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Effects of grammatical gender on gender inferences: evidence from French hybrid nouns

Abstract: A growing body of research shows that readers/listeners are biased by the grammatical gender of a noun when making inferences about the gender of its referent. This result is central in debates about gender-fair language but has mostly been established using masculine generics. This paper presents two preregistered studies on French that aim to replicate this result but using a lesser-studied type of nouns: generic hybrid nouns. These nouns can refer to both male and female individuals but are either masculine or feminine, depending on the noun (e.g. *un talent* ‘a talent’ and *une vedette* ‘a star’). The availability of both genders for hybrid nouns allows for a more comprehensive test of the effect of grammatical gender than permitted by masculine generics. Overall, the paper replicates the role of grammatical biases in gender inferences, with masculine hybrid nouns being judged as more likely to refer to male individuals as compared to feminine hybrid nouns. However the results did not reveal a symmetric bias for feminine nouns, which were interpreted as gender-neutral. But this latter result should be interpreted with caution as it could be due to uncontrolled effects of gender stereotypes coming from the specific stimuli used in the study.

Keywords: grammatical gender, hybrid nouns, masculine generics, gender-fair language, French

1 Introduction

Systems of grammatical gender are often sex-based across languages (Corbett 2013). In these systems, words referring to a person are classified in two grammatical classes (feminine, masculine) that usually reflect the gender of the corresponding referent (female, male). For instance, in French, the word *garçon* ‘boy’ refers to a male individual and is grammatically masculine, as shown by patterns of grammatical agreement triggered on the determiner (e.g. *un garçon* ‘a.MASC boy’). By contrast, the word *fille* ‘girl’ refers to a female individual and is grammatically feminine (e.g. *une fille* ‘a.FEM girl’).

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But grammatical gender and referent gender do not always match. For instance, in many languages with grammatical gender, masculine forms do not only refer to male individuals but also have a generic reading: they can be used to refer to mixed-gender groups or individuals whose gender is unknown or irrelevant (e.g. Aikhenvald 2016: chapter 7). The use of masculine generics is illustrated in (1) for French: although the speaker uses the masculine pronoun *il* ‘he’, they actually promise to punish whoever broke their glasses, regardless of gender.

(1) Masculine generics in French

Je ne sais pas qui a cassé mes lunettes mais il va être puni.

‘I don’t know who broke my glasses but he will be punished.’

Due to the type of gender mismatch illustrated in (1), grammatical gender is not always a reliable cue to the referent’s gender. Yet a growing body of research suggests that readers/listeners still tend to draw gender inferences that are in line with grammatical gender, even in mismatch contexts such as (1) (e.g. Gastil 1990 on English *he*; Gygax et al. 2008; Xiao, Strickland and Peperkamp 2023 on French; Gygax et al. 2008 on German). For instance, Brauer and Landry (2008) found that French readers were more likely to think of male candidates for Prime Minister when presented with a masculine form intended as generic (*candidats* ‘candidates.MASC’) than when presented with an explicitly gender-neutral form (*candidats/candidates* ‘candidates.MASC/candidates.FEM’). These findings have been used as a key argument by proponents of gender-fair language to replace masculine generics with gender-neutral forms. Gender-fair language aims at eliminating linguistic biases that contribute to an unfair representation of gender and therefore might perpetuate gender inequalities (see Sczesny, Formanowicz and Moser 2016 for an overview).

Although the result that grammatical gender interferes with gender inferences is the central motivation for gender-fair language, it has mostly been established using masculine generics such as (1) (see Gygax et al. 2021 for an overview). However masculine generics are not the only case of mismatch between grammatical gender and referent gender, with potential social impacts. The present paper examines another such case. In French, some nouns have a generic interpretation but a specific grammatical gender, feminine or masculine, depending on the noun (Abeillé and Godard 2021: 389-390), as illustrated in (2a) and (2b). Following Corbett (2015) and Gygax et al. (2019), these nouns will be referred to as hybrid nouns.¹ The present paper aims to test whether the effect of grammatical gender observed for masculine generics extends to generic hybrid nouns, with masculine hybrid nouns inducing more male representations than

¹ These nouns are also called hypernyms by Abbou (2011).

feminine hybrid nouns and therefore potentially giving rise to problematic biases from a social perspective.

- (2) Hybrid nouns with a generic interpretation in French
- a. Feminine nouns: *une personne* ‘a person’, *une vedette* ‘a star’, etc.
 - b. Masculine nouns: *un individu* ‘an individual’, *un talent* ‘a talent’, etc.

Generic hybrid nouns form a closed lexical class and this might explain why they did not receive as much attention as masculine generics in the literature (Gygax et al. 2019). However these nouns also present some advantages compared to masculine generics. First, the availability of both genders for hybrid nouns allows for a more comprehensive test of the effect of grammatical gender than permitted by masculine generics, which are only found in the masculine. In particular, hybrid nouns provide a way to test whether the male bias induced by masculine nouns is compensated by a symmetric female bias for feminine nouns.

Second, hybrid nouns make it possible to control for competition effects that could play a role in the male-biased interpretation of masculine generics. Words that can be used in the masculine generic can also be inflected in the feminine. The male bias for masculine generics could be partly due, or even entirely according to some,² to the presence of this feminine competitor. Under this view, the masculine grammatical gender does not directly trigger male inferences. Instead, the reader/listener tends to discard female interpretations for masculine forms by reasoning that the writer/speaker could have used the more informative feminine competitor if they had a female interpretation in mind. In line with the competition-based hypothesis, Gygax and Gabriel (2008) found that readers were more likely to have a male-biased interpretation of masculine generics when reading a text also including feminine-inflected forms than when reading a text only including masculine generics. By contrast, competition is less likely to play a role for hybrid nouns as these nouns do not inflect for gender and therefore lack a salient morphological alternative in the opposite gender that could reinforce or even entirely drive any gender bias.

Despite these advantages, generic hybrid nouns in French have to our knowledge only been investigated in a single study by Brauer and Landry (2008: Study 3), using a single pair of hybrid nouns (*un individu* ‘an.MASC individual’/*une personne* ‘a.FEM person’). In that study, participants were presented with a role noun in the masculine generic and asked to describe the typical person that does the corresponding job. For half of the participants, this person was referred to in the text with the feminine hybrid noun *personne*. For the other half, the masculine noun *individu* was used instead. The authors

² For instance, Jakobson (1971: 213) treats the masculine gender as semantically underspecified and therefore without any bias towards a male interpretation.

found a smaller proportion of female responses for participants in the condition with masculine *individu* (16.9%) than for participants in the condition with feminine *personne* (30%), in line with the hypothesis that gender inferences are biased by grammatical gender for hybrid nouns.

The present paper aims to follow up on Brauer and Landry (2008) using a larger set of hybrid nouns (14 pairs) to test whether the effect of grammatical gender generalizes beyond the pair *individu/personne*. Two studies run online were carried out to test the hypothesis, using judgment data from French-speaking participants in France and in Switzerland. The use of judgment data is common in works evaluating grammatical biases in gender inferences (e.g. Gygax et al. 2008; Xiao, Strickland and Peperkamp 2023). The specific design used in the two studies follows Richy and Burnett (2021), where participants were asked to estimate the likelihood that a sentence refers to a man or a woman using a Likert scale. Section 2 presents the first study (Study 1). Section 3 presents a follow-up study (Study 2) that was run to address a methodological issue that came up in the first study. The preregistration, data and code for both studies are available in Storme and Delaloye Saillen (2022b,a).

2 Study 1

2.1 Methods

2.1.1 Stimuli

Each grammatical gender (feminine, masculine) was represented by 14 generic hybrid nouns (see Appendix). Hybrid nouns were considered to have a generic interpretation by the authors if they could be predicated of both a man and a woman without contradiction. Feminine and masculine hybrid nouns were paired up together according to semantic similarity (e.g. *individu/personne*, *vedette/talent*). Semantic similarity was assessed based on the authors' judgment. The appendix lists the pairs of nouns used as stimuli along with an English translation that is meant to highlight the semantic property common to each pair. The nouns in each pair were included in the same carrier sentence, as shown in (3), in order to control for effects of gender stereotypes that could come from the sentential context. The complete list of carrier sentences can be found in the Appendix.

- (3) Examples of experimental items
- a. *Une vedette de la chanson a été invitée pour présider le jury.*
'A.FEM pop star was invited to chair the jury.'
 - b. *Un talent de la chanson a été invité pour présider le jury.*
'A.MASC pop talent was invited to chair the jury.'

However gender stereotypes were not controlled for or balanced across noun pairs and sentential contexts. In other words, the specific noun pairs and sentential contexts chosen for the study might come with their own gender biases whose effects will combine with any effect of grammatical gender. Yet, through the comparison of minimal pairs such as (3a) and (3b), the study still makes it possible to assess the effect of grammatical gender at an equal gender-stereotype strength.

2.1.2 Study design

The study was a repeated-measurement experiment with a Latin square design. Two lists of experimental items were created, each one containing seven feminine hybrid nouns and seven masculine hybrid nouns (see Appendix). Each list featured only one among the two paired-up items. For instance, (3a) belonged to one list of items and (3b) to the other list. Participants were randomly assigned to one of the two lists and therefore saw seven feminine hybrid nouns and seven masculine hybrid nouns each (so there were two groups of participants, each group being assigned to a different list of items). The order of presentation was randomized for each participant.

Participants were asked to guess three properties of the person referred to in the sentence, as shown in Figure 1: (i) their age, (ii) their gender, and (iii) their level of education. The question was carefully worded so as not contain any grammatical clue about the referent's gender. Questions about the referent's age and level of education were added in order to make the goal of the study harder to guess, following Richy and Burnett (2021). Participants used a seven-point Likert scale to answer all three questions, as shown in Figure 1. Following again Richy and Burnett (2021), the three questions were presented in the same order for all items (age, gender, education). For the gender variable, participants were asked to estimate the likelihood that the sentence refers to a man or a woman, 1 indicating a highly confident 'man' response, 7 a highly confident 'woman' response, and 4 an equal likelihood of the referent being a man or a woman.

*Une vedette de la chanson a été invitée pour présider le jury.
 À votre avis, de qui parle-t-on dans cette phrase ? Indiquez ses caractéristiques individuelles ci-dessous.

	1	2	3	4	5	6	7	
Âge : jeune	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	avancé
Sexe : homme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	femme
Niveau d'éducation : peu avancé	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	avancé

Fig. 1: An example of item

Following Richey and Burnett (2021) again, experimental items were interspersed with filler items consisting of proper names, in particular (but not exclusively) gender-neutral proper names like *Dominique*. These fillers were also meant to divert the attention of participants from the research question. Each participant saw 14 experimental items and 20 filler items.

2.1.3 Participants

100 participants were recruited through mailing lists at French-speaking universities in Switzerland and in France. The study was carried out online using the LimeSurvey platform (LimeSurvey 2012). Each participant was randomly assigned to one of the two lists. A total of 50 participants saw each list. Participants participated on a voluntary basis. They provided their informed consent to participate in the research and agreed to make their data available online. No sensitive information about participants was collected.

2.1.4 Data analysis

The judgment data were modeled using the ordinal cumulative model (Bürkner and Vuorre 2019: 78-79). The cumulative model assumes that the observed ordinal response variable derives from the categorization of a latent continuous unobserved variable. In the present study, the ordinal variable is the rating of the referent gender along the seven-point scale. The latent variable is the underlying continuum corresponding to the participant's uncertainty about the referent's gender. To model this categorization in the case of a seven-point Likert scale, the cumulative model assumes that there are six thresholds which partition the latent variable into seven ordered categories (1, 2, ..., 6, 7). The model provides estimates for the mean of the two grammatical genders and for the position of the six thresholds along the latent continuous variable. The reader is referred to Bürkner and Vuorre (2019) for further details.

A Bayesian approach was adopted (rather than a frequentist approach) for inferring the parameters of the ordinal regression. This choice was motivated by the fact that Bayesian inference yields outcomes that are intuitive and easy to interpret. In particular, it provides a posterior distribution for all the model's parameters and combinations of parameter values given the data. This makes it very easy to test any hypothesis about the parameter values and about differences between parameter values. Also, Bayesian approaches virtually always converge to accurate values of the parameters (Liddell and Kruschke 2018). The model was fit using `brms` (Bürkner 2017) in R (R Core Team 2020).

The model included the fixed effect ‘grammatical gender’ and the maximal random-effects structure justified by the study’s design (Barr et al. 2013). We followed Baayen, Davidson and Bates (2008: 403) in the specification of the random-effects structure for Latin square designs. In particular, the group membership of participants (Group 1, Group 2) was included as a random effect. The random-effects structure included:

- a by-participant random intercept and a by-participant random slope for Grammatical gender,
- a by-group random intercept and a by-group random slope for Grammatical gender (there were two groups of participants in the Latin square design, each one being assigned to one of the two lists of hybrid nouns),
- a by-item random intercept (corresponding to the effect of specific carrier sentences on the response variable, e.g. (3)),
- and a by-word random intercept (corresponding to the effect of specific nouns, e.g. *vedette*, *talent*, etc., on the response variable, independent of their grammatical gender and of the carrier sentence, whose effects are captured by the fixed effect Grammatical gender and by the by-item random intercept, respectively).

Grammatical gender was dummy-coded, with feminine gender used as the reference level. In the analysis, we focus on the parameter $\hat{\beta}$ that quantifies by how much the reference level must be adjusted for masculine nouns. Due to the way the Likert scale was set up (1 corresponds to a highly-confident ‘man’ response and 7 a highly-confident ‘woman’ response), a negative value for $\hat{\beta}$ indicates a stronger male bias for masculine nouns. Compelling evidence for a difference in the inferences triggered by feminine and masculine nouns was considered to be provided only in case zero was outside of the posterior 95% Credible Interval (CI) for $\hat{\beta}$. Credible Intervals were obtained using the ETI (Equal-tailed Interval) method and the package *bayestestR* (Makowski, Ben-Shachar and Lüdtke 2019).

2.2 Results

Figure 2 shows the frequency of each response along the seven-point Likert scale for feminine and masculine hybrid nouns (averaged across participants and items). Figure 3 shows the corresponding posterior probability distribution, as estimated by the preregistered statistical model described in Section 2.1.4. The effect of grammatical gender on gender inferences goes in the expected direction, with masculine nouns inducing more male representations than feminine nouns ($\hat{\beta} = -0.85$, $CI = [-2.50, 1.25]$). But the 95% CI is too large (it includes zero) to conclude for a strong effect.

To get a better understanding of why the Credible Interval was so large, a post-hoc, non-preregistered comparison was carried out within each group separately (Group 1,

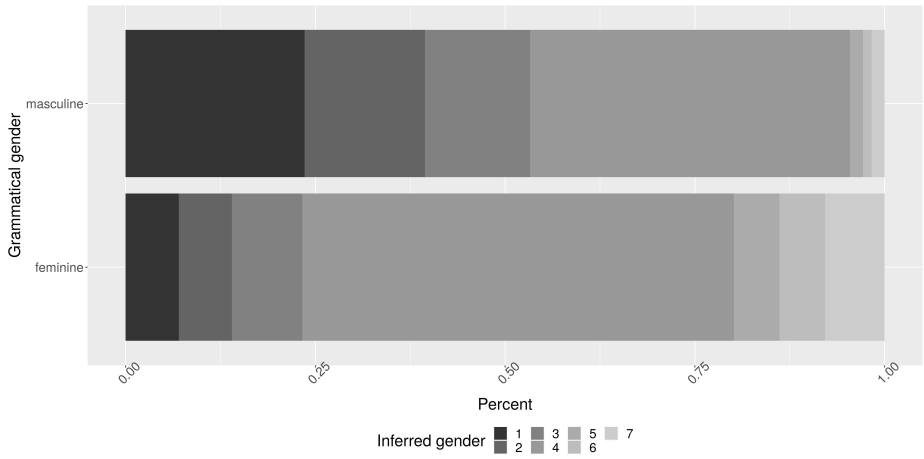


Fig. 2: Descriptive statistics: the effect of grammatical gender (feminine, masculine) on gender inferences in Study 1 (1: categorically male response; 4: gender-neutral response; 7: categorically female response).

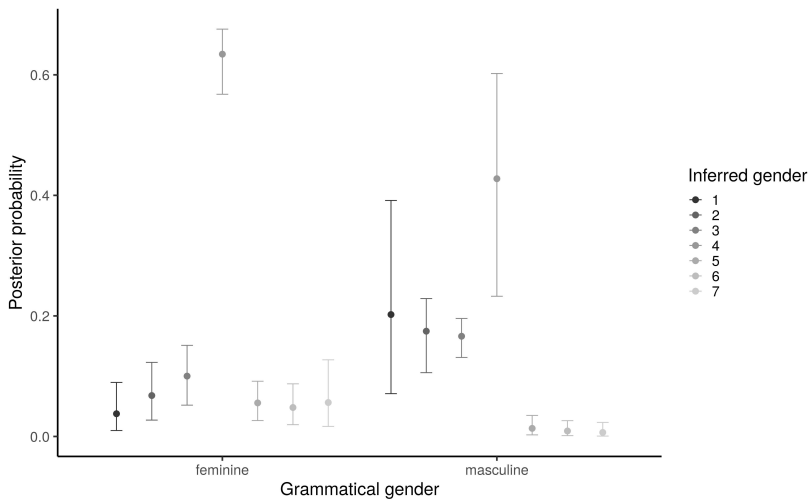


Fig. 3: Inferential statistics: the effect of grammatical gender (feminine, masculine) on gender inferences in Study 1 (1: categorically male response; 4: gender-neutral response; 7: categorically female response). Posterior means with 95 % CI.

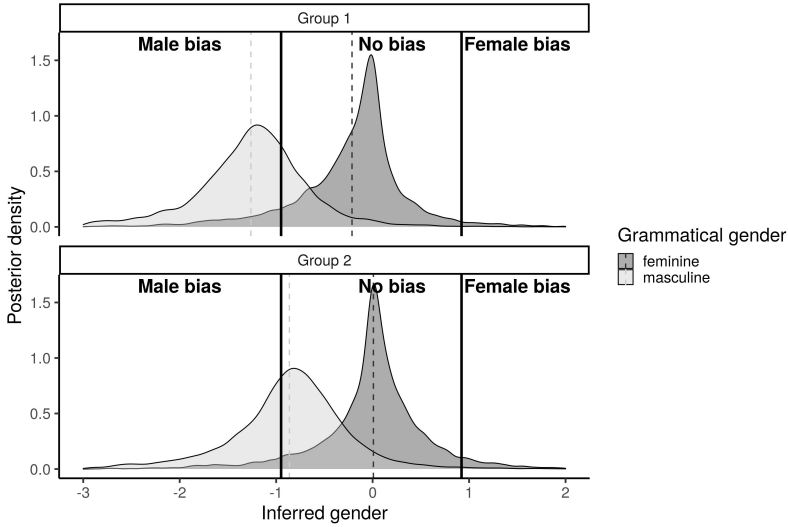


Fig. 4: Inferential statistics: the effect of grammatical gender (feminine, masculine) on gender inferences in Study 1 (represented along the latent continuous scale). Vertical dashed lines indicate means of the corresponding posterior distributions. The two vertical solid lines correspond to the lower and upper thresholds for the gender-neutral response along the seven-point Likert scale.

Group 2), using the same model but focusing this time on the posterior probability of the response conditioned on group membership (Group 1, Group 2). Figure 4 shows the posterior density of gender inferences associated with masculine and feminine nouns within each group separately, using the latent continuous scale to make the interpretation easier. The lower and upper thresholds for the gender-neutral response (vertical solid lines) correspond to the posterior mean of the threshold between responses 3 and 4 along the ordinal scale and to the posterior mean of the threshold between responses 4 and 5, respectively.

This post-hoc study reveals that grammatical gender does have a compelling effect on gender inferences within each group separately, with masculine nouns inducing more male representations than feminine hybrid nouns (Group 1: $\hat{\beta} = -1.05$, $CI = [-1.63, -0.49]$; Group 2: $\hat{\beta} = -0.87$, $CI = [-1.45, -0.27]$). The CIs for the within-group differences are smaller than the CI for the across-group difference. The question why an effect of grammatical gender was found when considering each group separately but not when considering them together will be taken up in Section 2.3.

Inspection of Figures 3 and 4 reveals that the interpretation bias induced by feminine and masculine nouns is asymmetric. Masculine nouns favored a male interpretation whereas feminine nouns did not favor female interpretations but were interpreted as

gender-neutral. This is particularly clear in Figure 4: the posterior distribution for the interpretation of feminine nouns is largely included within the range of gender-neutral values whereas the posterior distribution for the interpretation of masculine nouns is shifted towards male values. Inspection of Figure 4 also reveals a difference between Group 1 and Group 2: gender inferences were less biased towards male interpretations in Group 2 than in Group 1, in particular for masculine nouns.

2.3 Discussion

Grammatical gender was found to affect patterns of gender inferences only when focusing on each group separately but not when considering them together. Also, the Credible Interval for the difference between feminine and masculine nouns was much larger when considering the two groups together than when considering them separately. This suggests that there are substantial differences between the two groups. This was confirmed by the exploratory analysis that revealed overall less male-biased inferences in Group 2 than in Group 1.

In light of the post-hoc comparison of Group 1 and Group 2 (Figure 4), we propose the following interpretation for the absence of overall effect of grammatical gender. Because the study is based on a Latin square design with two groups, the fixed effect for grammatical gender effectively corresponds to an average of two across-group differences: (i) the difference between feminine nouns in Group 1 and the corresponding masculine nouns in Group 2 (in Figure 4, this corresponds to the difference between the dark gray dotted line in Group 1 and the light gray dotted line in Group 2) and (ii) the difference between masculine nouns in Group 1 and the corresponding feminine nouns in Group 2 (in Figure 4, this corresponds to the difference between the light gray dotted line in Group 1 and the dark gray dotted line in Group 2).

But because of the stronger overall male bias observed in Group 1 (as can be seen in Figure 4, means are smaller in Group 1 than in Group 2 for both grammatical genders), the difference between feminine nouns in Group 1 and masculine nouns in Group 2 ended up being *smaller* than the difference between masculine and feminine nouns within each group. On the other hand, the difference between masculine nouns in Group 1 and feminine nouns in Group 2 ended up being *larger* than the difference between masculine and feminine nouns within each group. Overall, the presence of a stronger male bias in Group 1 than in Group 2 therefore resulted in more variability and in a larger Credible Interval across groups than within groups.

There are two potential sources for the difference observed between Group 1 and Group 2. The two groups of participants were exposed to two different lists of hybrid nouns. By chance, the nouns included in the list shown to Group 1 could have been more male-biased than the ones included in the list shown to Group 2. The two groups

also included different participants. The participants in Group 1 could have been more male-biased by chance than the participants in Group 2. However, the first explanation seems more likely because there were less nouns to choose from (28 nouns) than participants (100 participants). If this interpretation is correct, then the absence of effect of grammatical gender across the two groups should be an artefact of the specific way items were grouped. To test this, a second study with a different assignment of items to participants was run and will be presented in Section 3.

The results also revealed asymmetric biases for masculine and feminine nouns. Only masculine nouns had a grammatically biased interpretation. Feminine nouns were largely interpreted as gender-neutral. This result is reminiscent of Brauer and Landry (2008: Study 3). They also found that masculine *individu* had a male-biased interpretation (16.9% female responses) whereas *personne* was not female-biased (30% female responses).

However this asymmetry should be interpreted with caution in both the present study and Brauer and Landry's (2008) study. In this latter study, hybrid nouns *individu* and *personne* were presented alongside masculine generics. The presence of masculine generics could have favored male interpretations overall. In the present study, gender stereotypes were not controlled for across the set of experimental items, as indicated in Section 2.1.1. If the specific set of hybrid nouns and/or carrier sentences chosen for the study happened to have been male-biased, then this could explain the asymmetry between masculine and feminine gender, with inferences being generally shifted towards male interpretations.³ In particular, several pairs of hybrid nouns chosen in the study are associated with high social status and prestige (*vedette/talent*, *star/as*, *sommité/génie*, *célébrité/monument*). Since there are typically more men than women that occupy high social positions in France and Switzerland, the choice of such words could result in a male bias. We leave for future research the investigation of how gender stereotypes might interact with grammatical gender for hybrid nouns.

3 Study 2

A follow-up study was run to address the issue of the heterogeneity of the two groups observed in Study 1.

³ The male bias observed in Brauer and Landry (2008) is unlikely to be due to uncontrolled gender stereotypes because they only included role names corresponding to jobs featuring an equal number of men and women according to the French national institute of statistics (e.g. *enseignants de lycée* 'high school teachers.MASC').

3.1 Methods

A single change was made in the methods used in Study 1. Instead of being assigned to one of two preestablished lists of experimental items, participants in Study 2 were assigned to a set of seven masculine and seven feminine nouns that were randomly selected among the set of all hybrid nouns for each participant. This way, each participant saw a different list of hybrid nouns. This change in the design made it possible to remove the Group variable that was problematic in Study 1. Otherwise the same materials and experimental design were used as in Study 1.

60 participants were recruited through mailing lists in French-speaking universities in France and Switzerland and through the CNRS mailing list RISC. The same methods were used for data analysis as in Study 1. The only difference with Study 1 was the absence of random effects for Group (because participants were no longer assigned to one of two preestablished lists of items in Study 2).

3.2 Results

Figure 5 shows the frequency of each response along the seven-point Likert scale for feminine and masculine hybrid nouns (averaged across participants and items). Figure 6 shows the corresponding posterior probability distribution, as estimated by the statistical model described in Section 3.1. This time, compelling evidence was found for the main effect of grammatical gender, with masculine nouns inducing more male representations than feminine hybrid nouns ($\hat{\beta} = -0.94$, $CI = [-1.41, -0.45]$).

Figure 7 shows the posterior density of gender inferences associated with masculine and feminine nouns in Study 2, plotted along the latent continuous scale. Inspection of Figures 6 and 7 reveals that the interpretation bias induced by feminine and masculine nouns is asymmetric, as in Study 1. This is particularly clear in Figure 7: the value for the interpretation of feminine nouns⁴ is included within the range of gender-neutral values whereas the posterior mean for masculine nouns is outside of this range.

3.3 Discussion

Compelling evidence was found for an effect of grammatical gender when the Group variable used in Study 1 was removed in Study 2. This suggests that the specific way items were grouped into the two lists in Study 1 was responsible for the absence of

⁴ This value is constant and equal to zero because the variable ‘grammatical gender’ was dummy-coded, with ‘feminine’ being used as the reference level.

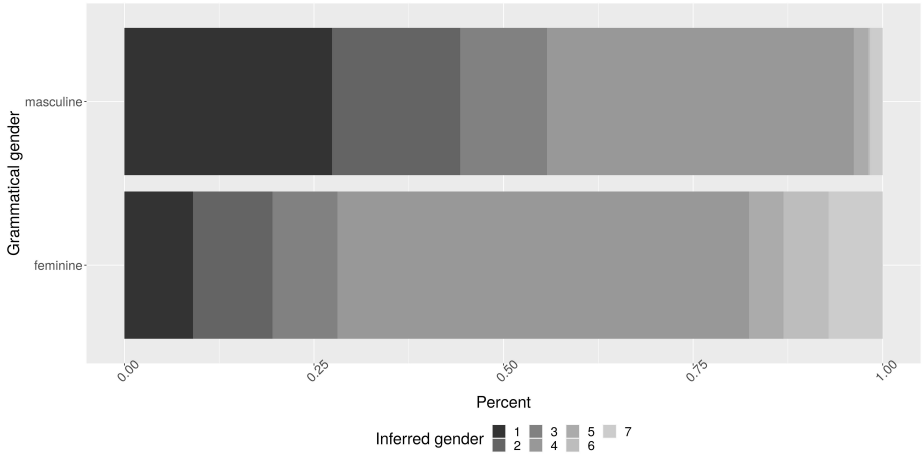


Fig. 5: Descriptive statistics: the effect of grammatical gender (feminine, masculine) on gender inferences in Study 2 (1: categorically male response; 4: gender-neutral response; 7: categorically female response). Descriptive statistics.

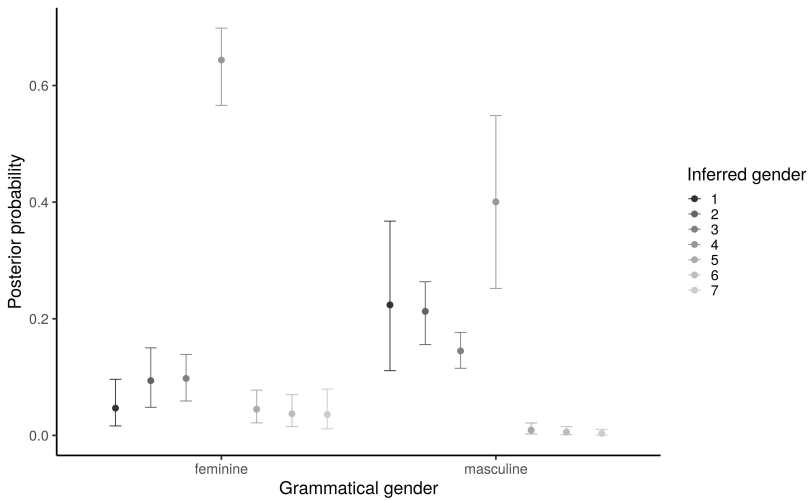


Fig. 6: Inferential statistics: the effect of grammatical gender (feminine, masculine) on gender inferences in Study 2 (1: categorically male response, 4: gender-neutral response, 7: categorically female response). Posterior means with 95 % CI.

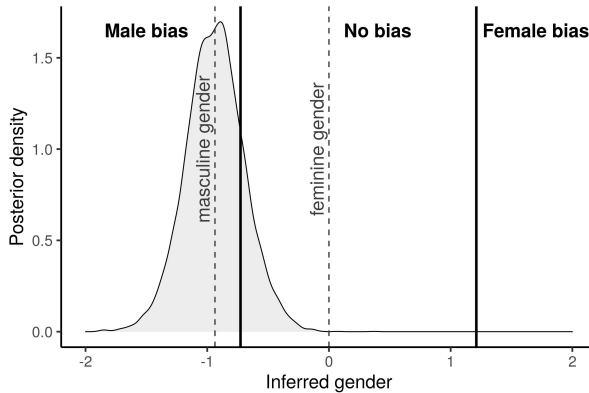


Fig. 7: Inferential statistics: the effect of grammatical gender (feminine, masculine) on gender inferences in study 2 (represented along the latent continuous scale).

a main effect of grammatical gender, as hypothesized in Section 2.3. This result is interesting from a general methodological perspective: it means that it is probably preferable to assign individual items randomly to participants than to use a small number of preestablished lists of items.

The results also revealed asymmetric biases for masculine and feminine nouns, with only masculine nouns resulting in a grammatically-biased interpretation. However this asymmetric bias should be taken with a grain of salt as it could be due to uncontrolled effects of gender stereotypes in the stimuli, exactly as in Study 1 (see Section 2.3).

4 Conclusion

The current article has shown that hybrid nouns with a generic interpretation induce more male representations when their grammatical gender is masculine than feminine. This result confirms and generalizes the conclusion that was reached by Brauer and Landry (2008) based on a single pair of hybrid nouns (*personne/individu*). More generally, this research adds to a growing body of evidence that grammatical gender biases gender inferences. Crucially, the evidence comes from a type of nouns which do not inflect for gender (contrary to masculine generics) and therefore for which an alternative competition-based account is unlikely.

Only the masculine gender was found to bias gender inferences. Indeed, feminine nouns were interpreted as gender-neutral. However this latter result should be interpreted with caution as it could be due to uncontrolled effects of gender stereotypes coming

from the specific stimuli used in the study. In particular, several pairs of hybrid nouns included in the experimental items referred to individuals with high social status and this might have contributed to an overall male bias. Further studies are necessary to establish whether the unbiased interpretation of feminine nouns results from methodological issues or is genuine.

The results also have implications for gender-fair language. Indeed they suggest that the general male bias observed in languages such as French could be attenuated not only by replacing masculine generics by gender-neutral forms but also by using feminine instead of masculine generic hybrid nouns (e.g. *une personne* instead of *un individu*).

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Appendix

Material used in Study 1 (S1) and Study 2 (S2) along with the average gender scores for each noun in each study (1 corresponds to a confident male response and 7 to a confident female response). The column 'Contextual Meaning' is not meant as an accurate and general English translation but rather as a rough indication of the semantic property contextually shared by the two nouns within each pair. The column 'Group' indicates whether the corresponding noun was shown to participants in Group 1 or Group 2 in Study 1.

Hybrid noun	Contextual meaning	Sentence	Group		Gender score	
			(S1)	(S2)	S1	S2
star (f)	'champion'	C'est une ___ de la course à pied.	1	1	3.42	3.44
as (m)		C'est un ___ de la course à pied. '(S)he's a running ___.'	2	2	2.60	1.82
personne (f)	'person'	Cette ___ ne se souvient même plus de son nom.	2	2	4.00	3.59
individu (m)		Cet ___ ne se souvient même plus de son nom. 'This ___ doesn't even remember their name.'	1	1	2.38	2.82
dépouille (f)	'dead body'	La ___ fut transportée dans un cercueil.	1	1	3.74	3.90
cadavre (m)		Le ___ fut transporté dans un cercueil. 'The ___ was transported in a coffin.'	2	2	3.92	3.77
bête de foire (f)	'circus freak'	Avec ses manières, c'est une véritable ___.	2	2	3.26	3.42
phénomène de foire (m)		Avec ses manières, c'est un véritable ___. 'With his/her manners, (s)he is a real ___.'	1	1	3.06	2.62
personnalité (f)	'figure'	Une ___ de premier plan du gouvernement s'est exprimée à la radio.	1	1	3.24	3.11
personnage (m)		Un ___ de premier plan du gouvernement s'est exprimé à la radio. 'A prominent government ___ spoke on the radio.'	2	2	2.98	2.75
vedette (f)	'star'	Une ___ de la chanson a été invitée pour présider le jury.	2	2	4.52	4.34
talent (m)		Un ___ de la chanson a été invité pour présider le jury. 'A pop ___ was invited to chair the jury.'	1	1	3.50	3.48
célébrité (f)	'celebrity'	C'est une ___ du cinéma français.	1	1	3.74	3.54
monument (m)		C'est un ___ du cinéma français. '(S)he is a French movie ___.'	2	2	2.90	3.08

Hybrid noun	Contextual meaning	Sentence	Group (S1)	Gender score S1	Gender score S2
tête (f)	'leader'	La ___ du groupe a accepté une interview à la télé.	2	3.78	2.56
cerveau (m)		Le ___ du groupe a accepté une interview à la télé. 'The group agreed to a TV interview.'	1	3.36	3.00
fourmi (f)	'little person'	Tu n'es qu'une ___.	1	3.60	3.50
microbe (m)		Tu n'es qu'un ___. 'You're just a ___.'	2	3.22	3.29
merveille (f)	'child'	Ma petite ___ s'est fait un bobo au genou.	2	5.30	5.37
trésor (m)		Mon petit ___ s'est fait un bobo au genou. 'My little ___ hurt his/her knee.'	1	2.76	2.76
crème (f)	'child'	Ma petite ___ a fait sa rentrée scolaire aujourd'hui.	1	5.24	5.41
ange (m)		Mon petit ___ a fait sa rentrée scolaire aujourd'hui. 'My little ___ started school today.'	2	3.74	3.51
sangsue (f)	'scrooge'	Cette ___ m'a volé toutes mes économies.	2	4.46	4.17
vautour (m)		Ce ___ m'a volé toutes mes économies. 'This ___ stole all my savings.'	1	1.94	1.84
sommité (f)	'leading expert'	Une ___ du domaine a reçu le prix.	1	3.78	3.95
génie (m)		Un ___ du domaine a reçu le prix. 'A ___ in the field received the prize.'	2	2.72	2.69
fripouille (f)	'scoundrel'	Cette ___ a encore réussi à tromper tout le monde.	2	3.54	2.70
charlatan (f)		Ce ___ a encore réussi à tromper tout le monde. 'This ___ managed again to fool everybody.'	1	1.92	1.79

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