participants' recognition of idioms. The participants were expected to choose the right meaning of the bolded idioms or to choose the correct alternative to fill the blank in each statement. The reliability index of this test was estimated using the KR-21 formula to be 0.80. Since the items in this test were chosen from the instructed idioms, the content validity of the test could be taken for granted. Nonetheless, a panel of experts confirmed its validity.

To compare the effects of each category of mnemonic devices on the participants' recall of idioms, at the end of the treatment, a 30-item test was used in which students were asked to fill in the blanks using one of the target idioms. A panel of experts attested the content validity of this test prior to its administration. The estimated reliability was .78.

3.3. Procedure

To reach the main goal of the study, the procedure was outlined based on the following stages. First, a sample of 350 Iranian students who were preparing themselves for IELTS was selected based on convenience sampling. After the administration of OPT, data from those participants whose scores fell more than a standard deviation away from the mean were not included in any analysis. After homogenization and participant attrition, there were 270 participants left in nine groups.

After using the idioms pretest to ensure that the students were not familiar with the selected idioms, the treatments were given to different groups. Three groups received instruction through verbal mnemonics, three groups through visual mnemonics and three groups through linguistic mnemonic devices. The experiment lasted for eight sessions. Students were taught the pre-selected idioms in each session, based on the mnemonic devices described below. Each session lasted between 50 to 60 minutes.

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Three groups were instructed through linguistic mnemonic devices. The first group received instruction through etymological elaboration. First, the instructor wrote the target idioms on the board one by one and asked the students to guess their meanings. Second, she handed out hard copies of the origins of the target idioms. Finally, she talked about the meaning and etymology of each idiom and provided examples for them in order to contextualize the target idioms. The students were asked to make sentences with each idiom to make sure that they had grasped its meaning. They were also encouraged to spot check and correct their classmates' mistakes. The instructor/researcher provided the final feedback after peer-correction.

The second group received instruction through the keyword method. The keywords were prepared in such a way to have some acoustic resemblance to one of the parts of idioms and expressions. There was a brief description of the keyword method. Then, the instructor presented the target idioms through the keyword method and explained their meanings in the target language.

The participants in the third group were instructed using L1 translation. In this group, the instructor put the idioms on the board using an overhead projector and asked the students to guess their meanings based on the constituents. She provided their corresponding L1 translations afterwards. Learners were then motivated to put the target idioms in meaningful sentences in order to activate what they had learned in the class. They received feedback after reading their sentences.

Three groups were instructed through visual mnemonic devices. The first group received pictorial treatment. In this group, the target idioms were written on the board by the instructor and the students were asked to conjecture the meanings of idioms. Then, images of idioms were displayed using the overhead projector, followed by elicitation of learners' responses about the possible meanings of idioms. Eventually, the instructor elaborated on the meaning of idioms, one by one, in the target language using explicit explanation. Then, the instructor used some examples to clarify the meaning of the target idioms. Students were encouraged to use the target idioms in examples/sentences to ensure that they had understood their meanings. Their sentences were corrected by their peers, and the instructor provided the students with the final feedback and put the best sentences on the board.

Group 2 received instruction through mental imagery. For this group, the pre-

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determined target idioms for a specific session were written on the board, and the students were asked to visualize the circumstances the teacher was about to describe. The target idioms were used in pre-selected situations described by the instructor, and the students were encouraged to have a mental representation of them. The participants were requested to estimate which idioms were required in that specific context as the instructor/researcher unfolded the setting. In the next step, the students were prompted to put the instructed idioms in their own sentences. A number of them read their sentences aloud, and received feedback from their classmates and the instructor.

Movie clips and animations were used as the instructional techniques for Group 3. The students watched short video clips and animations containing the already-selected target idioms. The students had the opportunity to watch the video clips two or three times. Some questions about the dialogues in the animations/movie clips were asked by the instructor. Finally, the instructor shed light on the meaning of the idiom(s) used in the clips through explicit elaboration. The students' interest in idioms was stimulated by encouraging them to use the target idioms in sentences immediately after the instruction. The participants were also prompted to read their sentences aloud, and they received feedback from the instructor and their peers.

Three types of verbal mnemonic devices were used in the last three groups. Group A received instruction through grouping. The target idioms were grouped based on the semantic organization. For example, idioms related to happiness, idioms related to sadness, and idioms related to anger. The instructor put the pre-selected idioms on the board and encouraged the participants to give their meanings. She mentioned the name of the group and the rationale behind putting those expressions in a specific group. The instructor clarified the meanings of idioms by using them in examples. The students used the target idioms in sentences/examples. They also received feedback from their classmates and the instructor. The instructor put the most appropriate examples on the board.

Group B received instruction through stories. This treatment consisted of three stages: pre-story, while-story, and post-story stages. The figurative meanings of the idioms were presented to the students in the pre-story stage. In the while-story stage, the narratives chosen in advance were narrated to the participants accompanied by gesticulation to help them grasp the meaning of the story. In the post-story stage, the participants read the narratives and stories and provided oral responses to the instructor's questions. They were told to summarize the stories as a

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part of their homework assignment.

Conceptual metaphor was used as the instruction method for Group C. Initially, learners' metaphoric awareness was raised by explaining the notion of metaphor and conceptual metaphor and using some examples. In the next step, hand-outs containing target idioms were distributed among the students, and their meanings were explained using conceptual metaphor. The students did a completion task after the instructor's explanations to show that they had grasped the meanings of the newly-learned idioms correctly. The students then used the target idioms in examples/sentences.

After the treatment, the posttests were administered to all the participants. The collected data were then fed into SPSS, and prepared for statistical analysis.

3.4. Data Analysis

The data collected from posttests were tabulated for analysis. Then, a one-way multivariate analysis of variance (MANOVA) was run to check the comparative effects of different mnemonic devices. The underlying assumptions of MANOVA were checked before using it.

3.5. Design of the Study

This study employed a pretest-posttest comparison group design. Despite the absence of a control group, each experimental group acted as a comparison group for others. Although the assignment of different groups of participants to each of the treatment conditions was on a completely random basis, the initial selection of the participants was not. Therefore, the design of the study was quasi-experimental.

4. Results

To study the effects of linguistic, visual, and verbal mnemonics on learners' recognition and recall of idioms, the posttest scores were compared using the MANOVA procedure. Before running MANOVA, its assumptions were checked. To find multivariate outliers, Mahalanobis distance was obtained as part of the residuals statistics generated from the regression procedure. The maximum value

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for Mahalanobis distance was 8.848, which was compared against a critical chi-square value. There were two dependent factors in this study (*df* = 2). The critical value was 13.82 (α = .001). Since the Mahalanobis value was less than the critical value, the assumption of multivariate normality was met, and there were no multivariate outliers. The results of the test for checking equality of variances showed that this assumption was also met (Levene's F for recognition= .827; *p* = .439 > .05; Levene's F for recall= 1.462; *p* = .234 > .05). The assumption of equality of covariance matrices was checked using Box's test (*p* = .03 > .001). Linearity between each pair of dependent variables was also assessed using scatterplots. No evidence of non-linearity was observed in scatterplots. The correlation table was examined to check the multicollinearity assumption. The dependent variables were only moderately correlated (*r* = .3). Kolmogorov-Smirnov statistic was used to check univariate normality. Other requirements, such as having interval data and independence of observations were also checked at the outset of the study.

To examine the possible differences among the groups, the Wilks' Lambda value and its corresponding p value were checked based on the Multivariate results (Table 1), which showed statistically significant differences between the effects of our mnemonic devices (Wilks' Lambda = .900, p < .0005).

Table 1

Multivariate Tests Results for the Effect of Menemonics on Idiom Learning

Effect		Value	F	Sig.	Partial Eta Squared
mnemonic	Pillai's Trace	.101	7.083	.000	.050
	Wilks' Lambda	.900	7.201[b]	.000	.051
	Hotelling's Trace	.110	7.318	.000	.052

The results of tests of between-subjects effects are given in Table 2.

Table 2

Results of Tests of Between-Subjects Effects for Idiom Learning

Source	Dependent Variable	F	Sig.	Partial Eta Squared
Mnemonic	Recognition	1.439	.239	.011
	Recall	13.683	.000	.093

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For reducing the risk of type 1 error, a Bonferroni adjustment was used to find a new alpha level. Having two dependent variables, .05 was divided by 2, resulting in .025 as the new alpha level. In our study, the significant difference between the effects of mnemonic techniques was on the 'recall' posttest scores with the effect size of .093. A one-way ANOVA was used as a follow-up step. The descriptive statistics showed that the linguistic mnemonic group got the highest mean (21.57), followed by the verbal mnemonic (21.54). The visual mnemonic group achieved the lowest mean (19.88). To see if the observed differences were significant, the ANOVA was used. The result of Levene's test of equality of variances showed that this underlying requirement was met (Levene Statistic = 1.462; p = .234 > .05). The ANOVA output (Table 3) revealed that the differences among the groups were statistically significant ($F_{(2, 267)}$ = 13.683, p < .0005).

Table 3
ANOVA Results for Idiom Recall

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	168.919	2	84.459	13.683	.000
Within Groups	1648.078	267	6.173		
Total	1816.996	269		ω^2= .530	

The effect size (ω^2= .530) indicated that 53 percent of the variability can be ascribed to the treatment used in the study. The Tukey Test was used as a post hoc comparison to locate the significant differences. The result is summarized in Table 4.

Table 4
Multiple Comparisons of Means for Idiom Recall

(I) group	(J) group	Mean Difference (I-J)	Sig.
1 verbal	2 visual	1.667*	.000
	3 linguistic	-.022	.998
2 linguistic	3 visual	1.689*	.000

The significance levels in Table 4 suggest that both linguistic and verbal mnemonics are significantly more effective than visual mnemonics. However, although linguistic mnemonics are slightly better than verbal mnemonics, the

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difference between them is not statistically significant.

5. Discussion

Learning idioms is a cognitively demanding endeavor for many EFL learners. As a consequence, methodic and careful attention should be devoted to them in educational programs. According to Worthen and Hunt (2011), mnemonic devices promote encoding of information through making elaborations, establishing associations, and stimulating imagination. Therefore, mnemonic instruction is of immense significance in the storage, recognition, and recall of idioms. According to the findings of this study, linguistic, visual, and verbal techniques were differentially effective on idioms recall. However, the differences among them regarding idioms recognition were not statistically significant. Mnemonics stimulate and activate the dual coding system by activating direct and indirect imagery, thereby enhancing storage, comprehension, and retrieval of target idioms. Verbal and linguistic mnemonic devices, as indirect imagery tools, facilitate idioms recognition and recall by stimulating the process of mental imagery. In other words, by being exposed to verbal and linguistic input, learners can be assisted to develop and shape mental representations and extrapolations. Put differently, the association of mental images with verbal elaborations provided by verbal and linguistic mnemonics prompts the dual coding framework and facilitates semantic processing and recognition of idioms. On the other hand, visual representations activate direct imagery through triggering the perceptual imagery (Vasiljevic, 2015). Imageability plays a fundamental role in the semantic processing of idioms. The image element as the first and the additional naming as the second factor can be regarded as the main characteristics for figurative language (Dobrovol'skij & Piirainen, 2005). The image element bridges the so-called cognitive gap between the linguistic form and the implicit idiomatic meaning of an expression. By enabling learners to form mental images, verbal and linguistic devices make a significant contribution to the image component of figurative competence. Due to the generation of these mental images, learners can find meaningful connections between the form and meaning of idioms to learn and recall idioms more easily (Boers & Webb, 2015). Despite undergoing two separate pathways for processing, visual and verbal input derived from linguistic and verbal mnemonics can come to play collaboratively as the learner tries to store, recall, and retrieve information. Consequently, by taking advantage of this complementary network, verbal and linguistic mnemonics boost

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learners' recognition and recall of target idioms. Evoking mental representations as a result of linguistic and verbal elucidation is also in line with the cognitive-linguistic paradigm as cognitive linguistics presupposes that meaning is embodied and that the meaning of an idiom is not utterly random (Boers, 2013). In this sense, linguistic and verbal mnemonic devices facilitate the combination of verbal and non-verbal sources of input, diminish the cognitive load, and enhance cognitive processing (Shen, 2010; Welcome et al., 2011). This justifies the outperformance of verbal and linguistic mnemonics compared with visual mnemonics. In case of visual input, learners merely have access to the visual pathway. Compared to verbal and linguistic mnemonics in which both verbal and visual channels are made use of, this can be regarded as a potential pitfall. This observation is also in line with the level of processing theory put forward by Craik and Lockhart (1972). Based on this framework, the mental imagery created through exposure to verbal and linguistic materials can, in turn, serve as an additional element of pictorial enrichment and embellish the input even further. As a consequence, the accompanied mental representations enhance the depth of cognitive processing of idioms, and facilitate interpretation, comprehension, and recall of the actual meaning and linguistic form of English idioms. Besides, verbal and linguistic input provides contextualized exposure to idioms. The benefit of being exposed to a purposeful context is more prominent when it comes to verbal strategies. Being exposed to contextualized meaningful input is one of the cornerstones of learning a foreign language. Liontas (2003) holds that context boosts the cognitive processing behind decoding, perception, and retrieval of idioms. From the empirical perspective, the success of linguistic mnemonics in assisting learners in the process of idioms recognition and learning is compatible with some studies (Bagheri & Fazel, 2010; Boers et al., 2007; Zarei & Ramezankhani, 2018). These findings are also partially in line with some previous studies focusing on the acquisition of new words using linguistic strategies (Köksal & Çekiç, 2014). The efficacy of the instruction based on verbal mnemonics is corroborated by empirical evidence including studies conducted by Boers (2000), Chen and Lai (2011), Vasiljevic (2011), as well as Zarei and Adami (2013). As regards verbal mnemonics, these findings are in agreement with those of Boers (2000), Vasiljevic (2011), Chen and Lai (2013), and Mohamadi Asl (2013). As opposed to blind memorization, verbal and linguistic mnemonics reduce the cognitive load involved in the process of recall and production of idioms. In this way, mnemonics contribute significantly to meaningful learning, and learners can

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make milestone developments in their idiomatic as well as pragmatic competence.

Despite being equally successful in terms of idioms recognition based on statistical analyses, visual mnemonics came in the third place in terms of idioms recall. This can be attributed to the existence of one cognitive route, namely the visual pathway, for semantic processing and analysis of the information. This finding is to some extent in line with the result of Boers et al. (2008) and Boers et al. (2009). They observed that adding visual mnemonics had little effect on students' recollection of the lexical configuration of idioms. Students in their studies often had an inclination to write a more frequently-used synonym instead of the target word in the fill-in-the-blanks test, indicating the fact that the learners had a proclivity to remember the visuals and the concepts that they depicted, but still failed to retain the exact words. Despite being a practical supplement to verbal clarifications and improving learners' acquisition of the meanings of idioms, Boers et al. (2008) unraveled the distracting nature of visual support. Likewise, Boers et al. (2009) warned against the deleterious effects of visual input, especially in case of retention of complex words with which learners are not quite familiar. They found that using visual support might be even misleading and decrease the acquisition of expressions with complicated words. This common observation might be attributed to the inability of visual strategies to create strong traces in memory. It is noteworthy that this study had differences with these two studies. Visual mnemonics were used as one of the main instructional treatments in the current study while Boers et al. (2008) deployed these techniques in feedback sessions. Additionally, Boers et al. (2009) used visual devices such as drawings or pictures for half of the idioms, and as a supplementary tool along with the verbal explanations of the etymology of idiomatic expressions. This did not happen in our study. Although all three visual techniques (pictures, clips, and mental imagery) were accompanied by verbal definitions of idioms, it seems that these techniques were not able to leave strong traces in the learners' memory. The relatively weak results of visual input and the better performance of linguistic mnemonics in terms of idioms recall seem to be in contrast with Szczepaniak and Lew's (2011) claim about the misleading effect of linguistic mnemonics, particularly etymological elaboration. This can be attributed to the differences in the design of these studies.

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6. Conclusion and Implications

The findings of this study indicate that linguistic and verbal mnemonic devices are effective in the process of idioms recall. According to the premises of dual coding, linguistic and verbal strategies help learners to scratch beneath the surface of idioms and transcend the literal translation through stimulating both verbal and visual pathways as two seemingly disparate routes of cognitive processing. In this way, they solidify their figurative feature; make idioms more penetrable in learners' minds, and prompt idioms recall. Etymology in particular, as one of the subcategories of linguistic mnemonics, might account for our findings. Tracing the history of idioms is one of the main functions of etymological elaboration. By providing additional supplementary levels of semantic processing, etymology strengthens the depth of cognitive processing. Using historical traces gives learners the capacity to fabricate pertinent mental images of idioms, and make idioms embodiment possible. With regard to verbal mnemonics, embedding idioms in rich contexts consolidates the generation of meaningful semantic networks in learners' minds, thereby simplifying the process of idioms recollection and production. Conceptual metaphor along with stories can be specifically beneficial in enhancing idioms recall. Using conceptual metaphor provides learners with the opportunity to establish conceptual frameworks by putting idioms in meaningful illustrations in their minds, thereby using verbal and visual coding systems to recall idioms. By the same token, stories have a significant role in creating meaningful and strong cognitive links between the linguistic and idiomatic meanings of idioms by putting them in appropriate contexts. Stories provide contextualized exposure to idioms in meaningful contexts, reduce students' cognitive load by enabling them in the process of forming images in their minds and pave the way for idioms recollection and production.

The findings also indicate that linguistic, visual, and verbal mnemonics are roughly equally beneficial in unraveling the figurative meaning and idioms recognition. Based on this finding, teachers and curriculum developers can take an eclectic approach, and by taking into account a multitude of cognitive learning styles, employ each or a combination of linguistic, visual, and verbal mnemonics in order to address the thorny issue of idioms comprehension among learners with specific learning preferences and individual styles. Depending on their learning style, learners can benefit from either one particular mnemonic strategy or even a

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blend of mnemonic devices (linguistic, verbal, and visual) to make idioms more comprehensible. These mnemonics accelerate the cognitive processing involved in idioms interpretation and recognition by making connections between the literal and non-literal meanings of idioms. Based on dual coding theory, verbal explanations are accompanied by visualization. As a result, linguistic, verbal, as well as visual mnemonics reinforce idioms comprehension by activating the dual coding system through verbal and visual routes.

Despite the advantages of visual mnemonics, there are some potential drawbacks as well. In some cases, based on our findings, visual input can distract learners from the main concepts, thereby being an impediment to the process of learning and recall. Besides, even though leaners may be able to grasp the figurative meaning of idioms and excel at recognition tasks, they might still have difficulties restoring the specific lexical elements that form and shape a given idiom. In other words, there is no guarantee that leaners recall the exact words in idioms when visual input is used in instructional treatments and, on some occasions, they use a synonymous term for a given word.

It should be acknowledged that this study had certain limitations due to the constraints imposed by the context and the treatment time. With regard to scope, intermediate-level Iranian EFL learners participated in the present study. Besides, just linguistic, verbal, and visual mnemonics were explored in this study. These points imply that further studies are needed before valid generalizations can be made.

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