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## Effects of Learner-Generated Illustrations on Comprehension and Recall of L2 Idioms

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**Abstract:** Research in cognitive semantics has shown that the dual coding of input (i.e. presentation of both verbal and visual information) promotes the formation of memory traces and consequently, the retention of information. The results of earlier studies that examined the effects of pictorial elucidation on idiom learning suggest that pictures may facilitate comprehension but contribute little to learners' retention of linguistic form and may even interfere with it. This paper will review the results of two studies that were conducted to examine whether learner-generated illustrations could serve as a way of integrating images and verbal descriptions so that both the comprehension and the production of idiomatic language are facilitated. The first study compared the effect of instruction through verbal definitions only with the condition where verbal explanations were followed by learner-generated pictures. The second study compared the retention of idiom meaning and form when pictures were provided by the instructor and when learners had to draw their own images based on the verbal input. The results of the two studies suggest that a combination of visual and verbal clues has a limited effect on retention of the meaning of idiomatic phrases but a positive effect on the recall of their linguistic form.

**Key words:** idiom teaching, dual-coding theory, learner-generated illustrations

**Apstrakt:** Istraživanja u oblasti kognitivne lingvistike su pokazala da prezentacija informacije u vizualnom i verbalnom modalitetu ima pozitivan efekat na njenu memorizaciju. Ranije studije o efektu slike na interpretaciju idiomatskog jezika su pokazale da vizualni materijal pomaže razumevanju idioma, ali ima mali i ponekad čak i negativan efekat na memorizaciju forme idiomatskih izraza. Ovaj članak sumira rezultate dva eksperimenta koja predstavljaju pokušaj da se vizulani materijal integriše u metodologiju sa pozitivnim efektom i na interpretaciju i na upotrebu idiomatskog jezika. U prvom eksperimentu instrukcija idioma kroz definicije je uporodjena sa instrukcijom u kojoj su definicije bile praćene studentskim ilustracijama tih izraza. U drugom eksperimentu efekat ilustracija odabranih od strane instruktora je upoređen sa studentskim ilustracijama idioma. Rezultati sugerišu da kombinacija vizualnog i verbalnog materijala ima mali efekat na memorizaciju znacenja idiomatskih izraza, ali doprinosi memorizaciji njihove jezičke forme.

**Ključne reči:** metodologija predavanja idiomatskog jezika, teorija dvojnog kodiranja; vizualni prikaz teksta od strane studenata

## 1 Background

Traditionally, semantic opacity, indivisibility of the phrases and their limited substitutability were considered to be intrinsic characteristics of idiomatic language (Carter, 1987). Idiomatic expressions were seen as isolated language units, mutually unrelated and independent of any conceptual system (Kövecses & Szabó, 1996). Consequently, it was assumed that the only way they could be approached was by treating them as single lexical units that must be memorised (Boers, Eyckmans & Stengers, 2007).

However, research in cognitive semantics that took place over the last three decades has offered a new perspective on the nature of idiomatic language. There is a growing body of evidence that suggests that a large number of idioms may be semantically motivated, and that idiomatic language can be interpreted according to general cognitive principles that include ontological and epistemic mappings (Lakoff & Johnson, 1980; Gibbs, 1990; Kövecses & Szabó, 1996; Boers, 2000).

The cognitive framework has opened new possibilities for the teaching of idiomatic language. Cognitive mechanisms that link literal and figurative meanings of idiomatic phrases, such as metaphors and metonyms, have been explored on the assumption that they can help learners recognise semantic motivation of the figurative language, and subsequently facilitate their retention and recall. One subject of growing interest in recent years has been the role that mental imagery may play in the comprehension and production of idiomatic language.

In 1971 Paivio proposed a 'dual-coding theory' arguing that there are two cognitive subsystems in the human brain: visual and verbal. They exist independently, which means that visual and verbal information are processed along two different channels. However, the two memory channels are interconnected, and therefore information that is presented through both visual and verbal codes is likely to be stored and retrieved more easily than information presented through one modality only.

A number of studies have looked for ways of accommodating the principles of dual-coding theory in the teaching of idiomatic language. As the meaning of the idioms can often be derived from the original, literal usage of the phrases (Boers, Demecheleer & Eyckmans, 2004), it was expected that pictorial support would facilitate the acquisition of idiomatic language. However, experimental research has produced mixed results. Boers, Lindstromberg, Littlemore, Stengers and Eyckmans (2008) conducted a number of controlled experiments that examined the mnemonic effectiveness of pictorial elucidation (a process of stimulating associative links between language items and images through the use of schematic drawings or pictures). In the experiment that specifically focused on idiom learning they found that using pictures and verbal explanations had a positive effect on the retention of idiom meaning in L2 but a limited, and sometimes even negative effect on the retention of idiom form, especially for learners who were high-imagers. Similar results were obtained in a study by Boers, Piquer-Píriz, Stengers and Eyckman (2009). Half of the target idioms were presented with verbal definitions only, while for the other half verbal definitions were accompanied with photographs or drawings that depicted the literal meaning of the phrases. The learners' recollection of the idioms was measured by a gap-fill test. The data obtained provided little evidence that pictorial support enhanced the retention of linguistic form. Pictures were even found to have a detrimental effect on the recollection of the more difficult words, especially for students who had a predisposition for processing vocabulary through imagery.

However, the results of the study by Szczepaniak and Lew (2011) indicated a facilitative effect of imagery on the retention of idiomatic language. The study compared the effect of four different formats of presentation of idiomatic language:

- 1) definition of idiomatic meaning + example sentence;
- 2) definition of idiomatic meaning + example + etymological note;
- 3) definition of idiomatic meaning + example + picture;
- 4) definition of idiomatic meaning + example + picture + etymological note.

After the idiom treatment the students were asked to write a full form of the target idioms based on one lexical component and to then select the best paraphrase of the

idiom meaning out of four options. The same format was used on the delayed test given a week after the treatment. The results of the study suggested that the presence of imagery facilitated retention of both idiom meaning and form. The effect of pictorial enhancement was significantly stronger than the effect of etymological notes. With regard to retention of meaning, the results were found to be statistically significant on the immediate retention test only, while with regard to idiomatic form a significant positive effect was observed on both the immediate and the delayed test. These findings suggest that pictures can stimulate both semantic and structural elaboration.

In short, the currently available data do not provide conclusive evidence with regard to the extent that pictorial support may facilitate the retention of idiomatic language. The present paper will report the results of two experiments conducted to further exploit the possible applications of pictorials in teaching idiomatic language in an SLA context. The studies examined whether substituting teacher-supplement pictures with student-generated illustrations could neutralise the observed negative effect that the use of pictorials had on the retention of the form of idiomatic expressions. The assumption was that asking learners to illustrate the literal senses of the idiomatic phrases would not only enhance imaging and the concreteness of their figurative meanings, but also focus learners' attention on the constituent elements of the target phrases.

## **2 Experiment One**

### **2.1. Study purpose and hypotheses**

The study examined acquisition of the meaning and the form of L2 idioms when the treatment consisted of verbal definitions only or when verbal explanations were followed by learner-generated illustrations of the target phrases. As drawing required that learners externally articulated the mental images that they generated in response to verbal input, it was expected that illustrations would promote the dual-coding of the input, and in turn enhance the recall of the target phrases.

### **2.2 Participants**

The experiment involved one group of 48 first-year Japanese university students with an intermediate level of English proficiency (TOEIC scores between 410 and 530).

### 2.3 Method and procedures

The study compared the acquisition of thirty L2 idioms, 15 of which were taught through verbal definitions only and 15 where presentation of verbal input was followed by learner-generated illustrations of the target phrases.

During the idiom selection process, attention was paid to the imageability of the target phrases. Only expressions that consisted of concrete words were included in the study. An effort was also made to ensure that the idioms that were taught in the two conditions were similar in terms of phrase length and general frequency of the constituent words. A complete list of the target phrases can be found in Appendix 1.

The idioms were taught five at a time over six sessions. The sessions lasted approximately 35 minutes in the definition-only condition, and about 50 minutes when students were asked to generate the drawings. Each session consisted of the following stages:

First, the students' level of familiarity with the target phrases and their constituent words was established. In both conditions at the beginning of each session the students were presented with a list of five idioms and asked to explain the meaning of the phrases in either English or Japanese. They were also instructed to circle any unknown words, and they were given an opportunity to clarify the meaning of these words with the teacher. This ensured that the literal meaning of each lexical item was known to the learners before the discussion shifted to their figurative usage.

In the second step, the learners were asked to read the example sentences that included the target idioms, infer their meanings and then write the phrases next to their definitions, which were also provided in the L2. At this stage the focus

was primarily on meaning, although the learners did have to pay some attention to the form in order to write the target phrases correctly.

For the idioms for which the treatments consisted of verbal definitions only, once the meaning of the target idioms had been confirmed the students were asked to complete two gap-fill tasks. The first one served as a receptive knowledge test: the learners were asked to complete the sentences by selecting a suitable idiom from the list. All idioms were presented in their neutral (dictionary) forms (e.g., *hold all the aces*, *play one's cards right*) and therefore in order to complete the sentences correctly the students sometimes had to make modifications to the verb tense and the form of possessive pronouns. The second gap-fill task served as a test of productive idiom knowledge. The target idioms were not provided, and therefore in order to complete the sentences, the students had to recall both their meaning and form.

In the dual-coding condition, after the second stage where learners read the example sentences and wrote the target phrases next to their corresponding definitions, an extra step was introduced where the students were asked to illustrate the literal meaning of the target idioms and then to write the phrases below the corresponding pictures. The steps that followed were the same as in the definition-only condition: first, the students had to complete a gap-fill task with the target idioms listed and then do another gap-fill activity for which they had to recall both the meaning and form of the target expressions.

One week after the idiom treatment the learners were given a delayed post-test where they were provided with the definitions and asked to write the idioms that matched their meanings.

*Scoring.* In the receptive knowledge test, where idiom phrases were provided, points were given if the students completed the sentence with the correct idiom. As the purpose of the test was to measure students' understanding of idiom meaning, no points were deducted for inflectional or spelling errors.

In the productive knowledge test, the students were only given the points when all components of the target phrases were encoded correctly. Spelling mistakes or omissions of an article or a preposition would result in no points being scored. Students were not penalised for verb tense errors as they were treated as grammatical errors, rather than lexical.

## 2.4 Results

### 2.4.1 Students' familiarity with the idiomatic language prior to the vocabulary treatment

None of the 48 participants in the study indicated familiarity with any of the target idioms. However, literal meanings of most of the constituent words did not seem to present a problem for the students. The only items that had to be explained in class were *contention*, *stab*, *cart*, *worms*, *palm*, *burner* and *grapevine*.

### 2.4.2 Immediate receptive knowledge test

In the receptive knowledge tests the students recalled on average 55% of the target idioms in the dual-coding condition and about 63% of the phrases in the verbal coding condition. The results of the descriptive analysis are presented in Table 2.1.

**Table 2.1** Descriptive statistics of the receptive idiom knowledge test (N=48)

Condition	Mean	SD
Dual coding condition	8.21	3.20
Verbal coding condition	9.44	3.48

The results of the paired sample t-test indicated that the differences between the two conditions were statistically significant [ $t(47)=2.29$ ,  $p<.05$ ]. The eta square statistic was (.10), which is considered a moderately large effect size.

### 2.4.3. Immediate productive knowledge tests

In both conditions, the overall scores of the productive knowledge test were lower than on the test of receptive knowledge, which can be attributed to the more

difficult nature of the task and the strict grading criteria applied. The mean values obtained were slightly higher in the dual-coding condition where the students mastered on average about 50% of the target expressions. The results of the test are presented in Table 2.2.

**Table 2.2** Descriptive statistics of the productive idiom knowledge test (N=48)

Condition	Mean	SD
Dual coding condition	7.58	2.80
Verbal coding condition	7.38	3.39

The difference between the two conditions was not found to be statistically significant [ $t(47)=.49$ ,  $p>.05$ ].

#### 2.4.4. Delayed post-test results

An analysis of the delayed post-test results indicated higher recall rates in the dual-coding condition. The students who generated drawings for the verbal input were able to successfully recall on average 81% of the target phrases; the students who were exposed to the verbal input only had an average recall rate of 65.6%. The results of the test are presented in the table below.

**Table 2.3** Descriptive statistics of the delayed post-test (N=48)

Condition	Mean	SD
Dual coding condition	12.15	2.95
Verbal coding condition	9.85	3.66

A paired sample t-test analysis showed that difference between the two conditions was highly statistically significant [ $t(47)=4.65$ ,  $p<.0001$ ]. The eta squared statistic (0.31) indicated a large effect size.

## 2.5 Summary



The results of the study suggest that learner-generated drawings can facilitate the acquisition of linguistic forms of idiomatic expressions.

### **3 Experiment Two**

#### **3.1. Study purpose and hypotheses**

The second experiment was designed to further explore the possible applications of student-generated drawings in the teaching of idiomatic language. The study examined L2 idiom acquisition under two conditions: a) pictorial support provided by the instructor; b) pictures generated by the learners themselves. Student-generated drawings were expected to facilitate learning more than the pictorials provided by the teacher on the grounds that the requirement for external visual representation of the target phrases would prompt learners to pay attention to their lexical make-up.

#### **3.2 Participants**

The experiment involved one group of 53 first-year Japanese university students. The students were non-English majors and their level of English was intermediate (TOEIC scores between 430 and 545).

#### **3.3. Method and procedures**

The study compared the acquisition of thirty L2 idioms, 15 of which were taught through pictures provided by the teachers and 15 for which learners themselves had to provide pictorial support. Like in the previous study an effort was made to ensure that the target idioms were composed of concrete words, and that the length of the phrases and distribution of the constituent words across the frequency levels were similar in both conditions. A complete list of the target phrases can be found in Appendix 2.

The idioms were taught five at a time during six sessions. The sessions lasted for 40 minutes when visual support was provided by the teacher and 50 minutes when students were asked to generate the drawings. The procedures were similar to those followed in Experiment One. First, the learners' level of familiarity with the target

phrases was established and the literal meaning of unfamiliar constituent words was explained. Next, the learners were presented with the example sentences and asked to infer the idiom meaning from the context and write the target phrases next to their corresponding definitions. After the meaning of the target idioms was confirmed, the students moved onto working with pictorial support. For the idioms where the pictures were provided by the teacher, illustrations from Collins Cobuild Idioms Workbook (Goodale, 1995) were used. The pictures represented the literal meanings of the target phrases. For example, for the idiom *'to hear something through the grapevine'* the following image was provided:



(Goodale, 1995:12)

The students were asked to write the target idioms below the pictures, which was expected to strengthen the connections between visual and verbal representations. For the idioms where the learners were asked to provide pictorial support, a sheet with five rectangular boxes was handed out. The students illustrated the target phrases and wrote the idioms below their corresponding pictures. Immediate post-tests had the same formats as those described in Experiment 1. In order to measure their receptive knowledge of the target phrases the students were asked to complete sentences by selecting a suitable idiom from the list. After that the students had to complete another set of five sentences but this time the target idioms were not provided. In order to complete the task the students had to recall both the meaning and the form of the target idioms (productive knowledge test). After the students' responses were collected they were provided with the model answers and encouraged to ask any questions they had about the meaning or usage of the target phrases. In the following week, the learners were given a post-test. For the idioms for which pictorial support was provided by the instructor the learners were presented with the same illustrations that they worked with in the previous week. They were asked to write the target idioms below the picture and then to match the picture number with the corresponding definition. In this way their retention of both the form

and the meaning of the target expressions could be tested. For the idioms where visual support came from the learners themselves, the copies of illustrations that they had made in the previous week from which the target idioms were blanked out were presented. The learners were asked to write the idioms below the pictures and to match the pictures with the corresponding definitions. The scoring procedures were the same as those followed in Experiment 1. In order to score a point the students had to correctly encode all components of the target phrases. Only errors that concerned word inflections were tolerated as they were treated as grammatical errors rather than lexical errors.

### 3.4 Results

#### 3.4.1 *Students' familiarity with the idiomatic language prior to the vocabulary treatment*

None of the 53 participants in the study indicated familiarity with any of the target idioms. Most of the constituent words of the target phrases were familiar, but the following items had to be explained in class: *grapevine*, *axe*, *grind*, *cart*, *horns*, *haystack*, *palm* and *contention*.

#### 3.4.2 *Students' performance on receptive knowledge tests*

The students were able to successfully recall the meaning of 55% of the target expressions in the learner-generated drawing condition and 60% of the phrases for which pictorial support was provided by the instructor. The results of the test are presented in Table 3.1.

**TABLE 3.1**

**Descriptive Statistics of the Receptive Idiom Knowledge Test (N=53)**

Condition	Mean	SD
Illustrations provided by the instructor	9.01	2.85
Illustrations generated by the learners	8.28	3.28

A paired sample t-test was conducted to examine the statistical significance of differences in the mean scores. The results of the analysis did not indicate that the differences between the two conditions were statistically significant [ $t(52)=1.38$ ,  $p>.05$ ].

### 3.4.3 Students' performance on productive knowledge tests

In both conditions the average scores on the productive knowledge test were lower than on the tests of receptive knowledge, which can be attributed to more difficult nature of the task and the strict grading criteria applied. However, this time the obtained mean values were slightly higher in the learner-generated drawing condition where the students mastered on average 7.3 out of 15 target expressions (49%). When illustrations were provided by the instructor the average rate of recall was 46%. The results of the descriptive analysis are presented in Table 3.2.

**TABLE 3.2**

**Descriptive Statistics of the Productive Idiom Knowledge Test (N=53)**

Condition	Mean	SD
Illustrations provided by the instructor	6.88	3.85
Illustrations generated by the learners	7.30	3.41

The difference between the two conditions was not found to be statistically significant [ $t(52)=-.90, p>.05$ ].

### 3.4.4 Post-test results

In both conditions students' scores on the delayed post-tests were higher than the scores on the immediate post-tests suggesting a positive effect of the feedback provided after the initial testing.

*Post-tests of receptive idiom knowledge.* The post-test scores suggested a better recall of idiom meaning when pictorial support is generated by the learners themselves. The students correctly identified the meaning of 84% of the target idioms that they provided the illustrations for and 76% of the phrases for which the visual support was provided by the teachers. The mean values and standard deviations are provided in the table below.

**TABLE 3.3**

**Descriptive Statistics of the Receptive Post-Tests (N=53)**

Condition	Mean	SD
Illustrations provided by the instructor	11.36	3.03
Illustrations generated by the learners	12.62	2.83

A paired-sample t-test analysis showed that the difference between the two conditions was statistically significant at .05 level [ $t(52)=2.63$ ,  $p<.05$ ].

*Post-tests of productive idiom knowledge.* The results of the delayed post-tests suggest a better of recall of linguistic forms when visual support is generated by provided by the students; the average number of correctly recalled idiom forms was almost 25% higher when the students drew the pictures themselves. Descriptive statistics of the productive post-test are presented in the table below.

**TABLE 3. 4****Descriptive Statistics of the Productive Post-Tests (N=53)**

Condition	Mean	SD
Illustrations provided by the instructor	8.56	3.42
Illustrations generated by the learners	12.26	3.96

The difference between the two mean values was found to be statistically significant [ $t(52)=-10.293$   $p<.05$ ].

**3.5 Summary**

Better student performance on the immediate test of productive knowledge and higher scores on the delayed post-tests of both receptive and productive idiom knowledge suggest that learner-generated drawings may be a more effective way of promoting acquisition of L2 idiomatic language than through pictorials provided by instructors.

**4. General discussion and pedagogical implications**

Data obtained in the two experiments suggest that student-generated drawings could be a potentially useful tool in the teaching of L2 idioms. Based on the

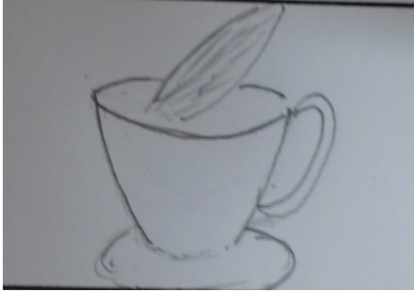
postulate of the dual-coding theory it can be assumed that illustrations of the target idioms stimulate integration of the verbal and visual coding systems, providing an alternative pathway for their recall. Students' better performance in the dual-coding condition may also be attributed to the greater complexity of the task. According to Schneider, Healy and Bourne (2002) more difficult learning tasks tend to result in initially inferior performance but less information loss across retention intervals than simpler learning conditions. This could explain the limited impact that the dual-coding condition had over the verbal condition in the immediate post-test and the substantial differences obtained in the delayed post-test in Experiment One. Finally, students' better performance on productive knowledge tests may have resulted from the nature of the task itself. According to the transfer-appropriate processing theory (TAP), the mnemonic effect of learning will depend on the nature of the task at the study phase and the testing phase (Morris, Bransford, & Franks, 1997). Semantic elaboration facilitates performance on semantically oriented tasks, while structural elaboration has a positive effect on the performance on the structurally oriented tasks (Barcroft, 2002). Illustration of the literal meaning of the idiomatic expressions focused learners' attention on the compositional elements of the target phrases, knowledge of which is crucial for productive idiom usage. In other words, productive encoding at the study phase may have accounted for students' better performance at the recall stage. This beneficial mnemonic effect of pictorial elucidation must not be overlooked when methodology for teaching figurative language is considered. Idioms present an intrinsic part of the native speaker's lexicon (Polio, Barlow, Fine and Polio, 1977) and mastery of the language will require the learners to acquire a large repertoire of idiomatic expressions for active use. Depicting the literal meaning of the idiomatic expressions may help learners who are striving to achieve this goal.

However, as with any other learning strategy, it is important that instructors consider when and how pictorial elucidation is integrated into the classroom activities. First, it should be remembered that the facilitative effect of the pictorial support tends to be stronger when it comes to the acquisition of the linguistic form rather than idiom meaning. While visual representation of the compositional

elements of the idiomatic strings makes individual words more salient prompting a better recall of the formal properties of the phrases, pictures do not always facilitate idiom comprehension. Although illustrations may help some learners to see the connection between the literal and the figurative meanings of the expressions, it is also possible that they sometimes have a distracting effect as some learners may focus too much on the literal meaning of the target expressions and fail to recognise their idiomatic usage. Therefore, visual coding of the input through student-generated pictures may be best suited for consolidation of the linguistic forms of the idioms that learners are already familiar with. Students could be asked to work in pairs and take turns drawing and identifying idioms from the illustrations. Alternatively, they could be divided into teams and asked to act out or mime the target expressions.

In addition to reinforcing encoding of the input, student-generated illustrations ensure that visual input is pedagogically relevant and comprehensible to the learners. There are many textbooks where pictures have a purely decorative function, and as a result do little to enhance learning (Mayer, Steinhoff, Bower & Mars, 1995). Furthermore, illustrations that are intended to contextualise language and stimulate learning are often culturally biased, and as a result incomprehensible to the learners (Hewings, 1991). Having the learners illustrate the target language ensures that the images match the verbal input and are meaningful to the students.

Third, student-generated illustrations can also serve as an indicator of learners' understanding of the input and reveal possible misconceptions caused by misunderstanding of the key-words or confusion of lexical forms. For example, one of the participants in Experiment Two produced the following illustration for the idiom '*a feather in a cap*'.



The drawing clearly indicates the confusion of word forms (*cup* vs. *cap*). The ability to identify the elements that cause misunderstanding of the input allows instructors to provide timely and more effective formative feedback, leading to better learning outcomes.

Finally, picture generation as a teaching strategy also has an affective value. An opportunity to personalise input and the comparatively easy nature the task meant that the majority of students approached the task positively and were able to produce context-appropriate drawings quickly and effectively from the first teaching session. A sample of student-generated drawings is available in Appendix 3. Teachers, however, should be careful not to impose this or any other strategy on the learners. As Richardson (1978) points out, it is important to make a distinction between coding efficiency (i.e. processing ability) and coding preference (i.e. preference for utilizing particular strategies). The effect that a particular strategy may have a stronger mnemonic effect does not mean that all learners will embrace it with enthusiasm. Pictorial elucidation should be approached as one of the alternative options to rote memorization, not as a magic wand for acquisition of figurative language.

The results of the study also highlight some general issues of concern with regards to teaching idiomatic language to L2 learners. First, it is evident that idiomatic language should be given more attention in the ESL classroom. In neither of the two experiments were the students familiar with any of the target expressions. Idioms represent an integral part of vocabulary development and the ability to comprehend and use them correctly requires linguistic, cognitive and pragmatic skills. The lack of learners' familiarity with the idioms highlights the need for this type of language to be incorporated in the syllabus and course



materials. Second, it is clear that learners need more practice in the production of syntactically flexible idioms. Sentences that required transformations of indefinite pronouns *one*, *somebody* and *something* resulted in a large number of erroneous phrases. Learners must be given sufficient exposure to both canonical and variant idiom forms and opportunities to work on activities that stimulate structural elaboration.

## 5. Future Research

The results of the two experiments point to several possible directions for future research.

First, in the two experiments reported above, posttests took place either immediately after the idiom treatment or one week later. An additional follow up test at a later date would provide more information about the long-term effects of different kinds of treatment on the acquisition of idiomatic language.

Another area of interest is the depth of processing of literal and figurative meanings of idiomatic utterances in L2. Earlier studies (Gibbs, 1980) suggested that figurative meaning is a dominant mode of processing of idiomatic language for native speakers. However, the conventionality of the figurative usage means that utterances with figurative meaning usually require less mental elaboration and as a result they tend to be more difficult to retrieve than the expressions used in their literal sense. It would be of interest to see whether the same results would be obtained with second language learners, who have a tendency to overlook figurative usage and process phrase constituents literally and individually. It is possible that for them figurative usage would be “unconventional usage”, eliciting more elaborative processing and leading to a better recall of the figurative phrases.

In both experiments reported in this paper the learners were asked to illustrate the literal meanings of the target phrases. It would be interesting to see whether a more open-ended task, where the participants are instructed to illustrate the

target sentences, but are left free to decide whether the drawings will reflect their literal or figurative meanings, would produce different results in terms of both images that are generated and their subsequent recall rates. A more open task design could also shed some light on the debate about whether conceptual metaphors underlie idiom comprehension (Gibbs & O'Brien, 1990; Gibbs, 1992), or whether images associated with idioms are more likely to reflect their concrete-literal meanings (Cacciari & Glucksberg, 1995). Parallel studies with the participation of native speakers and language learners could reveal possible differences in the role that imagery plays in L1 and L2 idiom comprehension.

Finally, more research is needed into how instruction of idiomatic language could be integrated in more communicative and authentic language tasks. In the present study, vocabulary treatment was de-contextualised, and the target idioms were presented as discrete lexical items. However, considering the limited time that learners and teachers have at their disposal, it is important to consider how learning activities can be modified to stimulate the use of the target phrases while retaining their communicative function.

It is hoped that this study will encourage further studies into acquisition of figurative language and the possible applications of image-based pedagogy in the ESL classroom.

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Note: Data reported in Experiment One first appeared in paper "Dual Coding Theory and the Teaching of Idiomatic Language" (*Bunkyo University, Bulletin of The Faculty of Language and Literature* 27 (1): 1-34). Data reported in Experiment Two was first reported in "Teaching Idioms through Pictorial Elucidation" (*The Journal of Asia TEFL* 2012, 9 (3): 75-105). Both papers were revised for this publication.

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## Appendix 1: Target idioms in Experiment One

### Dual coding condition

- tighten one's belt
- bone of contention
- ring a bell
- skate on thin ice
- step on someone's toes
- race against the clock
- pull one's socks up
- feather in one's cap
- stab somebody in the back
- have egg on one's face
- put the cart before the horse
- open up a can of worms
- burn the candle at both ends
- bang one's head against a brick wall
- have someone in the palm of one's hand

### Verbal coding condition

- food for thought
- at a crossroads
- cook the books
- hold all the aces
- go one's separate ways
- on the back burner
- play one's cards right
- flash in the pan
- hear something through the grapevine
- sink one's teeth into something
- have an ace up one's sleeve
- put one's foot into one's mouth
- put one's cards on the table
- leave a bad taste in one's mouth
- you scratch my back, I'll scratch yours.

## Appendix 2: Target Idioms in Experiment Two

### Picture-provided condition

- ring a bell
- cook the books
- let off some steam
- flash in the pan
- start the ball rolling
- play it by ear
- put one's finger on something
- have an axe to grind
- hear something through the grapevine
- burn the candle at both ends
- put one's cards on the table
- take the bull by the horns
- let the cat out of the bag
- look for a needle in a haystack
- you scratch my back, I'll scratch yours

### Learner-generated drawing condition

- tighten one's belt
- bone of contention
- skate on thin ice
- step on someone's toes
- race against the clock
- pull one's socks up
- stab somebody in the back
- have egg on one's face
- feather in one's cap
- put the cart before the horse
- open up a can of worms
- put one's foot in one's mouth
- leave a bad taste in one's mouth
- bang one's head against a brick wall
- have someone in the palm of one's hand

**Appendix 3: Samples of Student-Generated Drawings**

To tighten one's belt



To open a can of worms

