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Explicit Gender Stereotyping in Bilingualism: The Impact of the Foreign Language Effect

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Abstract:

This study investigates how the language used to present lexical stimuli influences the expression of gender biases, with a particular focus on the "Foreign Language Effect" (FLE) – the phenomenon where using a foreign language affects judgment and reasoning. Italian native speakers (N=213), English native speakers (N=105), and Italian-English bilinguals (N=192) evaluated 58 words categorized into Power, Weakness, Warmth and Coldness domains for gender connotation. Results indicated consistent stereotypical associations across languages, albeit with variable strength. Critically, participants exhibited attenuated stereotyping when assessing words in a non-native language, providing further empirical validation for the FLE. Foreign language use appears to elicit less automatic social biases, potentially due to decreased emotional activation and increased cognitive distance that occur when processing information in a less proficient language. Additionally, this reduction in stereotyping may be attributed to less exposure to and internalization of sexist language in a second language. By demonstrating the role of language in modulating bias expression, these insights have implications for understanding sociocultural perception formation and developing equitable language policies.

Keywords: *Bilingualism, Foreign Language Effect, Gender Bias, Linguistic Sexism, Stereotypes*

1. Introduction

Stereotyping, both positive and negative, forms the bedrock of our mental representations, often attributing certain traits to groups of individuals without direct experience or individual basis (Allport 1954). Gender stereotypes in particular encapsulate our societally constructed beliefs and expectations regarding attributes and behaviors that are deemed appropriate or characteristic for each gender (Ellemers 2018). Common gender stereotypes attribute traits like emotionality, nurturing, and dependence to women, and traits like assertiveness, leadership,

and independence to men (Rudman *et al.* 2001). These stereotypes become ingrained on both an individual and societal level through repeated exposure via media, family socialization, peer influence, and other social learning processes from a young age. As a result, gender stereotypes shape our default assumptions and judgments about individuals based solely on their perceived membership in the category of "man" or "woman." Additionally, language analysis, has revealed the persistence of gender stereotypes across different types of communication, such as child and adult conversations, books, movies, and TV shows (Charlesworth *et al.* 2021). The linguistic environment plays a crucial role in transmitting and reinforcing these stereotypes, contributing to their persistence and impact on social perceptions and interactions.

We can thus begin to introduce the concept of linguistic sexism. The term "linguistic sexism" has emerged in the United States as a neologism in the ongoing discourse surrounding language and social justice, drawing parallels with the concept of racism (Cardinaletti and Giusti 1991: 170). Just as racism encompasses discriminatory attitudes, behaviors, and structures based on race or ethnicity, linguistic sexism refers to similar biases embedded within language but focused on gender. The comparison between linguistic sexism and racism stems from the recognition that both phenomena perpetuate systemic inequalities and marginalization. Language serves as a tool through which power dynamics are expressed and maintained, reflecting and reinforcing societal hierarchies. Just as racist language can demean and dehumanize individuals based on their race, sexist language can perpetuate stereotypes, restrict opportunities, and reinforce gender roles. For example, the European Institute for Gender Equality (EIGE) highlights how even seemingly neutral words can take on gendered associations and connotations due to prevailing gender stereotypes. One example they cite is the word "ambitious." While ambition is generally viewed as a positive trait, stereotypically masculine traits like ambition and assertiveness are evaluated more positively when exhibited by men compared to women. For women, displaying ambition or career drive is more likely to result in backlash, as it contradicts expectations of femininity that downplay competence and prioritize nurturance/communal roles. As a result, the simple adjective "ambitious" implicitly carries more positive associations when used to describe a man versus a woman. A similar phenomenon occurs with some noun forms that decline differently for men versus women, like "master" and "mistress" (Lakoff 1973). While the dictionary definitions may be synonymous, the history and continued use of terms like "mistress" impart a negative or sexualized tone absent from the masculine form. This exemplifies how language, ostensibly objective, absorbs and perpetuates implicit gender biases ingrained within the cultures that produce it.

Research demonstrates that gender stereotyping and linguistically different treatment based on sex begin startlingly early in life. Studies, such as Rubin *et al.* (1974), have shown that parents, particularly fathers, tend to label their infants differently based on the infant's gender, and daughters are often described as "pretty" or "cute" more frequently than sons, but also as "softer, finer featured, more awkward, more inattentive, weaker, and more delicate" (Rubin *et al.* 1974: 517). Parents have been tested within the first 24 hours postpartum and, interestingly, fathers, who were not allowed to handle their babies, exhibited greater gender-typing tendencies compared to mothers. This suggests that paternal gender biases may exist independently of direct interaction with the child, indicating that such biases could be more deeply rooted in societal or cultural norms rather than formed through direct experience with the child. As children grow, these gendered perceptions become increasingly entrenched, shaping how individuals are described and perceived throughout their lives. For instance, women are often described as being relatively less competent, independent, and strong compared to men, while men are seen as less sensitive and warm than women (Broverman *et al.* 1972). Additionally, traits typically associated with masculinity are often viewed

as more desirable than those associated with femininity. Both men and women internalize aspects of these stereotypes into their self-perceptions, with women tending to incorporate more negative traits due to the devaluation of feminine characteristics.

Gender-based stereotypes persist across various measures, including both explicit and implicit assessments (Rudman *et al.* 2001). These data confirm that language serves as a powerful medium through which these stereotypes are perpetuated, influencing how individuals are perceived and treated based solely on their gender. For this reason, as noted by Lakoff (1973), linguistic imbalances are worthy of study because they serve to highlight real-world inequities and disparities. According to some authors, the words we use to describe individuals, the language used in media and literature, and the distributional structure of natural language semantics (Lewis and Lupyan 2020), all reflect and perpetuate gender stereotypes. For example, the tendency to describe women using diminutive terms such as "girl" or "lady" can reinforce perceptions of women as being childlike or less authoritative.

Institutions have recently recognized the role that everyday language plays in perpetuating gender imbalances and stereotypes. As a result, many institutions are actively implementing strategies to make language more inclusive and equitable, such as the promotion of Gender-fair language (GFL) which aims, for example, to avoid the use of masculine generics (i.e., a practice where the masculine form is used to represent both men and women in general statements). GFL encompasses several strategies, including "Neutralization" and "Feminization", which seek to challenge traditional gender norms and promote inclusivity. On one hand, Neutralization involves replacing explicitly gendered terms that default to masculine with unmarked forms that do not assume any gender. For example, changing "stewardesses" to "flight attendants," or using plural pronouns like "they" instead of "he" when gender is unknown or irrelevant. This helps make language more egalitarian by avoiding favoring one sex over the other. On the other hand, Feminization involves the deliberate use of feminine forms to make female referents visible and challenge the default assumption of males as the norm. This strategy aims to counteract the linguistic invisibility of women and promote gender balance in communication. For instance, using terms like "chairwoman" instead of "chairman" or "actress" instead of "actor" helps to acknowledge and validate the contributions of women in various roles and professions.

The European Parliament, and specifically the High-Level Group on Gender Equality and Diversity, notices how "the principles of gender neutrality in language and gender-inclusive language require the use of different strategies in the various official languages, depending on the grammatical typology of each language" (European Parliament 2018: 5). In natural gender languages like Danish, English, and Swedish, efforts are made to neutralize gender-specific terms. Grammatical gender languages such as German and Romance languages face challenges due to every noun having a gender. Genderless languages like Estonian and Finnish do not have grammatical gender distinctions, thus requiring minimal gender-inclusive strategies.[1]

The effectiveness of GFL strategies in reducing gender discrimination in the long term remains a subject of ongoing debate and research (for a review see Sczesny *et al.* 2016). While GFL strategies may contribute to raising awareness of gender biases and promoting more inclusive language use, they may not address the underlying structural inequalities and power dynamics that perpetuate gender discrimination. Moreover, while linguistic factors certainly play a role in the perpetuation of gender stereotypes, they are not the sole driving force behind

[1] <https://www.europarl.europa.eu/cmsdata/151780/GNL_Guidelines_EN.pdf>.

gender discrimination. Societal norms, cultural expectations, and institutional practices also contribute to the reinforcement of gender biases. Therefore, addressing gender discrimination requires a multifaceted approach that encompasses not only linguistic interventions but also broader social, economic, and political reforms. That said, the influence of linguistic exposure to sexist language on reasoning about gender-related issues is a complex and nuanced phenomenon. Research suggests that exposure to sexist language can shape individuals' attitudes, beliefs, and behaviors regarding gender (a.o., Ford *et al.*, 2013).

This study aims to investigate whether and how linguistic stimuli influence explicit gender stereotypes, particularly by exploiting the Foreign Language Effect. The Foreign Language Effect (FLE) refers to the phenomenon where individuals exhibit differences in decision-making when processing information in a foreign language compared to their native language (for reviews, see Hadjichristidis *et al.* 2019; Hayakawa *et al.* 2016). For example, research has shown that when making moral judgments, people who speak a foreign language may behave differently from those who speak their native language (Cipolletti et al. 2016; Costa *et al.* 2014b; Geipel *et al.* 2015a; Geipel *et al.*, 2015b; Privitera *et al.* 2023) and that the foreign language "reduces the relative weight intentions versus outcomes carry in moral evaluations" (Geipel *et al.* 2016: 37). Specifically, bilinguals tend to make more utilitarian decisions in moral dilemmas (i.e., causing harm to achieve a greater good) when using their foreign language. Interestingly, this effect appears unaffected by factors such as age of acquisition of the second language (L2), proficiency level (see, Białek and Fugelsang 2019; but also Brouwer 2019), or methodological considerations (Del Maschio *et al.* 2022a). However, the influence of bilinguals' language experience on moral decision-making in a foreign language may vary depending on the specific context, as the effect is not consistent across all dilemmas (Del Maschio *et al.* 2022b), and it disappears in code-switching situations (Driver 2022). Electrophysiological data have also suggested that altruistic decision-making may differ between native and foreign languages, with bilinguals potentially behaving more altruistically in their native language due to reduced emotional reactions in a foreign language (Liu *et al.* 2022).

There are a few main reasons proposed to explain why using a foreign language may mitigate biases compared to one's native tongue (Hayakawa *et al.* 2016). First, there is the 'reduced emotionality hypothesis' which stems from the idea that when verbal statements often employed in comparable circumstances are processed, corresponding emotions are recovered; foreign language processing involves less emotional engagement and increased psychological distance (a.o., Corey *et al.* 2017; Keysar *et al.* 2012) since associations were formed in less immersive learning environments than natural first language acquisition (Costa *et al.* 2014a). Expressions in one's native language are highly susceptible to normative influences due to extensive cultural learning and socialization. Conversely, using an L2 may attenuate emotional reactions typically associated with the violation of deontological rules (Gawinkowska *et al.* 2013; Hayakawa *et al.* 2017). Second, the increased cognitive effort required for foreign language comprehension leads to more deliberate and careful thinking, promoting a higher-level, more abstract perspective (Keysar *et al.*, 2012). The processing difficulty acts as a cue to thoroughly consider information rather than relying on intuitive responses, which can help curb implicit biases. This "bigger picture" view tends to prioritize outcomes over specific details, thus reducing biases stemming from superficial language cues.

Regardless of the underlying motivations behind the FLE, this phenomenon provides a unique opportunity to examine the impact of linguistic context on gender biases.

To sum up, this study aims to advance understanding of the FLE by exploring its influence on gender-biased judgments. Comparing responses in both an L1 and an L2 can illuminate the degree to which linguistic exposure impacts stereotype activation and expression. We anticipate replicating previous findings of gender-stereotyped evaluations (Rudman *et al.* 2001) in both L1 and L2. However, we hypothesize that the cognitive and emotional detachment associated with using an L2 may alleviate linguistic biases, resulting in diminished stereotyping. To examine this, we selected Italian and English due to their divergent grammatical gender systems. Grammatical gender permeates Italian morphology, affecting nouns, adjectives, articles, and pronouns through inherent gender (masculine/feminine) assignments. Conversely, English largely lacks this. While pronouns like "he" and "she" denote human gender, nouns themselves are not gendered. For example, unlike "dottore/dottoressa" in Italian, "doctor" remains neutral in English. These linguistic divergences provide a framework to explore our research questions. Do gender norms transmitted through grammatically gendered L1s like Italian differ from less gendered L1s like English? Can L2 use weaken stereotype influence by creating cognitive distance from native gender schemas? Comparing Italian-English bilingual responses to gendered stimuli may yield answers with implications for theories on bilingual cognition and behavior, as well as societal implications.

2. Method

2.1 Participants

510 Italian and English native speakers voluntarily participated in this experiment. Participants were divided into three groups. Two groups were tested in their L1: the first group was formed by Italian native speakers (N = 213, 116 females, M_{age} = 26.59, SD = 9.62) and the second group was formed by English native speakers (N = 105, 25 males, M_{age} = 35.3, SD = 11.56). The third group was formed by Italian native speakers tested in English as L2 (N = 192, 119 females, M_{age} = 26.33, SD = 6.5).

To obtain more detailed information regarding the level of proficiency in English as a second language of our participants, we collected self-reported information about their written and oral English skills based on the criteria defined by the Common European Framework of Reference for Languages (CEFR). Italian universities use the CEFR criteria to examine and evaluate their students. The proficiency levels of our participants in the Italian L2 group are reported in Table 1 for the written competence and in Table 2 for the oral competence.

Level	Number	Percentage
A1-A2	2	1
B1	12	6.3
B2	27	14.1
C1	63	32.8
C2	88	45.8

Table 1. Number and percentage of participants categorized by their proficiency in written English.

Level	Number	Percentage
A1-A2	2	1
B1	11	5.7
B2	34	17.7
C1	57	29.7
C2	88	45.8

Table 2. Number and percentage of participants categorized by their proficiency in oral English.

2.2 Materials

We designed a Lexical Assessment Test (LAT) based on items from Rudman *et al.*'s (2001) gender bias experiment, which we translated into Italian. Each participant viewed 58 words that were originally categorized by Rudman *et al.* (2001) into the following categories: *Power* (e.g., power, courage, dynamism), *Weakness* (e.g., fragility, weakness, subservience), *Warmth* (e.g., kindness, loving, gentleness), and *Coldness* (e.g., distance, harshness, rigor). Words were presented in English for English speakers/Italian L2 participants, and Italian for Italian L1 participants (see *Appendices 1-2* for full lists). To mitigate bias from grammatical gender in Italian translations, adjustments ensured linguistic neutrality. For example, the original adjective "delicato" (delicate) carries gender associations ("delicato" masculine, "delicata" feminine). Instead, we used the noun "delicatezza" (delicacy).

2.3 Procedure

The questionnaire was distributed using the Google Forms platform, with participants recruited voluntarily through social mediums (i.e., Facebook) and forums. Before taking part in the study, participants received detailed information regarding its purpose and procedures, adhering to ethical guidelines outlined in the "Declaration of Helsinki" and the Convention on Human Rights and Biomedicine (Oviedo Convention). Participants provided their consent before proceeding with the questionnaire. Data analysis was conducted using SPSS software (Statistical Package for the Social Sciences), version 26 (IBM, 2016).

Participants rated each word's perceived relatability to female (slightly/moderately/very) or male (slightly/moderately/very) gender, or indicated no gender connotation. An "I don't know this word" option accounted for unfamiliarity. Items were counterbalanced to prevent order effects. Responses were then converted post hoc to a -3 to +3 Likert scale: -3 indicated a strong femininity association, +3 indicated a strong masculinity association and 0 represented neutrality. This scoring method facilitated deriving average ratings for each word/category. Positive scores denoted predominant masculinity associations, negative scores indicated femininity associations, and zero represented neutrality. Importantly, participants were unaware of this scoring system and did not evaluate the words using a -3 to +3 scale.

2.4 Research Hypotheses

Guided by existing literature (Rudman *et al.* 2001), our research hypotheses are as follows: across all participant groups, we anticipate that words associated with *Power* and *Coldness* will generally

receive higher scores with masculine connotations, while those linked to *Weakness* and *Warmth* will tend to carry feminine connotations. Based on Rudman, we also predict a Gender effect with male participants attributing higher masculine connotations to words related to *Power* and *Coldness* compared to female participants. Conversely, we expect female participants to assign higher feminine connotations to words associated with *Weakness* and *Warmth* compared to male participants.

Our research centers on an innovative hypothesis regarding the role of an L2 in shaping gender-stereotyped values. We anticipate that participants tested in English as their L2 will assign scores closer to neutrality, indicating fewer gender connotations, compared to those tested in their native language (Italian). This expectation is based on the FLE. No differences should be in principle expected between participants tested in English or Italian as L1.

Finally, we hypothesize a correlation between proficiency levels in the L2 and the scores assigned to words. Participants with higher L2 proficiency are expected to exhibit behavior more akin to those tested in their native language, while those with lower proficiency levels will demonstrate fewer gender stereotypes.

3. Results

For the evaluation of the results, we first conducted a group analysis to assess the scores assigned to the four categories defined by us: *Power*, *Weakness*, *Warmth*, and *Coldness*.

The analysis focused on the Group variable (Italian L1, English L1, and Italian L2) and the Gender variable (male, female). Due to non-normal distributions and unequal variances identified in our data, we employed the Kruskal-Wallis test to determine if differences existed among the language groups in attributing semantic connotation scores (masculine vs. feminine) to the specified conditions (*Power* vs. *Weakness*, *Warmth* vs. *Coldness*), and whether participant gender influenced this attribution. Boxplots were generated to depict the mean scores for *Power* vs. *Weakness* and *Warmth* vs. *Coldness* across Group and Gender, as illustrated in Figures 1 and 2, respectively.

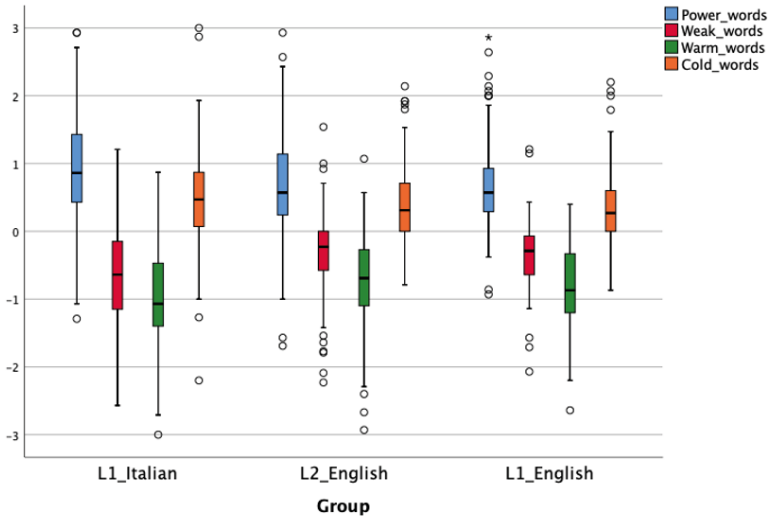

Figure 1. Boxplot showing the median positive and negative scores on the semantic gender-connotation of Power words, Weak words, Warm words, and Cold words divided by Group (L1 Italian, L2 English, L1 English). Each dot represents an individual score within the dataset. Circles denote mild outliers, and asterisks denote extreme outliers. A positive score reflects a masculine connotation, while a negative score indicates a feminine connotation. Error bars represent the standard error of the mean.

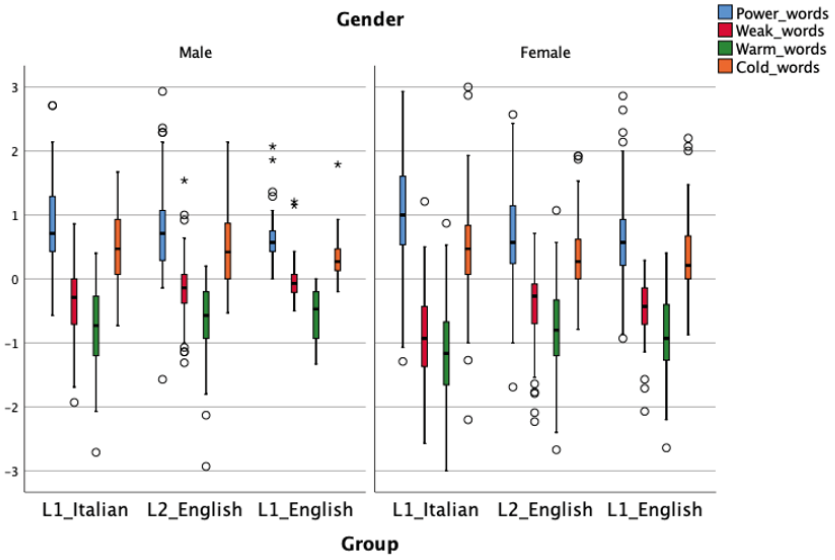

Figure 2. Boxplot showing the median positive and negative scores on the semantic gender-connotation of Power words, Weak words, Warm words, and Cold words divided by Gender (Male, Female) and Group (L1 Italian, L2 English, L1 English). Each dot represents an individual score within the dataset. Circles denote mild outliers, and asterisks denote extreme outliers. A positive score reflects a masculine connotation, while a negative score indicates a feminine connotation. Error bars represent the standard error of the mean.

The Kruskal-Wallis test indicated significant differences among the groups for *Power* words ($\chi^2(2) = 13.860$, p = .001), *Weak* words ($\chi^2(2) = 39.128$, $p < .001$), and *Warm* words ($\chi^2(2) = 14.371$, $p = .001$). However, the result for *Cold* words was just approaching significance ($\chi^2(2) = 5.172$, $p = .075$).

Post hoc pairwise comparisons using Dunn's method with a Bonferroni correction for multiple tests revealed notable differences between the Italian L1 and Italian L2 groups across several conditions: *Power* ($p = .009$), *Weakness* ($p < .001$), and *Warmth* ($p = .001$). Specifically, the Italian L2 cohort exhibited diminished stereotypical scores. We employed Spearman's rank correlation coefficient to investigate the relationship between L2 proficiency levels (both written and oral) and scores attributed to predefined semantic categories within the L2-tested group. The results revealed significant associations between oral L2 proficiency and the *Warmth* category ($r_s[N(190)] = -,198$, $p = .006$) and, marginally, with scores attributed to the *Weakness* category ($r_s[N(190)] = -,132$, $p = .068$). Specifically, higher levels of oral proficiency were linked to lower scores in both categories, indicating a tendency towards more feminine (biased) attributions. Regarding written L2 proficiency, a significant negative correlation was observed with scores in the *Warmth* category ($r_s[N(190)] = -,255$, $p < .001$), suggesting that higher levels of written proficiency were associated with more feminine attributions in this category.

Interestingly, the analysis also revealed a distinction between the two groups tested in their respective L1. Specifically, comparisons between the Italian L1 and English L1 groups indicated significant discrepancies in the *Power* ($p = .004$) and *Weakness* ($p < .001$) conditions, while no significant differences were observed in the *Coldness* ($p = .448$) and *Warmth* ($p = .106$) conditions. Further analysis demonstrated no significant differences between the Italian L2 and English L1 groups in any condition (*Power*, $p = 1.000$; *Weakness*, $p = 1.000$; *Warmth*, $p = .967$; *Coldness*, $p = .461$).

Finally, we decided to explore gender-based differences. Our analysis using the Mann-Whitney Test revealed significant variations between male and female participants concerning their evaluations across the defined categories (*Power*, *Weakness*, *Warmth*, and *Coldness).* For *Weak* and *Warm* categories, significant differences were observed between male and female participants (U = 19691.500, Z = -6.879, p < .001 for Weak words; U = 23428.500, Z = -4.570, p < .001 for Warm words). Female participants tended to attribute lower scores in *Weakness* and *Warmth* compared to male participants, suggesting a more feminine bias in their connotation scores. However, for the *Power* category, no statistically significant difference was found between male and female participants (U = 30454.500, Z = -0.232, p = .816). For the *Cold* category, although there was a trend towards a difference between male and female participants, the results did not reach statistical significance (U = 27990.000, Z = -1.755, p = .079).

4. General Discussion

In our study, we investigated how gender stereotypes are associated with lexical categories of Power, Weakness, Warmth, and Coldness among Italian native speakers, English native speakers, and Italian speakers using English as L2.

Previous studies have highlighted how certain lexicons, not semantically or morphologically marked as belonging to a specific gender, can, in our perception, be attributed to a specific gender. In particular, Rudman *et al.* (2001) demonstrated that male individuals attribute words related to the concept of power to the male gender, while female individuals attribute words related to the concept of warmth to the female gender. The authors conclude by suggesting the hypothesis that individuals hold gender stereotypes related to the idea that their own gender should possess certain traits. Following this line of research, we first decided to study gender stereotypes in a language and culture less considered in these studies, namely Italian. We also evaluated these stereotypes across two languages and bilingual speakers, hypothesizing reduced biases in an L2 due to emotional/cognitive distance. The foundation of our inquiry lies in recognizing the profound impact of language on our cognitive processes and social perceptions over the course of our lives, encapsulated by the FLE.

The present study confirmed that participants generally assigned stronger masculine connotations to words related to Power and Coldness, while Weakness and Warmth words received more feminine associations. This pattern was consistent across languages and genders, confirming existing gender stereotypes.

In line with the initial hypothesis, Italian participants who evaluated words in English as their L2 demonstrated less stereotypical judgments than when evaluating words in their native Italian, supporting the prediction that using an L2 reduces gender bias, consistent with the FLE. Higher proficiency in L2 was correlated with more native-like gender-stereotyped evaluations. Specifically, higher oral proficiency was linked to more feminine connotations in the Weakness and Warmth categories, while higher written proficiency was linked to feminine connotations in the Warmth category. Curiously, Italian native speakers, when tested in their L1, exhibited stronger gender stereotypes compared to English native speakers, particularly for Power and Weakness words. However, no significant differences were found between the scores of English native speakers and those of Italian speakers tested in English as an L2.

Finally, in line with previous studies, a significant effect of participants' gender was observed, but only among female participants, who attributed higher gender-stereotyped scores

to the Weakness and Warmth categories compared to male participants. No significant gender differences were found for the Power and Coldness categories.

These findings suggest that linguistic context and exposure significantly shape our perceptions and reinforce gender stereotypes. Throughout our lives, linguistic expressions embed deeply ingrained cultural beliefs and perceptions, framing our description of the world around us. When individuals are exposed to a linguistic environment where certain vocabulary is consistently associated with a specific gender, this can lead to the reinforcement and perpetuation of gender stereotypes. Unlike the continuous exposure and immersion experience with a native language, the acquisition of an L2 often occurs in environments where linguistic interactions are primarily instructional rather than immersive. Pavlenko (2012) describes this phenomenon as differences in affective processing, suggesting that, in some bilingual speakers – particularly late bilinguals and foreign language users – L1 and L2 may be differentially embodied. The author discusses how the later-learned language is often processed semantically but lacks the emotional resonance of the native language. This phenomenon, known as *disembodied cognition*, results from the context in which the L2 is typically acquired. Unlike the immersive and emotionally rich environment of early L1 acquisition, L2 learning usually occurs in more formal and less emotionally charged settings. This differential embodiment implies that L2 may not evoke the same depth of emotional response, which could influence how bilingual individuals perceive and react to emotionally charged situations. The reduced emotionality and increased psychological distance in L2 can lead to different decision-making processes, potentially mitigating biases that are more pronounced in L1 contexts (Pavlenko, 2012).

These findings expand our understanding of the FLE, indicating that utilizing a foreign language could foster cognitive and emotional detachment, thereby shaping semantic evaluations with decreased reliance on gender stereotypes. This interpretation finds support in our correlation analysis between participants' proficiency levels in their L2 and the average responses provided. Notably, we observed that individuals with higher levels of proficiency in their L2, approaching native-like fluency, tended to provide judgments more akin to those of participants who evaluated words in their native language. Some study limitations include relying on self-reported proficiency and not directly measuring cognitive processes. Future research should aim to replicate our key L1-L2 difference finding and disentangle the underlying mechanisms more directly, for example testing early bilinguals or bilinguals living in the L2 environment. Furthermore, exploring the influence of other personality traits beyond language proficiency, as suggested by Canal *et al.* (2015), could offer a diverse perspective on the multifaceted nature of gender bias perception.

If the hypothesis that limited immersion in a linguistic environment reduces connections between words and gender stereotypes holds true, it has significant implications for efforts aimed at promoting gender equality through linguistic interventions. For instance, contemporary linguistic techniques, such as Feminization or Neutralization processes, implemented by political and educational systems seek to mitigate the perpetuation of gender biases embedded in language. By modifying language use to promote gender-neutral or inclusive expressions, these techniques aim to reshape societal perceptions and promote greater gender equality. If, thus, the hypothesis is valid, then these linguistic interventions may indeed yield positive long-term outcomes.

Another exploration of the present study was on participants' gender differences. Unlike what was highlighted in Rudman *et al.* (2001), a gender effect is present only considering female participants. Specifically, in the categories of Power and Coldness, we did not find

differences between the responses of male and female participants. In the categories of Weakness and Warmth, however, we found that female participants gave higher gender-stereotyped scores than male participants. In other words, women attribute characteristics of warmth and weakness more to the female gender than men attribute these characteristics to the female gender; this is regardless of culture and language of origin because this data was the same cross-linguistically. These results are interesting when considered in the context of today's culture. This data may lead us to think that, despite the categories used being polar (power vs. weakness, coldness vs. warmth), certain characteristics of strength and determination may now be attributed to both male and female genders, while characteristics of fragility and nurturing persist in our mentality as desirable and belonging solely to the female gender, especially in the mindset of women. This change in mentality may be a consequence of the greater need in the economic reality of recent years for both members of the couple to have an income.

Finally, it is interesting to note that the two groups tested in their respective L1s, Italian and English, did not yield similar responses. Specifically, the Italian L1 participants tended to provide responses indicating stronger inherent gender stereotypes associated with words related to Power and Weakness. This divergence between the native speaker groups suggests that the implicit gender norms internalized by each culture and reinforced through the respective linguistic systems are not entirely parallel. While both the Italian and English languages undoubtedly contain patriarchal histories that helped shape stereotypical associations to some degree, it appears these stereotypes may be more subtly nuanced across cultures and languages. Several factors could potentially account for the Italians' tendency towards greater stereotyping. For example, subtle differences in social and cultural values around femininity and masculinity between Italy and English-speaking nations may foster slightly dissimilar implicit gender schemas over generations. Norms for how each sex is expected to behave and what qualities they embody can vary even among similar Western cultures. These societal influences, interacting with distinctive aspects of the linguistic systems, may jointly conspire to yield the observed between-group bias effects.

Of course, further investigation is still warranted to more firmly establish plausible factors for the Italian L1 participants' relatively heightened stereotyping. Indeed, the fact that Italians tested in English (their L2) exhibited responses more akin to those of native English speakers suggests that the linguistic gender system might also play a significant role.[2] Italian grammar morphologically encodes gender in all nouns and adjectives, which may subconsciously reinforce gendered notions from an early age. In contrast, English lacks this consistent grammatical gender system, possibly leading to less entrenched stereotypes. The differential encoding of gender in language structures could lead to varying levels of stereotypical associations. An ongoing follow-up study is examining an L1-L2 pair with a similar gender system, such as Italian-Spanish, to further investigate this hypothesis. This investigation is particularly intriguing given findings that linguistic similarity can diminish the FLE (Dylman and Champoux-Larsson 2020). This line of inquiry aims to disentangle the effects of L1 versus L2 status from the influence of the linguistic gender system itself.

[2] A reviewer of this paper raised a pertinent concern regarding the potential confounding effect of the gender system within each language, rather than attributing the observed effects solely to L1 versus L2 status.

5. Conclusion

The findings from our study provide new insights into how language influences gender bias. By looking at gender stereotypes associated with different word categories (Power, Weakness, Warmth, and Coldness) in Italian and English native speakers and non-native English speakers, some interesting patterns emerged. Words related to concepts like power and warmth tended to align with certain gender associations, reflecting common stereotypes. However, the relationship between language and bias was not straightforward. While all groups demonstrated similar trends, the strength of stereotyping varied significantly, with an L2 reduced biased judgments. Italian native speakers tested in English as L2 assigned to words with less stereotypical gender meanings compared to the Italian participants tested with their L1. This key finding of our study lends empirical support to the proposed mechanisms underlying the "Foreign Language Effect". Various studies have shown that performing a task in a non-native language disrupts automatic reliance on implicit biases by forcing conscious/less emotional consideration of meanings. Our L2 data exhibited this pattern of reduced stereotyping, suggestive of heightened reflective thought when accessing words in a foreign tongue. At the same time, emotional distancing from a learned L2 versus a native L1 limits associations between language and one's own culturally embedded norms and attitudes. Responding to words in English rather than Italian may have weakened participants' automatic alignment with ingrained gender schemas from their own culture and upbringing. While the specific cognitive and affective pathways driving the FLE warrant further direct examination, the findings from the L2 group offer additional support for this phenomenon within the realm of social cognition related to gender. By contextualizing our results within established explanatory models, we reinforce the notion that simply altering the linguistic frame of reference can significantly impact social and stereotypical thinking in theoretically consistent ways. Looking ahead, replicating this study design while incorporating implicit measures such as the Implicit Association Test (IAT) could help disentangle whether the observed effects primarily stem from emotional distance or cognitive processes. This holistic approach will also yield insights into the full spectrum of gender bias modulation in bilingual individuals.

Interestingly, differences emerged between the Italian and English first-language groups, suggesting the influence of cultural and linguistic aspects. Factors such as the explicit gender marking in Italian grammar, as opposed to the relative absence of such markers in English, may contribute to shaping biases over time. However, while in our study we acknowledge the influence of language on cognitive processes and social perceptions, we do not take a stance on the linguistic relativity hypothesis, which has been extensively explored in other studies (a.o., Prewitt-Freilino et al. 2012; Wasserman and Weseley 2009).[3] Instead, we recognize that language operates within a broader context of cultural and societal influences, all of which contribute to shaping perceptions and biases related to gender. While certain words' attributes may predispose gender associations, our findings highlight the potential for language to either exacerbate or alleviate biases through conscious processing changes. Recognizing the role of language holds practical implications for developing policies aimed at fostering equitable attitudes.

[3] Linguistic relativism, also known as the Sapir-Whorf hypothesis or linguistic relativity, posits that language shapes and influences thought patterns and worldviews. In other words, the structure and vocabulary of a language can influence how its speakers perceive and interpret the world around them.

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 the English version, used in Rudman, Greenwald and McGhee (2001). Due to a translation error, we had to remove the words 'triumph' and 'fragile' from the analysis

Power	*Weakness*	*Warmth*	*Coldness*
power	weak	warm	cold
strong	surrender	nurture	abandon
confident	timid	nice	distant
dominant	vulnerable	love	detached
potent	weakness	caring	harsh
command	wispy	gentle	reject
assert	withdraw	kind	rigid
loud	yield	protect	surly
bold	failure	accept	ignore
succeed	shy	support	offend
triumph	follow	welcome	rude
leader	lose	cooperate	selfish
shout	fragile	pleasant	aloof
dynamic	afraid	give	hostile
winner	loser	forgive	cruel

2. Words tested in the Italian version, taken from Rudman, Greenwald and McGhee (2001). Due to a typo, we had to remove the words 'grossolanità' and 'delicatezza' from the analysis

Potere	*Debolezza*	*Calore*	*Freddezza*
potenza	fragilità	calore	freddezza
forza	debolezza	allevamento	distanza
possente	timidezza	gentilezza	insensibilità
dominante	remissività	affettuosità	indifferenza
autorevole	arrendevolezza	amorevole	rigidezza
controllo	succubanza	delicatezza	asprezza
determinatezza	rinuncia	premurosità	rigore
decisione	accondiscendenza	dolcezza	scontrosità
coraggio	timore	accoglimento	trascuratezza
vincente	riservatezza	cordialità	indolenza
grossolanità	debilità	garbo	sgarbatezza
affermazione	dipendente	cooperazione	egoismo
solidità	delicatezza	tepore	superiorità
dinamicità	tremare	altruismo	ostilità
di successo	vacillare	perdono	crudeltà