

Lexical Retrieval in Spanish as a Third Language: The Analysis of Errors and TOT States

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Abstract

A Tip-of-the-tongue state is a strong feeling that a target word, although currently unrecalable, is known and will be recalled (Schwartz, 2008). This phenomenon, while universal in occurrence, takes place not only among monolingual speakers but also among multilingual ones. In this paper, episodes of TOT are reported during a word retrieval experiment on Japanese speakers of Spanish L3 with English L2. A similar method from Ecker's study (2001) was employed regarding the acquisition and processing of L3 words and their organisation and relation to other words (L1 and L2) in the mental lexicon. The study focused on learners' salient attributes in lexical retrieval of Spanish words during a Tip-of-the-tongue (TOT) state. Considering the typological distance between the L1 and the L3 of the subjects, similar principles of integration, organisation and processing of L3 words found by Ecker's study are reported in this study. A description of cross-linguistics influence (CLI) in L3 word retrieval during a +TOT is provided by considering aspects related to word form, meaning and syntactic class. The subjects were 17 Japanese speakers from a beginning level Spanish class. Initial word form and syntactic category, among others aspects, were found with considerable frequency during TOT states on L3 word retrieval. CLI from L2 and L3 represented the first and second higher source of influence in comparison with L1. The results showed how learners continue to rely on the languages more closely related to the target, irrespective of whether these are first or non-native languages.

Key Terms: lexical retrieval, cross-linguistics influence, mental lexicon, tip-of-the-tongue state, L1: first language, L2: second language, L3: third language.

1. Introduction

The human brain is the most complex apparatus that nature has evolved on this earth, and we know that answers to riddles of the human brain are not simple (Schwartz, 2002). Tip-of-the-tongue phenomenon (henceforth, TOT) is undoubtedly an episode that many human beings have experienced regardless of the language they speak. With certain frequency, speakers find themselves in situations where they cannot recall a particular word but the feeling of knowing the word is so strong that the simple failure to retrieve it can cause frustration at times. This particular phenomenon has been called Tip-of-the-tongue state. Brown and McNeill (1966) conducted one of the first studies in linguistics concerning TOT states. They explained to the participants that if they were unable to think of the word but felt sure they knew it and that at an unspecified time the word would come back, then they were in a TOT state.

During TOT states monolinguals seem to recall similar words, syllables of the words, and even phonological features being the source of influence within the same language repertoire. For example, TOT states have also been reported among monolinguals and bilinguals (see, e.g., Gollan & Acenas, 2004), children with dyslexia (Hanly & Vandenberg, 2010), college students (Schwartz, 2006), and older adults (Schwartz & Frazier, 2005). In multilinguals speakers TOT has also been studied in the hope of learning more about the mechanism underlying multilingual lexical processing (Cenoz, Hufeisen & Jessner, 2003; Ecker, 2001). Studies concerning cross-linguistics influence of previous languages in terms of lexical word retrieval have also been conducted with speakers of more than two languages.

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The purpose of this study is to conduct a replication of the study made by Ecke (2001) regarding the acquisition of Spanish by Japanese speakers with English L2. In Ecke's study, the subjects were Spanish speakers learning German L3 and having English as the second language. In this study, the subjects were Japanese speakers learning Spanish L3 and having English as the second language. Ecke (2001) reported a significant influence of L3 during +TOT states of German words followed by L2 and L1 respectively. After a thorough research in the literature of TOT studies involving bilinguals, no papers were found when Japanese speakers are learning Spanish as a third language with English as a second one. This replication is supposed to show if Ecke's findings (2001) can be found in an environment where the L1 is Japanese. In addition, the present study is concerned with the acquisition and processing of L3 (Spanish) words and the TOT states during a word retrieval experiment. In particular the study aims to:

To discover if the same principles of integration, organisation and processing of L3 words in the mental lexicon at form, syntactic-frame, and meaning levels of representation found by Ecke (2001) can also take place when the L3 is typological different from the L1.

To examine and describe the source of influence during L3 word retrieval.

A similar method as the one employed in Ecke's (2001) study has been adapted to and conducted for this particular environment where the languages involved are Japanese (L1), English (L2), and Spanish (L3).

2. Models of lexical retrieval

Any model of lexical retrieval must account for the rapid and continuous retrieval of words (Schwartz, 2002). During a word retrieval task, time is important since most speakers can find ways to replace the words by using a similar one during actual speech. However, when a particular word is elicited in a specified amount of time, episodes of -TOT or incorrect word retrieval might take place. Analysing these failures of lexical production may reveal what went wrong in lexical production (Ecke, 2001).

Example (1) is a record of a subject during a TOT state.

(1) Word to retrieve in Spanish: Biblioteca (L1: toshoukan), (L2: library)

Feel-of-knowing (FOK): 4 (I know the word)

Number of syllables: 4 __ teca

Stress: -te-

Associations: Books, library, Estudio (study)

The subject in the previous example could not recall the target word in the 60 seconds given but indicated a FOK of 4 in a five-point scale. The FOK of 4 indicates that the subject knew the target word and was able to recall parts of the words since the last two syllables of the target word were written. In addition, the subject recalled the word stress. This example is considered as a TOT state since the subject indicated the influence from the target word in L2 and one L3 meaning-related word. The words associated with the target word came from the L2 (English) and the L3 (Spanish). It was certainly a TOT state. This kind of analysis of word retrieval failure and TOT states can help us find what the salient attributes are in a speaker's mind during retrieval. In addition, it can provide information regarding the language causing the cross-lexical influence and the organisation of the mental lexical networks of the speaker.

Research questions

- (a) What are the salient attributes in L3 word retrieval?
- (b) Which language is the main source of interference during TOT states?
- (c) What is the frequency of interference by language during TOT states?

3. Method

3.1 Design

A translation task similar to the one employed by Ecke (2001) was used to elicit written word production during a word retrieval activity on L3. According to the literature, a translation activity has been employed by TOT researchers on many occasions to analyse TOT states in monolingual and bilingual speakers. Brown and McNeill (1966) instructed the participants in their study that if they were unable to think of the word but felt sure that they knew and could recall it then they were in a TOT state. A translation task of vocabulary served as a good technique to elicit mental activity during word retrieval because it can provide relevant information about the mental lexicon and its organisation. Fragmentary information of the target word regarding number of syllables, stress of the word, phonological sound, and associations were analysed in +TOT.

3.2 Subjects

In the beginner Spanish class 22 students speak Japanese as their L1. Seventeen of them agreed to participate in the study. The subjects represented almost 80% of the class population and were undergraduate students learning Spanish for the first time. It was a requirement of the course to have an intermediate to an advanced proficiency level of English since the main language of instruction was English (80% English, 20% Japanese). All the subjects were enrolled in an international university in Japan. The data collection took place about two weeks before the end of the semester.

3.3 Materials

1. Certain criteria were followed in the selection of the words for the study. Twenty-two words, including two words as an example, were selected as the target words of the study. All the words were taught in class as part of the curriculum designed for the level. In addition, these words came from the target vocabulary list for the Spanish proficiency test DELE level A1. The words selected for this study were carefully analysed by the instructor as words the students were able to recognize due to their high frequency. These words were non-cognates in Japanese and English. Regarding their syntactic class, there were 13 nouns, 4 verbs, 3 adjectives, and 2 verbs represented in the target vocabulary of the task. (Appendix 1)
2. The stimuli used for the translation and recall task were presented on power point slides followed by the pronunciation of each word. Every word was introduced using Japanese characters followed by a short sentence in L3 with the target word left blank as performed in Ecke's study (2001). (Appendix 2)
3. All the subjects received 22 semi-structured answer sheets and an instruction sheet explaining the task (Appendix 3).

Before the experiment, the subjects were instructed how to fill out the answer sheet by using two words as an example (Appendix 4). 60 seconds were given for each of the target words in the experiment. The experiment took approximately 30 minutes.

3.4 Procedure

The subjects were split into four groups in order to collect the data. The number of subjects by group varied from two to five students. In each group section, the subjects were instructed with 22 stimuli (2 words served as an example and were excluded from the analysis) on power point slides followed by the pronunciation of the word in Japanese L1 by the investigator and a short sentence in Spanish L3 with the target word left blank. 60 seconds were allotted per target word, in order to allow subjects to search for the word and fill out the time sheet. After the 60 seconds, the investigator asked the participants to stop and showed them the correct Spanish word followed by its pronunciation. As in Ecke's study (2001), the participants were asked to circle "yes" or "no" on the bottom part of the answer sheet under the following conditions: (a) they knew the target word and were searching for it, (b) they were thinking about the word, but they could not recall. When the target word section on the answer sheet was left blank and the two questions were circled as "yes", it was considered as a +TOT. A +TOT is an instance of word retrieval of the actual target word. In cases where the participants circled the first question as "yes" and the second question as "no", a -TOT was considered. -TOT represented instances of failure to retrieve a word (i.e. words that were different from the target word).

3.5 Recall response types

During the experiment, the following responses were found:

- (1) Some subjects retrieved the correct target word in less than 30 seconds.
- (2) Some subjects retrieved an incorrect target word in less than 30 seconds.
- (3) Some subjects pronounced and wrote down the target word in the L2.
- (4) Some subjects did not know the target word.
- (5) Some subjects were in a +TOT state and made use of the 60 seconds as an attempt to retrieve the word.
- (6) Some subjects were in a -TOT and made use of the 60 seconds as an attempt to retrieve a different word from the target word.

The retrieved responses were coded using the same criteria employed by Ecke (2001):

Correct target recall: the subject recalled the correct target word.

Wrong target word: the subject recalled an incorrect word.

Unknown target: The subject circled a feeling-of-knowing (FOK) score of 1, 2 or 3 on a five-point scale (1= I don't know to 5= I'm sure I know it).

-TOT State: The subjects circled a FOK score of 5, 4, or 3. (3 was used only when the participant wrote fragmentary information or associates words.) In addition, it was considered -TOT when the participant circled "no" in the second question "I was not thinking of this word."

+TOT State: the subjects circled a FOK score of 5, 4, or 3. (3 was used only when the participant wrote fragmentary

information or associates words.) In addition, it was considered a +TOT when the participant circled “yes” in both questions “I knew the target word and was thinking of it.”

4. Analyses

After the experiment, the following information was considered for further analysis.

- (a) Fragmentary information of target word form. This included information of the initial, middle, and final segment of the word, the number of syllables, and the stress of the syllable.
- (b) Word associations in TOT states related to the target word were analysed considering the L1 (Japanese), L2 (English), and L3 (Spanish).
- (c) General relation type by form, form/meaning, meaning, and syntactic class in +TOT states.
- (d) Form similarity information (initial, middle, and final segments; number of syllables, and stressed syllable).
- (e) Meaning relation type was categorised as superordinate, subordinate, category member, synonym, and attributive.

5. Results

5.1 Participant’s responses

After the experiment, 357 responses were collected from the 17 subjects. Table 5.1 shows the different types of responses considered for analysis. 52% of the target words were recalled correctly while 15% were recalled as incorrect. 14% represents cases of “unknown word” when the participants left the target section of the answer sheet blank and circled “no” in both control questions. Only 1 % of the total data represents cases where the participant (a) did not provide information about the target word and (b) did not circle any of the two control questions. +TOT states episodes were recorded in 11% of the responses and 7% were recorded as –TOT states. The +TOT states rate was higher than –TOT as found by Ecke (2001). For the purpose of this paper, only +TOT states were considered for further analysis.

Table 5.1 Total number and percentages of responses

	N (357)	Percentage 100%
Correct target	183	52%
Wrong target	53	15%
Unknown target	50	14%
No information	3	1%
+ TOT States	38	11%
- TOT States	26	7%

5.2 Fragmentary information in +TOT states

The percentages of partial target word information are shown in Table 5.2. The highest rate is represented by the initial word segment. Most of the subjects were able to recall (66% of the cases) the initial segment of the word. The lowest rates are 13%

and 16% represented by the stress and the middle segment of the target word respectively. The final segment of the word was recalled in 34% of the cases while the number of syllables was recalled in 37% of the cases. The pattern found in the fragmentary information of +TOT is consistent with the findings in L3 acquisition (Ecke, 2001).

Table 5.2 Percentages of fragmentary information in +TOT states (n = 38)

Initial	Middle	Final	Syllables	Stress
66%	16%	34%	37%	13%

5.3 Associations and incorrect word retrieval in +TOT

The associations made by the participants during a +TOT states were classified by form, form/meaning, meaning, syntactic class, and no relation. Table 5.3 shows the percentages of all the +TOT and an example of the associate word and the target word found after the analysis. In 50% of the cases, the participants associated the target word within the same syntactic class. Regarding the form of the word, in 21% of the cases the participants recalled similar form segments of the target word. In most of the cases of word associations, the form of the word was similar to the L2 word form while a small number was similar to the L1 word form. The classification of the words similar in form to the target language were later analysed by considering form attributes as shown in Table 5.4.

Table 5.3 Percentages of associate-target relation types in +TOT states.

Examples	Form	Form/meaning	Meaning	Syntactic class	No relation
	21%	8%	5%	50%	16%
Associate	cabocha	cat	comprar	boring	lejos
Target	cebolla	gato	compras	aburrido	reloj

Table 5.4 Form attributes coinciding in associate-target pairs similar in form

Examples	Initial	Middle	Final	Syllable	Stress
Associate	<u>M</u> ayor	<u>C</u> abocha	<u>T</u> ortilla	<u>F</u> lour	<u>F</u> uego
Target	<u>M</u> arido	<u>C</u> ebolla	<u>C</u> ebolla	<u>F</u> lor	<u>H</u> uevo

The relation types of associate-target words in +TOT states from the experiment are shown in Table 5.5. The association by category represented the highest rate. Most of the words associated with the target word had L2 influence. The second source of previous language influence was represented by the target language (L3). Examples of each relation type are shown in Table 5.6.

Table 5.5 Percentages of relation types of associate-target pairs similar in meaning

Superordinate	Subordinate	Category	Synonym	Attribute	Associative
19%	3%	45%	3%	3%	26%

Table 5.6 Examples of meaning-relation types

Relation type	Associate	Target
Superordinate	Hombre (man)	Marido (husband)
Subordinate	Hora (hour)	Reloj (clock)
Category member	Estar (to be)	Asistir (to attend)
Synonym	Tareas	Deberes (homework)
Attributive	Derecha (right)	Detras (behind)
Associative	Mensaje (message)	Carta (letter)

A final analysis concerning cross-linguistic influence was considered by classifying the words found during +TOT states in accordance with the language of influence.

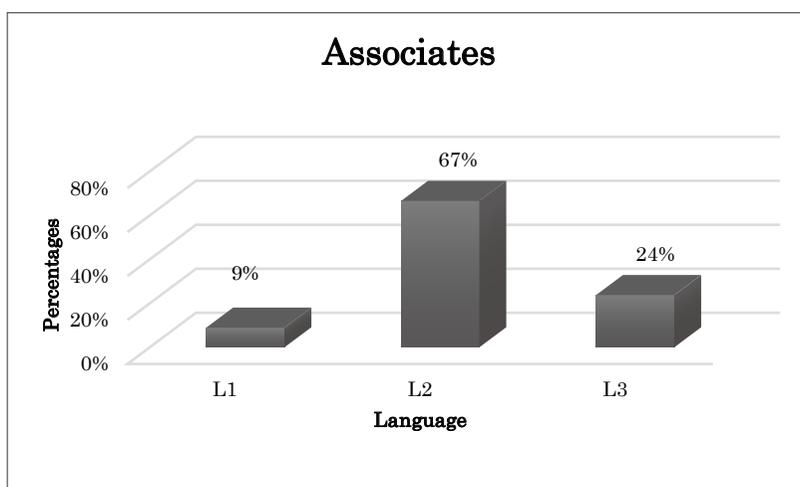


Figure 5.1 Percentages of language of associates in +TOT states

6. Discussion and conclusion

A similar pattern in relation to +TOT findings in Ecke's (2001) study of German L3 acquisition by Spanish speakers with English L2 was found in the present study. In response to the first research question, the salient attributes in Spanish L3 retrieval were consistent with Ecke's findings. The highest number of fragmentary information in +TOT was related to the initial segment of the word, the number of syllables and the final segment of the word were the second and third highest respectively. These findings might suggest that during word retrieval, subjects tend to recall the initial and final segment of a word more than the middle segment. Regarding the associations and incorrect word retrieval in +TOT, the subjects associated the target word with similar words from the same syntactic category in L3 and wrote down the correct equivalent in L2. As mentioned by Kroll and De Groot

(1997) the meaning of the target word is normally activated by two lexemes sharing a common concept. This idea might explain why the subjects could not retrieve the correct target word but instead words from the same syntactic category in the L3. In most of the cases, the subjects wrote the correct target word in the L2 as attempt to demonstrate the knowledge of the L3 unrecalled word in the L2.

According to the literature, theories of language production seem to follow two distinct processes in lexical retrieval (e.g., Garrett, 1992; Burke et al., 1991). A semantic retrieval process where the subject activates relevant information regarding the target word, and a second process related to phonological features of the target language. Both of these processes were found in the +TOT states analysed in this study. The subjects recalled words from previous languages emulating a similar sound to the target word, similar to the model retrieval of Caramazza and Miozzo (1997). These results suggest that in a failed attempt to retrieve a word, subjects seemed to search for a phonological representation of the target word.

In relation to the cross-linguistics influence (CLI), the findings in this research suggest that the L2 (English) was by far the main source of cross-lexical influence. These results support previous findings such as the one by Hammarberg (2001), which showed that in L3 lexical production the source of transfer seemed to be activated by the L2 rather than the L1. It is worth mentioning that one of the subjects of this study reported, after the experiment, to be thinking in Chinese, which was the last language previously studied for one semester before the current Spanish language class. This supports also the idea that other L2 languages can serve as the source of cross-lexical influence during L3 word retrieval.

Regarding the frequency of interference by language, the L2 (English) had the highest percentage of interference (67%) when retrieving a word in L3. The target language, Spanish, was also a source of interference with a 24% while the L1 (Japanese) represented the lowest source of interference 9%. It is important to mention that the language of instruction, as explained in the method section, was 80% English and 20% Japanese. While this might be considered as a possible explanation of L2 interference, De Angelis (2007) points out that learners continue to rely on the languages more closely related to the target, irrespective of whether these are first or non-native languages.

It has to be acknowledged that the data presented in this study comes from a small scale. Since most of the speakers enrolled in the Spanish class do not share the same L1 (Japanese), follow-up studies concerning TOT with non-Japanese speakers might be necessary to confirm these findings since 100% of the students in the Spanish class share the same L2 (English). In addition, studies concerning other linguistic aspects in third language acquisition are suggested since these studies might provide important information regarding language teaching in international environments. The study of TOT states in language learning is important since it can provide information about the mechanism of the mind regarding lexical knowledge and its organisation. Curriculum planners and language teachers can also find this information useful since it contains significant data regarding word retrieval and cross-linguistics influence of previous languages when learning new vocabulary in multilingual environments.

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Appendix 1

Words selected for the word retrieval experiment

上	On	Encima
細い	Thin	Delgado
背が高い	Tall	Alto
花	Flower	Flor
時計	Clock	Reloj
猫	Cat	Gato
図書館	Library	Biblioteca
タマネギ	Onion	Cebolla
卵	Eggs	Huevo
主人	Husband	Marido
服	Clothes	Ropa
水	Water	Agua
つまらない	Boring	Aburrido
宿題	Homework	Deberes
後ろ	Behind	Detrás
きれい	Pretty	Bonito
住む	Live	Vivir
読む	Read	Leer
買い物	Shopping	Compras
主席	Attend	Asistir
欲しがる	Want	Querer
手紙	Letter	Carta
牛乳	Milk	Leche

Appendix 2

Sample of the translation task

Word to retrieve: 上 (Encima) (on)

Short sentence: El libro está _____ de la mesa. (The book is _____ the table.)

Answer: Encima (on)

Appendix 3

Answer sheet (English version)

Target word: _____

I don't know it. 1 2 3 4 5 I am sure I know it.

Number of syllables: _____

Stress: _____

Letters / Sounds _____

Other information:

Associations:

Target word: _____

Did you know this word? Yes _____ no _____

Did you think of this word? Yes _____ no _____

Japanese version

言葉: _____

わかりません. 1 2 3 4 5 よくわかります

音節の数: _____

アクセント: _____

文字 / 音: _____

他の情報:

連想:

言葉: _____

この言葉がわかりますか? はい _____ いいえ _____

この言葉を考えましたか? はい _____ いいえ _____

Appendix 4

Instructions for the task

Instructions

This is an experiment about what is known as the tip-of-the-tongue phenomenon.

Tip-of-the-tongue states occur when one is close to remembering a word, but cannot recall it completely. I am interested in when such experiences occur, how they are resolved, and what kind of information the speaker can recover about the word, even if he or she cannot recall the word itself.

I am going to read to you the Japanese translation equivalents of 20 Spanish words. After each stimulus, I will ask you to recall the Spanish word and fill in a page in your booklet. If you recall the Spanish target word immediately, write it down. If you are certain that you do not know the word, circle number

1. If you think that you know the word, circle one of the numbers 2 to 5 depending on how sure you are. Please also record any attributes that you know about the target word (in particular, the number of syllables, main stress position, letters / sounds). Sometimes, you will not know much about the word that you intend to recall.

However, please write down everything that you can remember about the target word, and do not hesitate to guess any of its attributes. It is also possible that you will think of other words or word fragments related in meaning or sound to the target word. These words may resemble the target, but you will be certain that they are different words. It is important that you record all these associations. If you recall the target word during the experiment, write it after 'target word'. After some time, I will pronounce the target word. Please do not write the word if you did not recall it before. If you know the word, mark control question (1) with yes X, and if you were thinking of it, mark control question (2) with yes X. I am asking you this question because I need to know whether you were searching for the word that I had in mind.

Please raise your hand if you have any questions.

Instructions (Japanese version)

手順

今から日本語に訳した20個のスペイン語の単語のカードを見せ読み上げます。それぞれの日本語の単語に対して、スペイン語を冊子に記入してください。スペイン語の単語がすぐにわかったら、それを「単語」の欄に書いてください。もしその単語が全然わからなければ、数字の1を○で囲んでください。その単語が少し分かれば、どのくらいわかるかその度合いに応じて、2から5のどれかを○で囲んでください。また、何か単語の特徴が分かればそれも書き込んでください。(例えば、音節の数、アクセント、文字／音)

時々、思い出そうとしている単語についてあまりわからないかもしれません。しかし、その単語について連想できるもの、たとえば他の言葉や単語の一部でもいいので何でも書いてください。全て連想できるものを書き込むことが重要です。

少し時間をおいてから、答えを伝えます。その後は思い出せなかった単語を書かないでください。答えを聞いた後で、その答えの単語を知っていたのであれば質問1の「はい」に「○」を、もし考えていたのなら質問2の「はい」に「○」を記入してください。この質問を尋ねる意義は、私が考えていた単語と同じものをあなたが頭の中で探していたかどうかを知るためです。

質問があれば手を挙げてください。