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Idiom Processing: What Primes Idioms

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Nam, Hyun-Jeong. 2015. Idiom Processing: What Primes Idioms? *The Journal of Linguistic Science* 72, 153-170. Since the idiom principle (Sinclair 1987), idioms have been studied through various approaches. However, little research has been carried out to directly address the activation and access of idioms in language production. The aim of this study is twofold: First, it investigates the type of primes that activates idioms most in Korean L2 learners' production, and second, the study further explores whether the way idioms are memorized and stored in their mental lexicon reflects the retrieval process of the idioms in production. Results suggest that idiom processing is affected by the types of primes. The first word of the target idiom was found to be the most efficient trigger. This implies that components of idioms contribute to the access to the whole conceptual/meaning representation. Semantically related L1 was the second most efficient prime found in the study, which suggests L1 lemma mediation in L2 idiom processing. Definition in L2, followed by definition in L1 was found to be an inefficient prime, which indicates the importance of context in idiom learning and teaching. There was a strong positive correlation between L1-mediated idiom learning and idiom processing facilitated by L1 primes. That is, if L1 is utilized as a cue to memorize idioms, the L1 information may be used as a prime in idiom production. (Daegu Haany University)

Key words idioms, idiom processing, prime types, L1 activation, L2 production

1. Introduction

Over the last few decades, there has been an increasing interest in research concerning chunks of language, otherwise known as formulaic lexical items or preconstructed multi-word expressions. Many researchers are convinced that knowledge of formulaic multi-word lexical items is essential for language learning (Carter 1998; Nattinger & DeCarrico 1992). Widdowson (1989) claims that the ability to apply the idiomatic lexical items to a given context indicates the speaker's communicative competence. It has also been pointed out that the use of preconstructed lexical items rather than composition of all the individual constituents on the spot contributes to native-like fluency (Ellis 2001; Lewis 1993, 2000; Pawley & Syder 1983; Singleton 2000). In addition to the attainment of native-like fluency, memorization of a large set of formulaic chunks that contains essential grammatical structures may promote accuracy and acceptability (Ellis 1994).

Since the Idiom Principle (Sinclair 1987) that suggested the restriction of word selection as opposed to open word choice, idioms have been studied through other approaches. Examples are the form-based approach concerning the adjacency and grammatical fixedness of their component words, the meaning-based approach concerning compositionality, and the storage-based approach tracing their entries (Nation 2013: 488-494). However, not much attention has been paid to the research concerning what primes idioms in second language production. Therefore, the aim of this study is twofold: First, it investigates the type of primes that activates idioms most in Korean L2 learners' production, and second, the study further explores whether the way idioms are memorized and stored in their mental lexicon reflects the retrieval process of the idioms in production.

2. Theoretical Background

Research concerning the access and processing of idioms has yielded controversial findings. At the center of the arguments lies the issue of existence of compositional

nature in idioms. In the non-compositional view, idioms are considered to be lexical items containing multiwords and thus the meaning of each constituent of an idiom does not contribute to the overall idiomatic comprehension (Bobrow & Bell 1973; Swiney & Cuttler 1979). The compositional view, on the other hand, allows for semantic contribution of each component to the figurative meaning of an idiom (Cacciari & Glucksberg 1991; Gibbs et al. 1989).

The non-compositional approach has been taken in the Idiom List Hypothesis (Bobrow & Bell 1973), the Lexical Representation Hypothesis (Swinney & Cutler 1979), and the Direct Access Hypothesis (Gibbs 1980), all of which suggest that the meaning of an idiom is retrieved from a separate lexical entry in the lexicon. In the Direct Access Hypothesis, in particular, Gibbs (1980) claims that figurative meaning of idioms may be comprehended via the direct access to the mental lexicon prior to processing of the literal meaning.

In the compositional view, on the other hand, an idiom is seen neither to be a lexical item consisting of multiwords nor to be stored or accessed directly from its separate entry. For example, the Configuration Hypothesis (Cacciari & Tabossi 1988) suggests that idioms are simply the sequence of lexical items to be memorized and thus the literal meanings of the components remain activated in the process of idiomatic comprehension. In other words, idioms, a configuration of lexical items, include the lexical 'keys' (Cacciari & Tabossi 1988: 678) that trigger the figurative meaning. Furthermore, Conceptual Metaphor Model (Gibbs et al. 1989) explains the contribution of the part of the idiom to the figurative meaning in terms of the conceptual metaphor. They claim that meaning potential of components of the idiom affects the idiomatic comprehension on the whole.

In recent years, however, a more hybrid perspective or a 'golden mean' of idiom processing has emerged between the two extremes, the literal-first and the figurative-first comprehension hypothesis (e.g., Levelt & Meyer 2000; Giora 2002; Sprenger, Levelt & Kempen 2006). For example, the Graded Salience Hypothesis (Giora 2002: 490) suggests that the most "salient (coded, context-independent, prominent) meanings" of idiom components determine either the literal or figurative comprehension.

Among the research examining idiom processing, Cutting and Bock's (1997) and

Sprenger, Levelt & Kempen's (2006) study may be more relevant to the present study in that, first, they focus on language production and second, they utilize the activation mechanism in cognitive linguistics. Cutting and Bock (1997) explain the idiom processing in language production based on the conceptual, lexical-conceptual, and lexical-syntactic levels, allowing for the interaction between nodes at a different level. Their model explains the reason that idioms with the same figurative meaning or with the same syntactic pattern were erroneously produced or blended in their experiment. That is, idioms with similar figurative meaning can be activated due to the common features on the conceptual level and the idioms sharing the same syntactic structure may also be activated because of the common characteristics at a lexical-syntactic level (Cutting & Bock 1997: 67-68).

The Superlemma Theory (Levelt & Meyer 2000; Sprenger, Levelt & Kempen 2006) may be more pertinent in that the concept of activation and competition of lexical items in the network frame that they adopted from the WEAVER model (Roelofs 1997), seems to better explain what primes idioms in the current study. Levelt and Meyer (2000) suggest that activation flows through lexical concept, superlemma, and lemma. For example, the lexical concept *to take great risks* may activate the superlemma *to skate on thin ice*, and then activate the lemmas, *skate*, *on*, *thin*, and *ice* (443-444). In addition, other idioms at the level of the superlemmas may be activated from the same concept and compete for production in the same way as any lexical item would undergo.

Compared to active and vibrant research overseas, little attention has been given toward this issue in Korea. Research that has been carried out in Korea rather seems to be limited to conceptual metaphors. For example, Lee & Kim (2008) found that conceptual metaphors shared in L1 and L2 may promote a better comprehension of idioms. Kim & Lee (2008) compared the instruction of conceptual metaphors underlying idioms and alphabetical memorization of idioms. Regrettably, little research has been carried out to directly address the activation and access of idioms in language production.

The aim of the present study is to explore what primes idioms in language production. The study will employ the concept of activation between the lexical and

the conceptual levels as discussed in the hybrid approach of idiom processing. In particular, the idea of additional development of idiom's own entry as a result of its frequent use (Abel 2003) will be expanded to L1-mediation. That is, if L2 learners use L1-mediated information to memorize idioms, the additional nodes to the particular information will be developed in the network and consequently accessed for L2 production. If the idioms are memorized with L2 semantic representation, other semantically related L2 superlemmas will trigger the target idiom. At the lexical level, the study will also examine whether the constituents of the idioms contribute to the idiom processing in the production stage (adopted from Sprenger, Levelt & Kempen 2006).

Research Questions

1. Among the following six types of primes, which contributes to the target idiom processing most?

- Semantically related L2
- Contextual information in L2
- Definition in L2
- Semantically related L1
- Definition in L1
- First word of the target idiom

2. Do the learners' learning methods reflect idiom processing?

3. Method

3.1 Participants

Thirty two subjects were involved in the present study. The participants were

English & TESOL (double) majors at a university in Korea at an intermediate level with a certain degree of variation at a sub-level from low to high intermediate. The participants had been instructed in idioms for one semester in the class 'Pattern of English Speaking'. The class met once a week and the instruction lasted for two hours and was delivered exclusively in English. Since all the courses provided in the department are English-medium, the participants were already accustomed to English-medium instruction. A variety of communicative tasks such as role-play were employed in the class and the participants were provided with various contextual information of the idioms through example sentences, dialogues and illustrations on the textbook titled 'All Clear'. Although the official exams for the course excluded the participants' L1, certain cases where their L1 was relied on for test preparation had been observed or reported in the researcher's personal encounters with the learners.

3.2 Materials and Procedure

The test was conducted after 14 weeks of instruction before the final exam. The questionnaire consisted of two sections, followed by in-depth interviews with those who expressed strong opinions on their idiom learning and production.

<Figure 1>

Prime type: Semantically related L2
Prime example: it doesn't matter
Target idiom: it doesn't make a difference
Prime type: Semantically related L1
Prime example: 할 일이 산더미야
Target idiom: be swamped
Prime type: Context in L2
Prime example:
A: Long time no see! Why don't we have some coffee?

B: I was on vacation for two weeks. Coffee sounds good but I'm afraid I can't. I had no internet access during the vacation and I have to () () () my email now.

Target idiom: catch up on

Prime type: Definition in L2

Prime example: Be the main person responsible for making sure that people get things done.

Target idiom: be in charge of

Prime type: Definition in L1

Prime example: 어떤 일이나 상황에 대하여 전혀 모르는 상태에 있음

Target idiom: (be) in the dark

Prime type: First word

Prime example: safe

Target idiom: safe and sound

The first section included six types of primes (see the examples in Figure 1). To investigate the activation of L1 or L2 information at a conceptual–lexical level, the study included L2-related primes (Semantically related L2, Contextual information in L2, Definition in L2) and L1-related primes (Semantically related L1, Definition in L1). In addition, at the lexical level, the first word of the target idiom was used as a prime (adopted and revised from Sprenger, Levelt & Kempen 2006).

A total of 30 questions (5 questions in each type of the primes) were taken from their textbook. The lexical items tested in the study vary in regard to its idiomaticity. They range from pure idioms to restricted collocations in terms of fixedness and semantic ‘opacity’ (Lewis 2000: 130); however, the idioms tested in the study will be referred to as idioms for reasons of expediency. The participants were asked to write the target idioms activated from the given stimuli with a time constraint of 30 seconds for the prime type ‘Context in L2’ at a dialogue level and 15 seconds for the rest of types of primes at a sentence/phrase level.

In section two, the participants were asked to identify their learning methods for each target idiom, stating whether they relied on L1 or L2 lexical information to memorize the particular idiom.

3.3 Data Collection and Analysis

The responses were collected manually and organized using Microsoft Excel program according to the types of the primes. Idioms with minor spelling errors in the first section were included in the counting.

For analysis, the data were fed to the statistics program SPSS 20. First, descriptive statistics were used for general information such as Mean and Std. Second, Friedman Test was used to identify the type of prime that promoted the idiom production most. Third, paired-samples *t*-test was conducted to compare the mean scores of the L1-mediated and L2-mediated types of primes. Last, correlation analysis using Pearson product moment correlation coefficient (*r*) was used to check the relationship between the participants' learning methods and idiom processing.

4. Results

<Table 1. Descriptive statistics for the idiom processing>

	N	Min	Max	Mean	Std.
S2	32	.00	5.00	2.00	1.76
C2	32	.00	4.00	1.53	1.37
D2	32	.00	5.00	1.31	1.28
S1	32	.00	5.00	2.38	1.58
D1	32	.00	4.00	1.38	1.18
F	32	.00	5.00	3.25	1.87
Valid N(listwise)	32				

Note. S2: Semantically related idioms in English, C2: Contextual information in English, D2: Definition of the idiom in English, S1: Semantically related idioms in Korean, D1: Definition of the idiom in Korean, F: The first word of the idiom

Table 1 shows idiom processing with different types of primes. Five primes in each section, a total of thirty primes in six sections were provided. The mean of idiom processing ranges from 1.38 (SD= 1.18) with the prime of 'Definition of the Idiom in Korean' to 3.25 (SD= 1.87) with the 'First Word of the Idiom'.

<Table 2 Ranks of the prime types>

	Mean Rank
F	3.25
S1	2.38
S2	2.00
C2	1.53
D1	1.38
D2	1.31

Table 2 shows that the prime 'The First Word of the Idiom' activated the target idioms most, followed by the prime 'Semantically Related Idioms in Korean'. It appears that 'Definition of the Idiom in English' is the least efficient prime for the target idioms.

< Table 3 Test Statistics: Friedman Test>

N	32
Chi-Square	42.479
df	5
Asymp. Sig.	.000

The results of the Friedman Test indicate that there was a statistically significant difference in idiom processing across the different types of primes (F, S1, S2, C2, D1, D2 $\chi^2 (5, n= 32)= 42.479, p<.001$).

<Table 4. Descriptive Statistics for the L1 and L2 primes>

	N	Min	Max	Mean	Std.
L2 primes	32	.00	.73	.32	.22
L1 primes	32	.00	.80	.38	.25
Valid N (listwise)	32				

As shown in Table 4, the mean of idioms produced with the L2 primes ('Semantically Related Idioms in English', 'Contextual Information in English', and 'Definition of the Idiom in English') is .32 (SD= .22), while the mean of idioms retrieved from the L1 primes ('Semantically Related Idioms in Korean' and 'Definition of the Idiom in Korean') is .38 (SD= .25).

<Table 5 Paired samples statistics>

		Mean	N	Std. Deviation	Std. Error Mean			
Pair	L2 primes	.32	32	.22	.04			
	L1 primes	.38	32	.25	.04			
Paired Sample Test								
Paired Differences								
		Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the Difference	t	df	Sig (2- tailed)
					Lower Upper			
Pair		-.052	.23	.04	-.14 .03	-1.26	31	.22

A paired-samples *t*-test was conducted to examine the difference of idiom production between the L1 primes and L2 primes. The resulting difference was however statistically insignificant ($p > .001$).

<Figure 2 Correlations between L1 learning and L1 access>

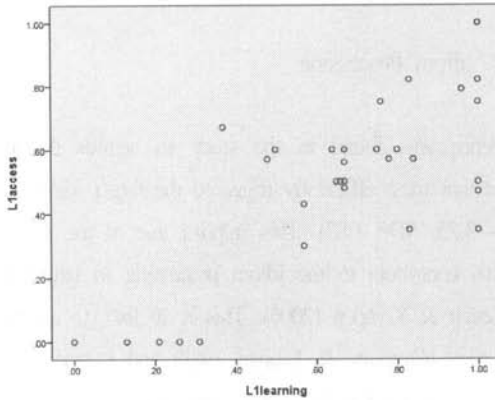


Figure 2 shows the relationship between L1-mediated memorization of idioms and the idiom production primed with L1. The upward trend indicates a positive relationship. That is, the more the L1 was utilized to memorize the target idioms, the more idioms were produced with L1 primes.

<Table 6 Correlations between L1 learning and L1 access>

	L1 access	L1 learning	
L1 access	Pearson Correlation	1	.756**
	Sig. (2-tailed)		.000
	N		32
L1 learning	Pearson Correlation	.756**	1
	Sig. (2-tailed)	.000	
	N	32	32

** Correlation is significant at the 0.01 level (2-tailed)

As shown in Table 6, there was a strong, positive correlation between L1 learning and L1 access, $r = .756$, $n = 32$, $p < .001$, with high levels of L1-mediated memorization of idioms associated with high levels of L1 prime effect.

5. Discussion

5.1 Prime Types vs. Idiom Processing

Some empirical evidence was found in the study to answer the first research question. The prime type that most efficiently triggered the target idioms was the first word of the idiom ($M= 3.25$, $SD= 1.87$). This implies that at the lexical level, the constituents of the idioms contribute to the idiom processing in language production as found in Sprenger, Levelt & Kempen (2006). This is in line, to a different extent, with the compositional view (Cacciary & Tabossi 1988) and hybrid models (Cutting & Bock 1997; Sprenger, Levelt & Kempen 2006) that consent to the contribution of parts of idioms to the whole idiom processing. The hybrid model in particular, better explains the findings of the present study. Each element of the idiom is separately accessible yet connected to one another within the common conceptual/meaning representation, and thus the first part may activate the rest of the components of the idiom (Sprenger, Levelt & Kempen 2006: 174-175).

The second most prevalent prime found in the present study was semantically related L1 idioms. This finding is not surprising considering the organization of Korean L2 learner's mental lexicon. As has long been suggested, the association between L1 and the concept is stronger than the conceptual-lexical link to L2 (Kroll & Stewart 1994; Potter et al. 1984). Thus, it seems inevitable for the L2 learners to avoid L1 lemma mediation in L2 idiom processing. Research concerning Korean L2 learners also supports the L1 mediation in L2 (e.g., collocations in Kim & Yoon 2008; a lexical judgment task in Park 2011; word association test in Nam 2014; idiom comprehension in Shin 2004). To discuss this further, the concept of spreading activation may be useful in this regard. As noted before in the Superlemma Theory, other superlemmas (idioms) sharing the same concept may be activated and compete for production (Levelt & Meyer 2000). If the learner's L2 lexicon had been well-equipped with other L2 idioms in the same semantic field, the semantically related L2 idiom could have primed the target idiom sharing the same conceptual representation in the study. However, if the L2 lexicon had not been fully developed and thus had

no access to other L2 idioms sharing the same concept, the closely connected L1 idiomatic knowledge must have been retrieved instead.

The least efficient prime was found to be L2 definition, followed by L1 definition being the second least efficient. This implies the importance of contextual information in language processing. Cain, Towse & Knight (2009) suggest that context positively affects idiom comprehension. In addition to receptive knowledge of idioms, Mohamadi Asl (2013) also emphasizes its long term effect on the learners' memory. As asserted in Simpson & Mendis (2003), it is important for learners to understand the speech contexts and discourse functions of idioms.

5.2 Learners' Learning Methods vs. Idiom Processing

The findings regarding research question 2 indicate that there is a positive correlation between the learners' learning method and idiom processing. The idioms retrieved from the L1 primes ('Semantically Related Idioms in Korean' and 'Definition of the Idiom in Korean') were ($M=.38$, $SD=.25$) more than the idioms produced with the L2 primes ('Semantically Related Idioms in English', 'Contextual Information in English', and 'Definition of the Idiom in English') ($M=.32$, $SD=.22$). Although this is not statistically significant, there is statistically significant evidence indicating a strong, positive correlation between L1 mediated learning and L1 access in L2 ($r=.756$, $n=32$, $p<.001$). This suggests that the more the L1 was utilized to memorize the target idioms, the more idioms were produced with L1 primes.

In terms of the concept of activation in cognitive linguistics, the node in the network is stronger as it is frequently used. Plunkett & Marchman (1993: 21) and Dell (2000: 345) refer to this as 'network training'. That is, when language learning occurs, the activation levels of the particular node become higher and consequently the node is easier to be activated at a later use. If the L2 learner had used L1 to memorize the target idiom, the concept-L1 node must have been trained in the network and thus activated with the L1 primes more easily than L2 primes in the study. Therefore it is evident that the way idioms are memorized may influence the way the idioms are retrieved.

The reason that the total amount of idioms produced with L1 primes was not substantially different from that of the idioms with L2-related primes can be explained in Nam's (2011) finding that L1 activation in L2 was present without L1 primes even in highly proficient L2 learners. As such, it can be assumed that in the present study the L2 primes may have activated the target idiom via L1 which was closely associated with the concept.

5.3 Pedagogical Implications

As it was found in the study, idiom learning based on its definition is the least efficient for idiom processing. Hoey (2005: 184) suggests that learning vocabulary in lists hinders the learning opportunity for chunks of language which in turn may impede the priming of the associated words in use. Considering the vocabulary learning and testing based on word lists that still seem prevalent in Korea, learning idioms in sufficient contexts may be critical.

In addition, although L1 activation in L2 seems hard to be completely circumvented as it was found in the study, L1-mediated memorization of idioms may be replaced or complemented by sufficient L2 input. As Durrant & Schmitt (2010: 182) suggest, sufficient exposure to the target lexical items may be the key to attainment of chunks of language.

6. Conclusion

In conclusion, the study suggests that idiom processing is affected by the types of primes. The first word of the target idiom was found to be the most efficient trigger. This implies that components of idioms contribute to the access to the whole conceptual/meaning representation, which is in line with hybrid models of idiom processing (Cutting & Bock 1997; Sprenger, Levelt & Kempen 2006). Semantically related L1 was the second most efficient prime found in the study, which suggests L1 lemma mediation in L2 idiom processing. Definition in L2, followed by definition in L1 was

found to be an inefficient prime, which indicates the importance of context in idiom learning and teaching. There was a strong positive correlation between L1-mediated idiom learning and idiom processing facilitated by L1 primes. The way that idioms are stored in the mental lexicon may reflect the retrieval process of the idioms. That is, if L1 is utilized as a cue to memorize idioms, the L1 information may be used as a prime in idiom production.

It should be noted that the implications of the results are suggestive and not conclusive due to limitations of this study. For instance, proficiency effect on types of primes in idiom processing was not included in the discussion since even individual learners at the same level of proficiency may vary in idiom processing due to their different learning methods. As such the study mainly focused on individual learners' learning methods and idiom processing with various primes. However, future study may seek comprehensive investigation into a better understanding of the proficiency effect on prime types, exposure to idioms, and the long-term memory.

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