

# The Influence of L2 English on the Comprehension of L3 German

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Diplomski studij engleskoga jezika i književnosti i njemačkoga jezika i književnosti

Andrea Mazur

**Utjecaj engleskog kao drugog stranog jezika na razumijevanje  
njemačkog kao trećeg stranog jezika**

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Mentorica: doc. dr. sc. Ana Werkmann Horvat

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## **Summary**

This paper investigates the comprehension of the third language and cross-linguistic influence of L2 on L3. More precisely, it studies the influence of English as the L2 on the comprehension of the German language as the L3. The results of the conducted experiment show that the knowledge of English helps in better comprehension of German. The results are accounted for by the fact that English and German belong to the same linguistic family and therefore share a great number of lexemes, and by the current models of bilingual language comprehension.

**Key words:** third language acquisition, comprehension, cross-linguistic influence

## **Sažetak**

Ovaj rad se bavi razumijevanjem drugog stranog jezika i utjecajem znanja prvog stranog jezika na taj proces. Točnije, proučava se utjecaj engleskog jezika kao prvog stranog jezika na razumijevanje riječi njemačkog jezika. Rezultati provedenog istraživanja pokazuju da znanje engleskog jezika pomaže boljem razumijevanju riječi na njemačkom jeziku. Mnogi lingvisti to objašnjavaju činjenicom da engleski i njemački jezik pripadaju istoj jezičnoj obitelji i stoga dijele veliki broj leksema.

**Ključne riječi:** usvajanje drugog stranog jezika, razumijevanje, utjecaj stranih jezika



## 1. Introduction

Every person has a potential to be multilingual, it is one of the greatest characteristics of human beings (De Angelis, 2007). Numerous studies explored the topic of second language learning (Kroll et al., 2012; Gabryś-Barker, D., 2009; Elston-Güttler et al., 2005), but it was only a few decades ago that researchers became interested and started to investigate the learning of the third language which resulted in a new term: third language (L3) acquisition. Globalization, development of education and better job opportunities are only some of the reasons why people learn languages, so it is often the case that they know at least two or even three foreign languages. EUROSTAT data from 2016 revealed that there are a lot of people in the EU who are multilingual, where more than 60% of the working-age adults reported speaking at least three foreign languages. In Croatia the number of multilingual people is even higher (above 70%) and this number is constantly increasing.<sup>1</sup>

This research paper investigates the topic of third language acquisition, more precisely, the acquisition of German language as L3, after learning English as the second language (L2). The study investigates to what extent the knowledge of English affects the comprehension of German with a hypothesis that there are significant benefits if a learner is proficient in English before learning German, since some scholars (e.g. Williams and Hammarberg, 2009; Hufeisen & Neuner, 2004) claim that if proficiency in L2 is high, there is a greater possibility of a positive transfer in L3. Also, English and German are from the same linguistic family which also explains why positive transfer occurs on the lexical level. (Williams and Hammarberg, 1998).

The paper is structured as follows. Section Theoretical background introduces the previous literature related to the research question including the definitions of multilingualism, the third language acquisition, introducing the most influential bilingual language comprehension models. The section ends with current findings and assumptions on learning German after English and with the elaboration on why this study is necessary. In the central part of the paper, the conducted experiment (a semantic priming task accompanied by a lexical decision task), stimuli, participants and the procedure of the experiment are described in detail. After that, the results are analyzed and discussed together with some possible limitations of the study and ideas for other studies on this topic in the future. The section ends with the discussion on successful ways of teaching L3.

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<sup>1</sup> <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20180926-1>

## 2.Theoretical background

### 2.1. Language transfer and interference

Language interference is a complex topic. Weinreich (1953:1) suggested the term interference and defined it as: "...instances of language deviation from the norms of either language which occur in the speech of bilinguals as a result of their familiarity with more than one language". However, his definition explained only one aspect of interference (negative transfer). It was Odlin (1989:27) who covered many aspects (positive and negative transfer, errors, misinterpretations in understanding, etc.). His definition of transfer was: "transfer is the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired". It is important to emphasize that there exist other terms for the same phenomenon, for instance, Sharwood Smith and Kellerman (1986) use the term cross-linguistic influence, which describes the most accurately the phenomenon of knowing two or more languages and how big impact they have on each other (Murphy, 2003).

Languages do not only have a great influence on each other, but also on cognitive functions. Kroll et al. claim (2012) that bilinguals' cognitive functions are significantly different from monolinguals. The reason is that bilinguals memorize and organize pieces of information in different ways than monolinguals. Their mental processes are more complex and challenged, particularly when they have to choose vocabulary in only one of the languages they speak. Also, when they have to understand and make utterances in the language that is not their dominant. Finally, maybe the most difficult task for bilinguals is when they have to shift from one to another language. All of these actions make the brain more resilient and productive. There is a number of recent studies on bilingualism and one of the most important and interesting things they report is that even when a bilingual person uses only one of the languages, both of them are somewhat activated. (Sunderman & Scwartz, 2008; Grosjean, 1997a; 1998a). This occurs even in a highly monolingual environment and even when bilinguals are greatly skilled in both languages. It is also present when writing systems are different (Hoshino & Kroll, 2008; Thierry & Wu, 2007) and also even when one of the languages is signed and the other is spoken (Morford et al., 2011).

To make the right choice and to use the target language and not the other one, it is necessary to develop a great mechanism for language processing. Some studies suggest that there is a such system

in the frontal cortex of our brain. It is a controlling system which prevents the interference (Abutalebi et al., 2012). However, since both languages are always active, they are always competing with each other. Whenever a word has to be visually or orally identified, the lexemes will compete, either because they are orthographically alike or because of their similarity in phonology (Kroll & Bialystok, 2013).

Although it is cognitively demanding and effortful to always balance between two or more languages, some scholars emphasize a great number of advantages a person has when he or she knows more than one language. For instance: persistent observation (Costa et al., 2009), i. e., a bilingual person thinks more about language and contexts and therefore chooses more intentionally words he or she utters; integration and harmonization (Bialystok, 2011), i.e., a bilingual person has to balance well two or more languages, and finally, cognitive plasticity (Peal and Lambert, 1962), i.e., flexibility of cognitive functions.

Grosjean (1989:3) emphasized that a bilingual is not two monolinguals but rather “a unique and specific speaker-hearer” that is a result of knowing two languages. According to this view it is important to study how bilinguals organize and use languages apart and simultaneously for effective communication on a daily basis. Furthermore, it is crucial to use appropriate tests while examining some phenomena, i.e. spheres that require all languages should be examined with all languages mixed together and those that require one language, should be examined monolingually. This view of bilingualism is beneficial because bilinguals are not compared only to monolinguals, as they were until now, but are researched with taking into account specific traits that only bilinguals have.

When a learner is acquiring a new language, language transfer often occurs and can be positive or negative. Positive transfer happens when similarities between two languages make the learning and comprehension easier, while negative transfer (interference) happens when points of divergence between the two languages cause errors in the learning and comprehension of the L2.<sup>2</sup> According to Gabryś-Barker (2009:155), the information the learner processed earlier is firmly linked with new information and may make the learning of a new language more effortless (if there is a positive transfer) or more challenging (if there is a negative transfer). Negative transfer seems to be more interesting and thus explored more in previous research. This type of transfer happens the most often when a learner supposes that certain rules may be applied to all languages (Seifert, 1991).

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<sup>2</sup><https://dictionary.apa.org/language-transfer>

Nevertheless, during language acquisition, both positive and negative transfer may occur. Positive transfer makes learning of a new language easier in a way that a learner transfers similar phonological, lexical or grammatical structures of previously acquired language on a new language (Derakhshan & Karimi, 2015).

The factors which influence which language will be a source of transfer are: “language distance (...), target language proficiency and source language proficiency, recency of use, length of residence and exposure to a nonnative language environment, order of acquisition, and formality of context” (Williams and Hammarberg, 1998).

Language distance can be a very important factor in transfer while acquiring a new language. Usually, a learner tends to transfer their knowledge from the language or languages that are more similar to the target language, for instance, like in the case of English and German. They are both Germanic languages and therefore have a lot of similar (or same) linguistic features. Gooskens et al. (2018) offered a similar theory. They stated that in the European Union language diversity and multilingualism are highly appreciated. It is believed that multilingualism creates bridges between people, but it is crucial that the speaker has enough knowledge about the particular language to prevent communication problems. Still, there is a special type of multilingualism, called ‘receptive multilingualism’, that is constructed based on the theory that when languages are interconnected the speakers will be able to communicate successfully without any previous instructions. This is often the case when people speak two different Scandinavian (e.g. when one person speaks Danish, and the other Swedish), Slavic (e.g. Polish and Czech) Germanic (e.g. Dutch and German) or Romance languages (e.g. Italian and Spanish). It is mainly because most related languages have similar vocabulary since they are historically stem from the same language. Therefore, the comprehension of these two languages is determined mainly by a great number of cognate words and the similarity between them. (Gooskens, 2007; Tang & van Heuven, 2015).

Although English is categorized as a Germanic language, it partially diverged from other Germanic languages because there are many words borrowed from Latin and French. This is the reason why an English native speaker will rarely understand a speaker of other Germanic languages without previous knowledge of this language. On the contrary, since English became a lingua franca, speakers of other Germanic languages will in the most situations understand and produce English very well because

they are exposed to it from early childhood, in schools, but also later at their workplaces (EF EPI, 2016).

De Angelis (2007) claims that it is not important that two languages a person is learning have a genetic relationship, i.e., that they come from the same linguistic family (e.g. Indo-European), but that the most important feature is that they have similar linguistic features. Yet, some scholars claim that there is a bias for transfer from L2 to L3 language, especially while acquiring new vocabulary. This transfer is even more predictable and evident if L2 is English and L3 is German (as it is the case in this research paper), since it is noted that English and German have a lexical similarity of 60 % (Williams & Hammarberg, 2009).

Source language proficiency may also have a great role in causing a transfer, but only if a learner is highly proficient in L2. If a learner knows the L2 very well, it will be much easier to recall words, patterns, rules, since the connections in the brain are stronger. Recency of use may also induce transfer. For instance, if a learner used L2 lately, he or she has an easier and faster access to it.

## 2.2. Models of bilingual language comprehension

Different models have been proposed to account for multilingual language use. Kroll and Stewart (1994) proposed The Revised Hierarchical Model. This model combines the conclusions of two earlier models Word Association Model and Concept Mediation Model and explains that in bilinguals' mind, there is a difference in the connection of ideas and words. More precisely, the model states that words in a bilingual's mother tongue are conceptualized more intensively than it is the case with L2 words. In other words, in their mind a learner connects words in L1 with ideas, photos, etc. whereas it happens less frequently with the words in L2. L2 words are more often represented and connected to the meaning of the word. The authors explain that this happens more often in late bilinguals, since they had more time to develop a greater number of concepts in L1. The model explains why the connection of L2 words to the L1 words (that are their translations) is significantly stronger than it is contrary. It is because learners, especially in the early stages of learning a new language, always tend to recall the meaning of the word from L2 to L1, since this happens more often than reverse (L1 to L2), their mind creates stronger bonds of L2 words to L1 words. As time goes by, the bonds between L1 and L2 words will become stronger, but they usually never become as strong as those of L2 to L1 words. This

statement also explains why it is generally more difficult and it takes more time for bilinguals to translate words or sentences from L1 to L2.

Bates and MacWhinney (1989) created a model that explains how bilingual people choose when and how to use one of the two languages they have acquired. The Competition Model, assumes that in a bilingual person's mind there is always a competition between the two languages. They give the example of an English-Spanish bilingual. Whenever the conversation is about a table both Spanish (*mesa*) and English (*table*) words for the table will be activated and compete with each other. Which one of them will be chosen depends on the language a person is speaking at that moment. If the person, for instance, speaks Spanish at that particular moment the word *mesa* will be chosen, since it is more connected to other lexemes, phrases, constructions etc. in the Spanish language. Therefore, the word *mesa* will be significantly more activated than the word *table*. However, a person cannot always rely completely on the context to choose between two words, since contexts may be sometimes unreliable. The two languages may be combined so the speakers might sometimes shift between the two languages. To have better control of this competition a person should rely on language-internal resonance, because "...forms co-activate each other through resonant interactive activation. As active forms within English activate other forms within English, the entire English lexicon becomes resonantly activated while the Spanish lexicon remains available but deactivated." (Hernandez, Li & MacWhinney, 2005:221).

Kroll & Tokowicz (2001) also dealt with this phenomenon. They assume that when a person learns new words it is common that they connect it with old concepts. So, it is not only the case that they have to memorize new information, but there is also ambiguity and competition that appears when a new word, which names the same thing in another language, is added to memory. This is an even bigger problem for the learners, who deal with a new language and new vocabulary only in a classroom environment. For learners who are surrounded with new words and language on a daily basis, outside of a classroom, the classroom environment will be a chance to gain special postulations or variations of meaning that are connected with L2. When L2 learners do not succeed in learning **how to deal with competition between L1 and L2 words**, phrases and concepts, it is common that they never become truly competent and fluent in L2. Cross-linguistic experiments show that all the languages we know are always available to a certain extent. Kroll and Tokowicz claim that there exists

a notable interference between the words that have similar form for less fluent bilinguals. Thus, if the L2 competence increases, the interference decreases significantly.

Based on these and other studies, Grainger and Dijkstra (1992) and Dijkstra and Van Heuven (1998) proposed one of the most influential bilingual models, that is, The Bilingual Interactive Activation (BIA) model. The model is based on the assumption that there is competition between the words of the languages that bilinguals know. Also, they assumed that the mental lexicon of the two (or more) languages is unified, not separated, and this is where the words from both languages are stored. This means that whenever bilinguals see a line of letters combined together in a word there will always be a certain amount of words that will compete with each other (in both languages) and the one that is the best candidate for a given context will win. This occurs even when a bilingual is speaking only in one language and there is no need for using the other language he or she acquired (Sunderman & Schwartz, 2008). There are some other studies from Grosjean's (1997a, 1998a) that also propose that the both languages of a bilingual person are always active to some level even when it is clear that they have to use only one of these languages. Knowing that, the question remains: how is it possible for a bilingual person to successfully suppress the language that is not needed in that moment?

In 1998 Green suggested a model, which he called The Inhibitory Control Model that explains how a bilingual person has the ability to control the process in the brain of choosing the language that is appropriate and spoken in that particular moment. That also explains their ability to switch from one to another language very quickly. However, there is a difference in the speed of switching the languages. When a bilingual speaker switches from L1 to L2, it happens slower than it is when the speaker switches from his L2 to L1. Meuter & Allport (1999) explained that it is because one's L1 is always the more dominant language.

In some later studies and proposals, scholars such as Brysbaert et al. (1999), Dijkstra et al. (1999) and Jared & Kroll (2011) stated that phonological features are just as important as orthographic features in word recognition. It is the combination of similarity in orthography and phonology that helps bilinguals in recognizing the cognates (two words from two different languages that are similar in orthography, phonology and semantics). Because of this discovery, there was a need to expand the BIA model. So, the linguists Dijkstra & Van Heuven (2002) defined a new model: BIA+ in which they observed and agreed on the fact that there is orthographical and phonological interconnection.

## 2.3 Third language acquisition

The topic of third language acquisition only recently became a prominent research area. Earlier, most of the time it was not distinguished from second language acquisition. However, there was a need for differentiation since more and more people, especially in the European Union, are tri/multilingual.<sup>3</sup> Cenoz (2003:71) defines it as: “(...) the acquisition of a nonnative language by learners who have previously acquired or are acquiring two other languages. The acquisition of the first two languages can be simultaneous (as in early bilingualism) or consecutive.” On the other hand, De Angelis (2007) wanted to include not only the L3 in the term, but every other language a person speaks, while not giving any special importance to any of them, so he suggested the term ‘third or additional language acquisition’.

Hammarberg (2010) disagreed with all of these definitions and explanations and with the fact that all of them assume that languages are learned chronologically, which is often not the case. Some people learn simultaneously two languages because they grow up in a bilingual family. There is also a factor of proficiency that has to be taken into consideration. A learner may be more proficient in an L3 than in their L2. For that reason, he proposed that an L1 is every language that a person acquires in the first year after birth. An L2 is any other language a person learns after the first year. L3 will be then every language a person acquires after he or she learned one or two L2’s and one or two L1’s. Therefore, L3 is not necessarily language number 3 that a person acquires.

Due to the complexity of the relationship between the languages a multilingual person knows, L3 acquisition has become interesting to study from an experimental perspective. It is already well-known that a person, while acquiring a foreign language (L2) always compares it with his or her mother tongue (L1) and it is inevitable that it always leads to a transfer of features from their L1 to L2. However, when it comes to acquiring the second (L3) and every other foreign language it becomes more and more intriguing and complicated, since there is a competition between languages and a doubt which of them will serve as a role model and a source of transfer of features to a new language (Cenoz, 2001).

A number of studies showed that when speakers make L3 utterances, it often happens that they use forms of words or phrases that are entirely or partly borrowed from L2 language. Dewaele (1998)

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<sup>3</sup> <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20180926-1>



gave the example of Dutch native speakers whose L2 is English and French L3. They make utterances such as: “les gens sont involves”. Here is the word involves partially borrowed from the English language (‘involved’) and there should be used the French word ‘impliqués’. Also, an English native speaker whose L2 is German and L3 Swedish will use the word föreslagger. The influence of German is clearly visible and an inspiration for this word was the German word ‘vorschlagen’. The Swedish word ‘föreslår’ would be more appropriate (Herwig, 2001). Another example is when an English native speaker whose L2 is French and L3 German makes an utterance such as: Tu as mein Fax bekommen. The speaker uses here French pronoun ‘tu’ and auxiliary verb ‘as’ by accident. However, he or she follows the rules of German syntax (Selinker & Baumgartner-Cohen, 1995).

Targonska (2004) conducted a study which showed that the knowledge of English as an L2 may help the students in learning L3 German, since there are some resemblances of English to German. The study assumed that the students could apply generalization while learning German and that helps them to learn German easier and faster. On the other hand, it is possible that negative transfer occurs (the word wer in German meaning who in English, but students can mix it with another questionword where, since it is pronounced and written similarly to the German word wer). Grymska’s research (2013) in which the students of L1 Polish, L2 English and L3 German participated showed the similar thing: that there is a great (negative) transfer in English and German vocabulary, i.e. that “the instance of transfer of nouns is mostly visible within the scope of false friends between L2 English and L3 German.” (Grymska, 2017:64).

Previous literature agrees that the reason why transfer from L2 to L3 happens is mostly because of low proficiency of L3 (Dewaele, 2001; Fuller, 1999; Hammarberg, 2001; Williams & Hammarberg, 1998). Yet, Hammarberg (2001) claims that in order for transfer to happen is crucial that a learner came to a particular level of proficiency in L2. The L2-L3 transfer is mainly the transfer of form, and the transfer of meaning is more often in L1-L3 transfer (Ringbom, 2001). The transfer will decline as proficiency in L3 increases, but also with increased exposure and use of L3. The exposure and use of the language are a very important factor when it comes to transfer in multilingualism. This also means that when a person is exposed and uses their L2 frequently, it will lead to a greater L2-L3 transfer (Ringbom, 1986).

Grosjean’s theory (2001) assumes that when bilinguals use only one language, there is a low chance that they will mix two languages and there will be hardly any cross-linguistic influence. However,

when trilingual or multilingual person uses only one language, it often comes to L2-L3 interference, but surprisingly almost never L1-L3 transfer. This shows that it is much harder to deactivate L2, than L1 (De Angelis & Selinker, 2001; Ringbom, 2001). Fuller (1999) conducted a study where a Spanish native speaker (whose L2 was German and L3 English) used a lot of German words and phrases (L2), while having to produce an utterance in English (L3), and hardly any in Spanish (L1). This is counterintuitive because the L1 is more frequently used than the L2, and it would be expected that, as it is stated above, the L1 will be a greater source of transfer, but this was not the case. This may be explained by Selinker & Baumgartner-Cohen's theory (1995) that a trilingual person switches on a particular cognitive mode when it comes to L3 construction: the talk foreign mode, so the foreign languages becomes a great source of negative transfer, completely unconsciously and unintentionally. This theory cannot be generalized, but it can be applied when it comes to transfer of words. Also, according to a last language effect the last, i.e. the previous language we acquired will be more accessible for transfer (Cenoz, 2001; Hammarberg, 2001; Shanon, 1991; Williams & Hammarberg, 1998).

When learning an L3 a person already developed some linguistic competence which helps them in learning the new language and which they did not have while learning L2. Cook (1992,1995) named it multi-competence and explained that trilingual or multilingual people have greater metalinguistic consciousness, they are more creative and cognitively flexible. Therefore, he stated that when they make an error it should not be considered as defeat, but as a result of creativity and flexibility. Mägiste (1984) stated that the theory of having multi-competence has positive effects on learning L3 but only among passive bilinguals (speakers who do not use L2 actively) since possibility of positive transfer is significantly increased and negative transfer is almost completely reduced. However, in active bilinguals, multi-competence does not help much, since their L2 is more activated and, because of such an influence of the L2, it usually comes to negative transfer.

Studies show that L3 learners do not use L3 that much in formal situations and if they use it, they make only short utterances. It is explained by the fact that they are very self-conscious and afraid to make an error. Also, in formal contexts they avoid negative transfer more successfully. Mägiste (1984) claims that "tasks which obviously are easy to perform in one or two languages turn into demanding tasks in a third language" (Murphy, 2003).

The phenomenon of learning and acquiring more than two languages became at present time not a choice, but a norm. For instance, Singleton and Aronin (2009) claim that there is a great expansion of multilingualism as a logical result of globalization. Also, there is more and more immigrant communities in particular countries, so they are obliged to learn the official language of the country they immigrated. Furthermore, people are aware that if they are proficient in more languages, they will have better job opportunities, could make more friends, travel and experience the world without language barriers. Also, according to Chłopek (2011:66), people who are multilingual are ‘multicompetent’.. Since the acquisition of foreign languages is completely different from learning mother tongue (L1). Competence of a multilingual person consists of constant interaction between these factors:

- the systems of L1, L2, L3
- cross-linguistic interaction, and
- multilingualism factor

(Grymska, 2017:54)

If there would not be a persistent communication between these variables, our brain could not operate in more than one language. The more consistent this communication is, the easier and more successful the language acquisition and its production is.

#### 2.4 L3 from an applied perspective

Language learning in a school system is determined by the order in which a person is learning languages (for instance when a person is learning first English and then German), but also by the parallel learning of languages at different levels of competence (when a person starts to learn German, but already has some knowledge in English) (Hufeisen and Neuner, 2004:5).

Foreign language teaching was previously based on many repetitions to memorize and apply different language patterns. There are three significant language learning hypotheses that were developed over the decades. They can be taken into consideration when there are, of course, at least

two languages involved, no matter if there is a case of learning the first foreign language or some other. The first is called the contrastive hypothesis in which the main focus is noticing similarities and differences between languages. This is why there comes to interference. The next hypothesis explains that every person makes errors while learning a language since there is an innate order a person acquires a certain language and is called the nativistic hypothesis. The last one, the interlanguage hypothesis, represents learning of a language as very dynamic and organized procedure where in the center of attention is to learn a new language. This hypothesis also explains transfer procedures (Hufeisen and Neuner, 2004).

In the last decade of the last century new models of learning multiple languages were proposed. Hufeisen and Neuner (2004) assume that the biggest changes happen when a person is learning the second (L2) and the third (L3) foreign language. As soon as a child starts to learn an L2 he or she already has some experience and knowledge about life and many skills such as ‘awareness, knowledge about what kind of learners they are, actual learning experience and contact with such emotional factors as motivation and/or anxieties about learning/speaking’ (Hufeisen and Neuner, 2004:8,9). After that, the basis for multilingualism is set, which means that if a person starts to acquire another foreign language, he or she has already had many encounters with skills and strategies for learning a foreign language (grammar, vocabulary, pronunciation) that can be applied in learning a new one, especially if the L2 is similar to a new language (L3) as it is the case with the English and German language.

When learning new words, a person does not isolate them, but connects them with the words from the languages he or she already knows. Our mind is not separated into isolated parts. All pieces of information are connected and our memory may be compared with a web. This “web” does not look the same by every person. That is, every learner has a different starting point and an authentic process of learning a foreign language.

Teachers should take this into consideration and adjust their ways of teaching. They should also enable every student “to structure the basic elements of foreign language learning in such a way that (a) profiles can be developed in the individual languages that correspond to the communicative – pragmatic, (inter)cultural, etc. – needs of learners in using the language and that can be further developed later on, if needed, after the completion of schooling.” This is particularly important for teaching the second foreign language (L3) (Hufeisen and Neuner, 2004:16-18).

Hufeisen and Neuner (2004) represented five principles of teaching L3. The first principle is cognitive learning, when a teacher activates learner's current knowledge and experiences about languages by incorporating a lot of comparisons and discussions in class. Here, it is combined declarative knowledge (language awareness) and procedural knowledge (knowing the language system and procedure of learning a foreign language). The second principle is to use many texts and materials in class and compare them with the texts in L2 and L1 to make the 'bridges of understanding' (Hufeisen and Neuner 2004: 29) between the languages. The third principle is to use materials that are interesting and relevant for learners. Also, the content of texts should be appropriate for their age. The fourth principle is about using different types of texts in class: texts with a lot of pictures, letters, newspaper articles, texts for listening/reading comprehension, etc. to practice different skills. Finally, the fifth principle says that since the learners of L3 have already learned the metalanguage and have experience in learning a foreign language, some content, especially grammatical, but also lexical, could be faster explained using the metalanguage. This might lead to a slightly boring classes that usually concentrate on the grammatical rules and issues for the most of the time, so a teacher has to be careful and use this phase to connect the knowledge of previously acquired languages, by doing the exercises that involve L1, L2 and L3.

## 2.5. The current study

The motivation for conducting this study was to contribute to current insights into the third language acquisition and to contribute experimental on-line evidence that is lacking in this field. More precisely, to investigate the impact of the English language as L2 on the comprehension of German as L3 and if it helps in comprehension and acquisition of the German language. There was only one similar study to this by Sokač (2021), but the participants were pupils of an elementary school (8th grade) and the task they had to solve was different. The participants had to translate sentences from German to Croatian. This study investigated to what extent the participants use English and German cognates. In this study, however, there are older and more experienced and proficient learners (students of the master studies of the English language on the Faculty of Humanities and Social Sciences in Osijek), whose L3 is German, and they participated in a semantic priming task together with a lexical decision task. Additional motivation is connected to the application of these results, since in the last part of the paper I discuss the implementation of these findings in teaching German

as L3 so that students would learn German more efficiently and which would increase positive transfer as well as prevent, if possible, negative transfer that usually happens while learning a new language.

This study is in particular important for Croatian teachers and students, but also for every other country where English is taught as L2 and German as L3. Also, the insights from this study will be important for every individual who is currently learning German or will learn it in the future as L3.

### 3. The experiment

This experiment investigated the effect of the knowledge of the English language (as L2) on the comprehension of words in the German language (as L3). The participants were given a semantic priming task together with a lexical decision task. The accuracy of participants' answers and the reaction times were documented and analyzed.

#### 3.1. Stimuli

The experiment that was conducted was a semantic priming task combined with a lexical decision task. In this task the participant decides whether a word is a real word or not in a given language. This task indicates that the reaction to a target word when deciding if it is a real word or not is faster when this string of letters goes after the related prime. For instance, when the English word *stone* precedes the German word DER ROCK, since they are semantically related, the response will probably be faster and it will mean that the English word primes the German word. Finally, this will mean that the knowledge of the English language stimulates and helps to acquire German faster and more effectively. On the other hand, when the English word *sleep* precedes the German word DER SINN, since they are semantically unrelated, the response time will be slower, which means that the English word sleep does not prime the German word DER SINN and if the participants recognizes that, it will also support the hypothesis of this research paper that the knowledge of English helps to acquire German.

The stimuli included 32 English words (primes) and 32 German words (targets), as well as 32 German pseudowords, shown across two lists. The pseudowords (e.g. der Brelvs, das Ghriet, der Feighp, das Mieph, das Jacstt, der Smosp, etc.) were taken from ARC Non-word Database.<sup>4</sup> There were two conditions: related and unrelated. The related German words (targets) were false friends of the English words that are semantically-related to the primes. (e.g. English prime: foot; German target: DER ENKEL, Der Enkel is a false friend to English word *ankle* that is connected semantically with the prime(foot), but the actual German word is not connected to the prime). The unrelated words were chosen randomly, as long as they are not semantically related to the target. Both words and non-words were approximately of a similar or the same length (monosyllabic or disyllabic). In front of each

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<sup>4</sup> <http://www.cogsci.mq.edu.au/research/resources/nwdb/nwdb.html>

German word there was also its article (the article of a non-word was chosen randomly). All the targets were written in uppercase while English primes appeared in lowercase letters.

**Table 1. Stimuli.**

English word (prime)	German word (target)	Condition
foot	DER ENKEL	related
label	DER BRAND	related
short	DER BRIEF	related
mastery	DIE ART	related
mean	DAS BAD	related
present	DAS GIFT	related
corridor	DER HALL	related
stone	DER ROCK	related
goods	DER STOCK	related
basil	DIE SAGE	related
fog	DER MIST	related
useful	DAS HANDY	related
final	DIE LAST	related
attention	DIE KAUTION	related
hanger	DAS KLOSETT	related
wing	DER IGEL	related
eyebrow	DAS ETIKETT	unrelated
flower	DIE FABRIK	unrelated
ferry	DER FLUR	unrelated
gentleman	DAS GYMNASIUM	unrelated
hat	DER HERD	unrelated
mask	DIE MESSE	unrelated
plane	DER PHYSIKER	unrelated
rash	DER RAT	unrelated
rush	DIE RENTE	unrelated
sleep	DER SINN	unrelated
spider	DAS STADIUM	unrelated
war	DIE WAND	unrelated
silver	DIE SCHNECKE	unrelated



clay	DAS KIND	unrelated
neat	DIE NOT	unrelated
envy	DAS EI	unrelated
bath	DER CLEWLT	non-word
boot	DAS YOKC	non-word
cash	DAS TWUMB	non-word
cone	DER DWOSCH	non-word
desk	DER KREKTS	non-word
film	DER QUIM	non-word
gold	DER SCRRAF	non-word
lash	DER KLILP	non-word
apple	DER SCHMOT	non-word
bread	DIE SHRYTS	non-word
chair	DER PRERST	non- word
flame	DAS SPRARG	non-word
ghost	DIE FLOUGE	non- word
house	DIE NAFT	non-word
juice	DAS KOBLET	non-word
knife	DER YOFT	non-word
carpet	DAS BREIPH	non-word
dragon	DIE FAMITT	non- word
rose	DER GLARCS	non-word
guitar	DAS SNOLV	non- word
helmet	DER NAIKS	non-word
insect	DIE ZALTR	non-word
jungle	DER STIM	non-word
kitchen	DER GHWOAL	non-word
bycicle	DIE ENCK	non-word
dolphin	DER BRELVS	non-word
festival	DAS GHRIET	non-word
harmony	DER FEIGHP	non-word
library	DAS MIEPH	non-word
mountain	DAS JACSTT	non- word
rainbow	DER SMOSP	non-word
theater	DAS SNIBB	non-word

### 3.2. Participants

Thirty-one participants (23 female and 8 male) participated in the study. All of them were students of the master's programme in English language and literature and were between the ages of 23 and 26. They were native speakers of Croatian (L1) with an exception of one participant who declared that their mother tongue is Serbian. This should not affect the results of this experiment since Croatian and Serbian are similar structurally and lexically. Most of the participants lived only in Croatia except for two participants who lived for a short period of time in Germany and one who spent two years in North Macedonia.

English is the first foreign language (L2) to all participants and they have been exposed to it for the most of their lives (on average for 19.5 years) so many of them (45%) stated that their level of proficiency in English is almost native, while 15 students assessed their knowledge as advanced and two of them as intermediate. They reported that they use English 3 hours a day on average. The second foreign language they acquired is German (L3), and they claim to have been exposed to it less than to English (16 years on average). They consider themselves less competent in German. Only 2 participants stated that their knowledge is almost native, 8 of them that they are advanced, 4 of them intermediate, 8 of them pre-intermediate and even 8 of them assessed themselves as beginners. The average usage of German on a daily basis was less than an hour (approximately 0.8 hours).

After that, they were given a LexTale test (Lemhöfer & Broersma 2012), a vocabulary test, to estimate objectively their proficiency both in English and German. LexTale is a proficiency test which has 60 trials that take around 3.5 minutes and is deemed to be very reliable.<sup>5</sup> The participants that score between 100 and 80 are considered upper and lower advanced learners, those with results between 60 and 80 are considered upper-intermediate and 59% is an indicator of lower intermediate and low proficiency. The average score for the participants of this experiment was 77.70 (max=96.25, min=13.75, SD=18.81) for English, which means that they are on average upper-intermediate learners. As it was expected, LexTale results showed that their proficiency in German is lower since it is their second foreign language (L3). The results for German were on average below 59%, i.e. GER 53.50 (max=81.25, min=27.5, SD=11.60), indicating that their proficiency is lower intermediate or lower.

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<sup>5</sup> See more about the task in 3.3. Procedure.

The experiment was reviewed and approved by the Ethical Committee at the Faculty of Humanities and Social Sciences (URBR: 2158-83-02-23-3).

### 3.3. Procedure

This experiment was conducted at the Faculty of Humanities and Social Sciences in Osijek, in one of the classrooms during one of the classes they attended. Almost half of the of participants were recruited this way. The other half participated in this experiment via a link at home. For the participants in the classroom, there were two different links projected on a screen. These two links had two different lists of words. One half of the participants had to type the first link in the Google search box, where the other half had to type the second link. All participants took part voluntarily in the experiment with no reward.

The stimuli were arranged in two lists of nouns in the German language, each of them consisting of 64 lexemes (32 words and 32 pseudowords). Each participant saw only one of these two lists so each participant only saw each target once in one condition (related or unrelated). The experiment was designed and presented via Psytoolkit (Stoet 2010, 2017), a tool that any researcher can use free of charge in order to illustrate, create and conduct cognitive-psychological assessments and examinations. It is often used by students and psychology teachers.

At the beginning of the experiment the participants saw a description of the purpose of the research, the ethical approval and that they voluntarily participate in this research, they could quit if they wanted to, and that they have to have a keyboard in order to solve the experiment. After they clicked on the button, they had the instructions in their mother tongue (Croatian) so that it is completely clear for them what exactly is their task. First, they had ten training trials where the words were visible on the screen. They first saw an English word (prime), then a German word (target) and they had to press the right arrow if the German word is a word, on the other hand, if they think it is not a word, they had to press the left arrow. After each pair of words, there was a delay of 2500ms before the next trial started. The target would stay on the screen for 500 ms, but they would in total have 2500 ms to respond. After the training, the experiment started. The procedure of the experiment may be seen in the picture below (Figure 1). After they finished it, English LexTale started. The participants saw words in English (60 words and nonwords) for which they had to decide whether the

word is an existing English word or not, again, by pressing the arrows on the keyboard. Words were appearing one by one. After the LexTale task in English, they saw the same task in German. In the LexTale tasks the participants were not time-restricted. Before the LexTale task in English they saw the instructions in English while before the task in German, there were instructions in German. The purpose of this task was to check their proficiency in English and German and to see while analyzing the results if it would be an important factor of recognizing whether a word is either a real word or a pseudoword. After the experiment, they had a questionnaire where they had to write down biographical and language data (age, gender, mother tongue, occupation, place they live in, etc.) and name the languages they learned and assess their level of proficiency in each of these languages. The questionnaire was based on Sabourin et al.'s (2016) language questionnaire.

PRIME		TARGET	→ WORD ← PSEUDOWORD
	300 ms	DER SINN	 2500 ms
	300 ms	DER ROCK	 2500 ms
	300 ms	DAS SPRARG	 2500 ms
	300 ms	DIE FAMITT	 2500 ms
	300 ms	DER KLILP	 2500 ms

Figure 1. Experimental design.

### 3.4. Analysis and Results

The data were analyzed using a linear mixed-effects model with the lme4 (Bates et al., 2014) R package (R Development Core Team, 2011). The fixed effect was condition (related vs. unrelated) and random effects were participant and item. Both random slopes and intercepts were used for the random effect of participant, and only random intercepts were used for the random effect of item (Winter 2019).

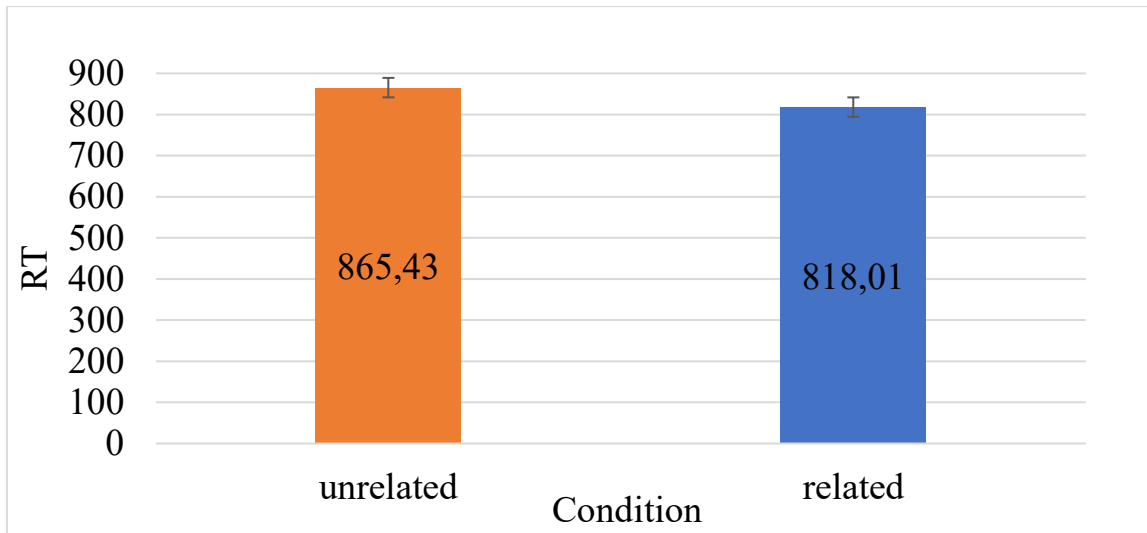
For the analysis of results, 3 participants had to be excluded, since their accuracy was under 30%. Overall, the accuracy was 63% which is quite low, but perhaps this is not surprising since German is the participants' third language. In general, we could expect accuracy to be around 80% or higher for L1 speakers. It is estimated based on the results of previous studies. There is no formal scale of scores. However, in this task participants have to react quickly, which is cognitively very demanding and is not easy even when it is in L1, and this was in L3 so it was even more challenging.

We also had to remove one German word (target) from analysis (die Not), since a high number of participants did not interpret it as a real word. This may be explained by the element of coincidence, we could not predict that this particular word would be so hard to recognize, since the participants have different backgrounds and levels of knowledge of the German language, and the words are randomly chosen. Also, it might be because DIE NOT is a noun in German, while in English it is not. That might have been confusing for the participants so they did not recognize it.

Fixed effects	Estimate	Std Error	df	t value	Pr(> t )
(Intercept)	818.90	53.33	27.16	15.36	< 0.001***
CONDITION unrelated	53.33	24.98	24.35	2.13	0.043*

**Table 2. Linear mixed effect model with a fixed effect of CONDITION and random effects of PARTICIPANT and ITEM.**

As seen in Table 2, the condition (related vs. unrelated) is a significant predictor of reaction times with reaction times being slower in the unrelated condition. The average values of RTs across conditions are seen in Figure 2.



**Figure 2. The average values of RTs across conditions.**

The more complex models that include English and German LexTale scores as predictors did not yield a significant result so here we only report the model that treats CONDITION (related/unrelated word) as a predictor of the participants' behavior.

### 3.5. Discussion

As it is already stated above, the participants were significantly primed by the related words in the English language. From the results we can conclude that their knowledge of English actually helped them in recognizing whether something is or is not a word in the German language. We can also draw a conclusion here that learning English helps us in acquiring German. In other words, when we are highly proficient in English that is our L2, as the participants who participated in this experiment are, it will help us while in? processing German as our L3, at least on the lexical level. Previous research suggests that transfer from L2 to L3 happens mostly because of low proficiency in L3 which also accounts for the results of this study (Dewaele, 2001; Fuller, 1999; Hammarberg, 2001; Williams & Hammarberg, 1998). In the current study the LexTale results indicated that proficiency of the participants in German was lower intermediate or lower. Also, there is a significant possibility that this happens because English and German belong to the same language family of Indo-European languages. Moreover, they are in the same branch of Germanic languages, more precisely of West-

Germanic languages, which means that they will have similar phonemes, morphemes and lexemes.<sup>6</sup> So, if their words are similar, logically, it will be easier to remember them in German after learning a similar language such as English.

Hufeisen and Neuner (2004) state that it will be easier for the learners of the second foreign language (L3) to acquire it if it is similar to L1 or L2, because they will have the opportunity to compare them with already acquired languages and will be able to recognize grammatical structures easier, as well as vocabulary. The learners will constantly make hypotheses and check if they are true. They also highlight that it is the crucial task of tertiary language teaching to emphasize the similarities of the two languages. It is important to always ask the learners to see what is similar or identical. After the similarities are defined, the learner is at this point ready for differences to be introduced. The teacher has a very important role in this case, since negative interference may appear here, i.e. the learners may transfer some features of the languages they already acquired in the new language, but that are inappropriate for L3.

We can also explain the results of the experiment by using some of the language comprehension models described earlier in the paper. Firstly, by the Grainger and Dijkstra's (1992) and Dijkstra and Van Heuven's (1998) BIA model of language comprehension. They claimed that words from all the languages a person acquired are activated all the time. Therefore, we can conclude that words from both English and German were activated, while participants solved the lexical decision task, so the English word primed the related German word. Recall that the English prime is actually not related to the German target semantically, but to its English false friend. This represents interesting evidence that shows that both of the languages are activated at the same time since if they were not, we would not expect any priming effect between the English prime and German target since it is not them that are semantically related, it is the English prime and the English false friend of the German target.

Also, we could find explanation in Green's (1998) Inhibitory Control Model in which he described that a bilingual has a mechanism in their mind that makes it easier to switch from one to another language. Although in elaboration of his model there were included only L1 and L2, it is also possible that it is similar with processing and using L3. This model is significant, since it can explain why the participants were capable to solve the task higher than at chance level, since they were able to switch

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<sup>6</sup> <https://www.britannica.com/topic/Chinese-Pidgin-English>

from English to German so quickly and to give correct answers. On the other hand, one could also claim that if the English language is inhibited, priming effect would not be expected, since our prime words and our target words are not semantically connected. They are connected to their false friends.

### 3.6. Limitations

All of the participants were students of the English language, so they deal with language for at least a few hours every day, but when it comes to German language some students use it for at least one or a few hours a day (similar to English) but there are students whose L3 is German, but do not use it at all, so that could also be the possible reason why the results are low for some participants. It would be interesting to do a similar study but with people whose L2 is English and who are learning German at the moment. While thinking about conducting the research, the idea was to conduct it with these types of learners, but it was very hard to find such participants, and it would take a lot of time. Mostly because of the recruitment logistics, since only one participant at a time could solve the task, never or rarely in a group, as there was the opportunity now with the students.

There was a possibility to do the experiment online so the link could be sent to as many participants was necessary and it was easier for them to do the experiment at the time that is suitable for them. This is how one can quickly get a lot of data and participants. However, a downside is that, since nobody was present at the time they were doing it, they maybe did not have that level of responsibility or effort as if they probably would have had, if they had done it in a researcher's presence, perhaps they took it for granted, just to solve it as quick as possible to send their data. For the same reason, some of the participants to whom the link was sent, did not solve the task or sent their data late. For these reasons, in the end there was not an equal number of the participants saw different lists.

As for the words that were chosen for the study, they are chosen randomly. Firstly, some of the words that were included were well-known false friends, then with the help of the Internet we got more examples of words. These were words that look the same, but do not have the same meaning ("false friends") in English and German and some unrelated random words. While the statistical model accounts for randomness in behavior of participants and items, there was a word that seems to be more confusing or difficult for most of the participants and that is the German word NOT (which means "necessity" in English). It is possible that this word did not look to the participants as if it could be a



German word (it does not have the typical endings for nouns, for instance -ung, -e, -keit, -er, etc.), so it was probably hard to recognize it as a German noun, or it was confusing for them since the English word 'not' is not a noun, but is used for negation.

#### 4. Successful teaching principles

According to Hufeisen and Neuner (2004) there are some teaching principles that may make learning German as L3 faster and that will prevent the negative transfer, but induce positive transfer of the knowledge of English as L2. Firstly, they claim that it is very important to inspire students to compare these two languages and make some hypotheses. That will develop not only their cognitive, but also metacognitive skills. Also, they recommend to encounter students with two texts on these languages at the same time so that the learners can also compare the phrases, grammatical structures, but also notice the usage of internationalisms (e.g. anglicisms). Moreover, the results of the current study showed that it is very useful for learners of the German language (L3) to know English vocabulary. They recognize and acquire the words and their meaning easier and faster. Also, it is very important, since L3 learners are older than they were when they were learning their L2, to adjust these texts and topics to their personal interests. In this way they will be more interested in learning L3 and persist in learning, no matter how hard it will sometimes be.

Hufeisen and Neuner (2004) also state that there are several possibilities of positive transfer while learning L3. One of them is intelligent guessing which assumes general knowledge in learners, as well as implicit knowledge about the target language (intralingual knowledge), context knowledge, interlingual knowledge (influences of the mother tongue and foreign languages). There is also a possibility of relating new knowledge to existing knowledge or using words from L1 or L2. It may also come to creating words in the target language/ converting words from L1 or L2 and finally what may also occur is the recognition and use of language relationships (Hufeisen and Neuner, 2004:100).

Cognate words, usually defined as a pair of words that have the same orthographical form and meaning in two or more languages that are in the same or similar linguistic family, are always very useful to expand vocabulary very quickly. For instance, when a Spanish native speaker learns English he or she can rapidly increase the knowledge of words in English. This is crucial for self-confidence and for getting the motive to continue with learning a new language, since there is always a great level of insecurity at the beginner phase, but also frustration because the learners are often convinced that they do not know enough vocabulary to express themselves in a foreign language. This is often not the case with grammar and pronunciation, since every language has its unique rules. However, the

positive psychological effect of knowing a considerable amount of words in a new language is very significant for further learning.

The role of the teacher is here very important because some words have the same or similar orthographical form, but do not mean the same. For instance, the Spanish word *suceder* means to happen, and although it is written almost the same as the English word *succeed* (to have success), it does not have that meaning. So, a teacher has to be careful that the learners do not think that every English word that looks the same or similar to a Spanish word, does not have the same meaning. It is recommended to present to students the most common cognates, and those that are not cognates, but that are often misinterpreted such as *actual*, *assist*, *large*, etc. The teachers should practice individually and the meaning and difference between them should be emphasized often (Anthony, 1953).

However, the responsibility is not only on the teacher. Mägiste (1984) showed that bilinguals who use their L1 and L2 actively and are currently learning L3 make more progression in knowledge of L3. The study was conducted among immigrants and it showed that those who were using both L1 and L2 at home had significant increase in proficiency of L3, which means that there is not only the responsibility of teachers to teach L3 well, but also on learners to use regularly all languages they acquired since they help them in learning a new language.

## 5. Conclusion

The results of the study show that English might help us in how we understand German. One of the most significant reasons for that is that they both belong to the same language family (Indo-European) and branch: Germanic; West-Germanic ((Williams and Hammarberg, 1998). That results in the similar vocabulary and grammatical patterns. The focus of this research paper was on the lexical level of linguistic knowledge. The hypothesis is confirmed that when a person is already proficient in English, it would be easier for her to learn German, because of the positive transfer. It means that the learner will notice a similarity between these two languages and to him or her it will be more efficient to remember and to use properly new vocabulary.

This is also supported by the bilingual language comprehension models, such as BIA model (Grainger and Dijkstra, 1992; Dijkstra and Van Heuven, 1998) or Inhibitory Control Model (Green, 1998) that show that all the languages which learners acquire are activated all the time and for that reason it is easier to recognize or recall lexemes on any language it is necessary at given moment, and it is not hard for them to switch from one to another language. However, there are some downsides of activating all languages at the same time. Negative transfer might occur, that is, a person could, because of the same orthographic features of two words of different languages, deduce incorrectly that these words mean the same. To prevent this, the teachers of L3 have a very important role. They have to put focus on the similarities in the two languages, and then later, highlight the differences. Since the participants of this research were students who use English a lot on a daily basis, but German a lot less, it would be interesting for further research to see if the results would be the same, if the participants were the learners who are currently learning German and use it almost the same as frequently? as English, and if there would be more positive or negative transfer.

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