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FACTORS INFLUENCING LEXICAL TRANSFER IN THIRD LANGUAGE ACQUISITION

Keywords: Third Language Acquisition (TLA), Third Language Acquired (L3), Second Language Acquired (L2), First Language Acquired (L1).

Abstract

The present paper examines the factors influencing lexical transfer in third language acquisition (TLA) by examining studies devoted to lexical transfer from L1 and L2 into L3 that were mainly conducted in Europe. There are several factors that have influence on lexical transfer: linguistic (such as typology), contextual (such as naturalistic setting vs. formal setting), psycho-linguistic (such as psychotypology and the learners' awareness of cognates), individual (such as learners' age) and other factors (such as L2/L3 proficiency level). The results of the survey indicate that negative lexical transfer from both L1 and L2 to L3 occurs (a) in naturalistic contexts, (b) when languages are typologically similar, (c) when students perceive these languages as similar, and (d) when L2 proficiency level is high and L3 proficiency level low. In contrast, positive lexical transfer from L2 to L3 occurs (a) in formal settings, (b) when students perceive these languages as similar, (c) when learners' awareness of true cognates is high, and (d) when both L2 and L3 proficiency level are high. Additionally, the learners' age was found to potentially predict the relative weight of lexical transfer in TLA in the following manner: negative lexical transfer from L1 and L2 to L3 may increase with age. Finally, it was found that when L1, L2, and L3 are equally proximate, it is the L1 that has the primary influence on lexical transfer in TLA.

Introduction

Language transfer "is said to occur when there is evidence that the linguistic features of one language influence those of another language" (Ellis 2015: 118). In TLA when L1 and L2 are typologically similar to L3 there is a large amount of both positive

and negative lexical transfer from L1 and L2 lexicon into L3. By contrast, typological dissimilarity between L1 and L2 with L3 will only result in a minor amount of positive and negative lexical transfer from L1 and L2 to L3 (Herwig 2001). Herwig proposed a component structure for lexical cross-language activation in TLA. This structure consisted of three "Lexicon-Semantic Networks" and three "Lexico-Formal Networks" for each language. The basis of lexical cross-language activation in trilingualism lies "in three sets of associations within each representational level and a third one connecting the two levels" (Herwig 2001: 119). For instance, the "Lexico-Semantic Network" of an L3 learner of English (with L1 French and L2 Spanish) is not only interconnected with itself but also with the French and Spanish "Lexico-Semantic Networks".

The "Lexico-Semantic Networks" organize and process words according to their conceptual similarity. "Lexico-Semantic" transfer comprises mainly "Calques" and "Semantic Extensions". The commonality of these three categories is that they show transfer of meaning rather than of form. The "Lexico-Formal Networks" organize and process words according to their phonological, orthographical and morphographical resemblance. "Lexico Formal" transfer mainly comprises "Language Switches", "Deceptive Cognate" and "True Cognate". The commonality of these last three categories is "that they are single lexical items that show transfer of form not meaning" (Ringbom 1987: 61).

An explicit definition of the five aforementioned categories is provided in the following paragraph. This is followed by a comprehensive description of the directionality of lexical transfer in TLA. The discussion continues with an illustration of the factors influencing lexical transfer in TLA. The paper concludes with a summary of the factors influencing lexical transfer in TLA.

Definition of technical terms:

This section defines several technical terms referring to different aspects of language transfer. The definition of terms is included in Table 1 below.

Lexical transfer of form	Type of lexical transfer	Underlying cause
Language Switches	Negative lexical transfer of form	"Language Switches" occurs when the L3 learner incorrectly uses a word/s from their L1 or L2 while processing words in their L3. The L3 learner uses word/s from their L1 or L2 lexicon because he/she is not aware of its equivalent meaning in L3. A "Language Switch" can occur from both L1 and L2 to L3. For example, a Finnish student learning L3 English might substitute the English word "jam" with the Finnish word "hillo", uttering the following sentence in L3: "The hillo was hidden in the cupboard".

Lexical transfer of form	Type of lexical transfer	Underlying cause
Deceptive Cognates	Negative lexical transfer of form	"Deceptive Cognates" occur when a learner is processing words in their L3 that are phonologically and orthographically similar but semantically dissimilar to words from their L1 and L2 lexicon. For example, a Swedish learner of L3 English may use the Swedish word "eventuellt" (meaning 'possibly') as a "False Cognate" of the English word "eventually".
True Cognates	Positive lexical transfer of form	"True Cognates" occur when a learner is processing words in their L3 that are phonologically, orthographically and semantically similar to words from their L1 and L2 lexicon. For example, the word "construction" is a French/English true cognate word, which is orthographically identical in both languages and somewhat similar phonologically.
Lexical transfer of meaning	**Type of lexical transfer**	**Underlying cause**
Calques	Negative lexical transfer of meaning	"Calques" occur when L3 learners have an awareness of the existing L3 lexicon but not of the relevant semantic collocational restriction. It mainly occurs when translating the figurative language (e.g. idioms, phrasal verbs from a source language (L1/L2) to a target language (L3). This occurs when L3 learners use the "Word for Word" translation strategy. For instance, the correct translation of the Swedish idiom "visa var skåpet ska stå" is "show someone how things must be done properly". This correct translation is the result of the translation of meaning. However, the "Calque" would be "show where the closet or cupboard is going to stand". This is an example of a "Word for Word" translation resulting in a loss of meaning.
Semantic Extension	Negative lexical transfer of meaning	"Semantic Extensions" occur when L3 learners are aware of the form of a word in their L3 lexicon but are unaware of the semantic restriction applying to its use. For example, the Finnish word "Kieli" means both 'tongue' and 'language'. A learner of L3 English with L1 or L2 Finnish who is unaware of the semantic restriction can mistranslate this word when they give less attention to the context.

Table 1: Lexical transfer of form and lexical transfer of meaning

The directionality of lexical transfer in TLA

Lexical transfer in TLA can occur in two ways. "Forward Lexical Transfer" is a transfer from L1 or L2 into the L3. "Reverse Lexical Transfer" is a transfer from the newest language(s) learned to the oldest language learned. When both of these types of lexical transfer occur, it is known as "Multidirectional Transfer" (Boratyńska-Sumara 2014). "Multidirectional Transfer" "can be applied to languages that perform the function of both source and recipient languages simultaneously" (Jarvis, Pavlenko 2008: 22). The vast majority of researchers in TLA have mainly investigated "Forward Lexical Transfer". More emphasis is placed on "Forward Lexical Transfer" due to its potential to assist in learning a new language by making use of a learner's existing L1 and L2 lexicon to assist with the development of their L3 lexicon (Boratyńska-Sumara 2014).

Factors influencing lexical transfer in TLA

Ellis (2015) illustrated the factors that influence both lexical and grammatical transfer from L1 to L2. This section applied his framework to show the factors that influence lexical transfer in TLA in cases of transfer from L1 and L2 to L3. This section argues that lexical transfer in TLA is influenced by the following five factors: linguistic, psycho-linguistic, contextual, individual and other factors (Meyer 1910; Cenoz 2001; De Angelis, Selinker 2001; Dewaele 2001; Ecke 2001; Gibson, Hufeisen, Libben 2001; Hammarberg 2001; Herwig 2001; Ringbom 2001; Angelis 2005; Bardel, Lindqvist 2006; Mulík, Carrasco-Ortiz, Amengual 2018).

A) Linguistic factors

These factors relate to "the linguistic properties of the native and target language" (Ellis 2015: 121). Evidence was found that lexical transfer in TLA can be influenced by typological similarity across related languages. In this sense, typological similarity includes phonological, orthographical and morphological similarity between related languages as well as language proximity.

1) Phonological and orthographical similarity

The mental lexicon of a learner contains information about all the lexical items (words) that a speaker knows, including their orthographic, phonological and conceptual representations (Aitchison 2003). The lexicon of a trilingual person comprises mental representations of words from all three languages (L1, L2 and L3) (Mulík et al. 2018). Empirical evidence suggests that bilinguals activate phonologically and orthographically similar words "from their L1 while processing words in their L2" (Mulík et al. 2018: 2). Similarly, trilinguals activate words from L1 or L2 while processing words in their L3. Mulík et al. (2018: 13) suggested that "the visual or auditory presentation of a word can lead to the parallel activation of orthographic and phonological representations" across the three languages of a trilingual learner

(L1, L2, L3). The "Orthographical Transfer" across languages is activated by reading (sight stimuli). The "Orthographical Transfer" is mainly examined through translation tasks from L1/L2 to L3 (sight stimuli). The "Phonological Transfer" is examined via "Word Recognition Tests" (voice stimuli) (Lemhöfer et al. 2008; Dimitropoulou, Duñabeitia, Carreiras 2011; Mulík et al. 2018). Activation of L1 or L2 words in L3 word processing depends on the degree to which the L1 or L2 words are phonologically and orthographically similar to the L3 words. The lexical transfer from L1 or L2 to L3 is not therefore random but systematic (Papagno, Vallar 1995; Lemhöfer, Dijkstra 2004; Lemhöfer, Dijkstra, Michel 2004; Pinto 2013; Mulík et al. 2018). For instance, L3 English learners with L1 Arabic and L2 French may activate the French word "accident" when learning the English word "accident". The word "accident" is a French-English "True Cognate" word that is phonologically and orthographically similar to its English pair "accident" and has the same meaning in both languages. In TLA, negative lexical transfer can also occur. Negative lexical transfer occurs in TLA when learners activate words from L1 or L2 which are orthographically and phonologically similar to words in their L3 lexicon, but dissimilar semantically (Marian, Spivey, Hirsch 2003; Weber, Cutler 2004). For instance, L3 English learners with L1 Arabic and L2 French may activate the French word "nid" (silent D) (nest) when hearing the English word "knee". Both words are phonologically similar but semantically dissimilar.

Mulík et al. (2018) examined the extent to which L1 and L2 activation in L3 lexical learning depends on the phonological and orthographical similarity across languages. They further examined the extent to which L2 activation in the L3 lexicon depends on the L2 level of proficiency. Mulík et al. (2018) recruited 35 Spanish students with L2 English who were encountering L3 Slovak for the first time. Participants were divided into two subgroups. Group A had advanced L2 English proficiency. Group B had low L2 English proficiency. Participants' L2 English proficiency was assessed by the TOEFL ITP test. Participants with high scores on the TOEFL ITP test (mean score = 598, SD = 48, out of a maximum score of 677) were assumed to have a high L2 proficiency. Participants unable to complete the TOEFL ITP test were assumed to have a low level of L2 English proficiency and assigned to the low-proficiency group. Mulík et al. (2018: 5) used "120 Slovak words which pertained to four experimental conditions (word types) as a function of their phonological and orthographical similarity with English and Spanish: 30 Spanish false cognates with 30 matched control words (true cognates), and 30 English false cognates with 30 matched control words (true cognates)". Participants were set three tasks. The stimuli were comprised of two lists of sixty words each (List A and List B) (Mulík et al. 2018). List A was used in the first and third tasks, and List B was used in the second task. Both lists contained all four subcategories (Spanish false cognates, Spanish true cognates, English false cognates, and English true cognates). Every subcategory was represented by 15 words. It is notable that despite the intention of the researchers to examine L1 and L2 positive and negative lexical transfer to L3, the design of the tests inadvertently favoured the positive and negative lexical transfer from L1 Spanish to L3 Slovak among all groups.

Task One was the "Paired-Associate Learning Task" (Mulík et al. 2018: 8). This task was computerized and was composed of three phases. In Phase One, a blank screen with a fixated point in the middle ("x" symbol) appeared for 500 ms. In Phase Two, a Slovakian word was presented in the middle of the screen for 3000 ms. The Slovak word was accompanied by an auditory stimulus, presented twice. The auditory stimuli represented the Spanish equivalent word of the Slovak word. The auditory stimuli were presented twice, at 0 ms and 1500 ms after the onset of the written translation. In the last phase, a blank screen appeared again for 1500 ms as an "inter-trial interval (ITI)" (Mulík et al. 2018: 8) and a new trial began. Participants were asked to learn the presented Slovak words. A total of 60 Slovak words were randomly presented twice (Mulík et al. 2018). Task One presented all words in L1 Spanish and no words were presented in English. The second task was "a translation recognition and decision task". A total of "60 word-pairs were presented in randomized order, one pair at a time" (Mulík et al. 2018: 8). This task involved four phases. In Phase One, a blank screen with a fixated point in the middle ("x" symbol) appeared for 500 ms. In Phase Two, the visual stimuli (Slovak word) was presented simultaneously with the auditory stimuli (Spanish word). The Slovak words remained in the middle of the screen for 5000 ms. In the last phase, a blank screen appeared again for 1500 ms and a new trial began. In the last phase, participants were asked to decide as quickly as possible if the Spanish translation was accurate by pressing a designated button. "After each participant's response, the correct translation was shown in green along with a message in Spanish indicating whether the answer was correct or incorrect ('Muy bien!'—'Well done!' or 'Te equivocaste!'—'Wrong answer!')" (Mulík et al. 2018: 9). The third task was a Slovak-to-Spanish translation task. The 60 auditory Slovak words from the first task were presented one-by-one. Participants were asked to translate these words into Spanish. They presented their answers on a paper sheet (Mulík et al. 2018).

Mulík et al. (2018) reported that in all tasks, Spanish participants, in their L3 processing, activated lexical knowledge from both L1 Spanish and L2 English during the novel L3 Slovak word learning (Task 1), recognition (Task 2) and translation (Task 3). The Spanish and English true cognate words played an equally important role in helping the participants learn L3 Slovak pairs (positive lexical transfer). Moreover, the Spanish and English false cognates had a negative facilitative effect in the activation of the L3 lexicon. However, the L2 low-proficiency group had a higher rate of false cognates transferred from L1 than L2 into L3. Participants with high-proficiency L2 were less subject to negative transfer from L2 false cognates. In summary, these findings suggested that in TLA, both positive and negative lexical transfer can occur from both L1 and L2 during novel L3 word learning. However, there was mainly a negative lexical transfer from the less dominant L2.

This review suggests that the study by Mulík et al. (2018) reflects the impact of orthographical and phonological similarities and dissimilarities across related languages on participants' lexical transfer in TLA. The study also examined if this transfer was evident in participants' L3 implicit linguistic knowledge (ILK) and/or their L3 explicit linguistic knowledge (ELK). The literature of new language acquisition

indicates that the learners' lexical linguistic knowledge of any given language is a combination of ILK and ELK (Ellis 2015). Linguistic knowledge, in this context, comprises lexical and grammatical knowledge. ELK is conscious as learners are aware of its existence and, therefore, can use it consciously. In contrast, ILK is intuitive and unconscious as learners are not aware of it (Ellis 2015). The literature concerning ILK and ELK shows that when participants are pressed for time, they rely on their ILK (Ellis 2015) or on their automatic ELK to provide answers (Suzuki, DeKeyser 2017). Automatic ELK is a type of knowledge that the learners are conscious of and can automatically (i.e. quickly) recall for use. In contrast, the participants count more on their ELK when they are given enough time. In Mulík et al. (2018), the words presented were completely new to the participants and the first two tasks were timed. Thus, the learners were completely dependent on lexical transfer from a previously learned language. This transfer was evident in the participants' ILK of L3 lexis or the participants' automatic ELK of L3 lexis. However, the students were given sufficient time to answer in the third task. Consequently, the lexical transfer here is evident in the participants' ELK of L3 lexis. Further clarification of these conditions may be useful for future research.

To conclude, this section suggests that in TLA, L3 learners activate words from their L1 or L2 depending on their phonological and orthographical similarity to the L3 processed word. The activation does not occur randomly; rather, it occurs systematically from the L1 or L2 words that are the most phonologically and orthographically similar to the L3 processed word. "Phonological Transfer" and "Orthographical Transfer" can be positive (e.g. true cognates) or negative (e.g. false cognates).

2) Language distance

Several studies in the field of TLA have demonstrated that language distance (typological closeness) between related languages (L1, L2, L3) is one of the main factors influencing lexical transfer in L3 learning (Ringbom 1987, 2001; Möhle 1989; Cenoz 2001; Odlin, Jarvis 2004; Llama, Cardoso, Collins 2010). This section will investigate the role of "language distance" in the transfer of lexicon in TLA.

Odlin and Jarvis (2004) examined whether trilinguals activate lexical knowledge from their L2 during L3 word processing and whether the extent of lexical transfer is proportional to the degree of language proximity between L2 and L3. They recruited two groups of participants. Group A consisted of 140 Finnish students with L1 Finnish, L2 English and L3 Swedish. Group B consisted of 70 Swedish students with L1 Swedish, L2 English and L3 Finnish. The participants' level of L3 was intermediate (6 months of instructed L3 learning). Speakers had been learning L2 English for a period of 3 to 7 years. Participants were aged between 11 and 16 years. Participants were asked to view a Charlie Chaplin silent movie. After they had finished watching this film, they were required to provide a written description of the scenes in their respective L3 language. Odlin and Jarvis (2004) examined participants' use of the Finnish and Swedish equivalent words of "instead", "for", "some" and "what" in their transcripts. The rationale was that these four English words only have true cognates with Swedish. As Finnish is an unrelated language, it does not have any

true cognates with English. This is because English and Swedish are both members of the Indo–European language family whereas Finnish belongs to the Finno–Ugrian language family. On this basis, both positive and negative transfer of these cognate words could be traced. The participants in Group A correctly used the Swedish equivalents of the words "instead", "for", "some", and "what" (English/Swedish true cognates). The positive lexical transfer from L2 English to L3 Swedish occurred due to the typological similarity between these two languages. The participants in Group B found it difficult to find the Finnish equivalents of the words "instead", "for", "some' and "what". There was no lexical transfer from L2 English to L3 Finnish. This is due to the typological dissimilarity between these two languages.

A critical issue related to the methodology of this study, namely the method used for evaluation of the learners' L2 and L3 proficiency levels. The researchers postulated that the participants' L2 proficiency level was intermediate because they were exposed to L2 instructed learning for 6 months. Furthermore, they also claimed that the participants' L3 proficiency level was advanced because the participants had received instruction in their L3 for 7 years. However, although the amount of instruction is one of the factors that causes the development of linguistic knowledge, it is not the only factor. It is well known that many other factors play a role in determining language proficiency, such as language-teaching efficiency as well as the learners' intrinsic and extrinsic motivation and cognitive ability. I suggest future research should consider having participants take a language proficiency test before the commencement of the study to provide clearer evidence of learners' L2/L3-proficiency levels. For instance, the Oxford Online Placement Test (OOPT) could be used to assess learners' L2 and L3 proficiency level. The OOPT is a digitalized and standardized test, which can be used to examine the level of proficiency of all the European languages. A learner's rating on OOPT is based on the Common European Framework of Reference for Languages (CEFR).

The second critical issue in this study concerns how positive lexical transfer is determined. Correct L3 lexical production can arise as a result of L3 lexical input and/or lexical transfer from the previously learned languages into L3. Unless the students encounter L3 words for the first time, it is not possible to distinguish the source of L3 lexical production. I suggest that future researchers examining positive lexical transfer should recruit participants who encounter L3 for the first time. However, this paper found no methodological issue pertaining to the measurement of negative lexical transfer in TLA. The learners' incorrect lexical production mainly resulted from negative lexical transfer from previous languages into L3, and the L3 input only contributed to positive lexical production.

In summary, this study showed that lexical transfer from L2 into L3 only occurs when L2 and L3 are typologically similar. However, there can be no lexical transfer when the L2 and L3 languages are unrelated.

Ringbom (2001) examined whether trilinguals activate lexical knowledge from their L1 and L2 during L3 word processing and whether the extent of lexical transfer is proportional to the degree of language proximity between L1 and L2 with L3. He investigated negative "Lexical Transfer of Form" and negative "Lexical Transfer

of Meaning" from L1 Finnish and L2 Swedish into L3 English. Participants in this study formed two groups where the first group consisted of 577 students with L1 Finnish, L2 Swedish, and L3 English and the second group consisted of 577 students with L1 Swedish, L2 Finnish, and L3 English. All the students were between the ages of 16 and 17 and had studied English at school for at least 7 years. Moreover, all the participants had a high L2 proficiency level as the L2 was taught from the time they were 8 years old. Participants were asked to translate 61 words from both their L1 and L2 into their L3. Half of the words were from their L1 and half from their L2. Words were presented in an English sentence (e.g. I am building my <HUS> because Hus is house in Swedish). Results showed that there was a less negative "Lexical Transfer of Meaning and Form" from L1 Finnish to L3 English (582 errors) than from L1 Swedish to L3 English (649 errors). Results suggested that negative "Lexical Transfer of Form and Meaning" from L1 to L3 is more likely to occur when L1 is typologically similar to L3. Results also showed that negative "Lexical Transfer of Meaning and Form" from L2 Finnish to L3 English included 21 errors. This was less than that from L2 Swedish to L3 English which included 164 errors. Ringbom (2001) suggested that negative lexical transfer occurs from both L1 and L2 to L3. The language (L1 or L2) that is the most typologically similar to L3 will be the main source of negative and positive lexical transfer. However, he further postulated that if L1 and L2 are typologically similar to L3, L1 is the main source of both negative and positive lexical transfer.

The critical issue in this study concerns the measurement of the participants' L2/L3 level of proficiency. The L2/L3 amount of language instruction was used to establish the L2/L3 proficiency level. As previously suggested, an L2/L3 proficiency test is the most efficient way to determine participants' L2/L3 proficiency level.

Angelis' (2005) study also provided evidence concerning the influence of typological similarity on lexical transfer in TLA across related languages. Angelis recruited 108 participants. The participants in Group A and Group B were adult learners of Italian at the University of Pittsburgh while the participants in groups C and D were adult learners of Italian at the University of Puerto Rico. Participants formed the following four groups:

- Group A had L1 English, L2 Spanish, and L3 Italian (n=37). Participants had a low level of L2 and L3 proficiency.
- Group B had L1 English, L2 French, and L3 Italian (n=26). Participants had a low level of L2 and L3 proficiency.
- Group C had L1 Spanish, L2 English, and L3 Italian (n=45). Participants had a high level of L2 proficiency and a low level of L3 proficiency.
- Group D had L1 Spanish, L2 French, and L3 Italian (n=9). Participants had a low level of L2 and L3 proficiency.

The participants' L3 proficiency level was determined mainly through a translation task, which required them to translate 30 words from L1 to L3. The participants were presented with 30 words in their L1 and were asked to translate them into L3. The results showed that the participants had a low L3 level of proficiency. This is because the participants scored an average of less than 30% on the translation task.

The method of determining the participants' L2 proficiency level varied across the four groups. The participants in groups A and B were required to complete a translation task, where they were asked to translate 30 words from L2 to L3. The participants from group A and group B scored an average of less than 30% on the translation task. Accordingly, the participants were considered to have a low level of L2 proficiency. The Group C participants had a high level of L2 proficiency as they had studied the L2 for an average of 6 years. The L2 proficiency level for Group D was low. This is because Group D participants had studied L2 for an average of only 1.5 years.

Participants were asked to read a paragraph in their L1 and to write a summary about it in Italian (L3) and were not permitted to use dictionaries. The following results were obtained for the lexical transfer of "Function Words" and "Content Words". In group A (L1 English, L2 French), the occurrence of lexical transfer from L1 English to L3 Italian was (n=30) while the occurrence of lexical transfer from L2 French to L3 Italian was (n=21). These results indicate that when both L1 and L2 are typologically similar to L3, L1 is the main source of lexical transfer to L3**.**

For Group B (L1 English, L2 Spanish), the number of occurrences of lexical transfer from L1 English to L3 Italian was (n=87). The number of occurrences of lexical transfer of L2 Spanish to L3 Italian was null (n=103). These results showed L2 was a greater source of lexical transfer because Spanish is more typologically similar to Italian than English.

For Group C (L1 Spanish, L2 English), the occurrence of lexical transfer from L1 Spanish to L3 Italian was (n=263). However, there was hardly any lexical transfer from L2 English to L3 Italian (n=5). Group C results showed that L1 (Spanish) was the main source of lexical transfer into L3 Italian. Angelis (2005) provided an explanation accounting for the small amount of lexical transfer from L2 English into L3 Italian. He suggested that the low occurrence of lexical transfer could be due to the students' perspective that English and Italian are typologically dissimilar.

In Group D (L1 Spanish, L2 French), the occurrences of lexical transfer from L1 Spanish to L3 Italian was (n=28). The occurrence of lexical transfer from L2 French to L3 Italian was (n=22). These results showed that when both L1 and L2 are typologically similar to L3, L1 is the main source of lexical transfer into L3.

There are two critical issues in the methodology of the study by Angelis (2005). The first issue concerns the measurement of the L2 proficiency level. The participants' L2 proficiency level for groups A and B was mainly determined by the translation task. In contrast, the L2 proficiency level for the participants in groups C and D was determined in relation to the amount of L2 instruction they had received. These two approaches in determining the participants' L2 proficiency level may have resulted in different findings. As previously suggested, an L2/L3 proficiency test is the most efficient way of determining participants' L2/L3 proficiency level.

The second critical issue concerns the variant level of L2 proficiency across the participants. Group C had an advanced L2 level of proficiency while all the other groups had a low L2 level of proficiency. To evaluate the impact of typological similarity and dissimilarity across the related languages on the lexical transfer in TLA, this review suggests selecting participants who have the same level of L2 proficiency.

More recently, Peric and Novak Mijic (2017) examined whether trilinguals activate lexical knowledge from their L1 and L2 during L3 word processing and whether the amount of lexical transfer is positively correlated with language proximity between L1 and L2 with L3. They investigated the negative "Lexical Transfer of Form" and the negative "Lexical Transfer of Meaning" from L1 Croatian and L2 English into L3 Spanish. "Lexical Transfer of Form" included "False Cognates", "Coinage" and "Code-Switching". "Lexical Transfer of Meaning" included "Calques" and "Semantic Extension". In their study, 60 participants were recruited. They formed two groups. Group A (n=30) were second-year college students. Group B (n=30) were third-year college students. Participants were acquiring Spanish L3 in the American College of Management and Technology in Croatia. All participants had L1 Croatian, L2 English (high proficiency level) and L3 Spanish. Participants were required to write a text of 200 words in their L3 within a time limit of 100 minutes. They were asked to write about any topic they wanted.

In the case of both Group A and Group B, there was more negative lexical transfer from L2 English than L1 Croatian into L3 Spanish. This was because English is more typologically similar to Spanish than Croatian. For instance, for Group A, negative "Lexical Transfer of Form" from L1 Croatian to L3 Spanish included "Code-Switching" (41 errors), "Coinage" (2 errors) and "False Cognate" (zero errors). Negative "Lexical Transfer of Form" from L2 English to L3 Spanish comprised "Code-Switching" (141 errors), "Coinage" (96 errors) and "False Cognates" (34 errors). In conclusion, there were more cases of negative "Lexical Transfer of Form" from L2 English to L3 Spanish (271 errors) than from L1 Croatian to L3 Spanish (43 errors). This result mainly occurred because Spanish is more typologically similar to English than to Croatian (Peric, Novak Mijic 2017). Negative "Lexical Transfer of Meaning" from L1 Croatian to L3 Spanish included "Semantic Extension" (3 errors) and "Calques" (26 errors). Negative "Lexical Transfer of Meaning" from L2 English to L3 Spanish included "Semantic Extension" (20 errors) and "Calques" (47 errors). In conclusion, there were more cases of negative "Lexical Transfer of Meaning" from L2 English to L3 Spanish (67 errors) than from L1 Croatian to L3 Spanish (29 errors). This result mainly occurred because Spanish is more typologically similar to English than to Croatian. The results for Group B demonstrated the same point (Peric, Novak Mijic 2017).

In a nutshell, several studies suggest that both positive and negative lexical transfer from L1 to L3 are more likely to occur when L1 and L3 are typologically similar. Similarly, both positive and negative lexical transfer from L2 into L3 are also more likely to occur when L2 and L3 are typologically similar. When L1 and L2 are relatively equally linguistically proximate to L3, there is always a greater degree of lexical transfer from L1 into L3 (Ringbom 2001; Odlin, Jarvis 2004; Peric, Mijic 2017).

3) Morphological similarity

Lexical transfer between languages includes the transfer of similar morphemes across relative languages (Weinreich 1953). For example, the lexical unit "bas" is a common morpheme across these 4 languages: basic (English), básico (Spanish),

de base (French), di base (Italian). This section investigates the effect of morphological similarity between related languages on the amount of lexical transfer in TLA.

De Angelis and Selinker (2001) undertook a qualitative study in which they investigated "Morphological Interlanguage Transfer" from L1 (French or English) and L2 (English or Spanish) into L3/L4 Italian lexical production. They investigated the correlation between "Morphological Lexical Transfer" and the degree of linguistic similarity across these related languages. "Morphological Interlanguage Transfer" is "the production of inter-language forms in which a free or bound non-target morpheme is mixed with a different free or bound target morpheme to form an approximated target language word" (De Angelis, Selinker 2001: 43). An example of "Morphological Interlanguage Transfer" is the lexical unit "bas" in: *ab*bastante (Catalan), bastante (Spanish), *ab*bastanza (Italian). These words mean 'sufficient' in English. De Angelis and Selinker recruited two participants. The first participant (P1) was a 50-year-old French-Canadian female with L1 French and three acquired languages (L2 English, L3 Spanish, and L4 Italian). She lived for 35 years in predominantly English-speaking countries and received instruction in Spanish for over 5 years. She spent a total of 6 months in Spanish-speaking countries (3 months in Mexico, 3 months in Spain). Participant two (P2) was a native Englishman (L1 English) with two acquired languages (L2 Spanish and L3 Italian). He received 5 months of intensive formal instruction in Spanish before moving to and living in Chile for three and a half years. Both participants first studied Italian for 2 years during high school and were enrolled in an Italian language course again for 1 week prior to the commencement of the study (De Angelis, Selinker 2001).

Both participants first attended an interview with a native Italian interviewer. After 6 months, a second interview was held. During this time, participants had no exposure to Italian nor did they travel to Italy. De Angelis and Selinker (2001) aimed to provide evidence of lexical transfer in L3 production in two different settings.

For P1 it was the following:

1. She was asked whether she was familiar with a list of English words that were read aloud to her one at a time. She was asked to answer with either "Yes" or "No".
2. She was asked to translate the same English words to Italian. The words were read aloud to her in English one by one. A translation was requested after hearing each word.
3. She was asked whether she had ever heard the Italian target words. The correct target words were read aloud to her one at a time. She was asked to answer with either "Yes" or "No".

For P2 the task was as follows:

1. P2 was recorded 22 times over five weeks. Before each recording, he was tasked with watching the Italian evening news almost daily, and to then produce an oral report of the events. He was undergoing two hours of daily Italian language instruction; from week 2 to week 6 data were collected. P2 had a harder task because he was a fluent Spanish speaker.

De Angelis and Selinker (2001) provided evidence of "Morphological Interlanguage Transfer" from L1 (French), L2 (English) and L3 (Spanish) into L4 (Italian) in P1. For P1, the amount of "Morphological Interlanguage Transfer" was determined by the degree of linguistic similarity across these related languages. "Morphological Interlanguage Transfer" occurred in this descending order of significance: L1 French, L3 Spanish and L2 English. For P2, "Morphological Interlanguage Transfer" also occurred from both L1 (English) and L2 (Spanish) into L3 (Italian). The amount of "Morphological Interlanguage Transfer" was once again determined by the degree of linguistic similarity across these related languages. Therefore, there was more "Morphological Interlanguage Transfer" from L2 (Spanish) than from L1 (English) into L3 (Italian).

The critical issue concerning this study is that the L2/L3 proficiency level of the participants was not stated and only the amount of L2/L3 exposure was stated. The second issue is that the sample size (only two learners) is too small to draw conclusions from.

This section suggests that morphological similarities between L1 and L3 may result in the activation of words from the L1 lexicon while processing the L3 lexicon. Furthermore, morphological similarities between the L2 and L3 lexicon may also result in the activation of the L2 lexicon while processing the L3 lexicon. However, morphological lexical transfer from L1 and L2 to L3 may increase in proportion to the proximity of the related languages.

B) Individual factors

Individual differences among learners such as age and attitude influence the likelihood of lexical transfer in SLA (Ellis 2015). In TLA, "Age" is a factor that influences L1/L2 transfer to L3. In this case, "Age" was an individual variable (i.e. the actual ages of different learners).

1) Age

In SLA Ellis (2015: 137) suggested that: "in general, L1 transfer occurs to a greater extent in older than in younger learners. This reflects differences in the extent to which younger and older learners depend on their L1 or L2 input as a source of data for learning". Ellis's (2015) suggestion for SLA also applies to TLA. Cenoz (2001: 1) examined the influence of L1 Basque and L2 Spanish on L3 English oral production. She investigated the extent to which "Age" influences lexical transfer in TLA. This was done by comparing the same group of L3 learners at two different times in their acquisition process. Cenoz recruited 20 students from Year Four (8 years of age). This same group was again recruited when they reached Year Six (10 years of age). Since their birth, these participants were simultaneously exposed to L1 (Basque) and L2 (Spanish). However, the curriculum subjects were instructed in L1 (Basque), while L2 (Spanish) and L3 (English) were instructed as subjects. The participants' L1 and L2 proficiency level were considered advanced, while their L3 proficiency level was considered intermediate. The researcher used the amount of L2/L3 linguistic exposure to determine

the learners' language proficiency. Participants received instruction in English and Spanish from the age of four. Participants were asked to look at 24 pictures from the children's book *Frog, where are you?* written by Mayer (1969). They were then asked to recite the story orally. Answers were audio-recorded and transcribed. This study investigated the occurrence of "Transfer Lapses" from L1 (Basque) and L2 (Spanish) in the aural production of L3 (English). "Transfer Lapses" are the unintentional use of one or more words from L1 or L2 lexicon in the production of an L3 utterance. Transfer lapses occur naturally and cannot be detected through specific speaking signs such as "marked intonation" or "hesitation" (Cenoz 2001). They mainly comprise "borrowing" and "foreignizing". "Borrowing" is "the use of an L1 (or Ln) word without any phonological and/or morphological adaptation" and "foreignizing" is "the use of words from L1 and L2 lexicon with these adaptations" (Poulisse 1989: 111). "Transfer Lapses" are a form of negative lexical transfer.

Cenoz's (2001) study also examined the occurrence of "Interactional Strategy" from L1 (Basque) and L2 (Spanish) into L3 (English). "Interactional Strategy" occurs when a student mixes words from their L1 and L2 lexicon when speaking in their L3 language. Students were asked to use their L3 language when interacting with their examiner. "Interactional Strategy" is a form of a negative lexical transfer.

Cenoz (2001) found that older learners (10 years old) made more "Transfer Lapses" from both Basque L1 and Spanish L2 to produce L3 English lexicon than younger learners (8 years old). Among older learners, the percentage of "Transfer Lapses" from L1 Basque to L3 English was M=26.78/SD=44.35 and the percentage of "Transfer Lapses" from L2 Spanish to L3 English was M=72.62/SD=37.89. Among younger learners, "Transfer Lapses" from L1 Basque to L3 English M=14.76/SD= 31.42 and the percentage of "Transfer Lapses" from L2 Spanish to L3 English was M=67.99/SD=41.29. Cenoz also found that older learners (10 years old) made greater use of "Interactional Strategy" from both Basque L1 and Spanish L2 to produce L3 lexicon than younger learners (8 years old) did. Among older learners, the percentage of "Interactional Strategy" from L1 Basque to L3 English was M=83.89/SD=16.48 and the percentage of "Interactional Strategy" from L2 Spanish to L3 English was M=6/SD=11.09. Among younger learners, the percentage of "Interactional Strategy" from L1 Basque to L3 English was M=80.53/SD=27.62 and the percentage of "Interactional Strategy" from L2 Spanish to L3 English was M=5.53/SD=11.09.

These results showed that there is a greater amount of negative transfer from L1 and L2 into L3 among older learners than younger learners. This result contradicted Cenoz's (2001) expectation that there will be a lower rate of negative lexical transfer among older learners (10 years old) than younger learners (8 years old). This assumption was premised on the fact that the older learners had two additional years of L3 instruction and therefore had a higher level of L3 proficiency. She proposed an alternative explanation, which tries to account for these counter-intuitive findings by exploring the influence played by age on linguistic behaviour. She proposed that with the increase of age, negative lexical transfer will increase.

However, while a tentative conclusion concerning the role of age in the negative lexical transfer in TLA might be drawn from this study, it is important to note that

this finding has yet to be replicated by other studies. Moreover, the author's methodology can be critiqued on the basis that the age range between the two groups of learners is relatively minor and the students at both stages of learning are below the age of the critical period. Therefore, the study, at best, may only speak to the age of learners in the pre-critical period. Although this study points to the effect of age on lexical transfer, it does so only in relation to the difference between very young and slightly older children and does not address the issue of whether transfer varies in accordance age. Furthermore, this study fails to correctly determine the students' L2/L3 proficiency level via a language proficiency task.

This section proposes that in the pre-critical period, negative lexical transfer from L1 and L2 into L3 may increase systematically with age.

C) Contextual factors

Contextual factors relate to "the nature of the learners' exposure to the target language" (Ellis 2015: 121). In TLA, contextual factors can influence L1 and L2 transfer to L3 lexical production.

1) Macro-contextual factors

The "Macro-contextual" factor refers to the context defined in a very broad term such as an instructional context versus a naturalistic context. According to Ellis (2015), the "Macro-contextual" factor mainly concerns the difference between a natural learning setting and a formal classroom setting and their influence on language transfer. He argued that positive language transfer from L1 to L2 may occur in a formal setting such as classroom (i.e. in a focused context), whereas negative language transfer from L1 to L2 may occur in a natural setting where learners do not properly distinguish between L1 and L2 (i.e. in an unfocused context).

In TLA, the macro-contextual factor was found to influence lexical transfer. This was evident in the study of Dewaele (2001). He investigated to what extent a shift in the formality of a situation (formal vs. informal interview) can influence lexical transfer from L1 and L2 into L3. Dewaele recruited a total of 25 Dutch participants. 19 participants had French as an L2 and English as an L3 (Group A). 6 participants had English as an L2 and French as an L3 (Group B). Their L2 language was taught for 5 hours per week over 6 years in primary and secondary school, while their L3 language was taught for 3 hours per week over 4 years in secondary school. Dewaele collected a corpus of French L2/L3. This corpus resulted from L3 learners participating in two interviews, one being formal and one being informal. The communicative language of the interviews was French. The informal interview was a one-on-one conversation set in a casual atmosphere. The discussion topics were informal (hobbies, traveling) and answers were not time-pressured. In contrast, the formal interview was a speaking test (oral exam) with a ten-minute time restriction. The topics of discussion were formal (politics, philosophy, and economics) set in a serious atmosphere. Students were told beforehand that their score will depend on linguistic accuracy as well as the content. The interviews were recorded, transcribed

and analyzed. Negative lexical transfer mainly included "Mixed Utterances". "Mixed Utterances" occur when L3 learners use words from previously learned languages (L1 and L2) when speaking in their L3 language.

Results showed that in the informal interview, the amount of "Mixed Utterances" made by participants of both groups was higher than that made in the formal interview. A t-test showed a significant "difference ($t(24) = 3.773$, $p < 0.001$) between the proportion of "Mixed Utterances" in the informal situation ($M = 9\%$, $SD = 8.8$) and in the formal situation ($M = 3\%$, $SD = 3.9$)" (Dewaele 2001: 79). Dewaele suggested that these results might have occurred because learners in natural settings do not properly distinguish between L1, L2, and L3. Although Dewaele did not measure the amount of positive lexical transfer from L1 and L2 into L3 for both groups, he did observe that the amount of positive lexical transfer from L1 and L2 to L3 was greater in the formal setting. He suggested that this probably occurred because students in formal settings carefully selected "True Cognate" words from L1 and L2 into their L3 lexical production.

In this study, the level of L2 and L3 proficiency should have been evaluated using a proficiency test. Additionally, positive lexical transfer should have been examined statistically, not just observed.

This section suggests that in TLA, negative lexical transfer from L1 and L2 into L3 occurs more frequently in informal settings than in formal settings. This is thought to result from learners in natural settings not properly distinguishing between L1, L2, and L3. By contrast, positive lexical transfer from L1 and L2 into L3 occurs more frequently in formal settings than in informal settings because students in formal settings carefully select "True Cognate" words from L1 and L2 into their L3 lexical production.

D) Psycholinguistic factors

These are the factors relating to the learners' perception about the transferability (Ellis 2015: 121). In a TLA context, this is the transferability of L1/L2 lexical features to L3 lexical production**.** In TLA, psychotypological similarities across the relevant languages and the learners' awareness of true cognates constitute two factors that influence lexical transfer in TLA.

1) Psychotypological similarities

This section investigates the role of psychotypology in lexical transfer in TLA. Psychotypology does not refer to the actual similarity or difference between languages, but rather the learner's perception of such similarities or differences (Ellis 2015).

Bardel and Lindqvist (2006) examined the role of psychotypology in lexical transfer in TLA. In their study, they recruited a multilingual participant, who was a learner of L3 Italian. The participant's native language was Swedish and she had multiple L2s (English, French and Spanish). Her English and French L2 proficiency level was advanced as she had studied English for 10 years and French for 8 years. At the time of her participation in this study, she was pursuing a PhD in French at

Stockholm University on the acquisition of Romance languages. Her L2 Spanish proficiency was average as she had only studied Spanish for 1 year; however, her Spanish was activated by her Spanish-language course. Moreover, she also had a basic knowledge of L3 Italian prior to the study.

Before the beginning of the study, the participant informed the researchers that she is more proficient in English than French. For research purposes, the participant was enrolled in an Italian course for 11 weeks in Stockholm University. Data were collected from four recordings that took place on four separate occasions. The first recording was held right before the start of the course, the second occurred two weeks after its onset, the third recording was held directly after its completion and the last recording took place six months after the end of the course. All the recordings involved an interview on a random topic and three retelling tests, one of comic strips and two of mute cartoon videos. Researchers were interested in examining the participant's "Word Construction" in her L3 Italian. "Word Construction" is the participant's attempt to create Italian words based on previously learned languages. "Word Construction" phenomena can be detected because they are mainly accompanied by hesitation.

The "Word Construction" phenomenon can result in the formation of correct L3 words based on the other L2s (positive lexical transfer). For instance, this participant used a word in Italian based on its true cognate counterpart in one or all of her L2s that she assumed existed in the L3. For instance, the word "doctorant" in Italian has a true cognate in English, Spanish and French ("doctorate", "doctorante", "doctorante" respectively). To examine the psychotypological factor, the researchers only looked at instances of correct word construction where there was an equal potential for lexical transfer from all L2s due to the existence of true cognate words in all the L2s. This test was designed to confirm that lexical transfer from L2 languages into L3 is influenced by psychotypological proximity, as the L3 had true cognate word pairs in all three L2 languages. Hence, when a learner favours only one of their three L2 languages for lexical transfer into L3 on the basis that this is most typologically similar to the L3, this is only a perception, as objectively all the L2 languages are equally typologically similar to the L3. After the four recordings took place, an interview with the participant was arranged to understand her choices.

The "Word Construction" phenomenon can also result in the formation of incorrect L3 words. This occurs when a speaker uses "False Cognates" or the creation of non-existent words based on their L2 lexicon. For instance, the participant mistakenly uses the French word "lire" (read) or the Spanish word "roda" (read) instead of the Italian word "leggere" (read). The psychotypological factor was believed to influence not only positive lexical transfer (correct "Constructed Words") but also negative lexical transfer. Once learners begin favouring a specific L2 language for positive linguistic transfer, the likelihood of negative lexical transfer from that language increases. The calculation of the rate of "Constructed Words" comprised both correct and incorrect "Constructed Words".

Results showed there were no "Constructed Words" from Swedish L1 (X=0%). Bardel and Lindqvist (2006) accounted for this result because Italian and Swedish

are typologically dissimilar. Results showed that in all the 4 recordings, all the constructed Italian words were mainly from French L2 (X=81%) and that the percentage of the "Constructed Words" based on L2 English was minimal (X=3%). Results also showed that the percentage of the "Constructed Word" based on L2 Spanish was null (X=0%). The participant reported using L2 French even though Spanish is morphologically closer to Italian (and she knew the Spanish "True Cognates" of all the Italian "Constructed Words") and that her L2 English was more proficient than her L2 Spanish. She also reported that she made negative lexical transfers from her L2 French which was influenced by her decision to count only on her L2 French. Before the commencement of the test, the participant stated that she would draw on her L2 Spanish due to its phonological proximity to Italian. However, during the test, the participant avoided all lexical transfer from Spanish and English. Hence her perspective of typological similarity between these languages changed before, during and after the test. After the test, she stated that if she took the test again she would count on English as this was her most competent L2 language.

This test was designed to confirm that lexical transfer from L2 languages into L3 is influenced by psychotypological proximity, as the L3 had true cognate word pairs in all three L2 languages. Hence, when a learner favours only one of their three L2 languages for lexical transfer into L3 on the basis that this is most typologically similar to the L3, this is only a perception, as objectively all the L2 languages are equally typologically similar to the L3. However, this study did not include self-reported data. Therefore, it can be argued that it only addressed language distance and not the learners' perception of language distance. Furthermore, the level of L2 and L3 proficiency should have been evaluated using a proficiency test.

This section suggests that positive and negative lexical transfer from L2 to L3 does not only depend on actual typological similarity between L2 and L3 but can also be influenced by a learner's perception of their similarity. This is known as the psychotypological factor.

2) Learners' awareness of "True Cognates"

Otwinowska-Kasztelanic (2011) investigated the effect of the learners' awareness of "True cognates" between L1 and L2 on lexical transfer in L2 lexical production in trilingual participants. Based on the study's findings, this paper postulates that there is a possible impact of awareness of "True Cognates" between L1/L2 and L3 on lexical transfer in TLA. According to Otwinowska-Kasztelanic (2011), awareness of "True Cognates" does not only concern the learners' conscious knowledge of cognates but also relates to the learners' ability to identify them. A learner can only lexically utilize cognates if he/she is aware of their existence and has adequate linguistic knowledge to memorize them. Learners' awareness of cognates may depend on their proficiency in related languages. Otwinowska-Kasztelanic's study included 83 trilingual participants, including those proficient in L1 Polish, L2 English, and the L3. Their L2/L3 proficiency level was advanced C1 or C2 in the Common European Framework of Reference for Languages (CEFR). The participants responded to 7 questions, two of which reflected the impact of the learners'

awareness of cognates on the lexical transfer from L1 into L2. One question required the students to state the number of cognates they believed exists between Polish and English. The purpose of this question was to subcategorize the participants according to their awareness level of true cognates. The real number of Polish–English "True Cognates" is around 2500 words. The participants who stated the existence of 150 or fewer Polish–English true cognates were considered to have a low awareness level while participants who stated that there are 150 to 500 Polish–English "True Cognates" were considered to have a medium awareness level and participants who stated there are 500 or more Polish–English cognates were considered to have a high awareness level. The results of this study showed that 11 participants had a low awareness level of "True Cognates", 26 participants had a medium awareness level, and 43 participants had a high awareness level. In another question, the participants were asked to list five Polish–English "True Cognates". The researcher divided the English–Polish "True Cognates" into two categories. The first category consisted of the sophisticated Polish–English cognate words. This type of Polish–English cognates has a Latin or Greek origin (e.g. the word "transcendental"). On the other hand, the simple Polish–English cognates did not have any Latin or Greek origin. The results showed that the participants provided 255 sophisticated Polish–English true cognates. The 43 participants with a high awareness level of "True Cognates" provided 215 sophisticated Polish–English "True Cognate" words. 8 students with a medium awareness level of "True cognates" provided 30 sophisticated Polish–English cognate words. On the other hand, the participants with low awareness level failed to list any sophisticated Polish–English cognates. The results showed that the participants provided 145 non-sophisticated Polish–English cognates, out of which 105 words were provided by 18 students with a medium awareness level of "True Cognates" and 30 words by 11 students with a low awareness level of cognates. These results demonstrate that among trilingual participants, the higher their awareness of "True Cognates", the greater the lexical transfer from L1 into L2 ($255 > 145$). In this case, lexical transfer concerns sophisticated and non-sophisticated "True Cognates". This result also showed that when the awareness of "True Cognates" between L1 and L2 was limited, the lexical transfer from L1 to L2 among the trilingual participants was also very limited. This is because the 11 students with a low awareness level of cognates only provided 30 English–Polish cognates. Each student in this category provided a raw mean of 2.7 Polish-English "True Cognate" words. In contrast, all the other students from the medium and high awareness level of true cognates provided five Polish–English "True Cognates" each. A significant positive correlation was found between the level of awareness and the types of cognates provided by the participants ($p < 0.01$). Based on this finding, this paper suggests that the trilingual learners' awareness of "True Cognate" words, between L1 and L2 lexis on one hand and with L3 lexis on the other may increase lexical transfer from L1 and L2 into L3 lexical production.

Otwinowska-Kasztelanic's (2011) study also found that the impact of awareness on true cognates on the lexical transfer from L1 into L2 among bilinguals was more positively correlated than its impact on the lexical transfer from L1 to L2 among

the trilingual participants. The Chi-square tests reported significant differences in the answers provided by the bilingual participants with advance awareness of true cognates and their trilingual counterparts (χ^2 (1) = 9.29, p < 0.002). This is because transfer in the mind of trilingual learners is a very complex phenomenon owing to the existence of the interconnected lexis of three different languages. This research can be replicated in a way that monitors the effect of the learners' awareness of "True Cognates" between L1/L2 and L3 on lexical transfer in L3 lexical production. An alternative way to examine would be to have two groups, one with a high level of cognate awareness across the related languages and the other with low awareness of "True Cognates" across the related languages. All the participants should have the same L2/L3 proficiency level which will allow the researcher to hold these two variables steady. Moreover, the participants should be asked to provide L1/L3 "True Cognates" and L2/L3 "True Cognates". From the number of words provided, a researcher could determine the impact of the learner's awareness of "True Cognates" on the lexical transfer in TLA.

To sum up, the lexical transfer in TLA increases according to the learner's awareness of "True Cognates" in the related languages.

E) Other factors

1) L2 level of exposure and proficiency

This section will investigate the impact of the learner's L2 level of proficiency and the amount of L2 linguistic exposure on lexical transfer in TLA.

Tremblay (2006) investigated the effect of a learner's L2 level of proficiency and the amount of L2 linguistic exposure on determining the lexical transfer of L2 French to L3 German. 13 English speakers participated in this study. Participants formed three groups. Group A (n=6) had a low L2 level of proficiency and a low amount of L2 exposure. Group B (n=3) had a high level of L2 proficiency but a low amount of L2 exposure. Group C (n=4) had a high level of L2 proficiency with a high amount of L2 exposure. The participant's L2 proficiency level was based on their performance on a French test. The participants with scores between 4.5 and 14.5 (out of 25) on the French test were designated as having high proficiency, while the participants with scores between 0 and 1 were designated as having low proficiency. Moreover, the participants were divided by their amount of L2 exposure: the participants with extensive contact with French in their daily life were designated as having high exposure, while the participants without daily exposure to French were designated as having low exposure. All the participants had an advanced L3 proficiency level, which was determined by an L3 German proficiency test. The study did not provide more details about the L3 proficiency test. The amount of L2 negative lexical transfer to L3 German in L3 oral production was calculated and results were compared across these three groups. Negative lexical transfer from L2 French included "Linguistic Inventions" and "Language Shifts". Participants watched 25 sets of cartoons forming a sequence of events. These sets formed multiple silent stories. Participants were asked to explicitly describe each story in L3 German.

Results showed that a high amount of L2 exposure seems to increase the rate of "Negative Lexical Transfer" from L2 into L3. These results were obtained by comparing the amount of "Negative Lexical Transfer" between Group B and Group C. Both groups had a high level of L2 proficiency but only Group C participants had a high amount of L2 exposure. Group C had a moderately significantly higher amount of negative lexical transfer than Group B (n=35 errors > n=5 errors; p=0.003). Tremblay (2006: 109) stated that "L2 exposure seems to influence learners' ability to use their knowledge of L2 to overcome lexical difficulties in L3".

By contrast, results showed that the level of L2 proficiency had a minimal effect on the rate of "Negative Lexical Transfer" from L2 into L3. However, "unless a threshold level of L2 proficiency is achieved, cross-linguistic influence from L2 into L3 will be very marginal" (Tremblay 2006: 109). These results were obtained by comparing the amount of "Negative Lexical Transfer" between Group A and Group B. Both groups had a low level of L2 exposure but only Group B participants had a high level of L2 proficiency. Group B had a slightly higher amount of "Negative Lexical Transfer" than Group A. However, this amount was statistically insignificant (n=5 errors > n=2 errors; p=0.249).

There are two critical issues concerning the methodology of this study. Firstly, this study did not provide enough details about the task used to determine the L3 proficiency level of the participants; it only stated that participants completed the task. Secondly, the study provided limited information regarding the criteria used in the selection of the participants with low L2 level exposure. However, the manner in which they selected the participants with high L2-level exposure was very clear.

This study suggests that in TLA an increase in the amount of L2 exposure increases the rate of negative lexical transfer from L2 into L3. Results showed that unless a threshold level of L2 proficiency is achieved, negative lexical transfer from L2 into L3 will be very minimal.

The L3 level of proficiency has been found to have a significant impact on lexical transfer across related languages (Fuller 1999; Hammarberg 2001; Celaya 2006; Peric, Novak Mijic 2017)

In the aforementioned study, Peric and Novak Mijic (2017: 91) also investigated "the relationship between L3 proficiency level and L3 error production". Their study included participants with L1 Croatian, L2 English and L3 Spanish and comprised two groups (Group A and B). Group B participants' L3 level of proficiency was superior to their colleagues in Group A. Participants in Group B learned L3 Spanish over a total of 240 lessons covering four semesters while Group A participants learned Spanish for a total of 120 lessons over 2 semesters.

Results indicated that "Lexical Transfer of Form" from both L1 Croatian and L2 English into L3 Spanish in Group B was less than in Group A (314 errors < 53 errors). "Lexical Transfer of Form" comprises "Language Switches", "Coinage" and "False Cognates". Results also showed that "Lexical Transfer of Meaning" from L1 Croatian and L2 English into L3 Spanish in Group A was less than in Group B (96 errors < 75 errors). "Lexical Transfer of Meaning" comprises "Calque" and "Semantic Extension". As Group B had a higher level of L3 proficiency than Group A, the results

indicated that the level of proficiency was an important factor determining the amount of negative lexical transfer from L1 and L2 into L3. Peric and Novak Mijic (2017: 91) stated that "the absolute number of lexical errors decreased as experience with the language increases". They also observed that positive lexical transfer may decrease systematically as the L3 level of proficiency increases. Participants mainly drew on their L3 lexicon in their L3 lexical production when they reached a high level in their L3.

Hammarberg (2001) also investigated the influence of the L3 level of proficiency on lexical transfer in TLA across related languages. In his longitudinal study, he recruited a participant named Sarah Williams who had L1 English, L2 German and was a new learner of L3 Swedish. He noticed a change in her "Linguistic Behaviour" during the progression of her L3 learning. Her positive and negative lexical transfer from L1 English and L2 German into L3 Swedish varied in accordance to her L3 level of proficiency (intermediate vs. advanced). Hammarberg reported that this learner in her L3 lexical production reduced switching to L1 (English) after 8 months, and reduced switching to L2 (German) after 4 months. A gradual decrease in switching to L1 was observed during the five years. However, a complete null switch to her L2 (German) was observed after 2.5 years. Sarah William's L2 negative lexical transfer to L3 diminished twice as quickly as her L1 negative lexical transfer to L3. In conclusion, Hammarberg reported that as Sarah's L3 level of proficiency increased, her negative "Lexical Transfer of Form" from L1 and L2 into L3 decreased (e.g. language switch). Similarly, he observed that her L1 and L2 positive lexical transfer into L3 increased as her L3 level of proficiency improved.

Peric and Novak Mijic (2017) examined the impact of the amount of L3 instruction on lexical transfer in TLA. Hammarberg (2001) examined the impact of L3 exposure on negative lexical transfer in TLA. However, both studies stated that they were examining the impact of L3 proficiency on lexical transfer in TLA. Though the amount of "L3 instruction" and L3 exposure are both important for the development of L3 proficiency, other variables are also influential in this regard, such as learners' cognitive ability and motivation. Future research should select participants with L1, L2, and L3 that are typologically similar. This would allow for positive and negative lexical transfer from L1 and L2 into L3 (i.e. both false cognates and true cognates). There should be two groups of participants who should have the same level of L2 proficiency (preferably advanced). This can hold steady participants' L2 level of proficiency as an independent variable. Participants of one group should have a high level of L3 proficiency and participants of the other group should have a low level of L3 proficiency. Participants' L2/L3 level of proficiency should be determined via a language proficiency test. Results from a task designed to examine participants' use of true and false cognates across related languages in their L3 production can, therefore, reflect the potential impact of the L3 level of proficiency on lexical transfer in TLA. However, it is always hard to adequately measure the impact of L3 level of proficiency on L3 positive lexical transfer. This is because the correct use of true cognate can also arise from exposure to L3 input.

Summarily, in TLA, a high level of L3 proficiency inhibits learners' negative lexical transfer from L1 and L2 into their L3 lexicon. By contrast, it promotes positive lexical transfer from L1 and L2 into L3. When L3 learners achieve a high level of proficiency they mainly count on their L3 lexicon in their L3 lexical production.

Summary

This section summarizes the key findings from this paper followed by a few general concluding remarks. This article reviewed the results of primary research into lexical transfer in TLA. These studies were mainly conducted in a European context (Cenoz 2001; De Angelis, Selinker 2001; Dewaele 2001; Ecke 2001; Gibson et al. 2001; Hammarberg 2001; Herwig 2001; Ringbom 2001; Bardel, Lindqvist 2006; Peric, Novak Mijic 2017; Mulík et al. 2018). This paper identified several factors that might influence lexical transfer in TLA: phonology, orthography, morphology, language distance, age, macro-contextual, psychotypology, L2 level of proficiency and exposure and L3 level of proficiency. The concluding points below summarize the role of these factors in lexical transfer in TLA.

Concluding points:

1. In TLA, lexical transfer into L3 can occur from both L1 and L2. The language (L1 or L2) that is the most typologically similar to L3 may be the source of positive and negative lexical transfer into L3. In this sense, typological similarity includes, but is not limited to, phonological, orthographical and morphological similarities between related languages. However, when L1 and L2 are linguistically proximate to L3, there may be a greater degree of lexical transfer from L1 into L3 rather than from L2.
2. In the pre-critical period, negative lexical transfer from L1 and L2 into L3 may increase with age.
3. In TLA, negative lexical transfer from L1 and L2 into L3 occurs more frequently in informal settings than in formal settings. This is thought to result from learners in natural settings not properly distinguishing between L1, L2, and L3. By contrast, positive lexical transfer from L1 and L2 into L3 occurs more frequently in formal settings than in informal settings. This may be due to students in formal settings carefully selecting "True Cognate" words from L1 and L2 into their L3 lexical production.
4. The lexical transfer in TLA increases according to the level of learner's awareness of "True Cognates" across the related languages.
5. In TLA, an increase in the amount of L2 exposure increases the rate of negative lexical transfer from L2 into L3. Results showed that unless a threshold level of L2 proficiency is achieved, negative lexical transfer from L2 into L3 will be very minimal.
6. In TLA, a high level of L3 proficiency inhibits learners' negative lexical transfer from L1 and L2 into their L3 lexicon. By contrast, it promotes positive lexical transfer from L1 and L2 into L3. When L3 learners achieve a high level of proficiency they mainly count on their L3 lexicon in their L3 lexical production.

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