Grammatical Gender Feature in Spanish

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Grammatical gender as a lexico-syntactic feature has been well explored, and the gender congruency effect has been observed in many languages (e.g., Dutch, German, Croatian, Czech, etc.). Yet, so far, this effect has not been found in Romance languages such as Italian, French, and Spanish.

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1. The Gender Congruency Effect

Gender agreement, generally represented by agreement between the noun and the determiner or adjective in the noun phrase ^[1], is a key feature of gender-marking languages such as Romance languages (e.g., Spanish) as well as Germanic languages (e.g., German and Dutch). Nouns in these languages are assigned a gender (e.g., in Spanish, masculine or feminine), which is marked on associated determiners and adjectives, for example, in Spanish, 'la manzana roja', (literally: the_{fem} apple_{fem} red_{fem}). In this example, the form of the determiner is 'la' when 'manzana' is a feminine noun. In other words, the determiners match the gender of the noun they accompany. The gender congruency effect, which entails faster and more accurate processing in cases of a match between the gender of nouns and their associated determiners or adjectives, has been studied extensively in Romance languages ^{[2][3][4][5]}, as well as in German ^{[6][7][8][9][10][11]}, Dutch ^{[9][10][12][13][14]} and some other gendered languages (for an overview, see Wang and Schiller ^[15] and Sá-Leite et al. ^[16]; for a recent meta-analysis, see Bürki et al., in press ^[17]).

The gender congruency effect in language production has been investigated in experimental studies using the picture–word interference (PWI) paradigm ^{[18][19][20]}. In this experimental paradigm, participants are asked to name a picture while ignoring a distractor word presented shortly before, at the same time, or shortly after picture onset. It has been found that the reaction time to name the picture is affected by the relationship between the distractor and the target picture. In the study of Schriefers ^[20], the PWI task was initially employed to investigate how grammatical gender (i.e., in Dutch, common and neuter) is processed by native Dutch speakers. He manipulated the gender congruency between target pictures and distractors, i.e., creating gender-congruent conditions (e.g., a target picture of a 'boek,' book_{neuter}, with the distractor 'dak,' roof_{neuter}) and gender-incongruent conditions (e.g., a target picture along with a gender-congruent or -incongruent distractor at the same time and asked to name the picture using a noun phrase while ignoring the distractor. Faster naming latencies were obtained in the gender-congruent condition, coined as the gender congruency effect. Schriefers

^[20] interpreted the gender congruency effect as the result of grammatical gender features of targets and distractors competing for selection in participants' noun phrase production in gender-incongruent conditions.

Experimental research has shown a consistently faster response time for gender-congruent conditions than for gender-incongruent conditions in noun phrase production in German ^{[6][7][8][9][10][11]} and Dutch ^{[9][10][12][13][14]}. Bürki et al. ^[11], for instance, conducted a picture naming task in German using the PWI paradigm by manipulating two factors, i.e., gender congruency and phonological congruency. Participants were asked to name the pictures using noun phrases and ignore the distractors. As the grammatical gender of the target picture is selected in competition with distractors during NP production (determiner + noun or determiner + adjective + noun), variations in the naming response times were found to depend on the gender and phonological congruency status. Both the gender-congruent conditions. The consistent gender congruency effect was found in many studies in the NP language production of German ^{[6][7][8][9][10][11]} and Dutch ^{[9][10][12][13][14]} (for an overview, see Wang and Schiller ^[15] and Sá-Leite et al. ^[16]).

Nevertheless, conflicts have been observed in the attempts to replicate the gender congruency effect in Romance languages. The gender congruency effect in Italian was successfully replicated in the production of bare nouns (e.g., in Paolieri et al. ^[3](^{21]} and Cubelli et al. ^[4]), but not in the production of noun phrases (e.g., 'il gatto' (the cat)) in Cubelli et al.'s research ^[4]. In Cubelli et al.'s study ^[4], a gender congruency effect with an unexpected direction was found in Italian bare noun production. Longer naming latencies were observed in the gender-congruent condition than in the gender-incongruent condition. This effect has been successfully replicated in three experiments with different materials (e.g., in Paolieri et al. ^[3](²¹). However, Finocchiaro et al. ^[22] reported the absence of a gender congruency effect in their experimental work on Italian, Spanish, and French using bare noun naming. They attempted to replicate the study of Cubelli et al. ^[4] by testing native Italian speakers on bare noun production. However, no gender congruency effect was found with either transparent or opaque distractors in two experiments. Similarly, naming latencies in their Spanish and French bare noun production experiments were not affected by the gender of a distractor word presented with the target picture. On the contrary, Alario and Caramazza ^[23] demonstrated significantly faster response times for gender-congruent conditions than for incongruent conditions in French NP production (e.g., determiner + noun and determiner + adjective + noun).

Moreover, O'Rourke's ^[24] and Finocchiaro et al.'s ^[22] replication studies did not result in a finding of gender congruency effects in Spanish bare noun production, but Paolieri et al. ^[21] did. Furthermore, Paolieri et al. ^[21] found a reversed gender congruency effect, i.e., participants responded faster when naming target pictures in Italian (e.g., 'pera' (pear_{fem})) with gender-incongruent distractors (e.g., 'cervo' (deer_{mas})) than with gender-congruent distractors (e.g., 'calza' (sock_{fem})). Similarly, they also observed longer naming latencies in Spanish for target pictures (e.g., 'mono' (monkey_{mas})) with gender-matched distractors (e.g., 'grifo' (tap_{mas})) than with gender-unmatched distractors (e.g., 'cartera' (wallet_{fem})). Additionally, Von Grebmer zu Wolfsthurn et al. ^[5] observed a cross-language gender congruency effect in Spanish NP production with German speakers who were learning Spanish as a second language. Based on these contradictory findings in Romance languages, it is at least questionable whether or not the selection process of grammatical gender is competitive, and if so, whether or not

this competitive process surfaces as a variation in naming latencies. In particular, the answer to the question of whether or not the congruency status between the grammatical gender of the targets and distractors has a significant effect on naming latencies remains unclear.

2. The Grammatical Gender Feature in Spanish

Spanish, like many other Romance languages, has a gender system that distinguishes between masculine and feminine genders for nouns and their associated determiners and adjectives. Specifically, Spanish has a two-gender system including two-gender features for nouns (masculine and feminine), with the determiners and adjectives exhibiting gender agreement according to the lexical properties of the following nouns in NPs (e.g., determiner + noun and determiner + adjective + noun) ^{[24][25]}. The distribution of feminine and masculine gender values is approximately balanced in Spanish ^{[26][27]}. However, it has been argued that masculine and feminine gender may be represented differentially in Spanish, with masculine being the default gender, and feminine taking a more marked position in the language ^[28].

As a lexico-syntactic feature, grammatical gender in Spanish applies to all nouns, and the grammatical gender agreement of determiners is obligatory within NPs (e.g., 'la camisa' (the_{fem} shirt_{fem})) ^[15]. Many nouns are morphologically and/or phonologically marked by grammatical gender ^[15], and the selection of determiners and adjectives depends on the phonological and morphological forms of nouns ^{[29][30]}. Specifically, nouns ending in '-o' often have masculine gender (99.9%) and those ending in '-a' generally have feminine gender (96.3%). Additionally, a small number of nouns, i.e., those ending in '-e', have feminine or masculine gender, e.g., 'el tigre' (the_{mas} tiger_{mas}) and 'la llave' (the_{fem} key_{fem}), with 89.4% of all '-e' words being masculine ^{[24][31][32]}. Similarly, a small number of nouns ending in consonants (e.g., '-z', '-l', '-s', etc.) are opaque ^[24]. In general, there are about twice as many transparent nouns as there are opaque nouns in Spanish ^[33].

According to these transparent endings, the selection of determiners can mainly rely on the morphological feature of nouns, in which the corresponding feminine determiners (e.g., 'la' (the_{singular}) and 'las' (the_{plural})) are assigned to nouns ending in '-a' (e.g., 'la guitarra' (the_{fem} guitar_{fem})). Similarly, the masculine determiners (e.g., 'el' (the_{singular}) and 'los' (the_{plural})) are involved in nouns ending in '-o' (e.g., 'el gato' (the_{mas} cat_{mas})). However, there are less than 0.5% exceptions to this transparent gender marking of nouns, including words where the correspondence between their gender and their ending is not transparent ^[34]. For instance, the feminine determiners cannot be assigned to nouns beginning with a stressed /a/ (e.g., 'el água' (the_{mas} water_{mas})) ^[34]. This means that only when the phonological information about the nouns is available can the correct form of the determiner be selected. Whether or not the contradictory findings of the gender congruency effect in Spanish are due to the fact that the gender-marking determiners are not exclusively dependent on the grammatical gender of the head noun, but also on its onset phonology, invites more debates.

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