

## ***Is Literal Meaning Processed Before Figurative Meaning in L2 Idiom Processing?\****

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This study investigates the processing of literal and figurative meanings of L2 idioms by Korean learners of English. Based on Cieslicka's (2006) literal-salience resonant model, which proposes that literal meanings of idioms are accessed before figurative meanings in L2 idiom processing, the present study examines the model using a different experimental task (cross-modal lexical priming vs. self-paced sentence processing in context) and learners with different L1 background (Polish L1 vs. Korean L1). Ten English idioms were embedded in sentences (e.g., *He kicked the bucket*) and presented in conversation-based contexts biased toward either literal or figurative meaning (*He kicked the bucket = He died*). A novel non-idiom sentence (*He filled the bucket*) was also presented for each idiom in an appropriate context. Sixty seven Korean learners of English read the contexts line by line and their reading times were measured for each line. Literal sentences were read faster than figurative sentences. This suggests that, in L2 idiom processing, the literal meaning of an idiom was processed before its figurative meaning and that figurative meaning was more difficult to compute than both literal and novel non-idiom meanings even in the presence of strong contextual cues. In general, the results of the present study are in accordance with the literal-salience

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resonant model when different methods and learners with different L1 background were employed.

**Key words: idioms, L2 idiom processing, literal-salience resonant model**

## INTRODUCTION

An idiom can be defined as a string of two or more words which conveys a meaning that cannot be derived from the meanings of the individual words comprising that string (Swinney & Cutler, 1979). For native speakers of English, idioms are used quite often in their language use, while the relative preference for the fixed expressions is lower for second language learners. An idiom has two meanings, a literal one on the one hand, and a figurative (metaphoric) one on the other. This duality of meaning may explain why idiomatic expressions cause difficulty for language learners.

Because the figurative meanings of idioms cannot be derived from the meanings of their constituent words, researchers have drawn fundamental lines between the literal and figurative meanings of idioms, claiming that figurative meanings should be stored in the mental lexicon and retrieved as a lexeme. For example, the figurative meaning of the idiom expression 'kick the bucket' is 'die' and the meaning is retrieved from the mental lexicon without activating the literal meaning of the string. This caused a problem for generative linguists, for instance, who were interested only in the literal meanings of idioms. For this reason linguists and psycholinguists have described the special grammatical properties of idioms and developed several hypotheses regarding the processing and representation of idioms (Abel, 2003).

Although research on idiom processing has yielded remarkable insights, most linguistic studies have dealt with the mental lexicon of L1 speakers. Because relatively little attention has been paid to integrating L2 learners' processing of idioms into a mental lexicon, it is necessary to conduct idiom research in second language acquisition. Given that idiomatic expressions or

formulaic sequences are highly frequently employed in native speakers' language use, but very rare in use in L2 learners' interlanguage, investigating how idioms or formulaic expressions are processed and whether L1 speakers process idioms in the same way as do L2 learners could yield valuable insights (Conklin & Schmitt, 2008).

Of the various hypotheses on idiom comprehension and processing in the psycholinguistic approach the central question has been whether literal meaning or figurative meaning is accessed first in idiom processing. In L1 idiom processing studies, three major hypotheses have been proposed regarding this question. The first view is dubbed a 'traditional view', which asserts that literal interpretation has unconditional priority and that figurative meanings must be more difficult to process than literal meaning (e.g., Grice, 1975; Searle, 1979). The 'direct processing view', which, in contrast, proposes that literal meaning has no priority over figurative meaning, hence, literal meaning of the figurative utterance is not required to be computed (Gibbs, 1984). The third view is the 'graded salience hypothesis' (Giora, 1997; 1999; 2002), according to which salient meanings should be processed first, whether they are literal or figurative.

Although the question of whether literal meaning or figurative meaning is processed first is controversial in L1 idiom processing research, Cieslicka (2006) proposed the 'literal-salience resonant model' of L2 idiom comprehension, which posits that literal meanings are processed before figurative meanings, even if these idioms occur in a figurative context and their figurative interpretation is highly familiar to L2 learners. The goal of the present study is to examine this model using a different experimental task, i.e., self-paced sentence processing in context, compared with cross-modal lexical priming task used by Cieslicka and learners with a different L1 background (Korean) than those used by Cieslicka (Polish).

Contrasting with Cieslicka (2006), the present study used story-based contexts biased toward either a literal interpretation in which literal meaning is more salient, or figurative interpretation in which figurative meaning is more salient. The study aims to determine whether literal meanings have

priority in processing even in biased story-based contexts. Non-idiomatic novel phrases were used as control to determine how familiar idioms are to L2 learners. Therefore, the purpose of the present study is to investigate which meaning (literal vs. figurative) is accessed faster than the other in L2 idiom processing and whether L2 learners can distinguish idiomatic expressions from non-idiomatic novel phrases.

In the following, a brief review of L1 idiom processing models is presented, followed by a description of L2 idiom processing research, in which Cieslicka's (2006) graded salient resonant model that will be tested in the present study is introduced. Section III presents the aim of the study and the research hypothesis. Section IV describes the participants, materials and procedures. Section V presents results of an online idiom processing experiment. Section VI addresses discussion based on the results. Finally, concluding remarks are presented in section VII.

## **THEORETICAL BACKGROUND**

### **Literal and Figurative Meanings in L1 Idiom Comprehension**

Research into understanding literal and figurative language has raised a controversial question as to which meaning is processed first. Traditional theories assumed that literal and figurative interpretations vary, rendering priority of literal meanings over figurative meanings (e.g., Grice, 1975; Searle, 1979). The assumption was that literal interpretation has unconditional priority, meaning that the computation of literal meaning of an utterance is always activated before computation of any other meaning, and thus that activation of the literal meaning is obligatory. As a result figurative meanings must be more difficult to interpret than literal meanings and the activation of figurative meanings is optional. It is only after the literal meaning does not make sense in the context that the figurative meaning is activated. In this respect, the traditional view implicitly assumes sequential processing of

literal and figurative meanings.

This traditional sequential assumption has been questioned both theoretically and empirically by psycholinguists. They argued that in a rich context, understanding figurative meaning of idioms is essentially identical to understanding literal meaning and proposed the 'direct access/processing hypothesis', according to which the literal meaning of the figurative utterance need not be computed when retrieving the meaning of metaphors or idioms (e.g., Gibbs, 1984; Gibbs & Gerrig, 1989; Inhoff et al., 1984; Keysar, 1989; 1994; Ortony et al., 1978). These researchers claimed that literal language has no priority over figurative language, and suggested that figurative meaning is processed directly, without having to process the literal meaning at all (Gibbs, 1986; 1994). Empirical researchers provided evidence to support this direct processing view, showing that figurative and literal interpretations do not vary in processing. For instance, Gibbs (1980) presented subjects with passages of conversation and observed that they read idioms faster when they were used in a figuratively-biased context than in a literally-biased context; this result does not corroborate the traditional view that assumes obligatory activation of literal meaning. Given a rich context, subjects read literal and figurative language equally quickly in both literally- and figuratively-biased contexts (Gibbs, 1986; Inhoff et al., 1984; Ortony, 1978).

The direct access view seemed to have greater explanatory power and it replaced the traditional sequential view until on-line processing methods came to be used in idiom interpretation research. Some findings based on on-line processing were problematic for the direct access view when they implied the possibility that literal meanings had priority over figurative meanings in metaphor interpretation. Kemper (1981) showed that comprehending proverbs when they were followed by a single cue involves activating their literal meanings more rapidly than figurative meanings. Gibbs (1990) found that understanding figurative expressions took longer than interpreting literal referring expressions when subjects read a short text ending with either a literal referent meaning or a figurative referent meaning.

A crucial finding by Blasko and Connine (1993) showed that literal meanings were always activated initially when the metaphors were unfamiliar, whereas the figurative meanings were interpreted initially when the metaphor was very familiar (Blasko & Connine, 1993). The debate regarding whether literal and figurative language comprehension are processed using the same processing route or are processed differently has not been settled, because findings have not been entirely consistent with either view.

Upon the debate held between the sequential view and direct view in terms of the distinction between literal and figurative language (i.e., whether literal meaning first or figurative meaning first), Giora (1997; 1999; 2002) proposed a more general view of language processing, 'graded salience hypothesis', according to which salient meanings should be processed first, whether they are literal or figurative. To be salient, meanings of words, phrases, or sentences are coded in the mental lexicon and should be more familiar, more popular, more prototypical and more frequently used than other meanings, in a certain community.

Giora (2002) assumed that salience is a matter of degree determined by frequency of occurrence and familiarity with the meaning in question. She accounted for the degree of salience of a word using examples; for instance, for people living in urban societies, between the two meanings of 'bank', 'financial institution' meaning is salient and 'waterside' meaning is less salient. Likewise, for Internet users, the figurative meaning of 'surf' is more salient than its literal meaning, because the figurative meaning (searching the Internet) is more familiar than the literal meaning. However, for a less familiar idiom (e.g., *The goose hangs high*) the literal meaning (*There's a goose hanging in the larder*) will be more accessible than its figurative meaning (*Things are going well*), and therefore more salient than the figurative meaning.

Then, according to the gradient salience hypothesis, during the initial phase of processing, the literal/figurative distinction is not made while retrieving the meaning. Rather, salient meanings are available and are accessed initially from the mental lexicon regardless of contextual

information and literality. Thus, this hypothesis implies that the distinction that makes idiom comprehension difficult is not “the literal/figurative divide, but the salient-nonsalient continuum” (Giora, 2002, p. 492). The graded salience hypothesis which assumes that salient meanings are processed first, was intended to revise the traditional and direct access views of idiom processing and to provide more explanatory power than the literal/figurative split. However, Giora developed the graded salience hypothesis in the context of L1 idiom processing and did not consider L2 processing. Recently, inspired by Giora’s proposal, Cieslicka (2006) suggested a modified version of the graded salience hypothesis, dubbed the literal-salience resonant model, which was developed to account for the characteristics of L2 idiom processing.

### **Literal and Figurative Meanings in L2 Idiom Comprehension**

So far, we have briefly reviewed the three major theories raised in L1 idiom processing research. While the research has been done quite extensively in L1 processing, the theoretical or empirical studies in second language research are relatively sparse. Theoretical proposals that have been developed in L2 idiom comprehension research differ from those developed in L1 research.

One notable study on L2 idiom processing with respect to the difference between literal and figurative meanings of idiomatic expressions was conducted by Cieslicka (2006). Based on Giora’s (1997; 2002; 2003) graded salience hypothesis in L1 idiom processing studies, Cieslicka (2006), proposed the literal-salience resonant model of L2 idiom comprehension, which posits primacy of literal over figurative meanings. According to this literal salience view, L2 learners process literal meanings of idiom constituent words before figurative meanings, even if these idioms occur in a figurative context and if their figurative interpretation is highly familiar to the learners. Using Giora’s (1997) terms, the literal-salience resonant model assigns literal meaning a higher status in on-line idiom processing, assuming

that literal meanings of idioms will be more salient than figurative meanings regardless of familiarity or contextual information.

Using a cross-modal lexical priming experiment with advanced L1 Polish learners of L2 English, Cieslicka (2006) observed more priming effect for 'visual targets related to literal meanings of idiom constituent words, than for targets related figuratively to the metaphoric interpretation of the idiomatic phrase' (p. 115). These results support the compositional models of idiom processing by quantifying L2 learners' performance where individual components of idiomatic strings have been shown to significantly contribute to their processing. Both Giora's (1997, 2002, 2003) graded salience framework that is derived in the course of processing L1 idioms by native English speakers and Cieslicka's (2006) graded-salience resonant model that is ascribed to processing of L2 idioms by second language learners are in accordance with the assumption that the meaning postulated to be more salient is accessed first and activated most strongly in the course of idiom processing, but that the activation of more salient meanings of idioms, i.e., either literal or figurative meaning, is a function of their familiarity.

However, these two hypotheses make different predictions regarding literal meanings and figurative meanings with respect to which meanings are more salient. Giora's hypothesis predicts that in the processing of the familiar idiomatic phrases, the figurative meanings are more salient than literal meanings, whereas in the processing of unfamiliar idiomatic phrases, the literal meaning is more salient than the figurative meaning, and is activated first. On the contrary, Cieslicka's hypothesis on L2 idiom comprehension implies that literal meanings are more salient than figurative meanings regardless of whether or not the idioms are familiar to the L2 learner, and regardless of whether or not contextual bias is provided. Cieslicka (2006) further supports the assumption that L1 speakers assign different status to literal and figurative meanings while processing idiomatic expressions, than do L2 speakers. In sum, in Giora's (1997, 2002, 2003) model of L1 idiom processing, the degree of salience of idioms depends on the degree of familiarity of the idiom constituents: the meanings of idioms that are familiar

to the users are salient, but less familiar idioms are less salient. In contrast, Cieslicka's (2006) model of L2 idiom processing suggests that literal meanings are always salient irrespective of whether an L2 idiom is highly familiar or less familiar to the learners.

Another study that examined differences between L1 speakers and L2 learners in idiom processing is Abel (2003), which used judgments made by native speakers of German to investigate the decomposability of English idioms. An idiom is decomposable if its individual components contribute to its figurative meaning, and non-decomposable otherwise. Based on L1 and L2 judgments on decomposability of idioms, Abel (2003) proposed the Model of Dual Idiom Representation (DIR Model), which is based on the assumption that non-decomposable idioms require a separate lexical entry (i.e., idiom entry), whereas decomposable idioms can be represented via constituent entries and can additionally develop an idiom entry. Assuming that decomposable and non-decomposable idioms have separate entries in the mental lexicon, the DIR Model suggests that the differences between L1 speakers and L2 learners are due to the number of idiom entries in their lexical representations.

Unlike Abel (2003) and Cieslicka (2006), Conklin and Schmitt (2008) showed that L1 speakers did not process idiomatic phrases differently than did L2 learners. Conklin and Schmitt (2008) investigated whether formulaic sequences are read more quickly than the equivalent non-formulaic sequences and whether figurative meanings of formulaic sequences (a breath of fresh air = a new approach) are read more quickly than the literal meanings of the same sequences (a breath of fresh air = breathing clean air outside). They developed 60 target phrases: 20 formulaic sequences presented in contexts supporting their figurative interpretation; the same 20 sequences presented in contexts supporting their literal interpretation; and 20 control phrases. The target phrases were embedded in a passage; each passage included only one of the three conditions of target phrases. In on-line processing, both L1 speakers and L2 learners read formulaic sequences in contexts consistent with the figurative or literal interpretations faster than they read control phrases.

Interestingly, reading times for formulaic sequences used figuratively were not different from those used literally. These results indicate that the formulaic sequences were processed more quickly than equivalent non-formulaic sequences, and that the speed at which literal meanings are processed does not differ from the speed at which figurative meanings are processed. That L1 speakers and L2 learners processed the passages at similar speeds further suggests that L1 processing is not different from L2 processing.

Motivated by these results, Slyanova et al. (2008) used an eye-tracking experiment to investigate processing of idioms' figurative and literal meanings, and of novel phrases. To provide a more detailed account of idiom processing in L1 speakers and L2 learners of English, they provided story contexts that were strongly biased towards either the figurative or literal interpretation of an idiom. Using 21 target idioms that were more or less familiar to the L2 learners, Slyanova et al. (2008) aimed to explore the processing of figurative and literal uses before and after the point at which the expression becomes recognizable as idiomatic (the recognition point). Because figurative meanings of idioms are used more frequently than are literal meanings, they predicted fewer and shorter fixations to figurative uses than literal after the recognition point, i.e., after the expression has been recognized as idiomatic. Results showed that L1 speakers processed idioms faster than did L2 learners and that, contrary to the expectations, L1 speakers processed the idiom's figurative and literal interpretations at the same speed; this result was consistent with those of Conklin and Schmitt (2008). However, L2 learners processed idioms and novel phrases at the same speed; they also took longer to read figurative than literal ones, which suggests that the link between the idiom and its figurative meaning ('ring a bell' = remind) is not as strong as the link between the forms and meanings of the individual lexical items of the idiom ('ring' + 'a' + 'bell' = produce sound). Slyanova et al. (2008) concluded that figurative meaning is not activated as quickly as literal meaning for L2 learners and that these learners cannot use context effectively to activate the appropriate (i.e., figurative) meaning even in the presence of strong contextual cues, i.e., that the figurative meaning does not compete for

selection with the literal one.

## RESEARCH HYPOTHESIS

The aim of the current study is to test the literal-salience resonant model (Cieslicka, 2006) using a different experimental task (cross-modal lexical priming vs. self-paced reading time in context) and learners with different L1 background (Polish L1 vs. Korean L1) to examine whether this model also explains the processes involved in L2 idiom comprehension by Korean learners of English.

The literal-salience resonant model used the cross-modal priming technique, in which Polish learners of L2 English heard a sentence and saw a word on the computer screen at the same time to make a lexical decision test whether or not the word they saw was a real word. The auditory sentences presented in the study of Cieslicka (2006) were neutral sentences that did not provide any clear bias toward the figurative interpretation of the idioms (e.g., 'George wanted to *bury the hatchet* soon after Susan left'). While the participants were listening to the simple sentence, they were visually presented with a word related either to the figurative meaning of the idiom (e.g., FORGIVE) or to the literal meaning of the last word of the idiom string (e.g., AXE) and they were asked to decide whether or not the word they saw was a real English word.

The cross-modal priming test has been extensively used in lexical ambiguity research in psycholinguistics, as well as in L1 idiom processing studies to test recently developed models of the mechanism of figurative language processing. Yet, this technique has not been widely accepted in L2 idiom processing studies; a paradigm that works in an L1 context should be applied cautiously in an L2 context, because language learners may not have the same processing mechanisms as native speakers (Clahsen & Felser, 2006).

The cross-modal priming task employed in Cieslicka (2006) was conducted with a lexical decision task that did not involve a context in which

idioms could be used in natural ways. This leads to the necessity of exploring the processing of L2 idioms in a different paradigm from that in Cieslicka, i.e., by presenting idioms naturally in story-based contexts. Although the auditory sentences and visual targets are usually presented simultaneously in L1 idiom processing studies, in Cieslicka (2006) in which L2 participants conducted the experiment, to give enough time to process the figurative meanings, the visual targets were presented 100 ms after the auditory sentences. However, Cieslicka herself pointed out that this time might have been too short for the participants to detect figurative meanings. As a result, her experimental method may have allowed L2 participants to process literal meanings faster than figurative meanings.

In fact, in Cacciari and Tabossi (1988), when a visual target was presented after the last word of the idiom string with a 300-ms delay, the facilitation for figurative meanings over literal meanings were found or the reading times of figurative targets in the lexical decision task were almost simultaneous to the literal targets. Therefore, in addition to the lexical decision task through the cross-modal priming experiment, a self-paced sentence processing study using contexts biased toward either literal or figurative meanings need be conducted to examine whether the literal-salience resonant model can truly explain idiom processing by L2 learners. If the same results observed in the current sentence processing study with Korean L2 learners are the same as those in the cross-modal priming task with Polish L2 learners, the literal-salience resonant model can be claimed to have cross-linguistic explanatory power.

In sum, whereas Cieslicka (2006) embedded each idiom in a neutral sentence without context, and used a lexical decision experiment to test the literal salience in L2 idiom processing, the present study, in contrast, used a story-based context in which each idiom was embedded and used, self-paced sentence processing methodology, a task that would work best for the materials used in the present study. It examined whether literal meanings are really processed faster than figurative meanings, even when the participants have a different L1 background than those used by (Cieslicka, 2006). Based

on the different experimental method and a language group used in the present study, the following research hypothesis is formulated.

*Research Hypothesis:* If the literal-salience resonant model of idiom comprehension (Cieslicka, 2006) correctly predicts the computation of L2 idioms, a different group of learners, i.e., Korean learners of L2 English, will also show a faster access to the literal meaning of an idiom than to the figurative meaning as did the Polish learners of L2 English in Cieslicka (2006) did, even when a different experimental approach is used, i.e., the story-based context will provide a strong bias toward either the literal or the figurative meaning.

## **METHOD**

### **Participants**

The participants who took part in the idiom processing experiment were 67 college students (average age 22.3 years) who were majoring in either science or technology at a university in Korea and their English proficiency level was regarded as high-intermediate based on the self-rated English ability score (3.8 mean score out of 5). Aside from the self-rated English ability, the participants who had a standardized test score reported an average 750 TOEIC score, which also indicates high-intermediate English ability.

After finishing the online idiom processing experiment, these 67 participants were asked to complete a questionnaire in which they assessed their familiarity with each idiom used in the experiment on a 5-point Lickert scale (1 is least familiar and 5 is most familiar). The data of 39 participants who assessed their familiarity with for all idioms to be 4 or greater were selected and used for the analysis. These 39 participants were assumed to know both literal and figurative meanings of the idioms used in the experiment and to be qualified for further analysis, because one cannot know the figurative meaning of an idiom if one is not familiar with it.

## Materials

To select the idioms used in the experiment, 40 idioms were given to the 47 students who did not participate in the experiment and had an English proficiency level similar to that of the participants of the study. These students indicated their familiarity of the 40 idioms on a scale from 1 (idiom unfamiliar) to 10 (idiom very familiar). Ten idioms that were rated 8 or higher by all students were used in the experiment, along with 10 control phrases and 10 distracter phrases.

Each idiom was presented in two contexts, one literal and one figurative. Each was embedded in a sentence that was used in a story-based context. As a result, each sentence was used in a context biased toward literal interpretation at one time and in a context biased toward figurative interpretation at another. For example, an idiom *break the ice* was embedded in a sentence like *He broke the ice*, which was used in a context biased toward the literal meaning of the sentence. The same sentence was used in a different context biased this time toward the figurative meaning of the sentence (i.e., *He made people feel more relaxed*).

A novel control phrase was created for each idiom and embedded in a sentence that was used in a context biased toward a novel meaning. Novel control phrases were constructed by replacing one word in each idiomatic string (either the first or the last word) with a word of the same length in both letters and syllables and of equal or higher frequency. An example of the idioms in which the first word was replaced is 'pull one's leg' vs. 'push one's leg' and an example of idioms in which the last word was replaced is 'spill the beans' vs. 'spill the juice'.

This means that the same idiom was used in a context biased toward literal meaning on the one hand, and in a context with the cues of figurative meaning on the other hand. A novel phrase of an idiom was used in a context as control (see (1)-(3) below for an instance). Ten distracter contexts which did not contain idioms were used. See Appendix for the list of the 10 idioms and their equivalent novel phrase used in the study.

Example contexts (1)-(3) show the literal, figurative, and novel usages of the idiom “beat around the bush”, respectively. Basically, each utterance occupied one line. Each line in the context contained no less than 10 words, which means an utterance that contained more than 10 words was presented in two lines because it was too long to be presented in one line. Each paragraph ended with a target sentence containing an idiom. For analysis, the reading times of these target sentences that is the last line of three contextual conditions were compared.

(1) Context ending with literal target sentence

Two children are looking for their lost cat.  
“I think he’s hiding in that bush!”  
“I heard a meow. Well, let’s scare by  
beating some sticks on the ground.”  
“No, he might just run away.  
I’ll get some milk to lure him out.”  
“Okay. I’ll wait here.”  
“Don’t beat around the bush!”

*Question: Is the cat hiding in the bush?*

(2) Context ending with figurative target sentence

Two classmates are talking about  
their scores after an exam.  
“I didn’t get the score I wanted.  
I should have studied harder.”  
“Did you fail? Tell me your score!”  
“Well, it was not as bad as it could have been.”  
“Tell me!”  
“Well, it was better than my last grade...”

Is Literal Meaning Processed Before Figurative Meaning in L2 Idiom Processing?

“Don’t beat around the bush!”

*Question: Did he tell his score to his classmate?*

(3) Context ending with novel target sentence

Two landscapers are planting a tree.

“Now that we have the tree in the ground,  
we have to pack down the soil around the tree.”

“Alright. There we go.”

“I think we’re done.”

“Can I stop?”

“Don’t beat around the tree.”

*Question: Are they planting a tree?*

## **Procedure**

The participants in the present study read conversation-based contexts that consisted of 7-10 lines with no less than 10 words in each line. Each segment of the context was presented using a self-paced, moving-window technique, in which the participants pressed the space bar to display a new line on the computer screen. Each subsequent press of the space bar introduced the next segment. The experiment was conducted on an IBM PC running SuperLab Pro, an experimental software for sentence processing. The last line of each context was a sentence which contained an idiom expression in it. To ensure that participants attended to the sentences they were reading, they were asked to complete a yes/no comprehension question. Based on the story of the context that had been read, the participants pressed the “z” key if the answer was “yes” or pressed the “?” key if the answer was “no”; feedback was given in both cases.

In the experimental condition, each idiom was embedded in three different types of sentences in which the idiom was used with literal meaning, figurative meaning or novel meaning. Thus, one idiom created three contexts and each participant read 30 contexts for the 10 idioms in the main test. Ten contexts that did not contain idioms were used for distracters.

As an exercise, the participants read two contexts which were similar in length with the context used in the main test before the main test, but these exercise contexts did not include idioms in the last line. The test took about 25 minutes to administer.

## RESULTS

The degree of correctness on the comprehension questions was examined. The error criterion of 90% correct was set and no subject used for the data analyses failed to reach the criterion. Each type of condition obtained 95% of accurate responses. To reduce the variability, reaction times more than two standard deviations from the participant means in each condition were considered as outliers and excluded from the analyses.

The mean reading times for the target sentences with literal meanings (1.84 s) were significantly shorter ( $t(76) = 2.96, p < 0.05$ ) than the target sentences with figurative meanings (2.19 s), which suggests that literal meanings were accessed faster than figurative meanings in online L2 idiom processing. The mean reading times for the sentences with novel phrases (1.99 s) were slower than for the sentences with literal meanings, but the difference was not significant ( $t(76) = 0.31, p > 0.05$ ), and faster than the sentences with figurative meanings, but again, the difference was not significant ( $t(76) = 1.75, p > 0.05$ ).

Table 1 shows the mean reading times of target sentences in each experimental condition.

**TABLE 1**  
**Mena Reading Times of Target Sentences in Each Context Condition**

Context Condition	Literal Meaning-biased Sentence	Figurative Meaning-biased Sentence	Novel Meaning-biased Sentence
Reading times (sec)	1.84	2.19	1.99

These results mean that the literal meaning of an idiom was processed before its figurative meaning. It is interesting that the reading time of the figurative meaning of an idiom took even longer than that of the novel phrase, which suggests that figurative meaning is more difficult to compute even in the presence of strong contextual cues.

## **DISCUSSION**

The purpose of the present study was to examine whether literal meanings are indeed accessed first before figurative meanings in L2 idiom processing even when the idioms were presented in contexts biased toward literal, figurative, or control novel interpretation, not in the neutral sentences without context provided as in Cieslicka (2006). Literal meanings were found to have priority over figurative and control novel meanings in processing irrespective of the context condition. Thus, the findings of the present study support the literal-salience resonant hypothesis for L2 idiom processing.

The literal-salience resonant model (Cieslicka, 2006) accepts the role of literal meanings in constructing figurative interpretations of L2 idioms. Based on the presumption that literal meanings are accessed first before figurative meanings in L2 idiom processing, the idioms used in the experiment for L2 learners should be familiar to them for the figurative meanings of the idioms to be retrievable. Without knowing literal meanings first, inferring figurative meanings is impossible. The results obtained in the present study clearly showed the priority of literal meanings over figurative meanings of L2 idioms even in the context which was biased toward figurative interpretations.

Note, however, that the sentences containing novel phrases were understood faster than the sentences containing idioms with figurative meanings. This can lead to the assumption that figurative (conventional) interpretation of the idioms is less salient than the novel (control) use by Korean learners of English, because, according to the graded salient hypothesis (Giora, 1997, 2002), a more salient interpretation of an expression should be activated before the less salient interpretation. In this respect, based on the results of the present study, the degree of salience (i.e., conventional, familiar, frequent, predictable meanings) for the idioms to the learners in the current study can be postulated to be highest for literal meanings, intermediate for novel phrases, and the lowest for figurative meanings.

The fact that figurative meanings are less salient, and are thus processed with more difficulty than the novel phrases by Korean learners of English may be further evidence to support the speculation that idioms are not stored in their interlanguage mental lexicon with frequent use regardless of whether or not they know the meaning of the idiom. As a result, a sentence with the figurative use of the idiom 'beat around the bush (= speak indirectly)' took more time to read than a sentence with the novel phrase 'beat around the tree' even in a story-based contextual situation biased toward its specified meaning. The learners seem consistently to prefer the literal interpretation both for the idioms and for the novel phrases, which suggests that the direct processing hypothesis (Gibbs, 1984; Gibbs & Gerrig, 1989, among others) that assumes that the literal meaning of the idiom utterance need not be computed for retrieving the meaning of idioms, does not work in L2 idiom processing by Korean learners of English.

I now consider whether or not native speakers and second language learners are different in terms of idiom processing. The results of the current study contradict Conklin and Schmitt (2008), who suggested that L1 processing is not different from L2 processing and showed no reading time difference between formulaic sequences used in figurative interpretation and those used in literal interpretation. However, the findings of the present study concur with the results reported in Cieslicka (2006) and Siyanova et al.

(2008) in that these studies all showed the priority of literal meanings of idioms over figurative meanings in online processing. They also assumed that the status of literal and figurative meanings in idiom processing was different between native speakers and L2 learners.

## **CONCLUSION AND PEDAGOGICAL IMPLICATIONS**

I investigated whether literal readings had priority over figurative alternatives in L2 idiom processing, testing the literal salience resonant model (Cieslicka, 2006), which assumes that literal meanings of idiom expressions will be more salient than figurative meanings regardless of whether or not the idioms are familiar to the L2 learners, and whether or not the contextual bias is provided. After reading sentences containing an idiom in a context biased toward either literal or figurative meaning, Korean learners of English read a sentence in which an idiom had a literal meaning significantly faster than a sentence where the same idiom had a figurative meaning. Thus, the literal salience resonant model seems applicable to L2 idiom processing in general, and not only to Polish learners of English in tests in a cross modal priming task using neutral sentences, but also to Korean learners of English in a self-paced reading task using contextually biased conversations.

Although idiomatic or formulaic expressions are quite prevalent in native speakers' use of language, it is true that they are not preferably used by L2 learners' (Liao & Fukuya, 2004), presumably because of the reduced occurrence in corpora (McLellan, 2010), and they are not taught explicitly with metaphor-based instruction in L2 classrooms (Yasuda, 2010). Considering the results of the current study, which shows that L2 learners get access to the literal meanings of idiomatic expressions before the figurative meanings, it is necessary to provide sufficient input of figurative idiomatic expressions used in a natural context through various input resources to which L2 learners are exposed, such as ELT textbooks, so that they can

acquire the figurative meanings of idiomatic expressions as quickly as the literal ones. Conceivably, as the proficiency increased, figurative meanings will be accessed as fast as or faster than the literal meanings. Also, the explicit instruction on the idioms will lead to faster access to the figurative meaning, which can shed light on L2 research and pedagogy.

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**APPENDIX**  
**Idioms and Their Novel Phrases Used in the Story Context  
 for Experiment**

Idioms	Novel Phrases
let the cat out of the bag	let the dog out of the bag
beat around the bush	beat around the tree
bury the hatchet	bury the coffins
break the ice	break the cup
pull one's leg	push one's leg
miss the boat	miss the ship
ring a bell	beat a bell
kick the bucket	fill the bucket
break a leg	break an arm
spill the beans	spill the juice