

Gender biases with and without grammatical gender

November 6, 2024

Introduction

- ▶ In languages like English, there is compelling evidence that the interpretation of noun phrases is influenced by gender stereotypes associated with the noun.
- ▶ E.g. Garnham, Oakhill, and Reynolds (2002) exposed experimental participants to three-part discourses such as the following:
 1. The **soldier/nurse** drove to the playground after work
 2. and picked up one of the children
 3. who said 'Look what I did today **mummy/daddy**!'

Participants had to decide as quickly as possible whether the third part was a possible continuation of the first two.

Role noun	Lexical gender noun	Avg. response	Reaction time
soldier	daddy	more positive	faster
soldier	mummy	more negative	slower
nurse	daddy	more negative	slower
nurse	mummy	more positive	faster

- ▶ The question: how will this play out in a language with grammatical gender?

Avec mon bilan prévention, on fait le point sur sa santé aux ages clé de la vie, avec un médecin, un pharmacien, une sage-femme, ou une infirmière.

‘With my prevention assessment, you can take stock of your health at key stages in life, with a doctor_M, a pharmacist_M, a midwife_F or a nurse_F.’

French Ministry of Health communication campaign, October 2024

Occupation	real	perceived
Medical doctor	.50	.44
Pharmacist	.70	.58
Midwife	.99	?
Nurse	.85	.72

Real (according to the *Portraits statistiques des métiers* 2022)
and perceived (according to Misersky et al. 2014)
proportions on women in medical occupations.

Pascal Gygax et al. (2008). “Generically intended, but specifically interpreted: When beauticians, musicians, and mechanics are all men.” In: *Language and Cognitive Processes* 23.3, pp. 464–485.

Materials

- ▶ Parallel experiments in English, German and French.
- ▶ In all three languages, participants had to judge whether a sentence containing a lexical gender noun was a good continuation for a sentence containing a role noun.
- ▶ In French and German, the role noun was grammatically masculine.
 - English The **social workers** were walking through the station.
Since sunny weather was forecast several of the **women** weren't wearing a coat.
 - French Les **assistants sociaux** marchaient dans la gare.
Du beau temps étant prévu plusieurs **femmes** n'avaient pas de veste.
 - German Die **Sozialarbeiter** liefen durch den Bahnhof.
Wegen der schönen Wetterprognose trugen mehrere der **Frauen** keine Jacke.
- ▶ Manipulations:
 - ▶ The role noun's gender stereotype, with three independently normed categories (male-neutral-female)
 - ▶ Whether the final noun is *men* or *women*
- ▶ Items also varied in the quantifier used (*some of the, most of the, etc.*).
- ▶ Overall, each participant was exposed to 36 experimental items, 6 for each of the 6 combinations of gender stereotype and *men* vs. *women*.

Task

- ▶ The task was to decide quickly whether the second sentence was a sensible continuation of the first one.
- ▶ The expected answer was *yes* for all experimental items.
 - ▶ The authors verified this to be the case in a pretest of the materials.
 - ▶ It also makes good linguistic sense.
- ▶ The experiment also contained 36 filler pairs for which the expected answer is *no*, for reasons having nothing to do with gender.

The professors were taking a break in the sun.

Due to the bad weather the majority of the women had an umbrella.

Results: proportion of positive judgement

Language	Continuation	Stereotypes		
		Female	Male	Neutral
French	Men	.77	.83	.73
	Women	.59	.58	.56
German	Men	.65	.69	.72
	Women	.40	.35	.45
English	Men	.65	.85	.81
	Women	.88	.66	.81

► Inferential statistics:

- **English:** Interaction of continuation and stereotype: congruent pairs led to higher rates of positive responses. No main effect.
- **French:** Main effect of continuation: *men* always yields a higher rate of positive responses. No main effect of stereotype nor interaction.
- **German:** Main effect of continuation: *men* always yields a higher rate of positive responses. No main effect of stereotype nor interaction.
- Unconclusive evidence that the effect of continuation is stronger in German than in French.

Results: judgement times

Language	Continuation	Stereotypes		
		Female	Male	Neutral
French	Men	3665 (1626)	3523 (1380)	3701 (1102)
	Women	3871 (1486)	3863 (1794)	3873 (1355)
German	Men	3149 (1084)	3066 (1207)	3132 (1127)
	Women	3464 (1098)	3471 (1081)	3479 (1305)
English	Men	2749 (1004)	2810 (935)	2885 (1476)
	Women	2913 (1212)	2954 (1164)	2910 (961)

► Inferential statistics:

- **English:** No effect.
- **French:** Marginal main effect of continuation: *men* yields quicker responses. No main effect of stereotype nor interaction.
- **German:** Main effect of continuation: *men* yields quicker responses.

Discussion

- ▶ Clear evidence that:
 - ▶ Gender stereotypes of role nouns influence the interpretation of a noun as referring to men or women, at least in languages without grammatical gender, such as English.
 - ▶ In languages with grammatical gender, the use of a masculine generic favors the interpretation of a noun as referring to men, irrespective of gender stereotypes.
 - ▶ In addition, at least in German, a masculine generic referring to a group including women leads to longer processing, probably because speakers are revising their expectation that the group contains only men.
 - ▶ It is striking that the same experimental design that documents strong effects of stereotypes in English documents no effect at all in French or German
 - ▶ One would have expected *some* effect.
- ▶ In addition, the authors conclude that ‘masculine forms intended as generic are typically not interpreted as such’.
 - ▶ This is a bit of an overstatement—at least the paper does not provide direct statistical evidence to that effect.

Alan Garnham et al. (2012). “Gender Representation in Different Languages and Grammatical Marking on Pronouns: When Beauticians, Musicians, and Mechanics Remain Men.” In: *Discourse Processes* 49.6, pp. 481–500.

Design

- ▶ This follow-up experiment is exactly like the preceding one, except that the context includes a pronoun.

English

The **neighbors** came out of the cafeteria. **They** went away.
Because of the cloudy weather, one of the **women** had an umbrella.

French

Les voisins sortirent de la cafeteria. **Ils** partirent.
À cause du temps nuageux **une des femmes** avait un parapluie.

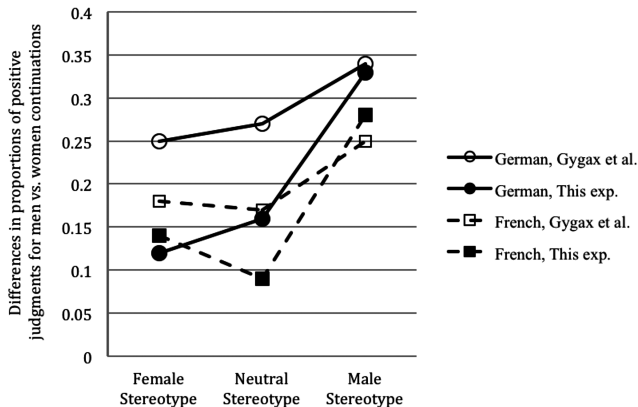
German

Die Nachbarn kamen aus der Cafeteria heraus. **Sie** gingen weg.
Wegen der schönen Wetterprognose trugen mehrere der **Frauen** keine Jacke.

Note that in French only the pronoun is unambiguously masculine.

- ▶ Otherwise same task.

Results: proportion of positive judgments



- ▶ Results for English and French unchanged.
- ▶ In German, there is now a main effect of stereotype as well as a stereotype-continuation interaction: the gender bias is higher in male-stereotyped nouns.

Discussion

- ▶ The addition of a sentence with a co-referring pronoun lead to the emergence of an effect of stereotypes in German, but not in French.
- ▶ This is probably linked to the fact that the pronoun is masculine in French but gender-neutral in German.

Célia Richy and Heather Burnett (2021). “Démêler les effets des stéréotypes et le genre grammatical dans le biais masculin : une approche expérimentale.” In: *GLAD!* 10.

Motivation

- ▶ This paper has two goals:
 1. Check once more with different methods whether effects of gender stereotypes can be documented in French.
 2. Compare **within a single language** contexts where grammatical gender is apparent and contexts where it is not.

Common gender nouns in French

- ▶ French (like many other languages) has many pairs of nouns whose semantics differs only in terms of social gender, e.g.

F	M
<i>boulangère</i>	<i>boulangier</i>
'female baker'	'male baker'

- ▶ The Démonette 2 database (Namer et al., 2023) documents 9,698 such pairs.
- ▶ In terms of the morphological relation between the two nouns, three situations are found:

Related forms	<i>une boulangère</i>	'a female baker'	<i>un boulangier</i>	'a male baker'
Identical forms	<i>une artiste</i>	'a female artist'	<i>un artiste</i>	'a male artist'
Unrelated forms	<i>une femme</i>	'a woman'	<i>un homme</i>	'a man'

- ▶ Cases where there are identical forms are traditionally called **common gender nouns** (Corbett, 1991).
 - ▶ The term suggests that there is a single noun *artiste* found in both genders, rather than two homophonous nouns. This is a contentious issue that we will not get into.
- ▶ Common gender nouns are very common: in the Démonette 2 database,
 - ▶ 43% of pairs are identical in orthography
 - ▶ 48% of pairs have identical phonology

Neutralizing gender contrasts

- ▶ Common gender nouns still manifest grammatical gender in agreement.
- ▶ However, in French, there are many contexts where agreement targets neutralize gender distinctions
 - ▶ *une_F artiste* ‘a female artist’
 - ▶ *des_? artistes* ‘(male or female) artists’
 - ▶ *l’_?artiste* ‘the (male or female) artists’
 - ▶ *de_? grandes_F artistes* ‘great female artists’
 - ▶ *de_? célèbres_F artistes* ‘famous (male or female) artists’
- ▶ The crucial idea of Richy and Burnett (2021) is to contrast the use of common gender nouns in gender neutralized and non-gender neutralized contexts.
 - ▶ In a gender-neutralized context, we are in a situation akin to English. We hence expect to see the same results as in previous experiments on English.
 - ▶ In a non-neutralized context, we are in a situation akin to what happens with non-common gender nouns. We hence expect to see the same results as in previous experiments on French.

Experiment1: Items

- ▶ 36 common gender nouns were selected from the Misersky et al. (2014) dataset, classified in 3 groups in terms of gender bias.

	Female bias	No bias	Male bias
Sample noun	<i>secrétaire</i> 'secretary'	<i>journaliste</i> 'journalist'	<i>diplomate</i> 'diplomat'
Misersky score	0.82	0.46	0.29

- ▶ Contexts were designed where the noun is preceded by a definite article and vowel-initial gender-syncretic adjective.
 - ▶ La veille d' un spectacle, l' **unique** **violoniste** a toujours le trac.
'The day before a show, the unique violonist always experiences stage fright.'
- ▶ Every participant saw all 36 nouns with counterbalancing of contexts.
- ▶ 40 filler items with gender-ambiguous first names.
 - ▶ Le dimanche matin, Camille aime aller courir au parc.
On Sunday mornings, Camille enjoys running in the park.

Experiment 1: Procedure

- ▶ Participants read the item, and then had to rate the referent of the noun phrase on three scales:

Quand il pleut, l'aimable graphiste sort avec son parapluie

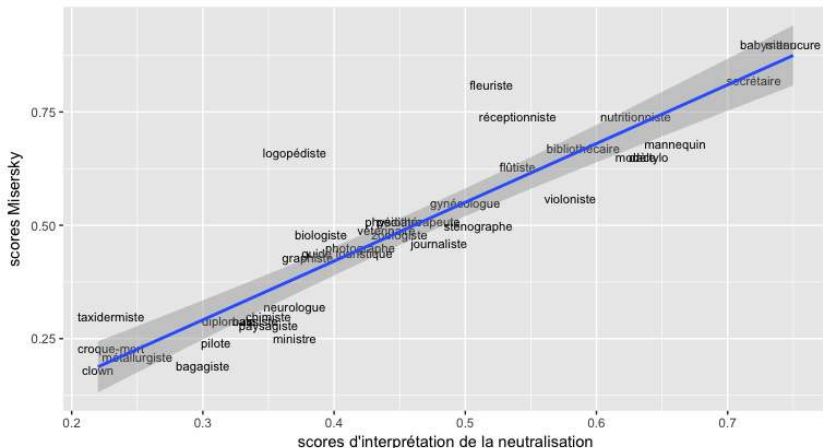
A votre avis, cette personne est plutôt:

- | | | | |
|----|-------------|---|-----------|
| 1. | un homme | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | une femme |
| 2. | pas éduquée | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | éduquée |
| 3. | jeune | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | agée |

- ▶ Only the *man-woman* scale is relevant to the experiment; the others function as distractors.

Experiment 1: Results

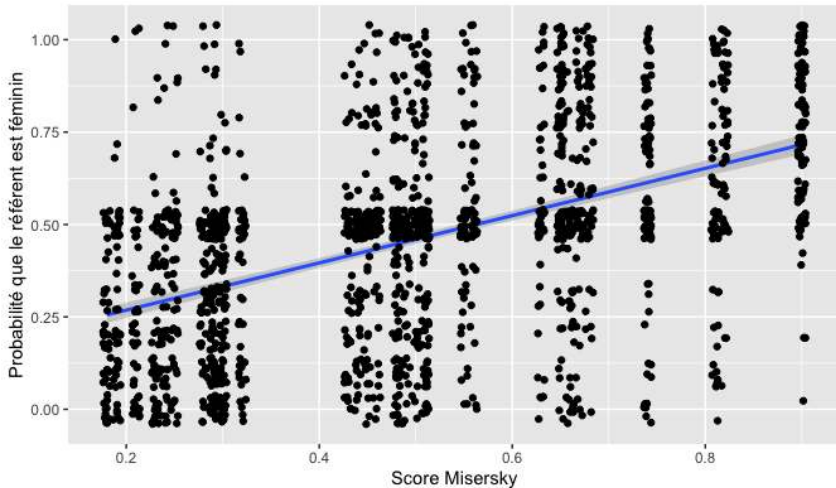
- Descriptive statistics go in the right direction.



Average scores per noun given by participants vs. Misersky scores

Experiment 1: Results

- ▶ A mixed effects generalized linear model documents a highly significant effect of Misersky scores on the judgements of participants.



Average scores per noun given by participants vs. Misersky scores

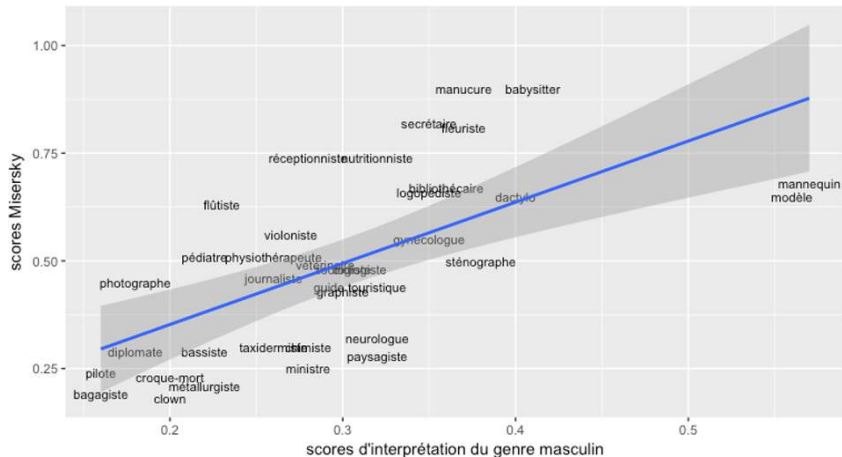
- ▶ Conclusion: the interpretation of common gender nouns in neutralized contexts is influenced by gender stereotypes.

Experiment 2: Design

- ▶ The only difference with experiment 1 is in the items: nouns now appear in a context where the form of the definite article disambiguates grammatical gender.
 - ▶ Quand son travail est fini, **le/la** **journaliste** fait toujours une sauvegarde.
'When their work is done, the journalist always backs it up.'
- ▶ Both masculine and feminine versions of the items were tested.

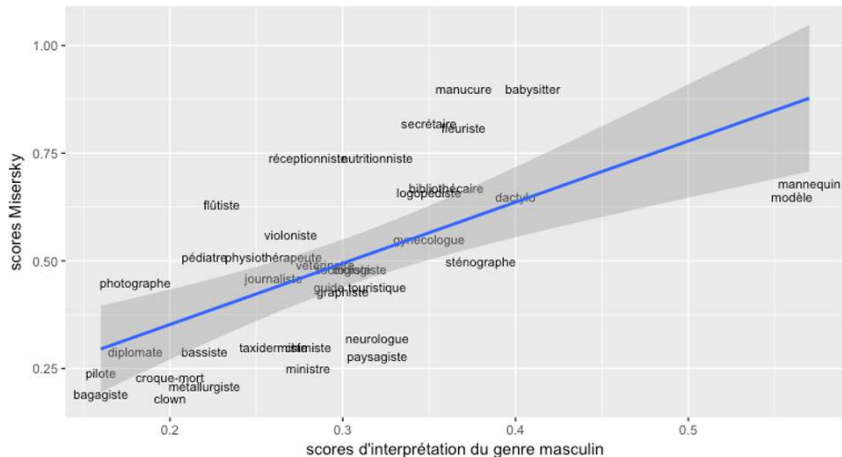
Experiment2: Descriptive statistics – masculine

- ▶ Per noun average values range from .16 to .57
- ▶ There is still a correlation between Misersky scores and average values



Experiment2: Descriptive statistics – feminine

- ▶ Per noun average values range from .69 to .96
- ▶ There is still a correlation between Misersky scores and average values

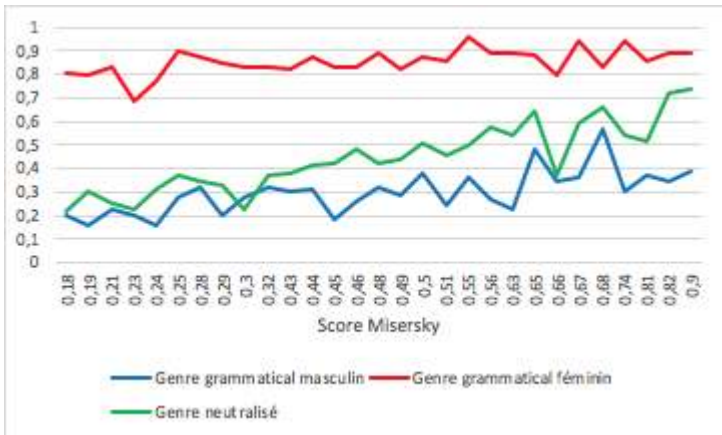


Experiment 2: inferential statistics

- ▶ A mixed effects generalized model finds:
 - ▶ A main effect of grammatical gender: feminine nouns get a higher score than masculines.
 - ▶ A main effect of Misersky scores: overall, the interpretation of nouns is influenced by stereotypes.
 - ▶ An interaction between the two: grammatical gender affects interpretation more strongly for nouns with a masculine bias than for nouns with a feminine bias.
- ▶ The authors suggest that this is because using a male-biased noun in the feminine (*la diplomate*) is striking in a way that seeing a female-biased noun in the masculine (*le babysitter*) is not.
- ▶ Interesting idea, but why?

Comparing the two experiments

- ▶ Scores in neutralized contexts stand between scores for masculine and feminine contexts.
- ▶ For highly male-biased nouns, masculine and neutralized contexts lead to the same scores, but they diverge for female-biased nouns.
- ▶ Scores for female-biased nouns in neutralized contexts never reach the levels found in feminine contexts.



Discussion

- ▶ Using this particular design, the authors were able to document effects of gender stereotypes across all conditions: in neutralized contexts, and in contexts where masculine or feminine grammatical gender is used.
- ▶ Subtle picture on the so-called ‘generic masculine’:
 - ▶ Using a masculine noun definitely pushes recipients to interpret the referent as more likely to be male.
 - Masculine grammatical gender does have an interpretation.
 - ▶ Using a feminine noun does lead to highlighting the possibility that the referent is a woman.
 - Inclusive language works: using feminine forms does make women more visible.
 - ▶ Masculine and feminine scores are not mirror images: speakers entertain more easily the possibility that a masculine noun refers to a woman than the opposite.
 - There is indeed an asymmetry between masculine and feminine in terms of possibilities of generic interpretation.

Benjamin Storme and Laura Delaloye Saillen (2024).
“Effects of grammatical gender on gender inferences:
Evidence from French hybrid nouns.” In: *Linguistics
Vanguard*.

Introduction

- ▶ One type of noun we did not look into yet are **epicenes**: nouns that have one grammatical gender but readily refer to either men or women.
 - ▶ *une_F* personne ‘a person’
 - ▶ *un_M* individu ‘an individual’
 - ▶ *une_F* star ‘a star’
- ▶ Confusingly, Storme and Delaloye Saillen (2024) call these **hybrid nouns**. This is not a very good term as it is used since Corbett (1991) to refer to a separate gender-related phenomenon (nouns that trigger agreement of different genders on different targets).
- ▶ Research question: does the grammatical gender of these nouns shape their interpretation in the same way as that of other nouns?
- ▶ One prior study by Brauer and Landry (2008) suggests that it does, focusing on just *personne* and *individu*
 - ▶ Finding that *individu* is biased towards men, whereas *personne* is not biased.
- ▶ The goal of the present study is to make a more systematic study, looking at more epicenes.

Items

- ▶ Selection of 14 pairs of nearly synonymous epicenes of the two grammatical genders.

F noun	M noun	meaning
<i>star</i>	<i>as</i>	champion
<i>personne</i>	<i>individu</i>	person
<i>dépouille</i>	<i>cadavre</i>	dead body
<i>bête</i>	<i>phénomène</i>	circus freak
<i>personnalité</i>	<i>personnage</i>	figure
<i>vedette</i>	<i>talent</i>	star
<i>célébrité</i>	<i>monument</i>	celebrity
<i>tête</i>	<i>cerveau</i>	leader
<i>fourmi</i>	<i>microbe</i>	little person
<i>merveille</i>	<i>trésor</i>	child
<i>crème</i>	<i>ange</i>	child
<i>sangsue</i>	<i>vautour</i>	scrooge
<i>sommité</i>	<i>génie</i>	leading expert
<i>fripouille</i>	<i>charlatan</i>	scoundrel

- ▶ Most of these are human nouns by sense extension from a preexisting noun with a different type of meaning; the carrier sentence disambiguates.
 - ▶ C'est *une célébrité/un monument* du cinéma français
'They are a French movie celebrity.'

Design

- ▶ Apart from the selection of nouns, the design is exactly parallel to that of Richy and Burnett (2021).

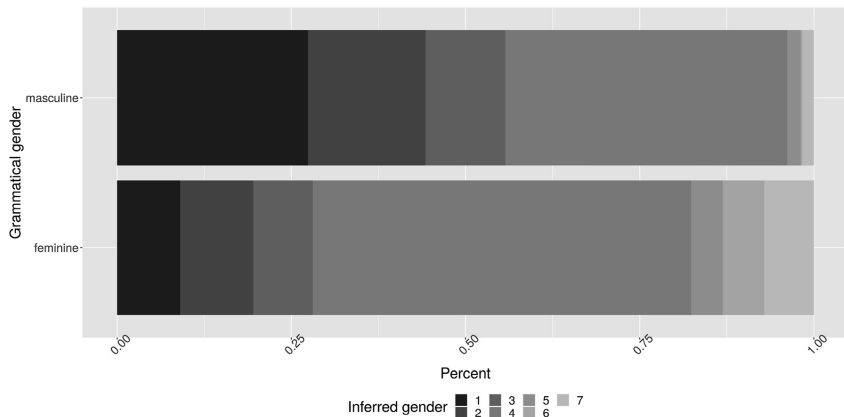
*Une vedette de la chanson a été invitée pour présider le jury.

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

- ▶ 14 experimental items, 20 fillers.
- ▶ In a first experiment, the authors used a Latin square design, with two lists of 7 masculine and 7 feminine items and participants split in two groups. This lead to a null result.
- ▶ In the second experiment, whether each participant saw the masculine or feminine version of each item was randomized.

Descriptive statistics

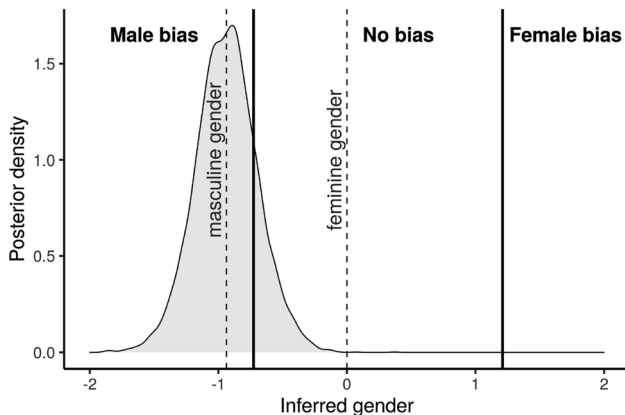


► This is clearly suggestive of

1. Masculine items leaning to more male interpretations than feminine items.
2. Responses for feminine items being more balanced than for masculine items.

Inferential statistics

- ▶ Bayesian ordinal cumulative model of response by gender, with
 - ▶ by-participant random intercept and slope
 - ▶ by-item random intercept
 - ▶ by-word random intercept
- ▶ Robust effect of grammatical gender ($\hat{\beta} = -0.94$, 95% CI = $[-1.41, -0.45]$)
- ▶ Masculine nouns are male-biased, feminine nouns are unbiased.



Discussion

- ▶ Interestingly, the tendencies observed by Brauer and Landry for *personne* and *individu* extend to other epicenes.
- ▶ The asymmetry between (unbiased) feminine and (biased) masculine is not properly established, as the study did not control for gender stereotypes: it may be that their masculine nouns or the carrier sentences were leaning towards male. What one can firmly conclude is that masculine and feminine epicenes contrast.
- ▶ Still, assuming that the asymmetry holds, it is interesting, all the more so because of a contrast with what Richy and Burnett (2021) found:
 - ▶ With common gender nouns, the effect of grammatical gender is stronger in the feminine than in the masculine.
 - ▶ With epicene nouns, the effect is stronger in the masculine.
- ▶ Why is that so? The authors do not discuss this. One possible scenario:
 - ▶ In Contemporary French it is readily possible to turn a masculine epicene in a common gender noun (Bonami and Boyé, 2019), but not a feminine epicene noun.

La narratrice anonyme aspire à la réussite absolue mais n'y parvient jamais, incarnant ainsi cette individuée par défaut [...] M. Schaal, Quebec Studies 76.
 - ▶ Hence when a masculine epicene is used, speakers are more likely to assume that a feminine would be used if a female referent was intended.

References I



Bonami, Olivier and Gilles Boyé (2019). “Paradigm uniformity and the French gender system.” In: *Perspectives on morphology: Papers in honour of Greville G. Corbett*. Ed. by Matthew Baerman, Oliver Bond, and Andrew Hippisley. Edinburgh: Edinburgh University Press, pp. 171–192 (cit. on p. 34).



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Gygax, Pascal et al. (2008). “Generically intended, but specifically interpreted: When beauticians, musicians, and mechanics are all men.” In: *Language and Cognitive Processes* 23.3, pp. 464–485 (cit. on p. 4).



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Storme, Benjamin and Laura Delaloye Saillen (2024). “Effects of grammatical gender on gender inferences: Evidence from French hybrid nouns.” In: *Linguistics Vanguard* (cit. on pp. 28, 29).