Gender bias and the foreign language effect: exploring the impact of linguistic similarity

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Abstract

Gender bias is deeply embedded in language and influences perceptions of social roles. Prior research suggests that the Foreign Language Effect (FLE) – the phenomenon where using a foreign language affects judgment and reasoning – can reduce implicit biases, including gender stereotypes, when individuals process information in a second language (L2). This effect has been attributed to increased cognitive effort and emotional detachment, leading to more deliberate and less automatic judgments. However, existing studies primarily examine FLE in linguistically distant languages, leaving open the question of whether the effect persists when both L1 and L2 share grammatical gender systems. This study investigates gender bias in adjective evaluations among native Italian speakers and Italian speakers assessing adjectives in Spanish as an L2. Participants rated adjectives categorized under Power, Weakness, Warmth, and Coldness, which have established gender connotations. The results replicated prior findings, showing that Power and Coldness adjectives are predominantly associated with masculinity, while Weakness and Warmth adjectives are linked to femininity. Additionally, female participants tended to assign stronger gender-stereotyped scores than male participants – a pattern consistent with previous research. However, no significant differences were found between evaluations in Italian (L1) and Spanish (L2), suggesting that linguistic similarity might have weakened or neutralized the FLE.

1 Introduction

Gender bias refers to the tendency to associate specific traits, roles, or behaviors with individuals based on their gender (cf. Ellemers 2018). These biases are not just personal beliefs – they are deeply embedded in the way we are raised, the education we receive, the media we consume, and the social interactions we have (cf. Charlesworth et al. 2021). Over time, they shape how we view gender roles and expectations, influencing everything from personal choices to professional opportunities.

From a young age, boys and girls are inclined to be influenced in different shapes based on expectations. These stereotypes inform how they perceive themselves, which interests they cultivate and even the careers they are willing to pursue (cf. Ramaci et al. 2017; Shapiro/Williams 2012). Boys are often conditioned to be self-sufficient, aggressive and dominant, characteristics associated with masculinity. Girls, in contrast, are often rewarded for being nurturing, emotionally sensitive, and cooperative, traits associated with femininity (cf. Broverman et al. 1972;

Keller 1995; Rudman/Greenwald/McGhee 2001). These expectations are not always intentional, but they create invisible boundaries that can limit individual choices and reinforce long-standing cultural norms.

Rudman/Greenwald/McGhee (2001), in an experimental work, explored the role of implicit gender stereotypes and their relationship with self-concept, using the Implicit Association Test (IAT), a psychological tool designed to measure unconscious biases by assessing the speed with which individuals associate certain concepts (e. g., gender) with positive or negative attributes.[1] The study investigates whether men and women implicitly associate their own gender with socially desirable traits, such as power and dominance for men and warmth and nurturance for women. The findings reveal that, despite explicit endorsements of gender equality, implicit stereotypes remain deeply ingrained. Men were more likely to associate their gender with strength and potency, while women tended to link their gender with nurturing and communal traits. This suggests that implicit biases function independently of conscious beliefs, reinforcing traditional gender roles in subtle yet persistent ways.

Indeed, because boys are often seen as natural leaders, they are more likely to be encouraged to pursue fields like science, technology, engineering, and mathematics (STEM), which emphasize problem-solving and analytical thinking. Meanwhile, girls may receive less encouragement in these areas, subtly nudging them toward different career paths (cf. Shapiro/Williams 2012). Girls are indeed more likely to be encouraged to pursue careers in caregiving roles, such as nursing or teaching, which align with societal expectations of nurturing and communal traits (cf. Charlesworth/Banaji 2019; Keller 1995). Moreover, studies have found that both men and women associate careers with males and family with females (cf. VanPuymbrouck/Friedman 2023; Wang/Redmiles 2019). These patterns, repeated over time, contribute to the gender gaps seen in many industries today.

These gendered career expectations are further reinforced by language, where the masculine form is often used to refer to both male and female professionals, as is particularly evident in grammatical gender languages. Interestingly, in some cases, women themselves prefer to be referred to using the masculine form when occupying positions of authority or working in traditionally male-dominated fields. This preference may stem from the perception that the masculine form carries greater prestige or conveys a sense of competence and authority that the corresponding feminine form lacks. In certain professions, such as law, academia, or government, female professionals may actively choose masculine titles (e. g., *avvocato* instead of *avvocata* in Italian) to align with established norms and avoid any perceived diminishment of their professional status (cf. Giusti 2022). Suffice it to recall that one of the first linguistic choices made by Giorgia Meloni, Italy's first female Prime Minister, upon taking office was to refer to

[1] For example, in a Gender-Science IAT, participants are shown words related to science (e. g., *physics*, *mathematics*, *engineering*) and humanities (e. g., *literature*, *history*, *arts*), alongside gendered categories such as male and female. In one condition, participants are asked to quickly sort words when *male* and *science* share the same response key, and *female* and *humanities* share another. In a second condition, the pairings are reversed, requiring participants to associate *female* with *science* and *male* with *humanities*. If participants respond faster in the first condition than in the second, it suggests an implicit bias associating men more strongly with science and women with humanities (cf. Nosek et al. 2009).

herself as *Il Presidente del Consiglio* instead of the feminine *La Presidente*, thus using the masculine definite article.

Over time, scholars have recognized that language can reinforce social hierarchies, including those related to gender (cf. Lakoff 1973). The term *linguistic sexism* has emerged as part of this discussion, highlighting how language can reflect and perpetuate gender bias. Much like racism in language, which embeds discrimination based on race or ethnicity, linguistic sexism subtly but persistently reinforces unequal gender roles and societal expectations (cf. Cardinaletti/ Giusti 1991: 170).

One of the primary mechanisms through which linguistic sexism operates is the gendered connotations embedded in language. Words that may appear gender-neutral at first glance often take on different meanings depending on whether they are used to describe men or women. This phenomenon was first systematically explored by Lakoff (1973) in a pioneering study that laid the foundation for the linguistic analysis of gender, highlighting how language subtly reinforces societal norms and expectations. The European Institute for Gender Equality (EIGE; cf. also European Commission 2018) provides an illustrative example with the word *ambitious*. Ambition is generally seen as a desirable trait, yet it is often interpreted differently depending on gender. When a man is described as ambitious, he is typically seen as driven, goal-oriented, and capable of leadership. However, when the same term is applied to a woman, it can carry negative undertones, suggesting that she is aggressive, unfeminine, or overly assertive – qualities that contradict traditional expectations of warmth and cooperation associated with femininity.

Beyond individual words, linguistic sexism is embedded in broader grammatical and structural conventions, particularly in languages that assign grammatical gender to nouns, adjectives, and articles. Linguists generally distinguish between *grammatical gender languages*, such as Italian, Spanish, and French, and *natural gender languages*, such as English and Swedish. In natural gender languages, gender is expressed primarily through semantic or contextual cues (e. g., pronouns like *he*, *she*, or *they*), and is largely absent from the grammatical system. In contrast, grammatical gender languages, assign gender to nearly all nouns, including those that refer to inanimate objects and abstract concepts. These grammatical assignments influence agreement patterns across adjectives, articles, and verbs, even when they do not relate to biological or social gender (cf. Corbett 1991). Many of such languages, default to the masculine form when referring to mixed-gender groups. For example, in Italian, a group of 100 women would be referred to using the feminine plural form (*tutte*), but if even one man were present, the entire group would be described with the masculine plural (*tutti*). Experiments seem to demonstrate that the masculine plural in languages that distinguish between masculine and feminine strongly biases interpretation toward an all-male group (a. o., cf. Gygax et al. 2008).

Recent studies have suggested that language structure itself plays a significant role in shaping implicit gender biases, influencing both perception and evaluation of gendered traits (cf. Lewis/ Lupyan 2020; Mazzaggio 2024; Prewitt-Freilino/Caswell/Laakso 2012). For example, the Foreign Language Effect (FLE), which describes shifts in cognitive and emotional processing when individuals operate in a non-native language, has been shown to mitigate certain biases, including gender stereotyping. Research suggests that when speakers process information in an L2, they engage in more deliberative thinking and experience reduced emotional resonance, leading to more neutral and less automatic evaluations (cf. Costa et al. 2014; Del Maschio et al. 2022;

Geipel/Hadjichristidis/Surian 2015; Hadjichristidis/Geipel/Keysar 2019; Hayakawa et al. 2016). This effect is supported by research on affective processing, which suggests that L1 expressions are strongly tied to personal experiences, socialization, and cultural values, whereas L2 lacks this emotional resonance (cf. Pavlenko 2012).

Mazzaggio (2024) demonstrated that when Italian speakers assessed adjectives in English as an L2, they exhibited less stereotypical gender judgments compared to evaluations conducted in their native Italian. This supported the hypothesis that foreign language processing promotes a more deliberative and reflective cognitive process, which in turn mitigates automatic biases. Additionally, the study observed that participants with higher L2 proficiency produced judgments more closely aligned with native-like gender associations, suggesting an interplay between proficiency and bias expression. However, an interesting divergence emerged when comparing responses from the two native language groups. Italian L1 participants demonstrated stronger gender stereotypes in their evaluations of adjectives associated with Power and Weakness compared to English L1 participants. The findings suggest that gender norms, internalized within each linguistic and cultural system, may vary significantly, prompting the need for further exploration of language pairs with differing structural and cultural characteristics. Indeed, one critical limitation of these findings is that English, unlike Italian, lacks a grammatical gender system, which raises the question of whether the FLE functions similarly when both L1 and L2 encode gender grammatically. Expanding on this, Dylman/Champoux-Larsson (2020) found that linguistic similarity between L1 and L2 can reduce the FLE. They conducted three experiments on moral and risk-based decision-making among bilinguals. They tested Swedish-English, Swedish-French, and Swedish-Norwegian/Norwegian-Swedish bilinguals using tasks such as the "Asian disease problem" and the "footbridge moral dilemma".[2] Their results showed that the FLE was present only when the foreign language was less culturally influential (e. g., French) or linguistically dissimilar from the native language. No FLE was observed when the foreign language was English (highly present in Swedish media) or Norwegian (structurally similar to Swedish).

Taken together, these findings suggest that both linguistic distance and grammatical structure may influence the degree to which L2 processing can reduce bias. This introduces a key issue: if gender bias in adjective evaluations is attenuated in an L2, does this effect persist even when the second language has a grammatical gender system, or is it diminished by linguistic proximity?

To sum up, by examining whether the FLE emerges in two closely related gendered languages, this study seeks to go beyond previous research that primarily compared gendered and non-gendered languages on gender bias (cf. Mazzaggio 2024). Rather than focusing solely on whether thinking in a foreign language reduces bias, it considers the potential role that the grammatical structure of the language may play in shaping perceptions of gender. More specifi-

[2] The "Asian disease problem" is a classic decision-making task in which participants must choose between two hypothetical public health interventions framed either as potential gains (lives saved) or losses (lives lost). It reveals susceptibility to framing effects – how different wording influences risk preferences. The "footbridge moral dilemma" is a well-known moral judgment scenario. Participants must decide whether to push one person off a bridge to stop a runaway train and save five others. It contrasts deontological (rule-based) with utilitarian (outcome-based) reasoning and is used to test the emotional and cognitive underpinnings of moral decision-making.

cally, it explores whether there is a relation between grammatical gender and gender bias, and how the structure of gendered languages might contribute to or mitigate such bias. If the FLE proves to be less pronounced between closely related languages like Italian and Spanish, this may suggest that grammatical gender – rather than linguistic distance alone – plays a role in reinforcing gendered associations. In other words, this study does not only examine whether a second language influences bias, but also whether specific linguistic features might modulate the extent of that influence.

2 Method

2.1 Participants

60 Italian native speakers, all university students, voluntarily participated in this experiment. Participants were divided into two groups. The first group was formed by Italian native speakers tested in their native language, Italian (N = 32, 24 females, M_{age} = 21.8, SD = 2.36, Range = 20–34). The second group was formed by Italian native speakers tested in Spanish as L2 (N = 28, 19 females, M_{age} = 21.7, SD = 1.29, Range = 20–26).

To obtain more detailed information regarding the level of proficiency in Spanish as L2 of our participants, self-reported information about their Spanish skills have been collected, based on the criteria defined by the Common European Framework of Reference for Languages (CEFR). 8 participants were A2–B1 level, 17 were B2 level, and 3 C1 level. Participants were recruited from a pool of university students, where L2 proficiency is formally assessed using CEFR criteria as part of their academic evaluations.

2.2 Materials

A Lexical Assessment Test (LAT) was developed based on items from Rudman/Greenwald/McGhee's (2001) gender bias experiment, which were translated into Italian (cf. also Mazzaggio 2024) and Spanish. The experiment included 38 adjectives categorized into four dimensions: Power (e. g., 'powerful', 'strong'), Weakness (e. g., 'vulnerable,' 'fragile)', Warmth (e. g., 'caring', 'hearty'), and Coldness (e. g., 'rude', 'insensitive').[3] Participants were asked to evaluate each word based on its perceived association with femininity (slightly/moderately/strongly) or masculinity (slightly/moderately/strongly), or indicated that the word lacked gender connotation. The order of items was counterbalanced to control for potential order effects.

Italian L1 participants received the items in Italian, whereas Spanish L2 participants received them in Spanish (see Appendix 1 for a full flist). To reduce potential biases arising from grammatical gender in both languages, only adjectives that could apply to any gender were selected. However, some lexical challenges remained. For instance, a few adjectives in Spanish (e. g., *suprayacente, déspota*) may be relatively infrequent or less familiar to L2 speakers. To account for this, the questionnaire included an "I don't know this word" option, allowing participants to skip items they did not recognize.

[3] The Power category includes two fewer items than the other categories, reflecting constraints encountered during the translation and adaptation process – particularly the need to preserve semantic equivalence and gender neutrality across both Italian and Spanish.

2.3 Procedure

The questionnaire was distributed via the Google Forms platform, with participants voluntarily recruited through student groups. Prior to participation, detailed information about the study's purpose and procedures was provided, ensuring compliance with ethical standards outlined in the "Declaration of Helsinki" (cf. World Medical Association 2013) and the "Convention on Human Rights and Biomedicine" (cf. Council of Europe 1997). Participants gave informed consent before proceeding with the questionnaire.

Data analysis was performed using SPSS software (Statistical Package for the Social Sciences), version 26 (cf. IBM Corp. 2016).

Participant responses were post-hoc transformed into a Likert scale ranging from -3 to +3 for analysis. On this scale, -3 represented a strong femininity association, +3 indicated a strong masculinity association, and 0 signified neutrality. This approach enabled the calculation of average scores for each word or category. Participants were unaware of this scoring system and did not directly evaluate words using the -3 to +3 scale.

2.4 Research hypotheses

The hypotheses guiding this study build on prior research, particularly Rudman/Greenwald/McGhee (2001), and are structured around three key areas: adjective associations, participant gender, and the FLE.

First, it is hypothesized that adjectives associated with Power and Coldness will be predominantly linked to masculine connotations, whereas adjectives related to Weakness and Warmth will be more strongly associated with feminine traits (cf. Rudman/Greenwald/McGhee 2001), regardless of language condition.

Second, a gender-based difference in evaluations is expected. Specifically, male participants are predicted to assign stronger masculine connotations to Power and Coldness adjectives, while female participants are expected to attribute stronger feminine connotations to adjectives tied to Weakness and Warmth (cf. Rudman/Greenwald/McGhee 2001).

Third, with regard to the FLE, it is hypothesized that no significant reduction in gender bias will occur when participants evaluate adjectives in Spanish (L2) as compared to Italian (L1). This prediction is based on the high structural similarity between the two Romance languages, particularly their shared grammatical gender systems. As such, the linguistic proximity is expected to attenuate or neutralize the distancing effects typically associated with the FLE (cf. Dylman/Champoux-Larsson 2020), in contrast to studies involving more typologically distant L2s, such as English (e. g., Mazzaggio 2024).

3 Results

The analysis was conducted in two stages. First, an overall analysis was performed to assess the general pattern of gendered associations across all participants, independent of language group or gender. This preliminary step was essential to confirm whether the tested adjectives exhibited systematic gender connotations before examining potential differences based on language (Italian L1 vs. Spanish L2) and participant gender (male vs. female).

A Wilcoxon signed-rank test was used to compare perceived gender associations for Power and Weak words. The results indicated a significant difference between the two categories ($Z = -6.66$, $p < .001$). Out of 60 participants, 59 rated Weak words lower than Power words, while only one participant provided the opposite pattern. This strongly suggests that Power words were consistently perceived as more masculine than Weak words. A similar Wilcoxon signed-rank test was conducted to compare Warm and Cold words, revealing another significant effect ($Z = -6.68$, $p < .001$). All but one participant rated Cold words higher than Warm words, confirming that Warm words were systematically associated with femininity, whereas Cold words were linked to masculinity.

Having established the general gendered connotations of these adjective categories, the analysis then moved to an investigation of group-level differences, considering the independent variables Language (Italian L1, Spanish L2) and Gender (Male, Female). Given that the data did not follow a normal distribution and exhibited unequal variances, a Mann-Whitney U test was conducted to compare semantic connotation scores across these groups.

The results of the group analysis, as illustrated in Figure 1, revealed no significant differences between Italian L1 and Spanish L2 speakers in their attribution of semantic connotations for any of the categories. Specifically, Power words showed no significant difference ($\chi^2(2) = 384$, $p = .343$). Similarly, Weak words ($\chi^2(2) = 371$, $p = .253$), Warm words ($\chi^2(2) = 377.5$, $p = .295$), and Cold words ($\chi^2(2) = 416.5$, $p = .640$) also displayed no statistically significant differences.

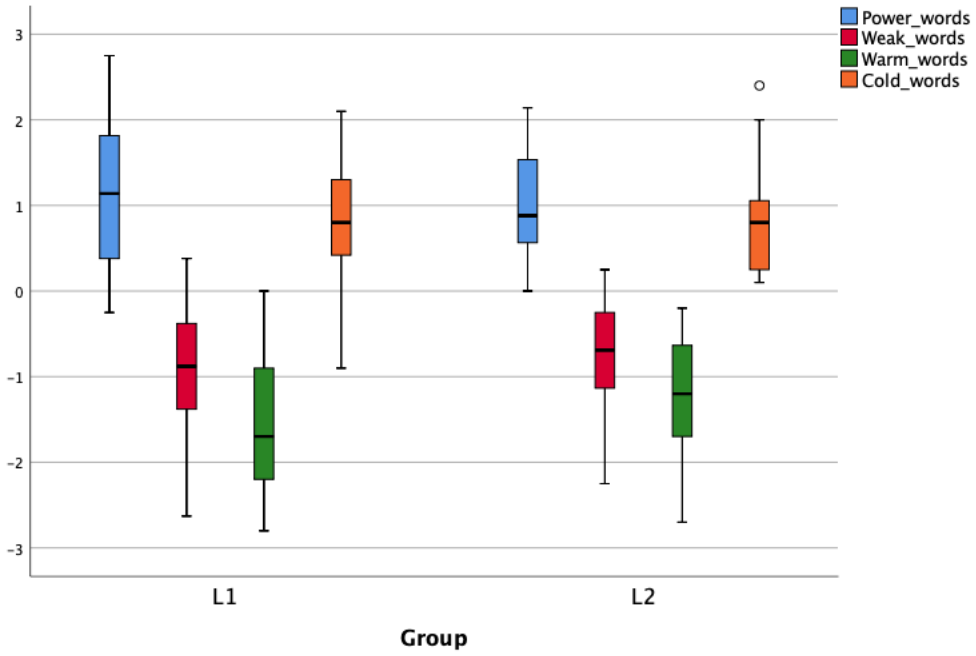

Figure 1: Boxplot showing the mean positive and negative scores on the semantic gender-connotation of Power words, Weak words, Warm words, and Cold words divided by Group (L1 Italian, L2 Spanish). A positive score reflects a masculine connotation, while a negative score indicates a feminine connotation (error bars represent the standard error of the mean)

In contrast, gender-based differences revealed significant effects in the Weak and Warm categories, as shown in Figure 2. Female participants tended to attribute lower scores in these categories compared to male participants, indicating a stronger feminine connotation. For Weak words, the Mann-Whitney U Test produced statistically significant results ($U = 125.5$, $Z = -3.262$, $p < .001$). Similarly, for Warm words, significant differences were found ($U = 103$, $Z =$

-3.677, p < .001). These results highlight a clear distinction in how male and female participants evaluate these categories. However, no significant gender differences were observed for Power words (U = 223, Z = -1.447, p = .148) and for Cold words (U = 272, Z = -0.539, p = .590).

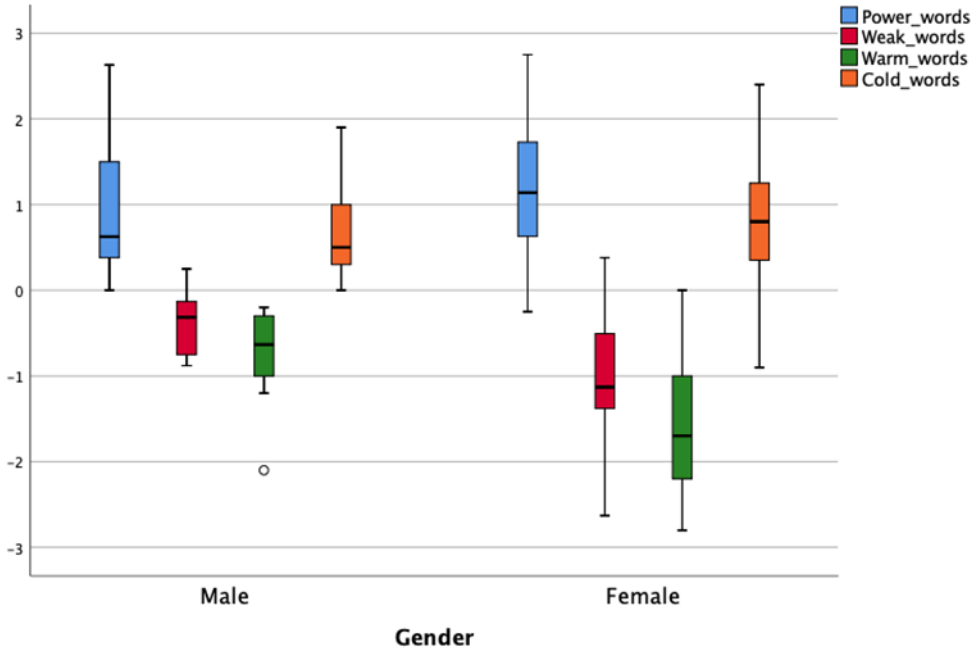

Figure 2: Boxplot showing the mean positive and negative scores on the semantic gender-connotation of Power words, Weak words, Warm words, and Cold words divided by Gender (Male, Female). A positive score reflects a masculine connotation, while a negative score indicates a feminine connotation (error bars represent the standard error of the mean)

Taken together, these findings indicate that while the language of testing (Italian vs. Spanish) does not appear to influence the gendered semantic connotations of these categories, participant gender does play a role, particularly for Weak and Warm words. Female participants demonstrated a tendency to perceive these categories as more strongly associated with feminine connotations.

Exploratory Analysis of Strongly Gendered Adjectives

An exploratory analysis identified adjectives most frequently rated at the extremes of the gender scale, revealing consistent gender-stereotypical associations across Italian (L1) and Spanish (L2). In both languages, Warm adjectives such as *dolce/suave* ('sweet'), *sensibile/sensible* ('sensitive'), *sentimentale/emocional* ('emotional'), and *sensuale/sensual* were strongly associated with femininity. Conversely, Power adjectives like *potente* ('powerful'), *vincente/triunfante* ('victorious'), and *superiore/superior* were consistently rated as masculine. Similarly, Cold adjectives such as *feroce/feroz* ('fierce'), *brutale/brutal*, and *impassibile/imperturbable* reflected strong masculine connotations tied to dominance and emotional detachment. Weak adjectives, including *fragile/frágil*, *debole/débil* ('weak'), and *vulnerabile/vulnerable,* also showed consistent feminine associations in both languages, highlighting stereotypes of fragility and passivity. See Appendix 2 for a visual summary of the most strongly gendered adjectives in both Italian and Spanish, differentiated by polarity (feminine vs. masculine) and frequency of extreme ratings.

4 Discussion

This study investigated whether explicit gender bias in language is modulated by foreign language processing, even when the two languages involved are grammatically and lexically similar. Specifically, it examined whether the FLE extends to bilingual contexts involving two structurally close Romance languages: Italian (L1) and Spanish (L2). To this end, native Italian speakers rated the perceived gender connotation of adjectives categorized as Power, Weakness, Warmth, and Coldness in both their L1 and in Spanish as their L2.

The findings revealed no significant differences in gendered connotations between L1 and L2 contexts: adjectives related to Power and Coldness were consistently associated with masculinity, while those linked to Weakness and Warmth were more strongly associated with femininity. These results replicate prior findings (cf. Rudman/Greenwald/McGhee 2001), reinforcing the idea that gendered associations are deeply embedded in conceptual and linguistic structures, and remain stable across closely related linguistic systems.

Importantly, the absence of FLE in this case stands in contrast to earlier studies showing that individuals tend to rely less on gender stereotypical reasoning when processing information in a foreign language (e. g., Mazzaggio 2024). One explanation for this discrepancy lies in the high structural and lexical similarity between Italian and Spanish. As Dylman/Champoux-Larsson (2020) have argued, the FLE tends to diminish or vanish when the foreign language is linguistically and culturally close to the native language. In this context, the shared grammatical gender systems, may have reduced the sense of psychological and cognitive distance typically required for the FLE to emerge. Moreover, the presence of cognates or near-cognates may have prompted lexical transfer, leading participants to unconsciously import gendered associations from Italian into their processing of Spanish adjectives. These overlapping features likely caused participants to engage with L2 items in much the same way as with L1, thereby neutralizing the distancing effect that characterizes FLE in more typologically diverse language pairs.

The study also investigated the role of participant gender in shaping stereotype attribution. Unlike Rudman/Greenwald/McGhee (2001), who observed gender effects among both male and female participants, but in line with other studies (cf. a. o., García-González/Forcén/Jimenez-Sanchez 2019; Hentschel/Heilman/Peus 2019; Mazzaggio 2024; Zunino et al. 2025), the present findings revealed that gender effects were primarily present among female participants. Specifically, women assigned higher gender-stereotyped scores to adjectives associated with Weakness and Warmth compared to men. This suggests that female participants were more likely to associate these traits with femininity, reinforcing traditional gender expectations. One possible explanation for this finding is that women may internalize certain gender norms more strongly than men, particularly in relation to attributes linked to emotionality and fragility. This aligns with theories on gender socialization, which suggest that women are often subject to stronger societal pressures to conform to traditional gender roles (cf., a. o. Bem 1981), even as cultural expectations evolve. The persistence of these stereotypes, even among women, raises important questions about how gender norms are transmitted and reinforced through both linguistic and social structures.

Supporting this interpretation, an item-level analysis revealed that adjectives most strongly associated with femininity across both languages were overwhelmingly tied to emotional and

interpersonal dimensions – such as *dolce*, *sensibile*, *suave*, and *emocional*. Notably, however, *sensuale/sensual* also emerged as one of the most strongly feminized terms, despite representing a qualitatively different register of meaning. While sweetness and emotionality evoke nurturing, softness, and relational warmth, sensuality conveys physical allure and erotic appeal. At first glance, this contrast may appear contradictory. Yet it reflects a broader pattern in gendered cultural expectations, wherein femininity is often constructed as encompassing both innocence and desirability – a dual role that aligns with long-standing ideological tensions embedded in traditional gender roles.

While these findings offer insights into the intersection of language, gender, and bias, some limitations should be acknowledged. First, the absence of a native Spanish-speaking (L1) group limits direct cross-cultural comparisons, making it difficult to determine whether the absence of FLE effects stems solely from linguistic similarity or whether cultural factors are also involved. For example, cultural differences may influence how certain adjectives are associated with gendered traits or emotional dimensions. Without native Spanish data, the role of cultural meaning versus lexical transfer cannot be fully disentangled. Second, participants were not monolingual and showed diverse levels of Spanish proficiency, which may have influenced the degree of emotional detachment typically associated with L2 processing. Lastly, the sample size is small and the gender distribution was unbalanced, with more female participants, which should be considered when interpreting gender-related effects. Future research could address these limitations.

5 Conclusion

The results of this study, together with prior evidence of a FLE in non-gendered second-language contexts (cf. Mazzaggio 2024), seem to support the notion that grammatical gender plays a role in sustaining automatic gender associations. However, because no native Spanish speakers were included, these results cannot be generalized to the broader Spanish-speaking population. Instead, the present findings indicate that for Italian speakers accustomed to a gendered first language, using a closely related gendered second language (Spanish) fails to provide the cognitive or emotional distance required to evoke a FLE. The substantial overlap between the two languages – especially in their grammatical gender systems and cognate vocabulary – likely leads participants to process Spanish in much the same way as Italian, thereby neutralizing the bias-reducing effects often observed in foreign language contexts.

These findings underscore the importance of linguistic structure in shaping cognitive biases. Future research should explore a broader range of language pairings and include participants from diverse linguistic backgrounds (e. g., native speakers of languages with and without grammatical gender) to clarify how specific grammatical features modulate the extent of the foreign language effect on gender bias.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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Appendix 1

Words tested in Italian and Spanish; English Provided as translation only.

Category	Italian	Spanish	English Translation
Power	*potente*	*potente*	'powerful'
Power	*forte*	*fuerte*	'strong'
Power	*efficiente*	*eficiente*	'effective'
Power	*vincente*	*triunfante*	'winner'
Power	*aitante*	*importante*	'muscly'
Power	*autorevole*	*déspota*	'authoritative'
Power	*superiore*	*superior*	'superior'
Power	*sovrastante*	*suprayacente*	'prevailing'
Weak	*vulnerabile*	*vulnerable*	'vulnerable'
Weak	*fragile*	*frágil*	'fragile/delicate'
Weak	*debole*	*débil*	'weak'
Weak	*insignificante*	*insignificante*	'insignificant'
Weak	*inferiore*	*inferior*	'inferior/subordinate'
Weak	*dipendente*	*dependiente*	'addicted'
Weak	*titubante*	*vacilante*	'hesitant'
Weak	*incapace*	*incapaz/incompetente*	'incompetent'
Weak	*influenzabile*	*influenciable*	'influenceable'
Weak	*instabile*	*inestable/inconstante*	'unstable'
Warm	*gentile*	*amable*	'kind'
Warm	*amorevole*	*suave*	'caring'
Warm	*accogliente*	*agradable*	'welcoming'
Warm	*cortese*	*cortés*	'polite'
Warm	*disponibile*	*servicial*	'helpful'
Warm	*cordiale*	*cordial*	'hearty'
Warm	*dolce*	*dulce*	'sweet'
Warm	*sensibile*	*sensible*	'sensitive'
Warm	*sentimentale*	*emocional*	'emotional'
Warm	*sensuale*	*sensual*	'sensual'
Cold	*ostile*	*hostil*	'hostile'
Cold	*rude*	*descortés*	'rude'
Cold	*egoista*	*egoísta*	'selfish'
Cold	*crudele*	*cruel*	'cruel'
Cold	*feroce*	*feroz*	'fierce'
Cold	*insensibile*	*insensible*	'insensitive'
Cold	*brutale*	*brutal*	'brutal'

Category	Italian	Spanish	English Translation
Cold	*imperturbabile*	*imperturbable*	'imperturbable'
Cold	*indifferente*	*indiferente*	'uncaring'
Cold	*impassibile*	*impasible*	'impassible'

Appendix 2

Bar chart illustrating the frequency of extreme gender ratings (i. e., -3 for strongly feminine, +3 for strongly masculine) for the most gendered adjectives in Italian (L1) and Spanish (L2). Adjectives are color-coded by polarity: feminine-coded adjectives appear in purple, and masculine-coded ones in blue.