Lecture Notes on Language and Literature (2024)
Clausius Scientific Press, Canada

DOI: 10.23977/langl.2024.070801
ISSN 2523-5869 Vol. 7 Num. 8

Conceptual Transfer of L1's Effects on Learning Grammatical Gender in L2

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Keywords: Conceptual transfer, grammatical gender, second language acquisition

Abstract: This study examines the impact of native language grammatical gender systems on second language (L2) acquisition, focusing on the concept of "conceptual transfer." Conceptual transfer refers to the influence of a learner's native language structures and concepts on their understanding and usage of L2. By exploring the varied effects of gendered, pronoun-based gendered, and genderless native languages on learning gendered second languages, this study synthesizes findings from six empirical experiments. These findings suggest that surface transfer plays a significant role in early stages or simpler L2 tasks, while deep transfer becomes critical in more complex linguistic situations. Additionally, the study identifies limitations in existing research, such as the lack of comprehensive data on genderless languages and the influence of cultural factors on gender bias, raising questions about the extent to which grammatical gender affects speakers' gender conceptualization. This work contributes to the ongoing discussion in Second Language Acquisition (SLA) by offering a nuanced view of how native language structures shape L2 learning outcomes.

1. Introduction

Whether or not language learners' native languages have an impact on learning a foreign language has been a frequent topic of discussion in SLA. Some scholars have defined a term called "conceptual transfer", which, in Whorf's words, means that in the process of learning a foreign language, language learners do suffer from "a binding power" of their native languages. Even learners who already have a high level of mastery with the second language they are learning can hardly escape the influence of their native languages.

In this study, I focus on the grammatical gender of languages to try to figure out how language learners are influenced by their native languages when learning a second language. Language learners have different linguistic backgrounds. Some of them have grammatical gender in their native languages, some of their native languages have gender reflected in the pronoun system, and some of their native languages do not have gender reflected in the grammar. When learning a second language with grammatical gender at the same time, learners with different first languages would reap different learning effects.

Different designs and empirical studies have been conducted by different scholars on this issue, exploring different influences and revealing different learning outcomes in language learners. In this paper, I first explain the three common linguistic gender systems, then describe the gender systems of the languages involved in this paper according to Gygax et al's (2019) [1] index, then briefly explain

the concept of “transfer”, and compare the experiments and conclusions of scholars to draw preliminary conclusions and summarize the shortcomings of this study.

2. Grammatical Gender

An important part of a language’s system is how the grammatical system of this language assigns gender. In general, there are three types of gender systems in languages: genderless, natural gender, and gendered languages.

The first type is genderless languages, such as Turkish which uses a pronoun to refer to all human and non-human nouns. The second is natural gender languages, such as English, which will use “he” and “she” to refer to male and female humans respectively, and even animals such as dogs and cats. English also has “it” in the pronouns, referring to both animate and inanimate things, but without gender distinctions. Chinese is similar that there is a distinction between “he (male tā)” and “she (female tā)” in the pronouns, while “it (non-human tā)” is used uniformly without gender distinctions. The third type is gendered languages, such as French, where in addition to living things, inanimate things are also divided into genders. For example, “table” is feminine and “mascara” is masculine. In genderless and natural gender languages, there is no such distinction. Also, in gendered languages, the feminine and masculine gender of inanimate things is often not directly related to semantics and is often assigned randomly.

Gygax et al (2019) further subdivided the three gender systems mentioned above into five language groups[1].

The first group is the grammatical gender languages, and the languages covered below, like French, Spanish, German, and Italian, all fall into this category. This group of languages have gender assignment on human nouns, such as “teacher” and “daughter”, as well as inanimate nouns, such as “table”. These nouns control the gender agreement of determiners, adjectives, pronouns, etc.

The second group is the languages with a combination of grammatical gender and natural gender. Dutch discussed below belongs to this group. This group of languages is much like the first group, but does not make systematic distinctions between the feminine and masculine forms of human nouns as the first group does. Although they also make gender distinctions for inanimate nouns, they only distinguish gender on some human nouns instead of all. In this respect, these languages are closer to natural gender languages like English, where words like “teacher” and “doctor” are not gender-marked.

English is the representative of the third group of languages, natural gender languages, which do not specify the gender of inanimate nouns. Personal nouns such as “teacher” and “doctor” cannot be gendered literally, but need to be gendered by “he” or “she” in the referent.

There are two other groups that are not covered in this paper, one is genderless languages, such as Turkish and Finnish. Most personal nouns and pronouns do not reflect gender, but gender can be indicated by adding suffixes. The other group, represented by Oriya and Basque, is very close to genderless languages, but this group still has a few traces of grammatical gender.

3. Transfer

In the field of second language acquisition, transfer refers to the transfer of first language knowledge to second language use.

In terms of degree, there are three types of transfer: no transfer, partial transfer or full transfer. In the case of no transfer, first languages have no effects on second languages, and L2 learners from different first language backgrounds do not differ in learning results of grammatical gender. However, scholars generally agree that first language still has an effect on second language learning in at least some aspects, so this position is generally not considered in research. Full transfer, on the other hand,

is a situation in which all aspects of first languages affect second language learning, at least at the beginning of learning second languages. Partial transfer refers to a situation in which only a portion of the first languages is applied to second language learning. In this study, I prefer the position of partial transfer because it can be seen that the effects of first languages occur mainly in the more complex context of gender agreement rather than in gender assignment based on the experiments below[4].

In terms of type, there are two types of transfer: surface transfer and deep transfer. Surface transfer refers to transfer that is morphologically superficial. For example, some languages with closer gender grammar rules are more eligible for this type of transfer to occur. Deep transfer, conversely, refers to transfers that involve abstract concepts. The learners substitute L1 into L2 not only grammatically but also conceptually.

4. Previous Empirical Studies of Transfer'S Effects on L2

In this section, the different effects of learning second languages from different first language backgrounds are illustrated through six experiments from surface transfer to deep transfer. The importance of noun occurrence frequency in learning L2 is also mentioned.

In experiments related to gender assignment of lexical feminine and masculine, surface transfer had a more direct effect on learners' correctness in learning second languages than deep transfer. Sabourin et al (2006) [5] in experiment 1 asked 70 people learning Dutch as L2 whose first language were German, Italian and English to assign gender on 160 nouns recognized by these learners. Overall, the correctness rates for all groups were above 80%. English was the only language within these four that had only natural gender, but English native speakers also had a high correct rate. This indicates to some extent that the effects of transfer in vocabulary learning are not as pronounced. However, German and Italian native speakers did have higher correct rates than English natives. Both languages are closer to Dutch in terms of gender systems than English. This may suggest that surface transfer helps in language learning effectively, as native German speakers may get correct answers by applying grammatical gender systems from German to Dutch.

On the other hand, the limitations of surface transfer are reflected in the experiments related to gender agreement. In Experiment 2, Sabourin et al (2006) [5] kept the participants from Experiment 1 and added 34 Dutch native speakers to observe the gender agreement between the noun and a relative pronoun in 80 sentences. The researchers controlled the variable structural distance. They fixed the length of structural distance with different grammatical nodes in a sentence to see if the length of the structural distance really affects second language learners' judgments of grammatical gender. Dutch native speakers performed better than all second language learners. Native English speakers had the lowest correct rate among the three groups of second language learners. Compared to Experiment 1, German and Italian learners performed more consistently, whereas native English speakers showed greater L1 influence in this experiment and had more difficulty getting the grammatical gender correct in more complex situations. This seems to reflect the limitations of surface transfer.

Based on these two experiments, it can be seen that there are differences in L2 learners' performances on gender assignment and gender agreement through surface transfer. Regardless of first language backgrounds, most learners can still have a high rate of correctness in lexicality by memorization, even if it is by rote. Nevertheless, when a native speaker of a natural gender language learning a gendered language, the first languages limit the learner's effectiveness on gender agreement more. This is clearly related to the degree of similarity and differences between L1 and L2, and possibly to the various difficulty of memorizing only the feminine and masculine lexical forms of words and applying them in sentences.

The presence of conceptual transfer is more evident in deep transfer, which is to say that learners'

first languages bring about gender concepts that are not only morphological but also culturally contextualized in an anthropomorphic sense. The grammatical gender of a language may bring about a tendency towards anthropomorphism, meaning that by using a gendered language, the language users will give a human-like feeling to animals or inanimate objects more than the genderless or natural gender users, giving gender characteristics to inanimate, and surely genderless, objects based on anthropomorphic features.

Experiment 3 conducted by Mecit et al (2022) [3] had 150 native French speakers classify 10 different animals, five of which were feminine and five were masculine. Although animals are not literally gendered, animal nouns in French are gendered. For example, "giraffe" is a feminine noun and "beaver" is a masculine noun. Participants are influenced by the grammatical gender of these nouns, anthropomorphizing them, assigning them more human emotions, and preferring to see the feminine animal nouns analogously as human females and masculine nouns analogously as human males. Similarly, Lambelet (2016) [2] selected 282 second language learners of French in Experiment 4 with complex native language backgrounds of 21 different native languages. Some of their native gender systems have two genders, some have three, and some have none. However, all participants were able to communicate in English while they had different levels of proficiency in French. They had to perform gender assignment on 10 French nouns (5 feminine, 5 masculine). When unable to determine the specific feminine and masculine gender of these words, participants assigned the nouns according to their conceptual stereotypes. For example, almost everyone thought that "fruit" had feminine characteristics and was a feminine word, while the meanings of "cliff" and "tower" were masculine. Interestingly, if participants have neuter in their native language, and a word in the material is neutral in their native languages, there is a 54% probability that they will determine that word as masculine, showing a slight preference for the masculine gender.

Learners whose native languages were gendered languages and those whose native language were only natural gendered have different strategies for selecting the masculine and feminine in second languages. In Sabourin et al's (2006) [5] Experiment 1, Dutch used "de" for both masculine and feminine and "net" for neuter, with "de" being used much more frequently than "net". Native German speakers know the genders corresponding to the nouns more precisely and thus have a higher absolute correctness rate. In contrast, Italian and English native speakers, especially English native speakers, adopted the strategy of choosing "de" if they did not know the answers, which also ensures a certain degree of correctness, whereas this does not prove that they know accurately the grammatical gender in Dutch. In another Experiment 5, Lambelet (2016) [2] used the same participants as in Experiment 4. The participants had to decide whether a comic was voiced by a male or female voice based on some nouns. The results showed that participants whose native language had a gender would decide the feminine or masculine nature of a word based on the gender of their first languages. For instance, Italian native speakers considered "milk" to be masculine and Spanish native speakers considered it to be feminine. What is the same is that if speakers think that a word is masculine, they feel that the voiceover should be male, and conversely, if it is feminine, the voiceover should be female.

In Experiment 5, the researchers also collected the number of years the participants had studied French and their proficiency in French. The results in this experiment show a related relationship between the two data. The longer the participants studied, the more proficient they were in French. However, this result is not directly related to Experiments 4 and 5. That is, those who performed well in Experiment 4 did not necessarily perform well in Experiment 5, and vice versa. The fact that people with high proficiency in French were less likely to choose the feminine and masculine gender of nouns based on their first languages in Experiment 5 did not mean that they performed better in Experiment 4, and there was a weak but significant negative correlation between the two. However, if there was a word that was masculine in both participants' first and second languages, the probability of the participants choosing the voiceover as male was significantly higher, even though people from

different language backgrounds were all affected by the French gender system. If a word has the same gender both in the learners' first and second languages, then the learner will have a clear conceptual idea of the gender of the word. If the gender is not the same in their first and second languages, the learners' overall gender concept of the word is weakened. If the gender of a word in first language matches well with how the word looks in the gender stereotype semantically and is strongly associated with its gender concept, then learning a different gender for the same word in second language would become more difficult and learners prefer the gender of the word in their own first languages. That is, the deeper the learners' conceptualization of a word in their first languages, the more likely they would assign the same gender in second languages for the same words by conceptual transfer.

Although deep transfer does affect language learners' perceptions of the gender of non-human nouns, the human/non-human distinction is still seen greater than the differences between feminine and masculine by most people. Mecit et al (2022) [3] approached 190 participants whose native language was English and French respectively in Experiment 6. In the experiment, the participants were given words "man" "woman" "table" "piano" and some other as a set of words. They were asked to classify the words. There were 12 words in a group, 6 were human and 6 were non-human by animate or not, and 6 were feminine and 6 were masculine by gender. In French, "table" is feminine and "piano" is masculine, so the researchers expected native French speakers to classify "women" and "table" into one category and "men" and "piano" into another, while native English speakers would classify nouns according to animate or inanimate. The results showed that although 45 people classified the words by grammatical gender, more native French speakers classified them according to natural gender, that is, human and nonhuman.

The frequency of noun occurrence was also a factor affecting transfer in numerous experiments. More input may be needed before mastery of second language is further advanced, even for learners whose native languages are significantly similar to the second languages. For example, in Sabourin et al's (2006) [5] Experiment 1, the nouns in the experimental materials were divided into high-frequency and medium-frequency nouns. German native speakers performed the best, Italian natives were the next best and English natives were the worst. However, learners of all three languages had higher correct rates on high-frequency nouns than on medium-frequency nouns. Regardless of the first language backgrounds and the gender systems of their native languages, the more frequently a noun occurs, the more likely the second language learners are to be proficient with it.

5. Conclusion

This literature review begins by explaining grammatical gender and gives a positioning of English, French, German, Dutch, Italian and Spanish, which appear most in the latter experiments, in the index of Gygax et al (2019) [1] from the perspective of grammatical gender, then uses the definition and classification of transfer to lead to the previous studies, followed by six experiments to string together some conclusions. To the extent of transfer, I agree more with the position of partial transfer, so in this section the impact of conceptual transfer on learning second languages is illustrated mainly with a typological classification of surface transfer and deep transfer. Surface transfer is more effective than deep transfer in gender assignment experiments. The most practical use of surface transfer is in the simpler parts of the learning process, such as for beginners or in lexical aspect, as shown by its limitations in the gender agreement experiment. When the situation is more complex, deep transfer will be more useful. First, learners anthropomorphize non-human nouns according to grammatical gender and assign them to the corresponding genders. Moreover, participants will also be influenced by the conceptualization of gender systems in their own native languages. When they are not clear about the noun's feminine and masculine gender in second languages, they will view it with the corresponding feminine and masculine gender in their first languages. If the feminine and masculine

gender in their L1 matches the semantics of the nouns in terms of traditional gender concepts, it will even become a hindrance to learning L2's grammatical gender. Nonetheless, even after reinforcement of this kind of conceptual transfer, feminine/masculine distinctions do not go beyond human/nonhuman distinctions and has a limited impact on conceptions.

The experiments also have some drawbacks that may cast doubt on the conclusions. For example, in Experiment 1, some English speakers got the answers right without knowing the exact gender of the words given. In order to avoid such a situation, participants were asked to correct the sentences instead of just judging the correctness or incorrectness in Experiment 2. However, there were still cases when participants were not sure of the sentences and chose to judge the sentences as correct in order to avoid correction. In Experiment 4, because participants spoke 21 different native languages, it was too complicated and some of the statistics were not comprehensive enough. In general, the main languages involved were either natural gender languages or gendered languages, and there were few studies involving genderless languages. This reminds me of Mecit et al (2022) [3] pointing out that in the study of grammatical gender, one argument is that cultures with gendered languages are more gender-biased than cultures with genderless languages. If taking the view that language affects culture, this is true for both strong and weak versions. But there seems to be some discrepancies in the facts. For example, Turkish is a representative of genderless languages, but the gender bias in Turkey is actually strong, and the Turkish culture is conservative possibly due to religious influence. The Nordic languages, such as Norwegian and Swedish, are gendered languages with inanimate gendered nouns like French, but the Nordics are among the top countries in the world in terms of gender equality. From this point of view, although this does not directly challenge the idea that language affects culture, whether the grammatical gender of a language can directly affect the gender conceptualization of the native speakers is a question that deserves continued research.

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