



RESEARCH NOTE

Contextual dilution in French gender inclusive writing: An experimental investigation

Céline Pozniak¹ , Emma Corbeau² and Heather Burnett² 

¹Université Paris 8, Structures Formelles du Langage and ²Laboratoire de Linguistique Formelle, CNRS, Université Paris Cité

Corresponding author: Céline Pozniak; Email: celine.pozniak@univ-paris8.fr

(Received 19 June 2023; revised 28 September 2023; accepted 02 October 2023; first published online 04 December 2023)

Abstract

Gender inclusive writing, a term that refers to a wide range of feminist linguistic practices aimed at reducing linguistic androcentrism, has been the topic of heated debates in France. Recent experimental studies have investigated its interpretation and showed that inclusive forms with the point médian (“étudiant-e-s”) and repetition (“étudiants et étudiantes”) feminize participants’ mental representations compared to the generic masculine (“étudiants”). In this article, we bring novel results from three experiments investigating the interpretation of these two inclusive forms in a more detailed context (university brochures). We find that the point médian is subject to “context dilution” effects: its meaning disappears in rich contexts, while repetition consistently changes readers’ mental representations, provided it is used systematically. We argue that our results show the necessity of looking at more ecological contexts in experimental (socio)linguistics for understanding the interpretation and processing of socially important linguistic variants.

Keywords: Inclusive writing; French; sociolinguistics; interpretation experiment; ecological context

Résumé

L’écriture inclusive, qui désigne un large éventail de pratiques linguistiques féministes visant à réduire l’androcentrisme linguistique, a fait l’objet d’intenses débats en France. Récemment, des études expérimentales ont étudié son interprétation et ont montré que, comparé au masculin générique (étudiants) des formes inclusives comme le point médian (étudiant-es) et la répétition (étudiantes et étudiants) participent à la féminisation des représentations mentales des participantes et participants. Dans cet article, nous apportons de nouveaux résultats via trois expériences analysant l’interprétation de ces deux formes inclusives dans un contexte plus détaillé : les brochures universitaires. Nos résultats montrent que le point médian est affecté par “la dilution contextuelle”, c’est-à-dire que sa signification disparaît dans des contextes riches, alors que la répétition, si utilisée de manière systématique, continue de changer les représentations mentales des lectrices et lecteurs. Nos résultats montrent la nécessité de recourir à des contextes plus naturels en (socio)linguistique expérimentale afin de mieux comprendre l’interprétation et le traitement des variantes linguistiques socialement importantes.

© The Author(s), 2023. Published by Cambridge University Press. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution and reproduction, provided the original article is properly cited.

Mots-clés: Écriture inclusive; Français; Sociolinguistique; Expérience d'interprétation; Contexte naturel

The goal of this article is to bring an emerging body of work on the effects of context on sociolinguistic perception to the attention of researchers in social psychology, psycholinguistics and psychology of language working on gender inclusive writing. The term *gender inclusive writing*, along with the terms *gender fair*, *gender neutral* or *anti-sexist* writing, can in principle refer to a very wide range of feminist linguistic practices aimed at reducing *linguistic androcentrism*, that is, the contribution that language makes to creating and privileging male mental representations over female (or non-binary) ones (see Abbou *et al.*, 2018; Haddad, 2023). However, in recent times, *inclusive writing* most often refers to a collection of orthographic conventions that create expressions that are hybrid representations combining the masculine and feminine forms using the interpunct or mid-dot, known in French as the *point médian*, the parenthesis, the slash or other signs (Abbou, 2011; Burnett and Pozniak, 2021).¹ Some examples of these forms in French, shown in (1) for 'the students', are alternatives to the (so-called) generic masculine expression *les étudiants*.

(1) les étudiant-e-s, les étudiant(e)s, les étudiant-e-s, etc. 'the students'

In this article, we focus on French, a grammatical gender language with both a large tradition of feminist language activism and a substantial body of psycholinguistic research on the processing of inclusive forms. We observe that, although they have already provided crucial empirical evidence into how speakers process and interpret gender marked linguistic expressions in French and other languages, much of the current psycholinguistic research on inclusive writing has focused on examples in which inclusive or masculine marked expressions appear in stimuli with very little surrounding context.² For these previous studies, the starkness of stimuli was necessary to control relevant linguistic, social and cognitive factors to ensure that the precise contribution of the masculine or inclusive forms to participants' mental representations are observable in an experimental context. However, we argue that, for our knowledge of how masculine/inclusive forms affect mental representations to be as complete as possible, and for the results of such psycholinguistic work to be as relevant as possible to activists looking to address linguistic androcentrism, one of the main goals of this research,³ something else needs to be taken into account: the amount of information in the context in which a masculine or an inclusive form appears. In particular, as we will describe below, experimental studies from the field of sociolinguistic perception has shown that embedding a range of linguistic phenomena inside a large, detailed context can change how they are processed and

¹The term *écriture inclusive* can in principle refer to a wide variety of linguistic practices; however, as discussed by Abbou *et al.* (2018) and Burnett and Pozniak (2021), for many French speakers, it currently picks out only the *point médian* strategy.

²Some studies, such as Horvath *et al.* (2015) or Hentschel *et al.* (2018), did use longer text, but the vast majority of studies in this field did not.

³See Gygax *et al.* (2021) for an extensive discussion of how the androcentric perspective can be fed or countered by different language practices, and Sczesny *et al.* (2016) for a more global perspective on linguistic androcentrism.

interpreted in an experiment. In fact, an elaborate context can sometimes even “overwrite” or “dilute” some interpretations that are available in stimuli with less accompanying information. In this article, we provide evidence that French gender inclusive writing is also subject to such “contextual dilution” effects, although not for all kinds of contexts or all kinds of forms. We argue that properly understanding how people process inclusive forms in more detailed contexts is crucial for evaluating how effective these practices are in countering linguistic androcentrism.

This article is structured as follows: First, we present a short literature review of gender inclusive writing and its uses and controversies, with a special emphasis on the linguistic and social situation in France. We then go into detail on recent experimental investigations of the interpretation of inclusive forms and show that, with stimuli in short contexts, a number of researchers have shown that inclusive forms with the *point médian* (e.g. *étudiant-e-s*) and double form (e.g. *étudiants et étudiantes*) significantly increase the number of women that participants perceive compared to the bare masculine (e.g. *étudiants*). We also review the recent studies in experimental sociolinguistics showing how adding information to a stimulus can weaken effects of sociolinguistic variants on mental representations. Then, we present two experiments that embed the *point médian* and double forms in a more elaborate context aiming to more closely imitate the kinds of texts in which gender inclusive writing is supposed to make a social difference: university brochures. Our main result is that only the double form of gender inclusive writing significantly changes readers’ mental representations, even when inclusive writing is used systematically in the whole brochure. We hypothesize that the *point médian* form, which has been shown to behave similarly to the double form in previous studies, is much less graphically salient and this is why its contribution to the meaning of the brochures can be diluted by extra information. In order to test this hypothesis, we explore in a third experiment whether the double form undergoes a similar contextual dilution process if we remove half of its occurrences in a brochure. We show that evidence for an effect of inclusive writing on the interpretation of a brochure weakens if the double form is only used in the first half of the document provided to participants. We conclude with a discussion of the consequences of our results for theories of sociolinguistic processing and recommendations for the use of inclusive writing.

Literature review

Although it is not always known by this name, linguistic androcentrism has been a major concern for feminists in many countries, since at least the 12th century (Weatherall, 2002). Psychological and psycholinguistic studies of masculine and inclusive forms date back to the 1970s for English (e.g. Kidd, 1971; Bem and Bem, 1973; Schneider and Hacker, 1973; Soto and Cole, 1975; Pincus and Pincus, 1980), where researchers showed that anglophones interpret words with masculine marking (*chairman*, *fireman*, *policeman* etc.) or masculine pronouns (*he*, *him*, *his*) as more likely to refer to men, even if the context favours a gender neutral reading (i.e. *The chairman must arrive before his colleagues*). Later studies such as Stout and Dasgupta (2011) and those described in Ng (2007) have shown a link between these male-biased interpretations and women’s feelings of ostracism on the job market and other kinds of gender-based discrimination.

Psychological and psycholinguistic research on grammatical gender in French is more recent, yet substantial (and growing). In the past 15 years, many scholars have argued based on experimental results that grammatically masculine noun phrases and pronouns create male-biased mental representations (e.g. Brauer and Landry, 2008; Chatard et al., 2005; Gabriel et al., 2008; Garnham et al., 2012; Gygax et al., 2008, 2012, 2019; Richey and Burnett, 2021; Pozniak and Burnett, 2021), providing extra support to qualitative arguments (e.g. Beauvoir, 1949, Yaguello, 1979; Houdebine, 1987; Michard, 1996) that linguistic androcentrism is also a problem in French. Much more recently, there has been a fair amount of psycholinguistic work on the processing of proposed solutions to linguistic androcentrism in French: the various inclusive forms. This work has been partly inspired by current large societal debates in France and elsewhere in the francophone world on whether gender inclusive writing should be used and, if so, which type. As Abbou et al. (2018), Burnett and Pozniak (2021) and Abbou (2022) describe, the most recent debates in France started in 2017, when members of the right wing press discovered an elementary school history textbook that had been written using a form of gender inclusive writing, and started writing articles claiming that such orthographic conventions were problematic for the French language and society.⁴ These complaints, which were primarily directed towards the *point médian* form, received much attention from major governmental institutions. The Académie Française declared that gender inclusive writing was a “mortal peril” for the French language,⁵ and the prime minister at the time, Édouard Philippe, even issued an official statement proscribing the *point médian*, among other forms, in official government documents.⁶ Interestingly, in this statement, Édouard Philippe specified that, while composite forms are prohibited, the double forms (*étudiante ou étudiant*) are allowed. Édouard Philippe’s distinction therefore raises the question of whether double form, which is sanctioned by the state, can play the same role as other composite forms, like the *point médian*, which are now outlawed in official documents.

This question was recently investigated by Tibblin et al. (2023a). These authors asked French L1 participants to estimate the distribution of men and women on a scale ranging from 0 to 100% in 22 non-stereotyped French role nouns. These nouns were either in the masculine form (*joggeurs*), or double form (either feminine-masculine *joggeuses et joggeurs*, or masculine-feminine *joggeurs et joggeuses*), the contracted double form (*joggeur-euses*) or the gender-neutral form (*un groupe de jogging*). They found that using inclusive writing, whatever the form (either gender-neutral or double forms), generated higher perceived percentages of women compared to the masculine form and no statistical difference was found between the different inclusive forms used.

Tibblin et al. studied nouns in isolation, but another study, Xiao et al. (2023), looked at the interpretation of inclusive writing in context. In addition, they studied

⁴<https://www.lefigaro.fr/actualite-france/2017/09/22/01016-20170922ARTFIG00300-un-manuel-scolaire-ecrit-a-la-sauce-feministe.php> (accessed 2023-09-15)

⁵<https://www.academie-francaise.fr/actualites/declaration-de-lacademie-francaise-sur-lecriture-dite-inclusive> (accessed 2023-09-15)

⁶<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000036068906> (accessed 2023-09-15)

an expanded set of nouns, differentiating according to their stereotypicality (with male-stereotyped (*diplomat*), women-stereotyped (*secretary*) and neutral-stereotyped professions (*journalist*)), they also contextualised the roles nouns in a short text (three sentences) as in (2).

- (2) Le rassemblement régional des PROFESSION NAME a eu lieu cette semaine à Amiens. La localisation centrale de cette ville a été particulièrement appréciée. Les PROFESSION NAME ont aussi adoré l'apéro offert à l'hôtel de ville le premier jour.

'The regional gathering of PROFESSION NAME took place this week in Amiens. The central location of this city was particularly appreciated. The PROFESSION NAME also loved the aperitif offered at City Hall on the first day.'

Although Xiao et al.'s stimuli were more elaborate than Tibblin et al.'s, the question they asked participants was roughly the same: they asked them to estimate the percentages of men and women during the gathering mentioned in the short text (see (3)). Results showed that use of gender inclusive forms (either contracted double forms with the mid-dot or complete double forms) led to higher estimations of women compared to the use of masculine form. They also showed that inclusive writing's effects changed depending on the stereotype class of the noun: with both inclusive forms, there was less male bias for neutral- and female-stereotyped professions, and more female bias for men-stereotyped professions.

- (3) Selon vous, quels étaient les pourcentages d'hommes et de femmes dans ce rassemblement?

"In your opinion, what were the percentages of men and women in the gathering?"

In summary, these very important experimental investigations of French gender inclusive writing forms have shown that double form and the *point médian* do an equally good job at countering linguistic androcentrism, at least when they are presented in isolation or with short contextualization. This being said, we would like to question how directly relevant these results are to the issue of using gender inclusive writing in, for example, official documents. Our interrogation is based on some recent research in sociolinguistic perception on the relation between context and the interpretation of sociolinguistic variables.

Importance of context

It has been known for a long time that the context, especially the discourse context, plays a role in the processing of many linguistic phenomena, such as asymmetries in the processing of subject vs object relative clauses (see Roland et al., 2012). Hilton and Jeong (2019) also insist on the importance of context from a sociolinguistic perspective. People usually make social inferences about others based on how they speak. However, these inferences – or impressions on the speaker – may change depending on the context. As described in Hilton and Jeong (2019), one example is Campbell-Kibler's (2009) study on the ING variant in English that shows that people using the velar variant (like *smoking*) will be perceived as being more

educated than those using the alveolar variant (*smokin'*), unless they have a Southern US accent. Following that, Hilton and Jeong (2019) suggest that people will ignore the social information conveyed by the sociolinguistic variables if they have gathered sufficient initial impressions of the speaker from contextual enrichment (i.e. from the information about the speaker and the speaking situation). This implies that some sociolinguistic variables known to have an effect in contextually less detailed stimuli (i.e. without sufficient information about the speaker and the speaking situation) could have little or no influence on perception in more contextually detailed stimuli where contextual enrichment takes over the social information conveyed, except if the social meanings conveyed by the forms are highly differentiable within a language (i.e. *enregistered*, Agha, 2003). Through ten experiments, they investigate to what extent this contextual enrichment influences the sociolinguistic perception of three linguistic variables in English: number agreement in *there* constructions, intonation contours in declarative sentences and overlapping speech in conversation.⁷ They find that contextual enrichment overall diminishes the effect of the social meaning for the first two variables (number agreement and intonation contours in declarative sentences), but not for overlapping speech in conversation. They suggest that the difference found between the variables is due to the fact that speech overlaps are subject to metalinguistic commentary, which is why participants have strong attitudes about it, contrary to the other two variables. They therefore conclude that contextual enrichment can obscure the effects of the linguistic forms, except if the social meanings conveyed by the forms are *enregistered*. This effect of context has been found for other sociolinguistic variables such as the social indexicality of English numerical expressions in Beltrama *et al.* (2022).

It thus seems necessary to take the context into account when looking at different forms to see which forms are really differentiable and still convey social meanings beyond the contextual enrichment. As explained earlier, studies from Xiao *et al.* (2023) and Tibblin *et al.* (2023a) on the interpretation of inclusive writing in French showed that forms like the double form or the *point médian* both succeeded in reducing linguistic androcentrism to the same degree. Still, one may wonder whether the social meaning of these forms would still be conveyed in a more detailed context, or whether it would be diluted by extra information. Moreover, previous studies asked participants directly to estimate the proportions of men and women. In this way, the question encouraged focusing on the form used (either inclusive or masculine). Semantically speaking, the interpretation of inclusive forms should also be tested in a more indirect way to see to what extent the social meaning of the inclusive forms is robust.

For these reasons, we decided to do three experiments testing whether the *point médian* and the double forms still reduce linguistic androcentrism in a more detailed context like the university brochures and in a more indirect way.

⁷As for the social meaning of the linguistic variables in Hilton and Jeong (2019):

- For number agreement, people using non-agreeing grammatical constructions are perceived to be less educated
- Assertive rising declaratives appear to sound more polite
- Overlapping speech is perceived as being interruptive

Type de diplôme : Licence Psychologie

La licence de psychologie se présente comme un premier grade pour les étudiant·e·s souhaitant devenir psychologue. L'UFR propose une formation généraliste caractérisée par une approche pluridisciplinaire. Les étudiant·e·s se familiarisent progressivement avec les différentes sous-disciplines de la psychologie telles que la psychologie clinique, psychopathologie et la psychologie cognitive expérimentale. Cette formation s'engage aussi à développer des compétences préprofessionnelles avec un stage obligatoire en L3. Un tutorat est proposé aux étudiant·e·s tout au long de leur cursus.

De nombreux étudiant·e·s choisissent de continuer leurs études après la licence, permettant d'accéder à de nombreux débouchés professionnels.

Figure 1. Example of an item used in experiment 1, in the *point médian* condition, for a less male-dominated discipline.

Experiment 1. Interpretation of *point médian*

Participants

Forty-eight participants (mean: 31 y.o, $\sigma = 12$) took part in the experiment hosted on Ibexfarm (Drummond, 2013). They were recruited on the Prolific platform (www.prolific.co), whose cost for one participant is around £9/hour. We then excluded participants who discovered the main goal of the study ($N = 2$) as well as participants whose accuracy to comprehension questions was less than 70% ($N = 4$).

Materials and design

We created 12 items that consisted of undergraduate brochures which were inspired by Burnett and Pozniak (2021). As illustrated in Figure 1, each brochure was a 100 words long text with four occurrences of the word *étudiant*⁸ (student). The first variable we manipulated was a within-item variable: the use of linguistic forms on the word *étudiant* (use of *point médian* or use of the generic masculine), leading to two conditions per item. The second variable was a between-item variable: the gender balance (parity) of the academic discipline described by the brochure, with six brochures referring to a rather masculine discipline (ex. mathematics) and six brochures referring to a less masculine discipline (ex. literature). Discipline parity was decided according to the *Conseil National des Universités* (CNU) numbers for faculty parity used in the corpus study of Burnett and Pozniak (2021) (i.e. proportions of women in disciplines). Table 1 presents the disciplines selected in the two categories: male-dominated disciplines vs less male-dominated disciplines. All materials are available on <https://osf.io/kg2sr>.

Three continuous scales ranging from 0% to 100% were added: one asking how many women will apply, one asking how many international students will apply, and the last one asking how many people from the region of Paris will apply to the degree (see Figure 2). The last two scales were actually added as distractors. The order of the three scales was counterbalanced through the participants. As said in the introduction, the question used in previous studies focused on a direct comparison between the proportion of women and men that are in each named occupation. As such, it might have increased the saliency of both stereotypes and

⁸The word *étudiant* used in our experiments has a score of .58 in Misersky et al. (2014), so it's rather a neutral-stereotyped noun.

Table 1. Proportion of women in the disciplines used in the experiments

Male-dominated disciplines	Percentage of women	Less male-dominated disciplines	Percentage of women
Engineering	19%	Education sciences	47%
Mathematics	21% (20.8)	Information and communication	50%
Informatics	23/24%	Psychology	56%
Philosophy	27%	Literature	56%
Political sciences	30% (29.7)	Langages	60%
Economics	34% (33.9)	Linguistics	61% (60.5)

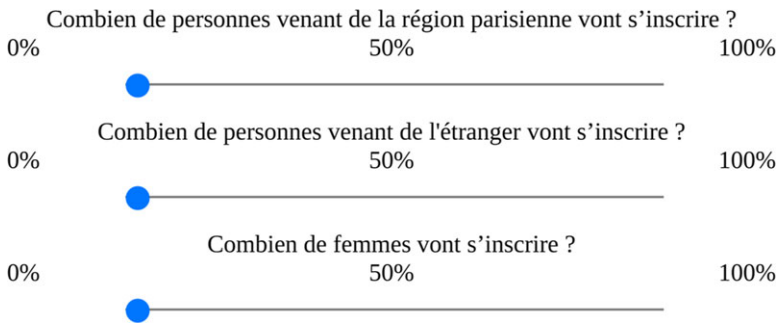


Figure 2. Example of an order of the three scales used in all experiments.

language form attached to the occupation. In our study, by asking “how many women will subscribe”, we want to have a general question associated with the whole description, and not just the activity name.

Twenty-four fillers were created with a structure really similar to the critical items, except that the word *étudiant* was never mentioned, and any gendered words (nouns, adjectives) were avoided. Five were brochures of undergraduate degrees, three were brochures of majors, nine were brochures of academic classes and nine were brochures of sport classes. Two practice items (similar to the fillers) were added. An example is given in Figure 3.

In order to check whether participants were reading carefully the brochures, we included 18 reading comprehension questions (six on the experimental items and twelve on the fillers), each time appearing on a subsequent screen.

Procedure

Participants were asked to participate in the school board of a fictitious university (named “Université des Grandes Études” *university of advanced studies*). They were told that this university wanted to be more modern and appeal more to students

Type de diplôme : Licence Histoire de l'art

La licence « Histoire de l'art » permet d'acquérir des connaissances approfondies sur les grands courants artistiques des périodes antique, médiévale, moderne et contemporaine. Pour ce faire, différents modules sont proposés tout au long des trois années. En L3, le programme s'oriente vers l'architecture, les arts décoratifs et les musées. Cette formation exige une curiosité intellectuelle, un intérêt pour l'art, l'histoire et la culture, ainsi qu'une autonomie dans son travail.

Après la licence d'Histoire de l'Art, il est possible de poursuivre ses études en master ou de se diriger vers des débouchés professionnels tels que la médiation patrimoniale ou le tourisme.

Figure 3. Example of a filler used in all experiments.

from diverse backgrounds. To do so, they were asked to read the university brochures and give feedback on three criteria with a slider: the percentage of women, international students and people from the region of Paris who would apply (from 0% to 100%, Figure 2). The experiment lasted around 25 minutes.

Hypothesis

If the use of *point médian* leads participants to a more inclusive interpretation in a way that the brochure is addressed to women as much as to men, then they should estimate that more women would apply for the degree when *point médian* is used compared to the masculine form *étudiants*. Also, the difference between the linguistic forms should be more important for brochures where discipline parity is lower, i.e. in more male-dominated disciplines.

Method of analysis

For all experiments in this article, we ran Bayesian linear mixed models with the R software (4.2.3 version, R Core Team, 2023) and the Rstudio interface (RStudio Team, 2020) using the brms package (Bürkner, 2017, Carpenter et al., 2017; Bürkner and Charpentier, 2020).

Bayesian analyses present multiple advantages (see for example Sorensen & Vasishth 2015). First, contrary to Frequentist frameworks, they directly test the likelihood of the hypothesis of interest, allowing us to go beyond the binary decision threshold. It is also possible to fit a maximal random effects structure (Barr et al., 2013) without convergence failure.

Since the participants had to estimate the proportions of women on a 101 point scale, we considered the dependent variable as continuous rather than ordinal, which is why we ran Bayesian linear mixed models with 4 MCMC chains and 6000 iterations by chain (for more information about Bayesian analyses, see for example Kruschke, 2014 or McElreath, 2020). We applied mean centered coding for each independent variable, coding 1 for inclusive forms (either double form or *point médian*), and 0 for masculine, as well as 1 for disciplines with higher parity and 0 for disciplines with less parity, with subsequent scaling so that the values approached $-.5$ for 0 coding and $.5$ for 1 coding. Participants and items were the random variables. For participants, we included random slopes for the linguistic forms and the discipline parity predictors as well as their interaction. For items, we included random slopes for the linguistic forms.

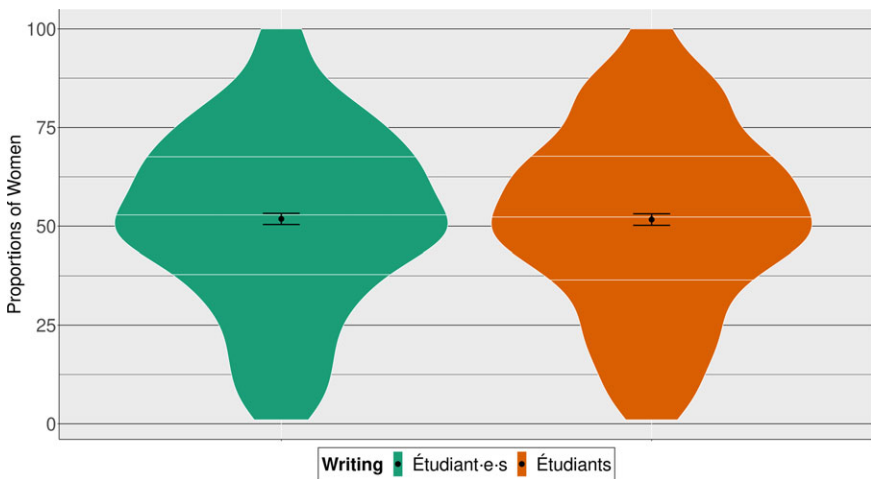


Figure 4. Proportions of women depending on the linguistic forms.

Bayesian models generate a posterior distribution for the predictors. In this article, we will report the estimated mean (Est.), the range (the 95% credible intervals: the probability that it includes the true value of the predictor), and the probability of the effect of the predictor being smaller than (for negative estimates) or greater than (for positive estimates) zero ($P(\text{Est.} > \text{ or } < 0)$, probability that there is an effect). As said before, one particularity of Bayesian analyses is that there is no binary threshold and evidence for an effect may be more or less strong depending on multiple criteria (where the zero or the credible intervals are located for example). Following the procedure in Pozniak and Burnett (2021), we will thus report results whose $P(\text{Est.})$ to be different from zero is $> .95$ (strong evidence) and those whose $P(\text{Est.})$ to be different from zero is $> .80$ (weak evidence). All code and analyses are available on <https://osf.io/kg2sr/>.

Results

Violin plots in Figure 4 show the mean proportions of women estimated who would apply for the bachelor's degree depending on the linguistic forms (use of *point médian*, “*Étudiant-e-s*” or masculine, “*Étudiants*”). They also show the quartiles (white horizontal lines) giving more detailed information about the distribution of the data.

Violin plots in Figure 5 also show the mean proportions of women, but depending on linguistic forms (use of *point médian* or masculine, “*Étudiants*”) and discipline parity (fewer women in the discipline vs more women in the discipline).

As shown in Figure 4, the estimations do not really vary whether the brochure is written with *point médian* or masculine (51.82 vs 51.66). Indeed, no robust evidence for an effect of linguistic forms was found in the statistical analysis: Est. = 0.18, CrI = $[-2.65, 2.96]$, $P(\text{Est.} > 0) = .55$. Figure 5 shows an effect of discipline parity confirmed in the analysis (strong evidence for an effect, Est. = 25.9, CrI = $[12.38, 39.55]$, $P(\text{Est.} > 0) = 1$), with higher proportions of women in less male-dominated disciplines. No robust evidence for an interaction between parity and linguistic

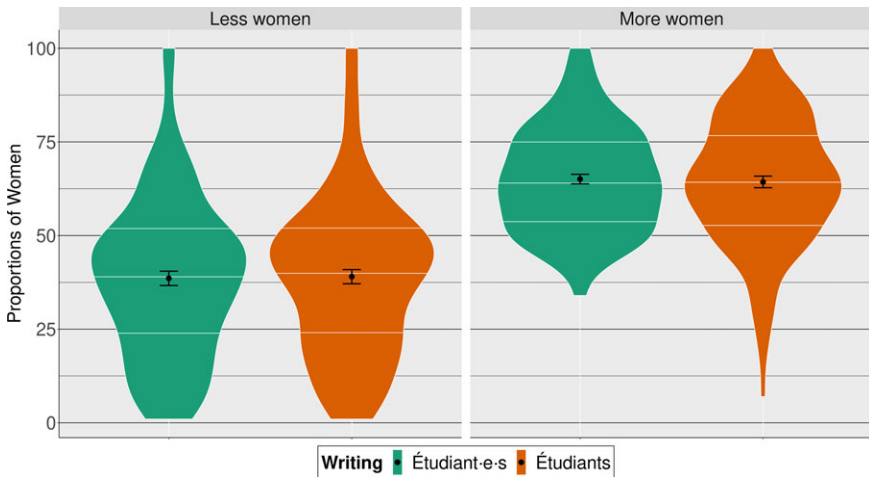


Figure 5. Proportions of women depending on the linguistic forms and discipline parity.

forms (*point médian* vs masculine) was found (Est. = 0.43, CrI = [-5.22, 6.12], $P(\text{Est.} > 0) = .56$).

Discussion

As expected with regards to Burnett and Pozniak (2021), male-dominated disciplines led to lower proportions of women by the participants. However, the use of *point médian* did not lead to higher proportions of women contrary to previous studies. It seems that in a detailed context and when the question of the interpretation is more indirect, the effect of *point médian* is diluted by extra information.

We decided to do the same experiment with the double form this time to see whether this form would also be diluted by extra-information.

Experiment 2. Interpretation of the double form

Participants

Forty-eight participants (mean: 34 y.o., $\sigma = 11$) took part in the experiment and were recruited on the Prolific platform. We then excluded participants who discovered the main goal of the study ($N = 4$) as well as participants whose accuracy to comprehension questions was less than 70% ($N = 4$).

Materials and design

Materials were the same as in the first experiment, except that the double form (*les étudiantes et les étudiants*) was used instead of the *point médian*, as shown in Figure 6.

Procedure

Procedure was the same as in the first experiment.

Type de diplôme : Licence Psychologie

La licence de psychologie se présente comme un premier grade pour les étudiantes et étudiants souhaitant devenir psychologue. L'UFR propose une formation généraliste caractérisée par une approche pluridisciplinaire. Les étudiantes et étudiants se familiarisent progressivement avec les différentes sous-disciplines de la psychologie telles que la psychologie clinique, psychopathologie et la psychologie cognitive expérimentale. Cette formation s'engage aussi à développer des compétences préprofessionnelles avec un stage obligatoire en L3. Un tutorat est proposé aux étudiantes et étudiants tout au long de leur cursus.

De nombreux étudiantes et étudiants choisissent de continuer leurs études après la licence, permettant d'accéder à de nombreux débouchés professionnels.

Figure 6. Example of an item used in experiment 2, in the double form condition, for a less male-dominated discipline.

Hypothesis

If the use of *double form* leads participants to a more inclusive interpretation in a way that the brochure is addressed to women as much as to men, then they should estimate that more women would apply for the degree when double form is used, compared to the masculine form *étudiants*. Also, the difference between the linguistic forms should be more important in more male-dominated disciplines.

Results

Violin plots in Figure 7 show the mean proportions of women estimated who would apply for the bachelor's degree depending on the linguistic forms (use of double form "Étudiantes et étudiants" or masculine, "Étudiants").

Violin plots in Figure 8 also show the mean proportions of women, but depending on linguistic forms (use of double form "Étudiantes et étudiants", or masculine, "Étudiants") and discipline parity (fewer women in the discipline vs more women in the discipline).

Figure 7 shows that proportions of women estimated were higher when double form was used compared to masculine (53.78 vs 50.41), which was confirmed in the statistical analysis (strong evidence for an effect, Est. = 2.65, CrI = [-0.33, 5.60], P(Est. > 0) = .96). As shown in Figure 8, we again found strong evidence for an effect of discipline parity, with higher proportions of women estimated in less male-dominated disciplines (Est. = 22.27, CrI = [9.24, 35.53], P(Est. > 0) = 1). We can also see an interaction between parity and type of inclusive form in Figure 8, for which we found weak evidence for an effect (Est. = -4.13, CrI = [-10.10, 1.80], P(Est. < 0) = .92): using double form leads to more proportions of women, especially in more male-dominated disciplines (strong evidence for an effect, Est. = 4.62, CrI = [-0.35, 9.58], P(Est. > 0) = .97) and not so much in less male-dominated disciplines (Est. = 0.60, CrI = [-5.89, 7.23], P(Est. > 0) = .59).

Discussion

Again, male-dominated disciplines led to lower proportions of women by the participants. However, contrary to the *point médian* in experiment 1, the use of double form led to higher proportions of women, especially in more male-dominated disciplines. Our results do not align with the results found in Xiao *et al.*



Figure 7. Proportions of women depending on the linguistic forms.



Figure 8. Proportions of women depending on the linguistic forms and discipline parity.

(2023) or Tibblin et al. (2023a) who did not find a difference between the two inclusive forms. It seems that in a detailed context and when the question of the interpretation is more indirect, the effect of *point médian* is diluted by extra information, while the double form still succeeds in reducing linguistic androcentrism, especially in male-dominated disciplines. Context thus does not appear to have the same effect on the two sociolinguistic forms, with the double form appearing more salient than the *point médian* (we will come back to this point in the general discussion).

We now consider the question of how general this “contextual dilution” effect is. When looking at the corpus data from Burnett and Pozniak (2021), qualitative results

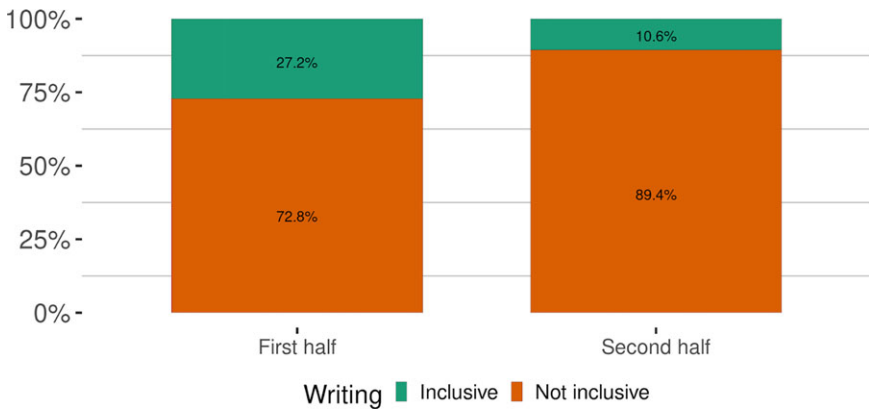


Figure 9. Use of inclusive writing depending on the position in the text (Burnett and Pozniak, 2021).

showed that inclusive forms appear to be rather used at the beginning of the brochures than at the end (27.2% vs 10.6%, see Figure 9). This raises the question of whether it is necessary to systematically use gender inclusive forms (particularly double form) for all relevant noun phrases in the discourse. Perhaps having inclusive forms only at the beginning is enough to signal that the noun phrases are meant to refer to both women and men, even in a detailed context. We decided to test this hypothesis in another experiment to see whether the double form remains salient and continues to convey social information even when it is not systematically used.

Experiment 3. Systematic use of the double form

Participants

Forty-eight participants (mean: 31 y.o., $\sigma = 10$) took part in the experiment and were recruited on the Prolific platform. We then excluded participants who discovered the main goal of the study ($N = 2$) as well as participants whose accuracy to comprehension questions was less than 70% ($N = 5$).

Materials and design

Materials were the same as in the second experiment, except that the double form (*les étudiantes et les étudiants*) was only used in the first two occurrences, with the last two being in masculine, as shown in Figure 10. When constructing the stimuli, we considered the question of where to remove two occurrences of double form. We decided to remove the last two because, again, we were interested in constructing the most realistic stimuli possible.

Procedure

Procedure was the same as in the previous experiments.

Type de diplôme : Licence Psychologie

La licence de psychologie se présente comme un premier grade pour les étudiantes et étudiants souhaitant devenir psychologue. L'UFR propose une formation généraliste caractérisée par une approche pluridisciplinaire. Les étudiantes et étudiants se familiarisent progressivement avec les différentes sous-disciplines de la psychologie telles que la psychologie clinique, psychopathologie et la psychologie cognitive expérimentale. Cette formation s'engage aussi à développer des compétences préprofessionnelles avec un stage obligatoire en L3. Un tutorat est proposé aux étudiants tout au long de leur cursus.

De nombreux étudiants choisissent de continuer leurs études après la licence, permettant d'accéder à de nombreux débouchés professionnels.

Figure 10. Example of an item used in experiment 3, in the double form condition, for a less male-dominated discipline.

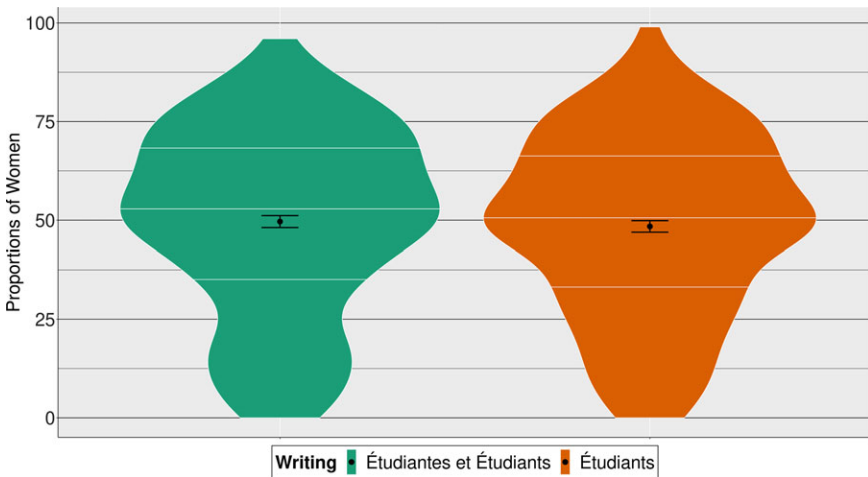


Figure 11. Proportions of women depending on the linguistic form.

Hypothesis

If the inclusive interpretation of the double form is only necessary at the beginning of the discourse, we expect the same results as those found in the previous experiments: participants should estimate that more women would apply for the degree when the double form is used compared to masculine, and the difference between both forms should be more important for brochures where discipline parity is lower.

Results

Violin plots show the mean proportions of women estimated depending on linguistic forms (use of double form, “étudiantes et étudiants” in the first two occurrences or masculine, “étudiants”, in the four occurrences) in Figure 11, and according to discipline parity (fewer women in the discipline vs more women in the discipline) in Figure 12.

Figure 11 shows that participants estimated that more women would apply for the degree when the brochure was written with the double form in the first two



Figure 12. Proportions of women depending on the form and discipline parity.

occurrences compared to when it was written exclusively using the masculine (49.64 vs 48.42), for which we found weak evidence for an effect (Est. = 1.29, CrI = [-1.39, 4.01], $P(\text{Est.} > 0) = .83$). As seen in Figure 12, participants estimated that more women would apply for a degree in which parity was higher, which was confirmed in the analysis (strong evidence for an effect, Est. = 24.4, CrI = [11.60, 37.31], $P(\text{Est.} > 0) = 1$). No robust evidence for an interaction between linguistic forms was found (Est. = 0.24, CrI = [-5.4, 5.8], $P(\text{Est.} > 0) = .53$).

General discussion

The first experiment showed different results from those found in Tibblin *et al.* (2023a) and Xiao *et al.* (2023) in that the *point médian* did not appear to increase the proportion of women that participants thought were going to apply in the various disciplines described by the brochure. In the second experiment, the double form did somewhat increase the proportion of women in disciplines across the board, but mainly in male-dominated ones. In this way, double form does appear to favour a ‘gender neutral’ reading, more than a strictly feminized one.⁹

These results seem surprising compared to those found in other previous studies, but can be explained by the differences in the materials and the questions asked to the participants. First of all, as for the materials, we studied the university context and only looked at one noun: *étudiant-e-s* (students). It is possible that, were we to investigate a wider set of nouns with different associated stereotypes, we might find some effect with the *point médian*, as found in Xiao *et al.* (2023). Moreover, previous researchers’ questions were more explicit and direct with respect to the proportion

⁹Inclusive writing is also used to refer to non-binary people, although it should be noted that our experiments focused more on female representations. Other more specific experiments on non-binary representations need to be done for this question.

of women in groups. In Xiao et al. (2023), there was a single item, therefore no fillers were needed. In contrast, our study had distractors (two scales) as well as fillers. Indeed, the absence of fillers may have induced some metalinguistic strategies from participants, especially in Tibblin et al. (2023a). Furthermore, the actual semantics of the question we asked participants is very different: we asked them to put themselves in the shoes of a university administrator making decisions for their programs, some of which involved gender parity. In this way, our response question created a much more realistic interactional context, but then at the same time, the relationship between the question and gender parity was less explicit. Given all these differences, it is not surprising that we do not find as strong effects as previous researchers have done.

As we mentioned, our results are reminiscent of those found by Hilton and Jeong (2019), and Beltrama et al. (2022): results involving the interpretation of sociolinguistic phenomena obtained in experiments with minimal context weaken or even disappear when the context becomes more detailed. We have named this phenomenon *contextual dilution*, and we suggest that it arises from how people process the information in the texts that they read.¹⁰ In shorter contexts, aspects of the form of the language may be more salient to listeners and readers than they would be in more detailed contexts where the listener/reader is required to take more information into account. A further argument for this analysis came from the results of the third experiment, focusing on how often double form is used. Indeed, our results could be interpreted in the following way: only using two occurrences at the beginning of the text may weaken the evidence for a contribution of double form to the creation of a gender neutral interpretation, especially in male-dominated disciplines. However, for this experiment, as mentioned by a reviewer, it could also be argued that adding the masculine forms in the same text with the double form created a stronger male bias. As said earlier, the choice of having the first two occurrences in the double form and the last two in the masculine form was inspired by what we found (Figure 9 above) in the corpus study from Burnett and Pozniak (2021). Still, as is often the case for corpus studies, several factors may be confounded,¹¹ and it would be interesting to test whether the results stay the same when only two double forms are used in the beginning of the text without the masculine forms. We leave this issue for future research.

The differences found between the *point médian* and the double form could also be imputed to the recent use of the *point médian*. Indeed, this form has become more frequent since 2017; whereas the double form was already quite widespread. It therefore seems reasonable to suppose that most people have not quite interiorized the social meaning of *point médian*, all the more in a very detailed context. Another explanation would be that contracted forms such as *point médian* resemble

¹⁰A reviewer pointed out that, in order to really justify this notion of contextual dilution, the *point médian* should also be tested only in the beginning of the text. While a replication is always necessary and encouraged in our field, we suggest that contextual dilution is relevant to explain the results found in experiment 1 and experiment 2 (double form vs. *point médian*), even more so when we compare with previous studies such as Tibblin et al. (2023a) and Xiao et al. (2023).

¹¹Burnett and Pozniak (2021) looked at undergraduate brochures in which teachers describe their class, among others. It is certainly plausible that some materials in the first half of the brochure were written in inclusive forms while other teachers used masculine forms for their class in the second half.

masculine forms contrary to the double form that makes the feminine form much more salient. It is thus possible that the contracted form has been processed as masculine forms.

We argue that our results, joint with the results from previous studies such as Tibblin *et al.* (2023a) and Xiao *et al.* (2023) have important implications for language policy or guidelines. In particular, they suggest that using either the point médian or double form in a book title, on social media, in a headline, in a short sign (such as one would find in a feminist protest), or activist graffiti would have the desired effect, but it would be optimal to switch to double form (which is allowed even in government documents), and use it systematically in a more detailed context (such as brochures, as was tested in our experiments). Also, as said before, frequency may be a crucial factor at play for the difference in interpretation between the *point médian* and the double form. Future research should look at the frequency of the forms used by participants (on a daily basis) to see whether a frequent use of inclusive forms – and mainly the *point médian* – affects the interpretation of these inclusive forms in a more detailed context, through habituation experiments for example. Finally, our results come from offline experiments, and a few studies with online techniques are emerging like in Friedrich *et al.* (2021) for the German star form, or in Gygas and Gesto (2007), and more recently Tibblin *et al.* (2023b) for French. Still, based on what we found, more research focussing on the influence of context with online measures are necessary to really capture how people process the inclusive forms.

Acknowledgments. NA.

Funding statement. This work was partially supported by a public grant overseen by the French National Research Agency (ANR) as part of the program “Investissements d’Avenir” (reference: ANR-10-LABX-0083), the AAP Jeunes chercheur-se-s-Néo MCFs 2021 from Paris 8 university and Structures Formelles du Langage, and the European Research Council (ERC) under the European Union’s Horizon 2020 research and innovation programme (Grant agreement No. 850539).

Competing interests. NA.

References

- Abbou, J.** (2011). *L’antisexisme linguistique dans les brochures libertaires: pratiques d’écriture et métadiscours* (Doctoral dissertation, Université de Provence-Aix-Marseille I).
- Abbou, J.** (2022). *Tenir sa langue: Le langage, lieu de lutte féministe*. Paris: Éditions Les Pérégrines.
- Abbou, J., Arnold, A., Candea, M., and Marignier, N.** (2018). Qui a peur de l’écriture inclusive? Entre délire eschatologique et peur d’émasculation *Entretien. Semen. Revue de sémio-linguistique des textes et discours*, (44).
- Barr, D. J., Levy, R., Scheepers, C., and Tily, H. J.** (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of memory and language*, **68**(3), 255–278.
- Beauvoir, S. D.** (1949). *Le deuxième sexe*. Gallimard.
- Beltrama, A., Solt, S., and Burnett, H.** (2022). Context, precision, and social perception: A sociopragmatic study. *Language in Society*, 1–31.
- Bem, S. L., and Bem, D. J.** (1973). Does sex-biased job advertising “aid and abet” sex discrimination? *1. Journal of Applied Social Psychology*, **3**(1), 6–18.
- Brauer, M. and Landry, M.** (2008). Un ministre peut-il tomber enceinte? L’impact du générique masculin sur les représentations mentales. *L’année psychologique*, **108**(2), 243–272.

- Bürkner, P. C. (2017). brms: An R package for Bayesian multilevel models using Stan. *Journal of statistical software*, 80, 1–28.
- Bürkner, P. C., and Charpentier, E. (2020). Modelling monotonic effects of ordinal predictors in Bayesian regression models. *British Journal of Mathematical and Statistical Psychology*, 73(3), 420–451.
- Burnett, H., and Pozniak, C. (2021). Political dimensions of gender inclusive writing in Parisian universities. *Journal of Sociolinguistics*, 25(5), 808–831.
- Campbell-Kibler, K. (2009). The nature of sociolinguistic perception. *Language Variation and Change*, 21(1), 135–156.
- Carpenter, B., Gelman, A., Hoffman, M. D., Lee, D., Goodrich, B., Betancourt, M., Brubaker, M., Guo, J., Li, P., and Riddell, A. (2017). Stan: A probabilistic programming language. *Journal of statistical software*, 76(1).
- Chatard, A., Guimond, S., Lorenzi-Cioldi, F., and Désert, M. (2005). Domination masculine et identité de genre. *Les cahiers internationaux de psychologie sociale*, (3), 113–123.
- Drummond, Alex. 2013. *Ibex farm (free hosting for Internet-based experiments)*. Version 0.3. <https://spellout.net/ibexfarm/> (23 February, 2021).
- Friedrich M., Drößler V., Oberlehberg N., and Heise E. (2021). The Influence of the Gender Asterisk (“Gendersternchen”) on Comprehensibility and Interest. *Frontiers in Psychology*, 12, 760062.
- Gabriel, U., Gygax, P., Sarrasin, O., Garnham, A., and Oakhill, J. (2008). Au pairs are rarely male: Norms on the gender perception of role names across English, French, and German. *Behavior Research Methods*, 40(1), 206–212.
- Garnham, A., Gabriel, U., Sarrasin, O., Gygax, P., and Oakhill, J. (2012). Gender representation in different languages and grammatical marking on pronouns: When beauticians, musicians, and mechanics remain men. *Discourse Processes*, 49(6), 481–500
- Gygax, P., Gabriel, U., Lévy, A., Pool, E., Grivel, M., and Pedrazzini, E. (2012). The masculine form and its competing interpretations in French: When linking grammatically masculine role names to female referents is difficult. *Journal of Cognitive Psychology*, 24(4), 395–408.
- Gygax, P., Gabriel, U., Sarrasin, O., Oakhill, J., and Garnham, A. (2008). Generically intended, but specifically interpreted: When beauticians, musicians, and mechanics are all men. *Language and Cognitive Processes*, 23(3), 464–485.
- Gygax, P., and Gesto, N. (2007). Féminisation et lourdeur de texte. *L'Année psychologique*, 107(02), 239. <https://doi.org/10.4074/S0003503307002059>
- Gygax, P., Zufferey, S., and Gabriel, U. (2021). Le cerveau pense-t-il au masculin. Cerveau, *langage et représentations sexistes*, Paris, Le Robert.
- Gygax, P. M., Schoenhals, L., Lévy, A., Luethold, P., and Gabriel, U. (2019). Exploring the onset of a male-biased interpretation of masculine generics among French speaking kindergarten children. *Frontiers in Psychology*, 10, 1225.
- Haddad, R. (2023). *L'écriture inclusive, et si on s'y mettait?* Paris: Le Robert.
- Hilton, K., and Jeong, S. (2019). The role of context in sociolinguistic perception. *Linguistics Vanguard*, 5(s1).
- Houdebine, A.-M. (1987). Le français au féminin. *La Linguistique*, 23(Fasc 1):13–34.
- Kidd, V. (1971). A study of the images produced through the use of the male pronoun as the generic. *Moments in Contemporary Rhetoric and Communication*, 1(2), 25–30.
- Kruschke, J. (2014). Doing Bayesian data analysis: A tutorial with R, JAGS, and Stan.
- McElreath, R. (2020). *Statistical rethinking: A Bayesian course with examples in R and Stan*. CRC press.
- Michard, C. (1996). Genre et sexe en linguistique: Les analyses du masculin générique. *Mots. Les Langues du Politique*, 49(1), 29–47
- Misersky, J., Gygax, P. M., Canal, P., Gabriel, U., Garnham, A., Braun, F., ... and Sczesny, S. (2014). Norms on the gender perception of role nouns in Czech, English, French, German, Italian, Norwegian, and Slovak. *Behavior research methods*, 46, 841–871.
- Ng, S. H. (2007). Language-based discrimination: Blatant and subtle forms. *Journal of Language and Social Psychology*, 26(2), 106–122.
- Pincus, A. R. H., and Pincus, R. E. (1980). Linguistic sexism and career education. *Language Arts*, 57(1), 70–76.
- Pozniak, C., and Burnett, H. (2021). Failures of Gricean reasoning and the role of stereotypes in the production of gender marking in French. *Glossa: a journal of general linguistics*, 6(1).

- R Core Team** (2023). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>.
- Richy, C., and Burnett, H.** (2021). Démêler les effets des stéréotypes et le genre grammatical dans le biais masculin: une approche expérimentale. *GLAD!. Revue sur le langage, le genre, les sexualités*, (10).
- Roland, D., Mauner, G., O'Meara, C., and Yun, H.** (2012). Discourse expectations and relative clause processing. *Journal of Memory and Language*, **66**(3), 479–508.
- RStudio Team** (2020). *RStudio: Integrated Development for R*. RStudio, PBC, Boston, MA URL <http://www.rstudio.com/>.
- Schneider, J. W., and Hacker, S. L.** (1973). Sex role imagery and use of the generic "man" in introductory texts: A case in the sociology of sociology. *The American Sociologist*, 12–18.
- Sczesny, S., Formanowicz, M., and Moser, F.** (2016). Can gender-fair language reduce gender stereotyping and discrimination?. *Frontiers in psychology*, **7**, 25.
- Sorensen, T., and Vasissth, S.** (2015). Bayesian linear mixed models using Stan: A tutorial for psychologists, linguists, and cognitive scientists. *arXiv preprint arXiv:1506.06201*.
- Soto, D. H., and Cole, C.** (1975). Prejudice against women: A new perspective. *Sex Roles*, **1**, 385–393.
- Stout, J. G., and Dasgupta, N.** (2011). When he doesn't mean you: Gender-exclusive language as ostracism. *Personality and Social Psychology Bulletin*, **37**(6), 757–769.
- Tibblin, J., Granfeldt, J., van de Weijer, J., Gygax.** (2023b). The male bias can be attenuated in reading: on the resolution of anaphoric expressions following gender-fair forms in French. *Glossa Psycholinguistics*, **2**(1).
- Tibblin, J., van de Weijer, J., Granfeldt, J., and Gygax, P.** (2023a). There are more women in joggeur-euses than in joggeurs: On the effects of gender-fair forms on perceived gender ratios in French role nouns. *Journal of French Language Studies*, **33**(1), 28–51.
- Weatherall, A.** (2002). *Gender, language and discourse*. Psychology Press.
- Xiao, H., Strickland, B., and Peperkamp, S.** (2023). How fair is gender-fair language? Insights from gender ratio estimations in French. *Journal of Language and Social Psychology*, **42**(1), 82–106.
- Yaguello, M.** (1979). *Les mots et les femmes: Essai d'approche socio-linguistique de la condition féminine* (vol. 75). Payot.

Cite this article: Pozniak C, Corbeau E, and Burnett H (2024). Contextual dilution in French gender inclusive writing: An experimental investigation. *Journal of French Language Studies* **34**, 273–292. <https://doi.org/10.1017/S0959269523000236>