Linguistik in Empirie und Theorie /
Empirical and Theoretical Linguistics

RESEARCH

Clara Stumm

When *Voisins* Can Be Women and When They Cannot – Masculine Generics in French

An Experimental Study on the Influence of Stereotypicality and Role Noun Type on the Interpretation of Masculine Role Nouns

MOREMEDIA

1682

J.B. METZLER

Linguistik in Empirie und Theorie/ Empirical and Theoretical Linguistics

Die Reihe Linguistik in Empirie und Theorie ist der Untersuchung linguistischer Phänomene auf allen sprachlichen Ebenen gewidmet. Durch die fachliche Breite des Herausgebergremiums und des wissenschaftlichen Beirats dieser Reihe umfasst ihr Portfolio die germanistische, anglistische, romanistische, slavistische Linguistik und die Linguistik des Ungarischen. Dabei werden sowohl empirische als auch theoretische Fragestellungen der gesprochenen und der geschriebenen Sprachforschung berücksichtigt. Neben innovativen einzelphilologischen Arbeiten richtet sich diese Reihe auch an Autorinnen und Autoren sprachübergreifender kontrastiver Analysen. Neben Monographien und Sammelbänden werden in der Reihe Linguistik in Empirie und Theorie auch herausragende Qualifikationsarbeiten kostenfrei veröffentlicht. Deshalb möchte das Herausgebergremium gezielt auch Nachwuchswissenschaftlerinnen und -wissenschaftler ermutigen, sich um die Veröffentlichung ihrer Qualifikationsarbeiten in der Reihe zu bemühen. Eine Publikation ist auf Deutsch und Englisch möglich. Dank Springer Link sind die Publikationen der Reihe Linguistik in Empirie und Theorie weltweit verfügbar.

Ein wissenschaftlich und interdisziplinär ausgewiesenes Herausgeberteam mit einem Beirat renommierter Expertinnen und Experten sichert die Qualität der Reihe durch eine Begutachtung im doppelten Peer-Review Verfahren.

The book series Empirical and Theoretical Linguistics is dedicated to the linguistic study of all domains of language. Thanks to the wide range of disciplines represented in the editorial team and the advisory committee, the series is able to encompass German, English, Romance, Slavic and Hungarian linguistics. Innovative studies of empirical and theoretical topics concerning spoken and written language in individual languages are invited, as are crosslinguistic and contrastive investigations. Besides monographs and edited collections, the series Empirical and Theoretical Linguistics publishes high-quality doctoral and postdoctoral theses. The editors therefore encourage early career researchers specifically to submit their booklength manuscripts for publication in the series. Contributions may be written in German or English. Thanks to Springer Link, publications in the series Empirical and Theoretical Linguistics are available worldwide.

Quality is ensured through double peer review by an editorial team of experienced academics in collaboration with a cross-European advisory committee of renowned specialists.

Clara Stumm

When *Voisins* Can Be Women and When They Cannot – Masculine Generics in French

An Experimental Study on the Influence of Stereotypicality and Role Noun Type on the Interpretation of Masculine Role Nouns

J.B. METZLER

Clara Stumm
Department for Classical and Romance
Philology
University of Bonn
Bonn, Germany

This work was approved by the Faculty of Arts of the University of Bonn in 2023 as a dissertation for the award of the doctoral degree (Dr. phil.) under the title: “When *Voisins* Can Be Women and When They Cannot – Masculine Generics in French. An Experimental Study on the Influence of Stereotypicality and Role Noun Type on the Interpretation of Masculine Role Nouns”.

ISSN 2662-5725 ISSN 2662-5733 (electronic)
Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics
ISBN 978-3-662-71662-5 ISBN 978-3-662-71663-2 (eBook)
https://doi.org/10.1007/978-3-662-71663-2

This J.B. Metzler imprint is published by the registered company Springer-Verlag GmbH, DE, part of Springer Nature.
The registered company address is: Heidelberger Platz 3, 14197 Berlin, Germany

Acknowledgements

This book is a revised version of my PhD thesis, submitted to the Department of Classical and Romance Philology at the University of Bonn in July 2023. During the years that I have been working on the interpretation of masculine role nouns, language and gender has become a dynamic field of research and the interpretation of masculine forms a widely researched topic. Accordingly, since the completion of my PhD thesis, more findings on the interpretation of masculine role nouns have been published.[1] I am looking forward to the findings of future research that, based on previous, present and recent findings, will bring light to more aspects of the interpretation of masculine role nouns.

Looking back on the past few years, I am filled with gratitude and emotion when I think of the many wonderful people who have honored me with their support, encouragement and inspiration and without whom I could not have done my PhD project. I can mention only some of them here.

First, I thank my supervisors Daniela Pirazzini and Marco García García, without whom I would not have embarked on this journey. Thank you for your logical thinking and sharp observations on my project.

I am also thankful to the editors of the Empirical and Theoretical Linguistics Series—Igor Trost, Annamária Fábián, Torsten Leuschner, Armin Owzar and Judith Visser—for accepting my work for publication within their book series, and I thank the anonymous reviewers for their comments on an earlier version

[1] More recent findings could only be integrated as side notes or could not be integrated in the present work at all. Amongst others, this is the case for Ewels & Nübling (2024); Kotthoff & Nübling (2024), which is the second edition of the research used in the present book (i.e., Kotthoff & Nübling 2018) and Meuleneers et al. (2024).

of this book. I also thank Friederike Lierheimer at Springer for her kind support during the publishing process.

I am indebted for the helpful comments and the valuable feedback I received when presenting my work on various academic occasions such as at AESLA, AILA, AMLaP and the IMPRS Conference. In this vein, I thank the German Academic Exchange Service (DAAD) and the German Federal Ministry of Education and Research for the International Doctorates in Germany for All scholarship that permitted me to present and discuss a former version of my experimental set-up at the Bootcamp on Quantitative Methods in L2 Research at the University of Warsaw. Likewise, the AILA Solidarity Grant (full award) permitted me to present and discuss the first part of my findings at the International Association of Applied Linguistics World Congress 2021, for which I am grateful. I am much obliged to the University of Bonn's Equal Opportunity and Diversity Unit's Program to Strengthen the Equal Opportunity Process for financially supporting my research stay at the Centre national de la recherche scientifique (French National Centre for Scientific Research) at Aix-Marseille University when conducting Experiment 2 and the University of Bonn's Argelander Program for Early-Career Researchers for funding my participation at the 41th International Conference of the Spanish Society for Applied Linguistics.

For their valuable advice and helpful comments on my project I also wish to express my thanks to the following colleagues: Pascal Gygax, Kevin McManus, Luke Plonsky, Anke Grutschus, Martin Becker, Semra Kizilkaya, Eric Engel, Volker Struckmeier, Javier Caro Reina, Robyn Berghoff, Pawel Sickinger, Theresa Redl, Dietha Koster, Julie Abbou, Uwe Nissen, Michał Paradowski and team Warsaw. Special thanks go to Gunnar Jacob, without whose scientific advice, enthusiasm for psycholinguistics and sincere and incessant encouragement this project would not have been possible.

Moreover, I would like to thank Johannes Ziegler, head of the Laboratoire de Psychologie Cognitive at the Centre national de la recherche scientifique at Aix-Marseille University, and his team for welcoming me to beautiful Provence, for their support and for permitting me to conduct my experiments in their laboratory. In this regard, a big thank you also goes to all those who have participated in my experiments.

I would be remiss not to thank Linda Führer for revisiting the glosses and references, and Magdalena Jelińska and Jonathan Simon for their help with the formatting in general and for their help with the formatting of the tables and figures specifically. Gunnar Jacob (once again) and Guido Lüchters deserve special mention for their invaluable support with the statistical part of my experimental study. I am also grateful to Mary Chambers, who thoroughly proofread the

manuscript of this book and corrected my English. I also acknowledge my students at the University of Bonn, whose eagerness to learn and to analyze linguistic issues, and whose interest in my lessons has always encouraged me to go on researching.

Finally, I thank my dear friends—sometimes geographically far, but so close to my heart. I am so grateful for your support on so many levels and that you are part of my life; your friendship means the world to me. I also thank the two Glücks for distracting me with fun facts on trees, trains and timetables. With deepest gratitude, I thank my family for everything and specifically for having fostered my curiosity in foreign languages and cultures. Last but by no means least, I thank my grandmothers, two women who never had the chance to study, but who both supported me on my way to the PhD. It is to them that I dedicate this book; I wish they could have seen this work finished.

Contents

Abbreviations

F	Feminine
Fr.	French
Ger.	German
M	Masculine
MvW	Moving Window
PL	Plural
RQ	Research Question
SEV	Sentence Evaluation
SG	Singular
SPR	Self-Paced Reading
WSP	Whole Sentence Presentation

List of Figures

List of Tables

Introduction

1

When visiting *En Marche!*'s 'Republic on the Move!' website,[1] the web user will encounter the following sentence:

> Chez En Marche la moitié des délégués nationaux sont des déléguées nationales.[2]
>
> 'At *En Marche*, half of the national$_{M.PL}$ delegates$_{M.PL}$ are national$_{F.PL}$ delegates$_{F.PL}$.'

Based on the beginning of the sentence, which speaks of *délégués nationaux* 'national$_{M.PL}$ delegates$_{M.PL}$' in the masculine form, the reader might be surprised to learn at the end of the sentence that women—*déléguées nationales* 'national$_{F.PL}$ (female) delegates$_{F.PL}$'—are part of the goup *délégués nationaux* 'national$_{M.PL}$ delegates$_{M.PL}$'. This is because the masculine role noun *délégués nationaux* has more than one meaning: it can be interpreted as referring to men only—*délégués nationaux* 'national$_{M.PL}$ delegates$_{M.PL}$' would thus mean 'male national delegates'. But it can also be interpreted as referring to a group consisting of men and women—*délégués nationaux* 'national$_{M.PL}$ delegates$_{M.PL}$' would thus mean 'male and female national delegates'.[3] The interpretation of the masculine role

[1] The political party has changed its name and corresponding website in September 2022 and has been called *Renaissance* since (see <https://parti-renaissance.fr> [23.05.2023]). As the above quote is from *En Marche*'s website, in this introduction, I will stick to the party's original name.

[2] See <https://en-marche.fr/emmanuel-macron/le-programme/%C3%A9galit%C3%A9-hommes-et-femmes> [23.05.2023].

[3] As we will see in Sect. 2.2.2, a masculine role noun can have even more meanings. As the above two are those of interest in the present book, I stick to these two for the moment.

C. Stumm, *When Voisins Can Be Women and When They Cannot – Masculine Generics in French*, Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics, https://doi.org/10.1007/978-3-662-71663-2_1

noun as referring to men only is called the *specific interpretation* of the masculine role noun. Conversely, when it is interpreted as referring to a group consisting of both men and women, its *generic* interpretation is accessed.

The fact that Macron's political party made the effort to clarify that half of their national delegates are *déléguées nationales* 'national$_{F.PL}$ (female) delegates$_{F.PL}$' shows that they are aware of the fact that the use of the masculine role noun can lead to confusion. Thus, the use of the feminine role noun side by side with the masculine role noun indicates that *En Marche* wanted to indicate, without any room for misunderstanding, that the generic meaning of *délégués nationaux* 'national$_{M.PL}$ delegates$_{M.PL}$' was intended.[4]

Furthermore, *En Marche*'s choice to clearly indicate that *délégués nationaux* 'national$_{M.PL}$ delegates$_{M.PL}$' comprises men as well as women does not happen in a vacuum. In fact, in 2017, Macron declared gender equality as *la grande cause du quinquennat* 'the major cause of the quinquennat' and has renewed his commitment to gender equality as a priority for the French government since.[5] Crucially, whether or not masculine role nouns should be used to refer to a group consisting of both men and women has been heatedly debated in France since 2017:[6] feminist institutions and scientists criticize the generic use of masculine role nouns, claiming that their potential misinterpretation as male-specific is "discriminatory to women" (Gygax et al. 2008: 480). Correspondingly, they discourage the generic use of masculine role nouns and instead encourage the use of gender-fair alternatives such as double forms like *délégués et déléguées*

[4] Note that the above quote from *En Marche* also alludes to the feminist slogan *Un homme sur deux est une femme* 'one (hu)man in two is a woman'.

[5] See <https://www.egalite-femmes-hommes.gouv.fr/legalite-entre-les-femmes-et-les-hommes-declaree-grande-cause-nationale-par-le-president-de-la-republique> [08.06.2023]; <www.diplomatie.gouv.fr/en/french-foreign-policy/human-rights/women-s-rights/gender-equality-a-priority-for-france> [08.06.2023]; <www.elysee.fr/emmanuel-macron/defendre-par-les-actes-les-droits-des-femmes> [08.06.2023]).

[6] While the use of masculine role nouns when referring to a group consisting of both men and women has been formerly criticized (e.g., Abbou 2011: 55 f.; *Haut Conseil à l'Égalité entre les femmes et les hommes* 2016: 27), it only really came up in the public debate when the French schoolbook *Questionner le Monde* by Sophie Le Callennec (2017) abbreviated double forms like *artisans et artisanes* 'artisans$_{M.PL}$ and artisans$_{F.PL}$' by putting *artisan.e.s* 'artisans$_{M.F.PL}$'. Discussions on a gender-fair use of the French language prior to the latter had, since the 1980s, concentrated on *féminisation* 'feminization'. *Féminisation* is the discussion about how to create feminine forms for job titles that had formerly been used in the masculine form for men and women alike (e.g., *professeur* 'professor$_{M.PL}$'—*professeure* 'professor$_{F.SG}$') (Burr 2003: 120 f.).

'delegates$_{M.PL}$ and delegates$_{F.PL}$'[7] or abbreviated double forms such as *délégué·es* 'delegates$_{M·F.PL}$' (*Haut Conseil à l'Égalité entre les femmes et les hommes* 2016: 27 f.; Viennot 2018: 102–106). A so-called gender-fair use of the French language thus is perceived as a tool to

> restaurer l'équilibre entre les genres, afin de mieux accompagner [...] la marche vers l'égalité. (Viennot 2018: 13)
>
> 'restore an equilibrium between the genders, to better accompany [...] the march towards equality.'

Conversely, the Académie française (*French Academy*) qualifies the alternatives to the generic use of masculine role nouns as a "mortal danger" (my translation) to the French language (Académie française 2017) and the *Proposition de loi contre l'écriture inclusive* 'bill against gender-fair writing' presented in January 2023 by French (far)right-wing politicians declares that the

> mise en cause de la langue française […] peut être regardée comme une entreprise de déconstruction de la Nation.
>
> 'the questioning of the French language [...] can be seen as an endeavor to deconstruct the Nation.'

Thus, these differential opinions show that the generic use of masculine role nouns and their alternatives is a hot topic in France—as it is in a lot of other Western countries.

Importantly, it could be argued that the possible surprise regarding the indication that half of *En Marche*'s *délégués nationaux* 'national$_{M.PL}$ delegates$_{M.PL}$' are *déléguées nationales* 'national$_{F.PL}$ (female) delegates$_{F.PL}$' in the above introductory quote is not based on the masculine form, but builds on the assumption that, stereotypically, politicians are men and not women. The surprise would thus not be grounded in linguistic information—the association of the masculine form with the male biological/social gender—but in extra-linguistic information, namely in the stereotype *politicians are men*.[8]

Theoretically, the possibly surprising linking of the *déléguées nationales* 'national$_{F.PL}$ (female) delegates$_{F.PL}$' with the *délégués nationaux* 'national$_{M.PL}$

[7] Note that the feminine grammatical gender of *déléguées* 'delegates$_{F.PL}$' is only marked in the written code, but not in the oral code; see Sect. 2.2.1.1.

[8] For the rating of *politiciens* 'politicians$_{M.PL}$' as stereotypically male, see Misersky et al. (2014: 868).

delegates$_{M.PL}$' could thus build either on linguistic or extra-linguistic information, or it could be influenced by both information types (Gygax et al. 2008: 470 f.). Yet only empirical research can present insights into whether language users picture exclusively men or men and women when reading masculine role nouns such as *délégués nationaux* 'national$_{M.PL}$ delegates$_{M.PL}$' (Schwarze 2008: 236).

In this vein, the present book presents a psycholinguistic approach to the question of whether masculine role nouns are interpreted generically or specifically when read by French native speakers. In order to analyze this I present an experimental study consisting of two self-paced reading experiments that, based on a sentence evaluation paradigm, take stock of the *yes* and *no* answers as well as the reading/response times. I delineate my corresponding research questions and aims in the following section.

1.1 Research Questions and Aims

As indicated above, this book's main goal is to analyze how masculine plural role nouns in French are interpreted when read by French native speakers (i.e., university students). More specifically, my experimental study, consisting of two experiments, aims to answer the following research questions (= RQs):

RQ 1: Do masculine role nouns in French trigger a male-specific interpretation?

RQ 2: Does stereotypicality (i.e., stereotypically male/neutral/female role nouns) influence the interpretation of masculine role nouns?

RQ 3: Does the role noun type (i.e., occupational nouns vs. non-occupational nouns) influence the interpretation of masculine role nouns?

RQ 1 aims to analyze whether the morphosyntactic factor *masculine form* might bias readers so that they interpret a masculine role noun as only referring to men. Both Experiment 1 and 2 tackle RQ 1, which is the question that is at the heart of the current scientific discussion of the interpretation of masculine role nouns (e.g., as in Gygax et al. (2008: 470 f.) on masculine role nouns in French and German; cf. Redl 2021: 121 on masculine pronouns in Dutch).

RQ 2's research goal is to examine whether the extra-linguistic factor *stereotypicality* (i.e., stereotypically male/neutral/female role nouns) influences the interpretation of masculine role nouns. This research goal is pursued in Experiment 1, which presents a replication of the French sample of an experiment run

by Gygax et al. in 2008. Experiment 1 therefore also provides important insights into the stability of previous findings.

RQ 3 addresses the lexico-semantic factor *role noun type* (i.e., occupational nouns vs. non-occupational nouns). In fact, most previous research on masculine role nouns has not examined whether different lexico-semantic types of masculine role nouns might be interpreted differently. Apart from De Backer & De Cuypere (2012), who investigated whether occupational masculine nouns like *pharmacists* and non-occupational masculine nouns like *neighbors* in Dutch and German are interpreted differently, the issue has scarcely been addressed.[9] In contrast to De Backer & De Cuypere (2012), who investigated Dutch and German role nouns in an offline measures survey study, in Experiment 2, I base my investigations on both offline and online measures. Importantly, in order to generate more reliable data, Experiment 2 aims to improve the experimental setup of Experiment 1 by adapting the method and the experimental and filler items used.

As will be shown, my two experiments yield different results: Experiment 1 indicates that masculine role nouns are interpreted specifically—i.e., masculine role nouns are mainly associated with men. Experiment 2, on the other hand, suggests that masculine role nouns are interpreted generically. Experiment 2's findings thus indicate that it is also possible to associate masculine role nouns with women. In order to explain my diverging findings, I therefore turn to a closer analysis of how the sentences in which a masculine role noun occurs might influence a masculine role noun's interpretation (e.g., the properties of the experimental and the filler items).[10] In this sense, I consider the interpretation of masculine role nouns as being influenced by multiple factors (e.g., coherence and stereotypicality).

The original contribution of this book lies (1) in the generation of new insights into the question of whether masculine role nouns are interpreted generically or specifically. This is achieved by examining (2) whether previous findings hold true today by investigating whether masculine role nouns that present different types of stereotypicality (i.e., stereotypically male/neutral/female role nouns) are interpreted differently and by examining (3) whether different role noun

[9] Kotthoff & Nübling (2018: 215–217) address this question in their literature review on masculine role nouns in German to some extent. Becker (2008: 66) also discusses it briefly when examining role nouns in German.

[10] See Sect. 6.1 on why I exclude methodological issues from being the cause of my diverging findings.

types (i.e., occupational vs. non-occupational nouns) are interpreted differently. In particular, based on the diverging findings of both experiments—Experiment 1 indicates that masculine role nouns are mainly associated with men, while Experiment 2 suggests that masculine role nouns are interpreted generically—this book discusses (4) a topic that, so far, has received little attention in the field: the influence of multiple factors on the interpretation of masculine role nouns. In doing so, this book presents (5) a preliminary approach that conceives of the interpretation of masculine role nouns as a multifactorial phenomenon.

1.2 Outline

Following the research questions and findings outlined above, the remainder of this book is structured as follows: Chapter 2 defines the concept of grammatical gender cross-linguistically, then focuses on the grammatical gender system of the French language. Most of Chap. 2 is dedicated to the correlation between grammatical gender and biological/social gender and describes the way in which masculine forms can be used to refer to groups consisting of men and women. This lays the foundation for Chap. 3, in which the most important linguistic approaches to the multiple meanings of masculine role nouns are presented. More precisely, Chap. 3 reviews theoretical as well as empirical research on the interpretation of masculine role nouns, placing particular emphasis on whether previous research assumes masculine role nouns to be interpreted generically (i.e., as referring to both men and women) or specifically (i.e., as referring to men only). Chapter 4 presents Experiment 1, which replicates the French sample of Gygax et al. (2008). Experiment 1 addresses the question of how a masculine role noun's stereotypicality (i.e., stereotypically male/neutral/female role nouns) may influence whether it is interpreted generically or specifically (i.e., RQ 1 and RQ 2). The acknowledgement of Experiment 1's limitations serves as the basis for the setup of Experiment 2, which is presented in Chap. 5. Experiment 2 addresses the question of how the role noun type of masculine role nouns (i.e., occupational vs. non-occupational nouns) influences whether the role nouns are interpreted generically or specifically (i.e., RQ 1 and RQ 3). As Experiments 1 and 2 yield diverging findings, these are contrasted with each other in Chap. 6, which discusses the possible reasons for the diverging findings by putting emphasis on the method, the properties of the filler items and the properties of the experimental

items featured in both experiments. Based on this, Chap. 7 considers the bigger picture by evaluating my experimental study's main findings in the light of previous research. As previous research cannot account for my diverging results, Chap. 7 sketches a multifactorial approach to the interpretation of masculine role nouns and suggests directions for future research. Finally, Chap. 8 summarizes the general conclusions that can be drawn from the present book and puts them into an overall context.

Grammatical Gender

2

The topics discussed in the present chapter lay the foundations for my experimental study in Chaps. 4 and 5, which evaluates whether masculine grammatical gender is interpreted as referring to biological/social male gender when reference is made to humans. Thus, the aim of this chapter is to introduce the concept of *grammatical gender* in general and its role in the French language specifically. More precisely, Sect. 2.1 distinguishes *grammatical gender* from *biological/social gender*, defines grammatical gender from a formal and a psycholinguistic view and presents an index that investigates the correlation between grammatical and biological/social gender across different languages. Sect. 2.2 presents the particularities of the grammatical gender system in French, focusing on human reference. In this vein, Sect. 2.2.1 discusses the assignment of French nouns to the grammatical gender classes. Sect. 2.2.2 delineates the way in which masculine forms can be used to refer to groups consisting of men and women. Sect. 2.3 presents a summary of the chapter.

2.1 Terminology and Key Concepts

The English word *gender* derives from Latin *genus* 'kind, sort' via Old French *gendre*. As opposed to the use of *gender* in everyday language, which is tied to biological/social distinctions, the original meaning of *gender* 'kind, sort' is closer to the function of grammatical gender as a classifier (Corbett 1991: 1). In this vein, Hockett (1958: 231) defines *grammatical genders* as "classes of nouns

C. Stumm, *When Voisins Can Be Women and When They Cannot – Masculine Generics in French*, Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics, https://doi.org/10.1007/978-3-662-71663-2_2

[that are] reflected in the behavior of associated words".[1] Before turning to a closer inspection of the linguistic category of grammatical gender, we have to differentiate morphosyntactic gender, which assigns nouns to different classes, from biological and social gender.

I understand *biological gender* as the biological gender assigned at birth (APA 2022) and *social gender* as the "attitudes, feelings, and behaviors that a given culture associates with a person's biological" gender (APA 2022).[2] Yet, for the purposes of my research, it is not important whether the identification of men and women is based on biological or cultural properties or both, I thus do not further differentiate between *biological* and *social gender* and speak of *biological/social gender* instead (Kotthoff & Nübling 2018: 14–16).[3]

Further, as my experimental study aims to examine whether masculine forms that are explicitly combined with *hommes* 'men$_{M.PL}$' and *femmes* 'women$_{F.PL}$'[4] are interpreted as referring to both men and women, the binary categorization *men/male* and *women/female* is sufficient. However, I am well aware of the fact that this does not reflect gender identities in-between or outside the gender binary, such as genderqueer gender identities (APA 2022).[5] When referring to biological/social gender, I use the adjectives *male*, *female* and *neutral*,[6] while I use *masculine*, *feminine* and *neuter* when referring to grammatical gender. For instance, when I speak of a *masculine noun*, this means that the noun is grammatically masculine (Diebowski 2021: 15 f.). Yet it could also refer to a female referent, as in the following sentence (Schafroth 2003: 108, 110):

(1) *Anne Dupont est professeur à l'université de Toulouse.*
'Anne Dupont is a professor$_{M.SG}$ at the University of Toulouse'.

[1] See also Corbett (1991: 1); Diebowski (2021: 15 f.).

[2] See also Diewald & Nübling (2022a: 4–7); Kotthoff & Nübling (2018: 14–16); Mickan et al. (2014: 40); Samel (2008: 38 f., 167); Schwarze (2008: 184 f.).

[3] See also Diewald & Nübling (2022a: 4 f.); Gygax et al. (2019a: 2–4).

[4] I henceforth use *hommes* 'men$_{M.PL}$' and *femmes* 'women$_{F.PL}$' without glossing (i.e., *hommes* and *femmes* only).

[5] See also Kotthoff & Nübling (2018: 14–16).

[6] *Stereotypically neutral* means that the role noun does not evoke any gender-related stereotypes. Although *non-stereotypical* would make more sense, I stick to *neutral* as it is the terminology used in Gygax et al. (2008: 472) (see Sect. 3.2.1.2), which is the study on which Experiment 1 is based.

Note that, in the literature, *biological gender* is also called *natural gender*, *semantic gender*[7] or *sex* without necessarily associating it with *social gender* (Diebowki 2021: 16). When directly quoting other authors, it is thus possible that *natural gender*, *semantic gender* or *sex* is used when I would have said *biological/social gender*. Also, when using established terms such as *gender agreement* '(grammatical) gender concord' or *gender equality* 'equal rights for persons of all biological/social genders', I do not specify them by saying *grammatical gender agreement* or *biological/social gender equality* as this would not respect the established usages of these terms. As a matter of fact, the polysemous use of the term *gender* has been established as such in the field and thus cannot entirely be avoided. However, in the remainder of this book, such ambiguous uses of *gender* are rare: within the specific context (e.g., the discussion of grammatical gender agreement as in the present section), it should be clear whether *grammatical gender* or *biological/social gender* is meant.

It is noteworthy that nouns referring to humans may evoke social gender stereotypes, such as generalized beliefs about the members of the group denoted. Corresponding expectations may concern roles which are more or less likely to be performed by either men (e.g., *engineers are male*) or women (e.g., *beauticians are female*) (Formanowicz & Hansen 2022: 127, 129 f.; Gygax et al. 2008: 473).[8] With this in mind, I follow Gygax et al. (2019c: 3), who define *gender stereotypes* and *gender stereotypicality* as "generalized beliefs and expectations about social roles or occupations, that are considered appropriate based on individuals' socially identified sex".[9] Accordingly, in the remainder of this book, *stereotype/stereotypicality* always concerns gender stereotypes and never other types of stereotypes such as cultural stereotypes. In other words, when I speak of *stereotypes/stereotypicality*, I mean *gender stereotypes*. As these are acquired through experiences and interactions with the extra-linguistic world, following

[7] Note that the German term *semantisches Geschlecht*, in the sense of 'lexical gender' (Diewald & Nübling 2022a: 4–7), should not be mixed up with the English *semantic gender* in the sense of 'biological gender'.

[8] See also Elsen (2020: 113 f.); Schafroth (2003: 97, 99 f.). See Garnham et al. (2012) and Gygax et al. (2016) for a discussion of the difference between typicality (i.e., gender ratios) and stereotypicality (i.e., generalized assumptions).

[9] See also Gygax et al. (2016: 1 f.); Irmen & Roßberg (2004: 273) and Misersky et al. (2014: 842); for a more linguistic definition of stereotypes in general, see Putnam (1975). See also Gosselin (2018: 87–89).

Gygax et al. (2021a: 3, 7), I consider stereotypes as *extra-linguistic information*.[10] Correspondingly, I distinguish *extra-linguistic information* from *linguistic information* (e.g., the morphosyntactic factor *masculine form*) (Gygax et al. 2016: 1 f.).[11]

In the language and gender literature (e.g., Gygax et al. 2008: 464, 470 f.; Garnham et al. 2012: 481–483, 499), *grammatical information* is used when referring to the masculine form of a role noun and is differentiated from a role noun's stereotypicality, hence called *stereotype information* or *extra-linguistic information*. However, as the understanding of *grammatical* can vary greatly between the different branches of linguistics (e.g., functional grammar vs. generative grammar), I refrain from using the possibly misleading term *grammatical information* in the remainder of this book and use *linguistic information* (versus *extra-linguistic information*) instead. Moreover, within *linguistic information*, for instance, the morphosyntactic 'grammatical' factor *masculine form* belongs to another domain of language than the lexico-semantic factor *role noun type*. Accordingly, the use of *linguistic information* permits me to differentiate between the different linguistic factors that may influence the interpretation of role nouns. Crucially, this differentiation allows me to establish a preliminary multifactorial approach to the interpretation of masculine role nouns in Sect. 7.3 (see Fig. 7.1).

Let us now come back to Hockett's (1958: 231) definition of *grammatical genders* as "classes of nouns [that are] reflected in the behavior of associated words". Accordingly, grammatical gender serves a dual purpose: on the one hand, it groups nouns into distinct classes. On the other hand, grammatical gender serves a structural purpose in delimiting the boundaries of noun phrases by virtue of *gender agreement*, i.e., the obligatory matching of a word's grammatical gender with the grammatical gender of the noun it is syntactically dependent on (Corbett 1991: 1, 7 f.; 2001: 6335; 2006a: 749).[12]

[10] See also Gabriel et al. (2017: 795 f.); Garnham et al. (2012: 481 f., 499); Gosselin (2018: 85 f.).

[11] It could be argued that a role noun's stereotypicality is a pragmatic (and thus linguistic) factor. Yet, as explained above, I assume stereotypes to be acquired in the extra-linguistic world (Gygax et al. 2016: 1 f.; Gygax et al. 2021a: 1, 3 f., 7) and stick to the assignment of stereotypes as *extra-linguistic information*. Crucially, this permits me to directly compare the present research with previous work, which has consistently differentiated between the linguistic factor *masculine form* and *extra-linguistic information* when referring to a role noun's *stereotypicality* (e.g., Gygax et al. 2008: 464, 470 f.; Garnham et al. 2012: 481–483, 499).

[12] See also Diebowski (2021: 15 f.); Loporcaro (2016: 924); Schafroth (2003: 90–93, 116); Schwarze (2008: 19 f.).

In contrast to Hockett's formal definition of *grammatical gender*, Dixon (1982: 159 f.) proposes a narrower definition of grammatical gender, which includes a third criterion. According to Hockett, a language only possesses grammatical gender when the following three conditions are fulfilled. Firstly, a language groups its nouns into classes. Secondly, there is grammatical agreement between these nouns and their targets. Thirdly, there is considerable correlation between the class membership of nouns and biological/social gender; for instance, nouns referring to women possess feminine grammatical gender (Gygax et al. 2019a: 2). Correspondingly, a language that meets the first two criteria, but which does not present a discernible correlation between the class membership of the nouns and biological/social gender, may be considered as a language without grammatical gender in Dixon's (1981: 159 f.) sense.

Corbett, in his standard reference work *Gender* (1991: 1), follows Hockett (1958: 231) and bases his definition of grammatical gender on the following two arguments, also mentioned by Dixon (1982): (1) the nouns of a language are grouped into classes; and (2) there is grammatical agreement between these nouns and their dependent elements. Crucially, Corbett points out that

> [t]he defining characteristic of gender is agreement; a language has a gender system only if noun phrases headed by nouns of different types control different agreements. The evidence that nouns have gender in a given language thus lies outside the nouns themselves. (Corbett 2001: 6335)[13]

In this sense, we can distinguish the element that triggers the gender agreement, the *controller*, from the elements that show agreement, the *agreement targets*. While agreement controllers are generally nouns, agreement targets are typically other nominal word classes, such as adjectives, determiners and pronouns. Still, what exactly serves as an agreement target in a given language is subject to cross-linguistic variation. Thus, in opposition to Dixon, it is not a grammatical gender-biological/social gender correlation that determines whether a language possesses grammatical gender, but whether there is *agreement* between the nouns and their dependent elements (Corbett 1991: 105 f.; 2001: 6335).[14]

Moreover, Corbett (1991: 7 f.) explains that the assignment of a noun to a specific grammatical gender class can be based on different features, such as formal (i.e., phonological and morphological) cues, semantic features (i.e., the

[13] For a cross-linguistic in-depth discussion of *agreement*, see Corbett (2006b).

[14] See also Diebowski (2021: 16); Gygax et al. (2019a. 2); Loporcaro (2016: 924); Schwarze (2008: 31 f.).

meaning of a noun determines its grammatical gender), or a combination of several of these criteria. In this respect, it should be acknowledged that the different assignment systems can be considered continuous rather than categorical. Contrary to other scholars who postulate that grammatical gender systems such as that of French are based on arbitrary factors, Corbett (1991: 8, 57) posits that all grammatical gender assignment systems have at least a semantic core (Corbett 1991: 7 f., 61–63, 151).[15] For instance, in French, nouns denoting women, such as *mère* 'mother$_{F.SG}$', tend to be feminine—based on the semantic feature *female* (*La Grande Grammaire du Français* 2021: 381, 389).[16]

Since I am not concerned with purely grammatical analyses in this book, but with the relation between grammatical gender and the associations it triggers in terms of biological/social gender, Dixon's approach is of interest. At the same time, Corbett, who stresses *agreement*, bases his discussion of grammatical gender on more than 200 languages of different language families. This permits us to analyze languages that do not present a grammatical gender-biological/social gender correlation side by side with those which do. Thus, Corbett's more formal definition enables a cross-linguistic comparison of grammatical gender systems without having to philosophize about whether there is "considerable semantic correlation" (Dixon 1982: 160) between noun classes and biological/social gender. Finally, Corbett's definition has also been used as the basis of a profound analysis of the grammatical gender systems of the Romance languages; for instance, in Loporcaro (2018: 6–8). Taken together, Corbett's approach is the most comprehensive approach to grammatical gender, which is why I stick to his definition.

Moreover, Gygax et al. (2019a) have established an index of five main language groups according to their grammatical gender system while focusing on the semantic link between grammatical and biological/social gender (Gygax et al. 2019a: 1, 3). They build their work on previous taxonomies of grammatical gender systems such as that of Corbett (1991). Obviously, the combination of an approach to grammatical gender based on Corbett (1991) with the focus on the grammatical gender-biological/social gender correlation is of particular interest to me and is discussed in the next section.

Given the focus on the grammatical gender-biological/social gender correlation, in the upcoming sections, the focus is on human reference nouns. In the

[15] See also Corbett (2001: 6335 f.; 2006a: 749 f.).

[16] See also Diebowski (2021: 16, 57); *Le bon usage* (2016: § 464); Loporcaro (2016: 924); Pozniak & Burnett (2021: 5); Schwarze (2008: 34 f., 40). See Köpcke & Zubin (1996: 484) and Kotthoff & Nübling (2018: 78) on German. For a structural approach to grammatical gender assignment challenging Corbett (1991), see Kramer (2020).

following, I use *human nouns* for all nouns that can refer to humans. Accordingly, *human nouns* include generic nouns that can be used to refer to both men and women, but which are always either grammatically masculine (e.g., *individu* 'individual$_{M.SG}$', *témoin* 'witness$_{M.SG}$'[17]) or feminine (e.g., *personne* 'person$_{F.SG}$', 'victim$_{F.SG}$') (i.e., they have a fixed grammatical gender).[18] Conversely, for personal nouns, a masculine form exists that is generally used for the reference to a man and a feminine form exists that is used for the reference to a woman (e.g., *étudiant* 'student$_{M.SG}$' vs. *étudiante* 'student$_{F.SG}$').[19]

Importantly, my experimental study focuses on a special type of personal noun, namely *role nouns*. In the present work, I use *role noun* in the sense of any personal noun "that incorporates features used to describe a person or a group of persons, such as […] [nouns] indicating hobbies or pastimes—e.g., soccer fan—or occupations—e.g., dentist, actor, or student" (Garnham et al. 2012: 482). Moreover, *role noun* functions as a hypernym for *occupational nouns* and *non-occupational nouns*. More precisely, a noun that describes persons or a group of persons through features referring to a professional occupation will be defined as an *occupational noun* (e.g., *ingénieur* 'engineer$_{M.SG}$'). Conversely, a role noun that is used to refer to the agents of a social role or a pastime will be designated as

[17] Although *La Grande Grammaire du Français* takes into account oral speech, like traditional grammars and French reference dictionaries, it classifies *témoin* 'witness' as being a masculine noun only. Nonetheless, in colloquial speech, *la témoin (de mariage)* 'the$_{F.SG}$ (wedding) witness$_{F.SG}$' is used when reference is made to women—as indicated by numerous greeting cards asking *veux-tu être ma témoin ?* 'will you be my (wedding) witness$_{F.SG}$?'. While the grammatical gender of *témoin* in the sense of 'wedding witness' seems to be changing, I nonetheless follow *La Grande Grammaire du Français* and define *témoin* as a generic noun with a fixed masculine grammatical gender.

[18] Note that Corbett (1991: 67 f.) uses *epicene nouns* in the sense of 'generic nouns' (e.g., *personne* 'person$_{F.SG}$', which is marked for grammatical feminine gender, but is used to refer to both men and women). I however use *epicene nouns* for personal nouns that can take both grammatical genders depending on the referent (e.g., *le/la linguiste* 'the$_{M/F.SG}$ linguist$_{M/F.SG}$'), as this is the most commonly established usage in French (see Sect. 2.2; Becquer 1999: 16, 22; Tibblin et al. 2023a: 30).

[19] Note that this usage may differ from the literature, in which *human nouns* and *personal nouns* are not considered as hypernyms/hyponyms, but are used as synonyms (as in Gygax et al. 2019a; Schafroth 2003). In the language and gender literature, personal names are analyzed separately from human/personal nouns (Gygax et al. 2019a: 4; Kotthoff & Nübling 2018: 92). Crucially, in French, while morphological markers can indicate whether a personal name is used for a man or a woman (e.g., *Paul*$_M$ vs. *Pauline*$_F$; *Christian*$_M$ vs. *Christine*$_F$), a personal name used for men cannot be used generically. I thus follow Gygax et al. (2019a: 4) and do not further examine personal names in the remainder of this book. Moreover, personal names have been scarcely investigated in the field; for exceptions, see Kotthoff & Nübling (2018: 191–213); Nübling & Hirschhauer (2018).

a *non-occupational noun* (e.g., *voisin* 'neighbor$_{M.SG}$') (De Backer & De Cuypere 2012: 257; Garnham et al. 2012: 482).[20]

The five language groups defined by Gygax et al. (2019a) are presented below. This index will help me contextualize the findings on the associations evoked by grammatical gender in different languages and in French specifically later on in this book (e.g., in Chap. 3). Note that Gygax et al.'s (2019a) index does not account for linguistic characteristics other than those needed for the analysis of the linguistic reference to men and women. Correspondingly, other linguistic differences are omitted.[21] At the same time, the frequency of more or less inevitable references to biological/social gender among the language groups can be considered a continuum, such that some languages may fall in between the five identified language groups (Gygax et al. 2019a: 4 f.).[22]

A Language Index of Grammatical Gender Dimensions Focusing on Reference to Humans

Grammatical gender languages, such as French and German, are languages in which nouns designating both inanimate and animate referents are classified for grammatical gender. While grammatical gender assignment for inanimates is considered arbitrary, when reference is made to humans, it tends to correlate with the referent's biological/social gender. For instance, in French, the masculine noun *l'enseignant* 'the teacher$_{M.SG}$' is used when referring to a man and the feminine *l'enseignante* 'the teacher$_{F.SG}$' when referring to a woman (Gygax et al. 2019a: 3 f.).[23]

Languages with a combination of grammatical gender and natural gender, such as Norwegian and Dutch, possess grammatical gender distinctions for inanimate nouns as well as for some personal nouns. For the latter, grammatical gender is generally tied to biological/social gender (e.g., Dutch *schrijver* 'male writer$_{M.SG}$' vs. *schrijfster* 'female writer$_{F.SG}$'). However, unlike grammatical gender languages, the majority of nouns referring to humans do not formally distinguish between masculine and feminine forms. For instance, *dierenarts* 'veterinarian$_{M.SG}$' in Dutch can refer to either a male or female veterinarian. At the same time, pronouns tend to

[20] See also Gygax et al. (2016: 2; 2021a: 1).

[21] See Corbett (1991: 7–32; 2013: Chap. 31) on the assignment of grammatical gender based on semantic criteria other than biological/social gender.

[22] See also Stahlberg et al. (2007: 164, 166).

[23] See also *La Grande Grammaire du Français* (2021: 381 f., 387); Stahlberg et al. (2007: 164 f.).

express the biological/social gender of a human referent (e.g., Dutch *hij* 'he' vs. *zij* 'she') (Gygax et al. 2019a: 4).[24]

Natural gender languages such as English do not classify inanimate nouns according to grammatical gender and only rarely do so when reference is made to humans (e.g., *actor/actress*).[25] For instance, *teacher* can refer to a man or a woman. However, personal pronouns distinguish between forms that are used to refer to men and women (e.g., *the teacher—he/she)* (Gygax et al. 2019a: 4).[26]

In **genderless languages with a few traces of grammatical gender**, such as Basque, most nouns referring to humans "as well as personal pronouns are used for male or female referents without using distinct linguistic forms" (Gygax et al. 2019a: 4). Yet some linguistic forms indicating grammatical gender exist, for instance, in the form of suffixes that are used to refer to either men or women (Gygax et al. 2019a: 4).

Genderless languages such as Turkish or Finnish mark neither nouns nor pronouns for grammatical gender. Information on a human referent's *biological/social gender* can still be conveyed by lexical means such as Turkish *erkek* 'man or male' or *kız* 'girl' or, accordingly, the compositions *erkek arkadaş* 'boy friend (= boyfriend)' or *kız arkadaş* 'girl friend (= girlfriend)' (Gygax et al. 2019a: 4).[27]

Based on Gygax et al.'s (2019a) index, we can see that the extent to which biological/social gender is grammaticalized varies greatly across the language groups presented. Crucially, all languages can express biological/social gender at least with lexical means. Yet, in grammatical gender languages distinguishing between masculine and feminine grammatical gender, the grammatical gender of personal nouns tends to reflect the biological/social gender of the referent. Accordingly, maleness and femaleness are signaled not only by lexical but also by morphosyntactic and phonological means. This makes references to biological/social gender not only obligatory, but also more frequent than in natural gender languages and (nearly) genderless languages (Gabriel & Gygax 2016: 177–179; Gygax et al. 2019a: 3–5).[28]

---

[24] See also De Backer & De Cuypere (2012: 254 f.); Redl (2021: 14).

[25] I use the term *natural gender language* as this is the established term when languages are classified according to grammatical gender; however, it does not adequately take into account the social dimension of (biological) gender (see Sect. 2.1; Gygax et al. 2019a: 1, 4 f.).

[26] In Corbett's (1991: 12) terms, English would be categorized as a *semantic/pronominal grammatical gender system*. The definition of English as a grammatical gender language is challenged by Schwarze (2008: 172–178), who argues that reference to nouns like *teacher* with the pronouns *he* or *she* is not based on the noun itself, but on the biological/social gender of the referent (in opposition to English nouns like *princess—she* vs. *prince—he*).

[27] See also Aikhenvald (2016: 71, 73 f.); Stahlberg et al. (2007: 165 f.).

[28] See also Stahlberg et al. (2007: 164, 166).

Further, in languages which present a discernible correlation between grammatical gender and biological/social gender, the attention to biological/social gender can be assumed to be heightened: while an English speaker can avoid giving information about the biological/social gender of a referent, in a grammatical gender language, speakers generally have to indicate the biological/social gender of a human referent—as in *the teacher* in English vs. *l'enseignant* 'the male teacher$_{M.SG}$' or *l'enseignante* 'the female teacher$_{F.SG}$' in French. Correspondingly, a user of a grammatical gender language can easily retrieve the biological/social gender of a referent based on grammatical cues (Gabriel & Gygax 2016: 177–181, 189; Gygax et al. 2019a: 4 f.).[29]

After having introduced and defined the terminology and key concepts concerning grammatical gender, in Sect. 2.2, we deal with the question of how French, the language under scrutiny in my experimental study, can be considered a *grammatical gender language*. In a first step, we turn to the origins of the French grammatical gender system, which derives from the Latin grammatical gender system. In Sect. 2.2.1, we then focus on the assignment of grammatical gender to human nouns and further consider the use of the masculine grammatical gender as default in Sect. 2.2.2.

2.2 Grammatical Gender in French

While Classical Latin sorts nouns into three grammatical gender classes, the masculine, the feminine and the neuter, Modern French has reduced the inherited three-gender system to a binary grammatical gender system, distinguishing masculine and feminine. During the restructuring of the grammatical gender system, Latin neuter survived into (early) Old French and "was depleted gradually, progressively losing members—mostly to the masculine—in the course of time"

[29] See also Loporcaro (2018: 6); Stahlberg et al. (2007: 164, 166).

(Loporcaro 2018: 203, 231–233, 282).[30] Schøsler (2020: 640) explains the transition from the Latin neuter to the French masculine grammatical gender as follows:[31]

> au singulier, les noms neutres du latin sont pour la plus grande majorité réanalysés comme masculins. Cela est dû au fait que la forme du singulier neutre latin ressemble au masculin accusatif singulier latin […], comme par exemple: *argentum → (li) argenz/(le) argent*.
>
> 'in the singular, the vast majority of Latin neuter nouns are reanalyzed as masculine. This is due to the fact that the Latin neuter singular form resembles the Latin masculine accusative singular [...], as for example: *argentum → (li) argenz/(le) argent*.'

Thus, all Modern French nouns are generally either masculine (e.g., *soleil* 'sun$_{M.SG}$'; *père* 'father$_{M.SG}$') or feminine (e.g., *lune* 'moon$_{F.SG}$'; *mère* 'mother$_{F.SG}$'). According to the *Grande Grammaire du Français*, in Modern (European) French 54% of nouns are masculine, 36% are feminine, 5% have both grammatical genders with the same form (*le/la juge* 'the$_{M./F.SG}$ judge$_{M./F.SG}$'),[32] and 5% have both grammatical genders with different forms (e.g., *technicien/technicienne* 'technician$_{M./F.SG}$').[33] While there are more masculine than feminine nouns in the French lexicon, the number of feminine nouns has increased

[30] The assumption that the Latin neuter had already disappeared in Vulgar Latin is widespread in Romance linguistics and is frequently cited (as in Schafroth 2003: 90). Yet, the transition was not finished as early as generally assumed (i.e., not in Proto-Romance/Vulgar Latin). One obvious counterargument to this oversimplification is that reduction to a binary grammatical gender system never took place in some Romance varieties (Loporcaro 2018: 282). Moreover, some scholars assume that the Latin neuter survived in Modern French indefinite pronouns (e.g., *quoi* 'what') (e.g., *Le bon usage* 2016: §465; Schafroth 2003: 90). However, from a synchronic point of view, this does not hold true as *quoi* can be linked to both masculine and feminine noun phrases referring to inanimate objects (instead of to neuter noun phrases in Latin) (e.g., *Tu as fait quoi?—Une bêtise/un malheur* 'What have you done?—A silliness$_{F.SG}$/a hit$_{M.SG}$') (*La Grande Grammaire du Français* 2021: 382 f.; Loporcaro 2018: 64). See Härmä (2000) for a detailed diachronic description of grammatical gender in French; see Burr (2000) for a diachronic analysis of the description of grammatical gender in French and other Romance languages in grammar books.

[31] See Loporcaro (2018: 232 f.) and Schøsler (2020: 639 f.) for more (semantic) rules on the reassignment of the neuter gender during the Latin-Romance transition.

[32] I only use glosses on determiners for epicene nouns (see Sect. 2.2.1.1) to indicate the grammatical gender of the noun. For nouns that are either masculine or feminine, I only indicate the grammatical gender of the noun itself (e.g., *le/la juge* 'the$_{M./F.SG}$ judge$_{M./F.SG}$' vs. *le/la technicien/technicienne* 'the technician$_{M./F.SG}$').

[33] This analysis was based on the written code and on singular forms. Hence, nouns like *ami/amie* 'friend$_{M./F.SG}$', which are identical in the oral code, were counted as masculine/

in the past decades for both inanimate and animate objects. Crucially, most of the more or less recently established nouns referring to humans possess both grammatical genders, reflecting the biological/social gender of the noun's referent (e.g., *le/la prof* 'the$_{M./F.SG}$ teacher$_{M./F.SG}$') (*La Grande Grammaire du Français* 2021: 382 f., 389). In the next section, we take a closer look at the two controller genders (i.e., masculine/feminine) and their target genders.

Controller and Target Genders

Le bon usage, one of the reference works on French Grammar, defines *grammatical gender* in French as follows:

> Le genre est une propriété du nom, qui le communique, par le phénomène de l'accord […], au déterminant, à l'adjectif épithète ou attribut, parfois au participe passé, ainsi qu'au pronom représentant le nom. (*Le bon usage* 2016: §464)
>
> 'gender is a property of the noun, which it communicates through the phenomenon of agreement [...] [i.e., controller genders in Corbett's terms], between the noun and the determiner, the predicate or attributive adjective, sometimes the past participle and the noun's pronoun [i.e., target genders].'

The following example, taken from Schafroth (2003: 91), exemplifies what has been explained by *Le bon usage*. We can see that the target genders (i.e., the determiner, adjective and past participle) agree with the feminine noun *mousse au chocolat* 'chocolate mousse$_{F.SG}$', which is the controller gender of the sentence:[34]

(2) *C'est la plus délicate mousse au chocolat que j'aie jamais mangée.*[35]
'This is the$_{F.SG}$ most delicious$_{F.SG}$ chocolate mousse$_{F.SG}$ that I have ever eaten$_{F.SG}$.'

As we can see, in (2), the past participle *mangée* 'eaten$_{F.SG}$' agrees with the feminine *mousse*; this is visible thanks to the *-e* in *mangée* (vs. the masculine form *mangé*

feminine nouns with different forms (*La Grande Grammaire du Français* 2021: 383). In Quebec French, the above cited ratio may differ, as more nouns are feminine. For instance, *argent* 'money' is a feminine noun in Quebec French, while it is masculine in European French (*La Grande Grammaire du Français* 2021: 383 f.).

[34] See also *Le bon usage* (2016: §464); Schafroth (2015: 335 f.); Schwarze (2008: 102–111).

[35] Note that the original example in Schafroth (2003: 91) is *C'est la plus délicate mousse au chocolat que j'ai* [!] *jamais mangée*. Yet, at least from a prescriptive point of view, the *subjonctif* instead of the *indicatif* should be used with superlative expressions such as *jamais* (i.e., *aie* instead of *ai*). For the sake of readability, I have adapted the example without indicating this directly above.

'eaten$_{M.SG}$'). However, in the oral code *mangée* would not be marked for feminine grammatical gender as it is pronounced in the same way as the masculine form: [mɑ̃ʒe]. Indeed, in French, when participles are marked for grammatical gender, this is often only perceptible in the written code, and is neutralized in the oral code (e.g., *elle est venue* [v(ə)ny] 'she has come$_{F.SG}$' vs. *il est venu* [v(ə)ny] 'he has come$_{M.SG}$') (*Le bon usage* 2016: §464; Schafroth 2003: 90 f.).[36]

Moreover, the opposition between masculine and feminine grammatical gender can be neutralized in several other ways, again in the written code. For instance, the plural definite (*les* 'the$_{PL}$') and indefinite determiners (*des* 'the$_{PL}$'), the singular definite determiner before vowel (*l'* 'the$_{SG}$'), the object pronoun *lui* 'her/him/them$_{SG}$' and invariable adjectives such as *incroyable* 'incredible' are all unspecified for grammatical gender. Moreover, so-called epicene nouns (e.g., *journaliste* 'reporter$_{M./F.SG}$') are also unspecified for grammatical gender: the grammatical gender of an epicene personal noun is generally based on the referent's biological/social gender and is expressed by the noun's agreement targets, such as the determiners as in *le journaliste* 'the$_{M.SG}$ male reporter$_{M.SG}$' vs. *la journaliste* 'the$_{F.SG}$ female reporter$_{F.SG}$' (Richy & Burnett 2021: 2 f., 8 f.; Schafroth 2003: 90–92, 106).[37] Speaking of the neutralization of grammatical gender, a sentence such as (3) does not contain any cues to the grammatical gender of the personal noun (Richy & Burnett 2021: 3):

(3) *L'incroyable journaliste a appelé.* 'The incredible reporter called.'

However, in actual language use, the intended grammatical gender usually becomes apparent via contextual cues or grammatical gender-marking on additional agreement targets. For instance, when the feminine determiner and a variable adjective are used, as in (4) (Schafroth 2003: 90–92, 112; 2015: 336; Yaguello 1978: 117):[38]

[36] But cf. *Elle s'est inscrite* 'She has registered$_{F.SG}$' vs. *Il s'est inscrit* 'He has registered$_{M.SG}$', in which the oral code is marked for grammatical gender. For a discussion of internal and external agreement of participles in French, see Schwarze (2008: 40 f.).

[37] On *epicene nouns*, see footnote 18. Note that homonyms which are disambiguated by their grammatical gender assignment (e.g., *le/la voile* 'the$_{M./F.SG}$ sail$_{M.SG}$'/scarf$_{F.SG}$') have two distinct entries in the lexicon and are not considered epicene nouns (Corbett 1991: 181 f.; *La Grande Grammaire du Français* 2021: 382 f.). See also *Le bon usage* (2016: §464); Schwarze (2008: 102–111).

[38] See also *La Grande Grammaire du Français* (2021: 382 f.); Richy & Burnett (2021: 2 f., 13); Tibblin et al. (2023a: 30).

(4) *La gentille journaliste a appelé.* 'The$_{F.SG}$ nice$_{F.SG}$ reporter$_{F.SG}$ called.'

Interestingly, the differentiation between the grammatical gender categories is being minimized in Modern French—even for pronouns. Especially in the oral code of younger speakers, masculine pronouns can function as defaults: *ils* 'they$_{M.PL}$' can be used when reference is made to a group of women instead of the feminine pronoun *elles* 'they$_{F.PL}$' (Schøsler 2020: 662).

Let us now come back to example (2):

(2) *C'est la plus délicate mousse au chocolat que j'aie jamais mangée.*
'This is the$_{F.SG}$ most delicious$_{F.SG}$ chocolate mousse$_{F.SG}$ that I have ever eaten$_{F.SG}$.'

The morphosyntactic agreement based on the feminine grammatical gender of *mousse* in this example can be considered redundant as both the article and the verb form agree with *mousse au chocolat* 'chocolate mousse$_{F.SG}$'. In this sense, Martinet (1999: 9, see also 1999: 7) judges the French grammatical gender system to be practically devoid of function:

> l'information qu'apporte aux usagers de la langue l'existence des genres féminin et masculin est pratiquement nulle.
>
> 'the information that the masculine and feminine grammatical genders transfer to the users of the language is practically null.'

Nonetheless, gender agreement may help to disambiguate sentences such as (5) and (6) in which the agreement with the masculine or feminine grammatical gender indicates whether the tea or the cup is hot (Schafroth 2015: 338):[39]

(5) *Une tasse de thé très chaud.* 'A$_{F.SG}$ cup$_{F.SG}$ of very hot$_{M.SG}$ tea$_{M.SG}$.'
(6) *Une tasse de thé très chaude.* 'A$_{F.SG}$ very hot$_{F.SG}$ cup$_{F.SG}$ of tea$_{M.SG}$.'

Accordingly, grammatical gender in French "can be considered as […] one of the phenomena which ensure syntactic and textual cohesion" (Härmä 2000: 610).[40]

[39] See also Richy & Burnett (2021: 1).

[40] See also *La Grande Grammaire du Français* (2021: 383).

Finally, while the grammatical gender of a personal noun is a linguistic feature that can refer to the extra-linguistic world by indicating a referent's biological/social gender, it can also convey social gender, such as extra-linguistic beliefs and connotations associated with men and women. This is the case of so-called "functional doublets" (Schafroth 2003: 99) for the designations of professions and functions. For instance, while the feminine form *ambassadrice* 'female ambassador$_{F.SG}$' is the morphologically regular counterpart of the masculine form *ambassadeur* 'ambassador$_{M.SG}$', the feminine form is used "for socially less important jobs or […] charity work" (Schafroth 2003: 100), as in *les ambassadrices de la mode française* 'the female ambassadors$_{F.PL}$ of French fashion'. However, a woman who is a diplomatic agent is referred to using the masculine form (e.g., *Madame l'ambassadeur* 'Madam ambassador$_{M.SG}$') (Michel 2017: 72; Schafroth 2003: 97, 99 f.).[41]

In the present section, we have seen that French sorts all its nouns into classes and that there is agreement between the nouns and their dependent elements. Based on Corbett (1991: 1, 105) and Gygax et al.'s index (2019a), we can accordingly define French as a *grammatical gender language.* We now turn to the question of how nouns are assigned to their respective grammatical gender classes.

2.2.1 Grammatical Gender Assignment

According to Bloomfield (1950: 280), "[t]here seems to be no practical criterion by which the gender of a noun in […] French […] could be determined". In this sense, the classification of a noun into a grammatical gender class is generally considered to be arbitrary. Moreover, Bloomfield's quote suggests that speakers of French have to memorize the grammatical gender of each noun (Corbett 1991: 7, 57–62). In fact, compared to other grammatical gender languages such as Spanish, in which the word-final vowels *-o*/*-a* generally indicate masculine and feminine grammatical gender, the gender of French nouns can be less reliably predicted based on the form of the noun alone (e.g., *table* 'the table$_{F.SG}$' vs. *bureau* 'the desk$_{M.SG}$') (Diebowski 2021: 57 f.; *La Grande Grammaire du Français* 2021: 383).

Inanimate nouns in French are considered to be not formally marked for masculine or feminine grammatical gender. Nonetheless, morphological or phonetic

[41] See also *Le bon usage* (2011: §485); Richy & Burnett (2021: 2); Sebastián-Tirado et al. (2023: 326, 341 f.). On value judgements based on stereotypes when reference is made to humans, see Gosselin (2018: 44 f., 85–96). On lexical asymmetries between feminine terms and masculine terms which are used as swear words or neutral terms (e.g., *garce* 'bitch$_{F.SG}$'/ gars 'guy$_{M.SG}$'), see Baider (2002); *Le bon usage* (2011: §485); Schafroth (2015: 344 f.).

cues can indicate a noun's grammatical gender to some extent (e.g., *-ation* in *climatisation* 'air conditioner$_{F.SG}$' vs. *-age* in *courage* 'audacity$_{M.SG}$'). In any case, the controller targets of inanimate nouns indicate the grammatical gender of inanimate nouns (e.g., *une table abimée* 'a$_{F.SG}$ worn$_{F.SG}$ table$_{F.SG}$' vs. *un bureau abimé* 'a$_{M.SG}$ worn$_{M.SG}$ desk$_{M.SG}$') (*La Grande Grammaire du Français* 2021: 381 f., 383 f., 387).[42] For animate nouns semantic assignment rules can help to predict grammatical gender. For instance, for reference to male and female animals, masculine and feminine forms are often used. These are either based on lexical pairs (e.g., *poule* 'hen$_{F.SG}$' vs. *coq* 'rooster$_{M.SG}$') or morphological pairs (e.g., *lion* 'lion$_{M.SG}$' vs. *lionne* 'lioness$_{F.SG}$'). However, some animal nouns also have fixed grammatical gender and are used to refer to both males and females (e.g., *une souris* 'a$_{F.SG}$ mouse$_{F.SG}$') (*La Grande Grammaire du Français* 2021: 391). Hence, although often considered as arbitrary, when analyzed in detail, French grammatical gender assignment can be considered to be based on rules of a morphological, phonological and semantic nature (Corbett 1991: 57–61; *La Grande Grammaire du Français* 2021: 383, 389).[43] I discuss these three aspects in the next sections, focusing on human reference and on the correlation between masculine/feminine grammatical gender and male/female biological/social gender. The focus on nouns referring to humans is in line with my research question which investigates whether masculine role nouns referring to humans are associated with male biological/social gender.

2.2.1.1 Morphological Assignment and Word Formation

It is often stated that French nouns do not have formal marking of grammatical gender (*La Grande Grammaire du Français* 2021: 38).[44] Nonetheless, some morphological markers can indicate whether a noun is masculine or feminine:

> Certains noms, qui désignent des animés, ont une forme masculine et féminine distinctes, à l'écrit [e.g., *un ami/une amie*] ou à l'oral [e.g., *boulanger/boulangère*]. Il s'agit en particulier de noms de métier […]. (*La Grande Grammaire du Français* 2021: 383)
>
> 'Some nouns referring to animate objects have a different masculine and feminine form in writing [e.g., a friend$_{M./F.SG}$] or in speaking [e.g., baker$_{M./F.SG}$]. This is especially the case for occupational nouns [...].'

[42] See also Corbett (1991: 57–61).

[43] See also Schafroth (2003: 93 f.); Schwarze (2008: 88 f., 112, 128).

[44] See also Bloomfield (1950: 280), but see Corbett (1991: 58–63).

In the following section, I present the most frequent morphological/word formation patterns of masculine and feminine French personal nouns,[45] including *additive* and *suppletive suffixation*, *epicene nouns* and *compounding*. Personal nouns that have a masculine and a feminine form—i.e., thanks to a suffix (e.g., *directeur/directrice* 'manager$_{M./F.SG}$') or thanks to their agreement targets only (e.g., *le/la juge* 'the$_{M./F.SG}$ judge$_{M./F.SG}$')—can be grouped together as presenting *variable* grammatical gender. Conversely, the remaining human nouns possess fixed grammatical gender (e.g., *mère* 'mother$_{F.SG}$', *personne* 'person$_{F.SG}$') (see Table 2.1 at the end of Sect. 2.2.1.3) (*La Grande Grammaire du Français* 2021: 389 f.). Note that I concentrate on masculine personal nouns for which a feminine equivalent can be formed by suffixation in my experimental study.

Suffixation
Additive Suffixation

-Ø/-e

In the French written code, feminine nouns can often be recognized thanks to the final *-e*, while the masculine form has the implicit grammatical gender marker *-Ø*. In this sense, concerning *additive suffixation*, the feminine form is often described as having *-e* added to the masculine form (Schafroth 2003: 102 f.).[46] Thus, the *null morpheme* is considered as a *masculine form* (e.g., *voisins* 'neighbors$_{Ø(=M).PL}$'[47] vs. *voisines* 'female neighbors$_{F.PL}$').[48]

[45] For more details on the morphology of French animate nouns and their word formation, see *La Grande Grammaire du Français* (2021: 389 f.); *Le bon usage* (2016: §485–504); Schafroth (2003: 102–104); Schwarze (2008: 148–159).

[46] See also *La Grande Grammaire du Français* (2021: 389 f.); *Le bon usage* (2016: §492); Schwarze (2008: 103).

[47] I henceforth use my prime example *voisins* 'neighbors$_{M.PL}$' without glossing (i.e., *voisins* only).

[48] I follow Schafroth (2003: 102), who treats the inflectional morpheme *-e* as suffixation along with the 'classic' derivational suffixes such as *-ette*. Note that this is not always the case; Schwarze (2008: 150; cf. *La Grande Grammaire du Français* 2021: 389) defines nouns like *apprenti/apprentie* 'apprentice$_{M./F.SG}$' or *cousin/cousine* 'cousin$_{M./F.SG}$' as epicene nouns. While this issue is worthy of further study, I decided to follow Schafroth: in reference works on French, as well as in the recommendations on gender-fair language, the addition of *-e* is not treated on the same level as epicene nouns. For instance, Becquer (1999: 10, 16, 22 f.) stresses the identical form of an epicene noun, which is defined as only indicating grammatical gender in its agreement targets, even in the written code. Especially with regard to gender-fair language in French, the addition of *-e* is closer to suffixation (and is regarded as a stronger form to indicate a feminine form) than to the use of an epicene noun (regarded as a weaker form to indicate a feminine form), which, even in the written code,

In the oral code, the *-e* on feminine agent nouns is generally not pronounced in standard French (e.g., *apprenti* [apʀɑ̃ti]/*apprentie* [apʀɑ̃ti] 'apprentice$_{M./F.SG}$'). At the same time, for some nouns, feminine gender is indicated in the oral code by a final consonant that otherwise remains silent, as is the case for some personal nouns like *cousin* [kuzɛ̃]/*cousine* [kuzin] 'cousin$_{M./F.SG}$') or *Anglais* [ɑ̃glɛ] 'Englishman$_{M.SG}$'/ *Anglaise* [ɑ̃glɛz] 'Englishwoman$_{F.SG}$' (*La Grande Grammaire du Français* 2021: 389 f.; Schwarze 2008: 111).[49]

-Ø/feminine suffix

In this form of additive suffixation, the feminine form is perceptible in both the oral and the written code. The feminine form is defined as being based on the masculine form, to which a (derivational) suffix is added, such as *-esse* (*maire*/ *mairesse* 'mayor$_{M./F.SG}$') or *-ette* (e.g., *beur*/*beurette* 'second generation North African living in France$_{M./F.SG}$'[50]) (*La Grande Grammaire du Français* 2021: 389 f.).[51]

Suppletive Suffixation (Alternation)

Suppletive suffixation is defined as "the alternation between two phonically different suffixes that are each added to a lexical stem" (Schafroth 2003: 103). Examples of this type of suffixation are the suffixes *-eur*/*-rice* (e.g., *directeur*/*directrice* 'manager$_{M./F.SG}$', *-eur*/*-euse* (e.g., *vendeur*/*vendeuse* 'shop assistant$_{M./F.SG}$'), *-ien*/*-ienne* (e.g., *technicien*/*technicienne* 'technician$_{M./F.SG}$'), *-in*/*-ine* (e.g., *citadin*/*citadine* 'city dweller$_{M./F.SG}$') and *ier*/*-ière* (e.g., *prisonnier*/ *prisonnière* 'prisoner$_{M./F.SG}$').[52] Moreover, acronyms can also serve as the stems of suppletives as well as of additive suffixation. Consider, for instance, *capésien*/

does not indicate (feminine) grammatical gender—if it is not for its agreement targets (Becquer 1999: 22; *La Grande Grammaire du Français* 2021: 389; *Le bon usage* 2016: §487; Schafroth 1998: 73). See Schwarze (2008: 148–153) for a critical examination of this topic.

[49] See also *Le bon usage* (2016: §492); Schafroth (2003: 102 f.); Schafroth (2004: 337 f.).

[50] Note that the feminine epicene form *beur* is also used. This indicates that *-ette* is not very productive for human nouns (but see personal names as *Babette*).

[51] See also *Le bon usage* (2016: §492); Schafroth (2003: 102 f.); Schafroth (2004: 337 f.).

[52] From a theoretical point of view, it is debatable whether *-ien*/*-ienne*, *-in*/*-ine*, *-ier*/*-ière*, etc. can truly be defined as suppletive suffixes: this could simply be considered as being like *-e* suffixation plus regular phonological rules. For the sake of consistency, I stick to the above commonplace presentation, but see Schwarze (2008: 148–153).

capésienne 'holder of the *CAPES* degree$_{M./F.SG}$' or *smicard/smicarde* 'minimum wage earner$_{M./F.SG}$', which is based on *smic* 'minimum wage' (*La Grande Grammaire du Français* 2021: 389; Schafroth 2003: 103–105).[53]

Epicene Nouns

Epicene nouns like *juge* 'judge$_{M./F.SG}$' can be used to refer to men and women without any formal changes; only their agreement targets (e.g., the determiner) signal the grammatical gender of the noun (cf. Sect. 2.2). Importantly, the grammatical gender expressed on the agreement targets indicates the biological/social gender of the referent (e.g., *le juge* 'the$_{M.SG}$ judge$_{M.SG}$' vs. *la juge* 'the$_{F.SG}$ judge$_{F.SG}$'). Epicene nouns often end in *-e* and are often formed with the suffixes *-iste* (e.g., *linguiste* 'linguist$_{M./F.SG}$'), *-ogue* (e.g., *biologue* 'biologist$_{M./F.SG}$') and *-aire* (e.g., *locataire* 'tenant$_{M./F.SG}$') (but see *le/la professeur* 'the$_{M./F.SG}$ teacher$_{M./F.SG}$'). Acronyms and word forms produced by clipping "can also be specified for gender in this way" (Schafroth 2003: 106): *un/une PDG* 'a$_{M./F.SG}$ CEO$_{M./F.SG}$', *un/une prof* 'a$_{M./F.SG}$ teacher$_{M./F.SG}$' (*La Grande Grammaire du Français* 2021: 389; Schafroth 2003: 106 f.).[54]

Compounding

If a noun is used as a stem for compounding, the grammatical gender is generally determined by the grammatical gender of the first member of the compound—if the compound is of the Romance type *determinatum-determinans*. For instance, *une femme professeur* 'a$_{F.SG}$ female (woman$_{F.SG}$) teacher$_{M.SG}$' is a feminine form based on *femme* 'woman$_{F.SG}$'. Conversely, *un professeur femme* 'a$_{M.SG}$ female teacher$_{M.SG}$ (woman$_{F.SG}$)' is a masculine compound as it is based on the masculine noun *professeur* 'teacher$_{M.SG}$'. This type of word formation is mainly used when the biological/social gender of the referent is to be expressed without drawing on other morphological patterns (e.g., *une femme professeur* 'a$_{F.SG}$ female (woman$_{F.SG}$) teacher$_{M.SG}$' instead of *professeure* 'female teacher$_{F.SG}$'). However, this kind of word formation is in decline as morphological forms are preferred (*La Grande Grammaire du Français* 2021: 389 f.; Schafroth 2003: 105).[55]

[53] Note that the analysis of feminine terms as being based on the masculine forms is criticized by some feminist linguists; see Khaznadar (1993: 144; 2002: 68, 76; 2012: 222), who speaks of *alternation* instead; see also Burr (2003: 134–136) and Labrosse (1996: 100). However, in French grammar books, it is not explicitly termed as *alternation*, but as *derivation* (see *La Grande Grammaire du Français* 2021: 390), in contrast to what is suggested by Burr (2003: 133 f., 136; see also Schwarze 2008: 149).

[54] See also Becquer (1999: 10, 16, 22 f.).

[55] See also *Le bon usage* (2011: §504); Schwarze (2008: 148).

In sum, the morphology of French personal nouns themselves and of their agreement targets can indicate grammatical gender. For instance, the suffixes *-eur*/*-euse* in *vendeur*/*vendeuse* 'shop assistant$_{M./F.SG}$' indicate the grammatical genders of the nouns. Moreover, in the French written code, feminine nouns can often be recognized thanks to the final *-e* of a noun, while the masculine form generally has the implicit grammatical gender marker *-Ø*. However, in the oral code, the picture is more complex. We turn to phonological gender assignment in French in the next section.

2.2.1.2 Phonological Assignment

According to Corbett, based on some phonological assignment rules, the prediction of the grammatical gender of a French noun can be considered rather transparent. Correspondingly, he defines the French grammatical gender assignment system as *overt gender*. Importantly, "[w]hile sometimes the final phone is an adequate predictor of gender […], in others the penultimate and even the antepenultimate must be considered" (Corbett 1991: 59 f.). Phonological assignment in French can be summarized by the following rule of thumb: nouns ending in a pronounced consonant are feminine, while nouns ending in a pronounced vowel are masculine. In this sense, phonological assignment comprises morphological assignment (Corbett 1991: 57–62): the feminine *-e* in the written code corresponds to nouns ending in a pronounced consonant and the masculine *-Ø* in the written code corresponds to a pronounced vowel in the oral code (Schwarze 2008: 88 f., 112, 128).[56] Concerning the reference to humans, this rule of thumb is particularly true for nouns that are also adjectives (e.g., *patient* [pasjã]/*patiente* [pasjãt] 'patient$_{M./F.SG}$'). However, it does not apply to masculine personal nouns ending in */-œʀ/*, amongst others. For instance, *acteur* [aktœʀ] 'actor$_{M.SG}$' is masculine. At the same time, the feminine equivalent of *acteur*, *actrice* [aktʀis] 'actor$_{F.SG}$' ends in a pronounced consonant and thus is covered by the rule.[57] Further, personal nouns like *auteur*/*auteure* 'author$_{M./F.SG}$' whose masculine and

[56] See also Diebowski (2021: 57 f.).

[57] Corbett also indicates that nouns ending in /ʀ/ are considered to be masculine in 77% of cases. Although this contradicts the above cited rule (i.e., nouns ending in a consonant are masculine), it might explain why agent nouns ending in */-œʀ/* possess masculine grammatical gender. Conversely, this would not account for inanimate nouns with the suffix */-œʀ/*, such as *largeur* [laʀʒœʀ] 'largeness$_{F.SG}$', which are derived from adjectives (e.g., *large—largeur* [laʀʒœʀ] 'width—largeness$_{F.SG}$'). I assume the corpus on which the phonological assignment rules were based contained a lot of nouns of the latter case, but not enough personal nouns ending in */-œʀ/* (Schafroth 2003: 93). At the same time, without having systemically examined the issue, I would say that simplex nouns ending in */-œʀ/* can be both masculine and

feminine form are pronounced the same way—*[otœʀ]*—are indistinguishable in the oral code if they are not combined with target genders, which are marked for grammatical gender (e.g., *une auteure à success* 'a$_{F.SG}$ successful author$_{F.SG}$') (Schafroth 2003: 93 f.).[58] In all, the phonological analyses on which the assignment rules have been based might not have included enough masculine personal nouns ending in */-œʀ/*. Hence, the phonological assignment rules concerning personal nouns remain to be analyzed in depth by future research (Schafroth 2003: 93).[59] However, as my experimental study investigates how masculine role nouns presented in the written code are interpreted, this research void does not affect the present study.

Crucially, while the major rules of grammatical gender assignment in French are considered to be of a phonological nature, semantic assignment rules take precedence over phonological (and morphological) assignment: based on phonological assignment, we would expect *maman* [mɑmɑ̃] 'mum$_{F.SG}$', which ends in a vowel, to be masculine. However, based on its reference to a woman, it is feminine (Corbett 1991: 61).[60] As my experimental study focuses on the interpretation of masculine role nouns, a special type of personal noun, the grammatical gender assignment based on semantic rules in French is of special interest here and is presented in the next section.

2.2.1.3 Semantic Assignment

Corbett (1991: 57 f.) assumes the masculine and feminine grammatical gender in French to have a semantic core, which can be summarized by the following rules:

---

feminine (e.g., *le beurre* 'the butter$_{M.SG}$', *le leurre* 'the lure$_{M.SG}$' vs. *la peur* 'the fear$_{F.SG}$', *une heure* 'an hour$_{F.SG}$'). However, as the grammatical gender of complex nouns such as *acteur* or *largeur* might be assigned according to the suffix and might not be assigned in the same way as simplex nouns, morphologically complex forms might need to be included in the counts differently. As this does not seem to have been the case, the analysis presented by Corbett (1991: 58–61), based on Tucker et al. (1977: 20), should be treated with caution. See also Lyster (2006: 84 f.).

[58] Note that the feminine form *autrice* 'author$_{F.SG}$' has also been suggested as an equivalent for the masculine form *auteur* 'author$_{M.SG}$' (Becquer 1999: 67).

[59] See also Corbett (1991: 57–59, 61); *La Grande Grammaire du Français* (2021: 389 f.); Schafroth (2015: 341); Schwarze (2008: 103).

[60] See also Schafroth (2003: 94 f.); Schwarze (2008: 102–111).

1. Sex-differentiable nouns denoting males are masculine.
2. Sex-differentiable nouns denoting females are feminine.[61]

Accordingly, when referring to humans, there is a strong correlation between grammatical gender (i.e., feminine/masculine) and biological/social gender (i.e., male/female). This is especially true for nouns for which biological/social gender is part of the lexical meaning (i.e., *lexical gender*), such as kinship terms (e.g., *père* 'father$_{M.SG}$'—*mère* 'mother$_{F.SG}$'). In this vein, nouns with lexical gender have a fixed grammatical gender (Schafroth 2003: 94–97).[62]

In other cases, the grammatical gender of the noun is variable in accordance with the biological/social gender of the referent. For instance, the masculine form *étudiant* 'male student$_{M.SG}$' is used to designate a man and the feminine form *étudiante* 'female student$_{F.SG}$' is used to designate a woman. Moreover, some nouns that refer to humans possess both grammatical genders, while having the same form. This is the case for epicene nouns, which can take both grammatical genders in accordance with the biological/social gender of the referent, like *le/la juge* 'the$_{M./F.SG}$ judge$_{M./F.SG}$' (*La Grande Grammaire du Français* 2021: 382 f.).[63]

In a broader semantic sense, it is worth noticing that social gender can also come into play when a noun is allotted to a grammatical gender class. For instance, *tapette* 'fag$_{F.SG}$' is a feminine personal noun, which is used for offensive reference to a homosexual man. Accordingly, in this case, the reference to a man does not correlate with the masculine grammatical gender. At the same time, the feminine suffix *-ette* is not trivial as it does not respect the grammatical gender-biological/social gender correlation and conveys a negative connotation, indicating that the designated man is not a 'real' man (see the discussion of functional doublets in Sect. 2.2; Diewald & Nübling 2022a: 6 f., 15–18; Schafroth 2003: 99).[64]

---

[61] *Sex* is used in the sense of *biological/social gender* here. For an analysis of how a dichotomous presentation of the grammatical gender classes masculine and feminine as being associated with male and female biological/social gender impacts the teaching and learning of French, see Perry (2002, 2011). See also Khaznadar (2002: 75).

[62] See also Haynie (2023).

[63] See also Tibblin et al. (2023a: 30); Yaguello (1978: 117).

[64] See also Kotthoff & Nübling (2018: 73 f.); *Le bon usage* (2011: §485); Loporcaro (2016: 925); Loporcaro (2018: 1 f.); Schafroth (2015: 344 f.).

Finally, *generic nouns* carry a fixed grammatical gender and can refer to both men and women. For instance, the feminine noun *personne* 'person$_{F.SG}$' and the masculine noun *témoin* 'witness$_{M.SG}$' can both be used to refer to either a woman or a man. When a generic noun like *personne* 'person$_{F.SG}$' refers to a male, the grammatical gender and the biological/social gender of the referent are incongruent.[65] Conversely, when *personne* 'person$_{F.SG}$' refers to a woman, grammatical gender and the referent's biological/social gender are congruent (*La Grande Grammaire du Français* 2021: 381 f., 389 f.).[66]

As discussed in Sect. 2.2.1, the French language "is often regarded as having one of the most opaque gender systems" (Corbett 1991: 57). Yet, in the previous sections, we have seen that this statement has to be modified (Corbett 1991: 57; Schafroth 2003: 92). First, French nouns can be considered to possess formal marking of grammatical gender—be it of morphological or phonological nature. While morphological and phonological assignment rules are less straightforward than in other languages, for human reference, the assignment of a noun to the masculine or feminine grammatical gender is predominantly semantically determined (Corbett 1991: 57–61). In other words, masculine nouns tend to refer to men and feminine nouns tend to refer to women (Schafroth 2003: 92, 95). Table 2.1 (based on *La Grande Grammaire du Français* 2021: 390) brings a system to the different cases discussed in the previous sections by viewing the possible combinations of grammatical gender (i.e., masculine, feminine, variable) and biological/social gender (i.e., male, female). It demonstrates that the former and the latter tend to match when reference is made to humans. An issue with which has not been dealt with yet is the reference to a group consisting of both men and women. In 2.2.2, I address the question of which of the grammatical genders functions as the controller gender when a personal noun is used to refer to such a group.

[65] In some cases, grammatical and biological/social gender are always incongruent (e.g., *une basse* 'a bass$_{F.SG}$', which refers to a male singer); for more examples, see *Le bon usage* (2011: §486–488). See also Schafroth (2003: 96–99).

[66] See also Corbett (1991: 57 f., 61); Elmiger (2008: 89); Schafroth (2003: 94–97).

Table 2.1 Grammatical gender for human nouns. (Based on *La Grande Grammaire du Français* 2021: 390)[67]

Grammatical Gender of the Noun	Biological/Social Gender of the Referent	Examples
feminine	female	*femme* 'woman', *mère* 'mother'
feminine	male or female	*personne* 'person', *victime* 'victim'
masculine	male	*garçon* 'boy', *père* 'father'
masculine	male or female	*individu* 'individual', *témoin* 'witness'
variable (oral and written code are the same)	according to the grammatical gender of the noun	*locataire* 'tenant', *juge* 'judge'
variable (oral code is the same, written code is different)	according to the grammatical gender of the noun	*apprenti/apprentie* 'apprentice', *professeur/professeure* 'teacher'
variable (oral and written code are different)	according to the grammatical gender of the noun	*patient/patiente* 'patient', *directeur/directrice* 'manager'

2.2.2 The Masculine Grammatical Gender as Default Gender

In the previous section, we have seen that masculine and feminine grammatical gender tend to correlate with female and male biological/social gender for personal nouns. However, in the case of coordinated noun phrases bearing different grammatical genders, the question arises as to which gender will function as the controller gender.

First, we have to remember that, in French, in some syntactic configurations, the past participle has to agree with the grammatical gender of a nominal or pronominal expression within the same clause (e.g., with the subject when it is a reflexive or reciprocal verb) (see Sect. 2.2 on controller and target genders). For instance, in (7), the participle *inscrits* agrees with the masculine form *étudiants*; in (8), *inscrites* agrees with the feminine form *étudiantes*:

(7) *Deux étudiants se sont inscrits.* 'Two students$_{M.PL}$ have registered$_{M.PL}$.'
(8) *Deux étudiantes se sont inscrites.* 'Two students$_{F.PL}$ have registered$_{F.PL}$.'

[67] See also Schafroth (2003: 97–106).

In (9) the picture is different: two potential controllers exist for gender agreement on the participle: the feminine noun phrase *deux étudiantes* and the masculine noun phrase *un étudiant* (*La Grande Grammaire du Français* 2021: 382):[68]

(9) *Deux étudiantes et un étudiant se sont inscrits.*
'Two female students$_{F.PL}$ and one male student$_{M.SG}$ have registered$_{M.PL}$.'

As becomes clear, in such configurations of coordinated noun phrases, the masculine functions as the controller gender. *Le bon usage* explains this as follows:

> Le masculin, étant le genre indifférencié, s'emploie aussi sans s'opposer au féminin pour désigner des personnes, ou une personne, en faisant abstraction de leur sexe […]. (*Le bon usage* 2011: §485)[69]
>
> 'The masculine, being the undifferentiated gender, is also used without opposing the feminine to designate persons, or a person, disregarding their sex.'

According to traditional grammar, the masculine grammatical gender hence controls syntactic agreement. Crucially, the masculine grammatical gender does not only control participle agreement but is also the default form for mixed groups (i.e., when reference is made to groups consisting of both men and women). *La Grande Grammaire du Français* (2021: 382) explains this as follows:[70]

> Le masculin peut être considéré comme le genre par défaut […]. [L]orsqu'un groupe comporte des individus des deux sexes, on recourt au masculin.

[68] See also Schafroth (2003: 110).

[69] In accordance with the structure of the previous sections and in line with my research aim, I do not further discuss this topic with regard to reference to inanimate objects. However, the explantation given by *Le bon Usage* is the same: "Si les donneurs ne sont pas du même genre, le receveur se met au […] masculin" 'If the controllers are not of the same gender, the agreement target appears in the […] masculine' (*Le bon usage* 2011: §442). See also Schafroth (2003: 110). See *La Grande Grammaire du Français* (2021: 382) for more factors that define the masculine grammatical gender as the default in French. Furthermore, I concentrate only on the French language here; however, the use of the masculine as the default gender is a pervasive phenomenon across languages that distinguish between masculine and feminine grammatical gender (Redl 2021: 9–12, 22; for exceptions, see Corbett 1991: 220 f.).

[70] The consideration of the masculine form as default has been elaborated more thoroughly by the structuralist approach to linguistic oppositions in general. The latter is based on *(un-) markedness*. While the above-cited treatment of a grammatical gender as default is not further defined, the concept of markedness is; see Sect. 3.1.1.

> 'The masculine can be considered as the default gender [...]. [W]hen a group contains individuals of both sexes, the masculine is used.'

This means that if there is at least one male referent in a mixed group, the masculine form is the controller gender, as in (10) (*La Grande Grammaire du Français* 2021: 382):

(10) *Un étudiant et deux étudiantes sont des* étudiants.
'One male student$_{M.SG}$ and two female students$_{F.PL}$ are *students*$_{M.PL}$.'

This principle of syntactic agreement is called *servitude grammaticale* 'grammatical subservience' and is often cited as *le masculin l'emporte sur le féminin* 'the masculine is victorious over the feminine' in French schools (Schafroth 2003: 110; Viennot 2014: 9 f.).[71] Thus, the claim that masculine personal nouns refer to men and feminine personal nouns to women (see, e.g., Sect. 2.2.1.3) has to be adjusted (Schafroth 2003: 110).

To be exact, noun phrases headed by masculine personal nouns have a dual (if not fourfold) function in French: on the one hand, they can be used specifically to refer to a man or men (e.g., *un étudiant* 'a male student$_{M.SG}$'), while on the other, they can be used generically. Furthermore, these so-called *generic* functions are threefold. First, a masculine personal noun can be used generically when reference is made to a mixed group (e.g., *les étudiants* 'the male and female students$_{M.PL}$'). Secondly, masculine personal nouns can be used generically when the biological/social gender of the referent is unknown or considered irrelevant (e.g., *Un étudiant ne devrait pas travailler plus de vingt heures par semaine* 'a student$_{M.SG}$ should not work more than twenty hours per week') (*La Grande Grammaire du Français* 2021: 382; Schwarze 2008: 196). Finally, masculine personal nouns can also be used generically when reference is made to a female

[71] This rule has been highly recommended by French prescriptive grammar since the 17th century. Before, *la règle de proximité* 'the proximity rule', which indicates that syntactic agreement is controlled by the grammatical gender of the noun that is the closest to the agreement target, was also used (*La Grande Grammaire du Français* 2021: 1770, 1803 f.; Schafroth 2003: 110; 2015: 345 f.; Viennot 2014: 65–79; 2018: 87 f.). For instance: *Un étudiant et deux étudiantes se sont inscrites* 'One male student$_{M.PL}$ and two female students$_{F.PL}$ have registered$_{F.PL}$'. While this rule can still sometimes be found today, especially in the oral code, in the light of gender-fair language, it is being discussed whether *la règle de proximité* should be accepted by prescriptive grammar and whether it should be taught at school (Schafroth 2015: 345 f.; Viennot 2014: 65–79); see the tribunal and petition on Slate.fr by Abdesslem et al. (2017). See Corbett (1991: 279 f.) on further aspects of the resolution of grammatical gender in French.

referent alone; this usage, however, is decreasing (e.g., *Elle est un excellent avocat* 'She is an excellent lawyer$_{M.SG}$') (Schafroth 2003: 108–110).

In contrast to masculine personal nouns, feminine personal nouns can only be used specifically (*les étudiantes* 'the female students$_{F.PL}$'). Thus, the French language can be assumed to present a bias in favor of masculine forms (Gabriel & Gygax 2016: 177–181, 183, 185 f., 189; Gygax et al. 2019a: 2). As my experimental study investigates whether masculine role nouns are interpreted generically or specifically, the rule that masculine personal nouns function as defaults for mixed gender reference plays an important role in the remainder of this book. Therefore, before continuing the discussion of the generic use of masculine personal nouns in French in particular in the section after next, we first turn to a more general topic in order to clarify the meaning of *genericity*—in the narrower and in the broader sense.

A term that is regarded as *generic* is generally understood as 'relating to a class, an unspecific category member' (Kotthoff & Nübling 2018: 91). In this sense, some authors speak of *masculine generic forms* (in our case, masculine role nouns) or *masculine generics*[72] as 'referring to persons with unknown biological/social gender' or as being used 'when the biological/social gender of the referent is irrelevant' (*La Grande Grammaire du Français* 2021: 382; Schwarze 2008: 196).[73] This is what I call *genericity in the narrower sense*; see (11), based on Becquer (1999: 38):

(11) *Un ministre de la Culture a dans ses attributions…*
'A minister$_{M.SG}$ for culture has in their assignments…'

However, in the language and gender debate, *generic* is mainly used in a broader sense, as 'a masculine form referring to a specific group of people consisting of both men and women' (Kotthoff & Nübling 2018: 91 f.; Pettersson 2011: 70).[74] This is what I call *genericity in the broader sense*, cf. (12):[75]

[72] Note that the term *generic masculines* can also be found in the literature.

[73] See also Kotthoff & Nübling (2018: 91 f.).

[74] See also Becquer (1999: 37–39); Diewald & Steinhauer (2022: 107); *Le bon usage* (2011: §485).

[75] The discussion of masculine forms has predominantly focused on the question of whether men and women alike can be represented by masculine forms (Kotthoff & Nübling 2018: 91). However, more recently, the linguistic representation of groups consisting of male, female and non-binary persons has been brought up. For instance, in German, the *gender star* and in French, the gender-neutral personal pronoun *iel* have been introduced. In the present book, as I concentrate on whether masculine role nouns are associated with both men and women,

(12) *Les ministres (hommes et femmes) ont décidé…*[76]
'The ministers$_{M.PL}$ (men and women) have decided…'

To avoid any confusion between these uses, it would be better to use the term *gender-inclusive* in the sense of a 'masculine form referring to a mixed group', as opposed to a *gender-specific* masculine form in the sense of a 'masculine form referring to a specific group consisting of only men'.[77] In this sense, the criticism of masculine forms as used in the broader sense as 'referring to mixed groups' is in regard to specific referents where it remains (supposedly) unclear whether both men and women form part of the group. For the sake of convenience, I stick to the terminology as it is generally used in the field of language and gender and thus use *masculine generic forms* in the sense of 'masculine forms referring to a specific group consisting of both men and women'. Accordingly, the *generic interpretation* of a masculine form (in our case, masculine role nouns) means that language users assume that reference is made to both men and women. In contrast, the *specific interpretation* of a masculine form (in our case, masculine role nouns) implies that language users assume that reference is made to men only. In this vein, I henceforth use *masculine generic forms* in the sense of 'masculine forms referring to a specific group consisting of both men and women', which is a usage that has already been established in the field (Kotthoff & Nübling 2018: 91 f.).[78] In this vein, whenever reference is made to genericity in the narrower

I stick to the above binary definition and use *masculine nouns* in the sense of 'masculine nouns referring to a specific group consisting of both men and women'. However, I encourage future research to investigate how all gender identities can be linguistically represented. See Elmiger (2022c) on the use of *iel* in French and Alpheratz (2018) on novel gender-neutral forms in French such as *bial* 'beautiful'; Körner et al. (2022, 2024) for a discussion of the female bias induced by the German gender star form; Zacharski & Ferstl (2023) on the inclusive interpretation of the German gender star; Lindqvist et al. (2019), on the gender-neutral pronouns *ze* in English and *hen* in Swedish; Marsolier et al. (2024) on the learnability of non-binary forms in French.

[76] As can be seen based on the given examples, *genericity in the narrower sense* is often combined with a masculine role noun in the singular form, while *genericity in the broader sense* is more often used with plural forms. As my experimental study analyzes masculine role nouns in the broader sense and in the plural form, I do not further explore this issue.

[77] Although it might seem more straightforward at first, I deliberately do not speak of *gender-unspecific* vs. *gender-specific* masculine forms (cf. the suggestion by Kotthoff & Nübling 2018: 91 f.): *gender-unspecific* would suggest that unspecific forms are examined. However, most research on masculine role nouns examines whether specific referents (e.g., *Les voisins sortaient les chiens* 'The neighbors$_{M.PL}$ were walking the dogs') are conceptualized as men, or as both men and women.

[78] See also Becquer (1999: 38); Pettersson (2011: 62–70).

sense, I will indicate it. However, as not all authors clearly indicate their understanding of *masculine (generic) forms*, I can only do so if the given sources allow me to do so.

At the same time, as this book's research aim is precisely to investigate whether masculine role nouns are interpreted generically or specifically (see RQ 1 in Sect. 1.1), I refrain from speaking of *generic masculine role nouns (or forms)* when a masculine role noun's interpretation is undefined: calling it a *masculine generic role noun (or form)* would suggest that the masculine role noun is actually generic. Instead, I speak of *masculine role nouns (or forms)* in order to indicate that a masculine role noun's interpretation is independent of a speaker's intention to use it generically (or specifically).[79] Hence, while the vast majority of previous research speaks of *masculine generic role nouns* in the sense of 'generically intended masculine role nouns', in the remainder of this book, I will speak of *masculine role nouns (or forms)* and a *masculine role noun's (or form's) generic (or specific) interpretation.*

Moreover, the specific interpretation of a masculine personal noun corresponds to *a male-biased mental representation* of the designated referent(s), which is a term that can also be found in the language and gender literature when the specific interpretation of a masculine form is discussed. Indeed, in theories of text comprehension, it is widely accepted that readers make sense of a text by constructing an abstract representation of the text. More precisely, they form a *mental representation* of the text at hand (Gygax et al. 2021a: 2–4). The latter includes the "representation of the people, setting, actions, and events that are mentioned in explicit clauses or that are filled in inferentially" (Grasser et al. 1994: 371).[80] This implies that, when processing text, readers do not just read words, but also refer to previously acquired knowledge (e.g., expectations concerning social roles) (Carreiras et al. 1996: 639 f.; Gygax et al. 2007: 34 f., 39 f.).[81] In this sense, a *gender-spread mental representation* based on linguistic

[79] See Tibblin et al. (2023b: 2) for a similar approach.

[80] More specifically, a mental representation encompasses three different levels: "[a]t the surface level, the exact words and the syntax are represented for a short period, at the textbase level, explicit text propositions and elements needed for text cohesion are included, and at the final level, known as the situation or mental model, the global state that is conveyed by the words and the sentences in the text is represented" (Gygax et al. 2021a: 2). In this book, I focus on the latter, which includes precisely the elements cited above. Note that the use of *mental representation* in the sense of 'mental model' has been established in the field of language and gender (as, for instance, in Gabriel & Gygax 2008; Gygax et al. 2008; Gygax et al. 2021a). See also Garnham & Oakhill (1996: 313 f.); Yeari & van den Broek (2011: 636); Zwaan (2016: 1028).

[81] See also Carreiras et al. (1996: 639 f.); Gygax et al. (2021a: 2–4).

information (e.g., the masculine form of a personal noun) and extra-linguistic information (e.g., the expectations concerning a referent's biological/social gender) corresponds to a mental representation including both men and women (i.e., generic in the broader sense), while a *gender-open mental representation* means that no gender categories are imagined (i.e., generic in the narrower sense). Conversely, a *male-biased mental representation* of the designated referent(s) means that the referent's gender is assumed to be male. Accordingly, the frequent specific interpretation of masculine personal nouns is also called *male bias* (Gygax et al. 2008: 464–466; Redl 2021: 10).[82] We now come back to the specifics of masculine personal nouns in French.

As we have seen at the beginning of this section, in French, while noun phrases headed by feminine personal nouns always unambiguously refer to women, masculine personal nouns are semantically ambiguous. Yet, despite this ambiguity, masculine personal nouns cannot always be used generically in French and not all masculine personal nouns have the same potential to refer to both male and female referents (Coseriu 1992: 225 f.; Schwarze 2008: 196 f., 199).[83] The degree to which masculine personal nouns in French are compatible with a generic use is the focus of the following section.

Genericity and Microvariation

In French, when it comes to kinship terms, in most cases, the masculine form cannot function as a generic. In contrast, a neutral hypernym or a double form is needed to refer to male and female family members. For instance, *les pères* means 'the $\text{fathers}_{\text{M.PL}}$' and not 'the parents', which would be designated by *les parents* 'the $\text{parents}_{\text{M.PL}}$'. In the same way, *oncles* '$\text{uncles}_{\text{M.PL}}$' does not refer to *les oncles et tantes* '$\text{uncles}_{\text{M.PL}}$ and $\text{aunts}_{\text{F.PL}}$', but to uncles only (see Sect. 2.2.1.3 on semantic gender assignment). However, *cousins* '$\text{cousins}_{\text{M.PL}}$' can refer to both female and male cousins—and, of course, to male cousins only. Beyond kinship terms carrying lexical gender, there are also other terms for which the masculine form cannot function as the default. For instance, *les princes* means 'the male $\text{princes}_{\text{M.PL}}$' and not *le prince et la princesse* 'the $\text{prince}_{\text{M.SG}}$ and $\text{princess}_{\text{F.SG}}$'. If the double form *le prince et la princesse* was to be avoided, the hyperonym *le couple princier* 'the $\text{royal couple}_{\text{M.SG}}$' would have to be used (Coseriu 1992: 224–226).[84]

[82] Very occasionally, the term *male biasing effect* is also used (as in Gygax et al. 2008: 479; Redl 2021: 73).

[83] See also Becquer (1999: 38); Gygax et al. (2019a: 2); Rey-Debove (1998); Tibblin et al. (2023a: 28 f.).

[84] Kinship terms, where gender is more directly semantically motivated, seem to be less compatible with a generic use in French. Although the example *les cousins* 'the $\text{cousins}_{\text{M.PL}}$'

Another important factor determining whether a masculine noun is used to refer to a woman lies in the usage habits of different French speaking populations. For instance, in Hexagonal French, the masculine form *professeur* 'professor$_{M.SG}$' is still commonly used to refer to a woman. In contrast, in Quebec French, by reason of a well-established gender-fair use of language, especially in official speech, the use of a singular masculine form for female reference would be perceived as awkward and the feminine form *professeure* 'professor$_{F.SG}$' would be used (Burnett & Pozniak 2021: 811, 824 f.).

Moreover, we can also see an effect of status: the higher the social status of a profession, the less likely a feminine professional term is to be used when reference is made to a woman—at least in France. For instance, the high status *professeure* 'professor$_{M.SG}$' vs. the comparatively lower status *infirmière* 'female nurse$_{F.SG}$'. In this regard, social gender also comes into play (see the discussion of functional doublets in Sect. 2.2). Hence, one (constantly evolving) factor is the established usage of feminine personal nouns. Accordingly, certain feminine nouns seem to be mandatory when referring to women (Schafroth 2003: 108). For instance, it would be perceived as unacceptable to refer to a specific female student with *étudiant* 'student$_{M.SG}$', as the feminine form *étudiante* 'student$_{F.SG}$' is commonly used (Coseriu 1992: 224–226; Schwarze 2008: 197–200).[85]

Furthermore, in France, the use of so-called novel feminine forms (e.g., *professeure* 'teacher$_{F.SG}$') instead of masculine forms (e.g., *professeur* 'teacher$_{M.SG}$'), as well as the use of double forms instead of masculine personal nouns, is often

demonstrates the opposite, the feminine and masculine form nonetheless share the same (inflected) stem (i.e., *cousin/cousine* 'cousin$_{M./F.SG}$'), while *oncle/tante* 'uncle$_{M.SG}$/aunt$_{F.SG}$' and *père/mère* 'father$_{M.SG}$/mother$_{F.SG}$' do not. So, it might be a matter of whether the female equivalent is a different word or not. However, in Spanish, masculine hypernyms of kinship terms can generally be used in a generic way (e.g., *los padres* as 'the fathers$_{M.PL}$'/'parents$_{M.PL}$') (Coseriu 1992: 225 f.; Schwarze 2008: 126, 132). See also Burnett & Pozniak (2021: 808, 825, 827); Schafroth (2001: 125 f.); Schwarze (2008: 126, 132, 156 f., 199 f., 220–222).

[85] Originally, *étudiante* 'female student$_{F.SG}$' signified 'a male student's girlfriend'. When some people first started to use *étudiante* to refer to female students, others countered that the feminine in that sense was blocked because of its original signification, a reasoning similar to that used nowadays when it comes to many other 'novel' feminine forms (*Le bon usage* 2011: §485; *Trésor de la langue française informatisé*: s.v. "étudiant"). See also Burnett & Pozniak (2021: 809, 811); *Le bon usage* (2016: §485). See Schröter et al. (2012) on the use and perception of masculine role nouns in German varieties.

associated with a left-wing style of speech. Thus, these forms are not well established in all registers and are not used by everyone (Burnett & Pozniak 2021: 821, 825).[86]

In sum, the (non-)use of certain masculine personal nouns when referring to a woman and to mixed groups in French is subject to microvariation, namely, differences in the established usages of a given feminine form across dialects or registers/styles. Moreover, whether a feminine noun is used to refer to a woman or not is linked to social gender. These examples show that even within the French language the masculine form cannot serve as the default in all cases in which a masculine and a feminine personal noun exist. Crucially, whether a masculine noun is used to refer to men and women alike depends on several factors, can be difficult to predict and has to be analyzed thoroughly in its concrete context (Coseriu 1992: 226).[87]

2.3 Summary

The definition of whether a language possesses grammatical gender can be based on several criteria. For instance, a language can be considered to possess grammatical gender when (1) a language's nouns are grouped into classes, (2) there is grammatical agreement between the nouns and their dependent elements and (3) grammatical gender and biological/social gender correlate considerably. From a cross-linguistic and more formal point of view, it can be stressed that whether a language possesses grammatical gender is determined by whether or not there is *agreement* between a noun and its dependent elements, leaving out (3). The definition of grammatical gender based on (1) and (2) is the one I will follow. Moreover, I chose to follow an index of five language groups (i.e., Gygax et al. 2019a), which categorizes languages based on the formal definition of grammatical gender while focusing on the semantic link between grammatical and biological/social gender.

In French, the language under scrutiny in this book, nouns denoting humans receive masculine or feminine grammatical gender. Furthermore, morphological and phonological rules can explain to some extent to which grammatical gender a personal noun belongs. However, semantic assignment rules are key: generally, when reference is made to men, masculine forms are used; when reference is made to women, feminine forms are used. Crucially, this rule does not apply

[86] See also Abbou (2011: 68–73).

[87] See also Lyons (1977: 308); Schwarze (2008: 132, 153 f., 156 f., 161–171).

to mixed groups: if there is one male referent in the group, the masculine form functions as default. Masculine personal nouns, which include role nouns, thus serve multiple functions: they can be employed specifically to refer to men and they can be employed generically when reference is made to a group consisting of both men and women (i.e., genericity in the broader sense), or when the biological/social gender of the referent is unknown or irrelevant (i.e., genericity in the narrower sense). In contrast, feminine personal nouns only refer to women. At the same time, masculine personal nouns cannot always be used generically; whether this is possible is subject to microvariation.

Masculine Role Nouns: Linguistic Theory and Psycholinguistic Evidence

3

The purpose of the present chapter is to present the most important linguistic explanations on the interpretation of masculine role nouns; together with the presentation of empirical findings on the actual interpretation of masculine role nouns, this lays the foundation for my own experimental study presented in Chap. 4 (Experiment 1) and 5 (Experiment 2). Overall, previous research on the interpretation of masculine role nouns can be subdivided into two major groups: one that suggests that masculine role nouns function generically, and one that claims that masculine role nouns are mainly interpreted specifically. These opposing views are presented in Sects. 3.1 and 3.2. More precisely, some of the theoretical approaches and empirical research on the multiple interpretations of masculine role nouns assume that it is mainly linguistic information that influences language users when they interpret a masculine role noun's reference; these are presented in Sects. 3.1.1 and 3.1.2. Other researchers consider extra-linguistic information to be of exclusive importance when gender representations are built; this work is reviewed in Sect. 3.2.2. Further theories and experiments assume that the interpretation of masculine role nouns is grounded in the interplay between linguistic and extra-linguistic information, as discussed in Sect. 3.2.3. Empirical research that has found participant-specific factors to influence the interpretation of masculine role nouns is summarized in Sect. 3.2.4. Finally, a synthesis of the reviewed research is provided in Sect. 3.3, while Sect. 3.4 summarizes the chapter.

Note that there is no theory or study claiming that masculine role nouns are interpreted exclusively generically or exclusively specifically. Accordingly, the titles of the sections *Masculine Role Nouns are Interpreted Generically* (Sect. 3.1) and *Masculine Role Nouns are Interpreted Specifically* (Sect. 3.2) only indicate

C. Stumm, *When Voisins Can Be Women and When They Cannot – Masculine Generics in French*, Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics, https://doi.org/10.1007/978-3-662-71663-2_3

that the theoretical approaches and empirical findings summarized in the respective section assume that masculine role nouns can function as generics with no problem, or that masculine role nouns are generally interpreted specifically while the other interpretation remains at least partly accessible (Gygax et al. 2021a: 5 f.; Kotthoff & Nübling 2018: 115–117; see Redl 2021: 120–122 on masculine pronouns).

Moreover, it should be noted that the research reviewed in this chapter draws on different approaches to language. Amongst others, I present theoretical approaches to masculine role nouns that mainly put forward arguments concerning the *langue* (i.e., language system). This is the case for the structuralist approach to masculine role nouns, which argues that the *langue* is autonomous and does not interact with extra-linguistic social structures (see Sect. 3.1.1). In this vein, the structuralist analysis of masculine role nouns describes which values are assigned to masculine role nouns by the language system and is mainly satisfied by a theoretical explanation of how role nouns can function as generics. Correspondingly, it does not necessarily analyze when these possibilities are effective in the *parole*, namely in actual discourse. The *parole* is analyzed by other theoretical approaches (e.g., Feminist Linguistics,[1] the importance of referentiality and pragmatics; see Sects. 3.2.1.1, 3.2.3.1 and 3.2.3.3) (Schwarze 2008: 202, 216 f., 221, 228) and by the empirical research on the topic.

In a structuralist framework, the possibility that linguistic asymmetries may interact with social inequalities is not taken into consideration, and, "in extreme cases, any influence of language on a speakers' cognition" (my translation) (Schwarze 2008: 228) is either considered irrelevant or denied. Thirdly, this assumption is in complete contrast to Feminist Linguistics (see Sect. 3.2.1.1), which stipulates that language is part of society and assumes that the generic use of masculine role nouns renders women less cognitively available than men. Still, only experimental studies can answer the question of whether a masculine role noun is actually interpreted generically or specifically (Schwarze 2008: 213, 216 f., 228, 236). Accordingly, in the upcoming sections, empirical findings that underpin one of the two main theoretical approaches (i.e., a *langue*-based approach vs. a *parole*-based approach) are discussed directly after the presentation of the corresponding theoretical approach.

[1] Note that feminist linguistic theory originally derives from feminist activists who examined the relationship between language and biological/social gender and, for instance, encouraged a feminist reform of language (Kramer 2016: 65 f.; Schwarze 2008: 182 f.). For the sake of simplicity, I use the established term *Feminist Linguistics* without going into the details of the roots of the socio-political movement that has engendered a feminist approach to language.

In the following and in accordance with my experimental study, I concentrate on findings on the French language as much as possible, as well as on experimental studies that investigate genericity in the broader sense (i.e., role nouns denoting a group consisting of specific male and female referents). However, while psycholinguistic experiments nearly exclusively investigate role nouns referring to groups potentially consisting of both men and women (i.e., genericity in the broader sense), the theoretical approaches often discuss the latter together with masculine generic role nouns in the narrower sense without distinguishing precisely between the different functions of masculine role nouns (see Sect. 2.2.2).[2] Moreover, as my experimental study examines masculine role nouns in the plural form in French, I focus on research on masculine role nouns in the plural form in French. Research on other types of masculine forms (e.g., pronouns) or other languages (e.g., German) is discussed only if it is particularly noteworthy for my purposes and/or if no comparable studies exist for French.

3.1 Masculine Role Nouns Are Interpreted Generically

In this section, I present research that assumes masculine role nouns can function as generics without a problem. I present theoretical research in Sect. 3.1.1, before turning to corresponding empirical findings in Sect. 3.1.2.

3.1.1 Linguistic Information Only—Theoretical Approach: Structuralism

In this section, I present the structuralist explanation of the multiple meanings of masculine role nouns. This explanation describes which values are assigned to role nouns in the *langue* and focuses less on the interpretation of masculine role nouns in discourse. Correspondingly, it does not include extra-linguistic information in its analysis of the functioning of masculine role nouns (Schwarze 2008: 216 f., 230 f.).

In the structuralist sense, the generic meaning of a masculine role noun is derived from the specific meaning (Klein 2001: 23). This is possible when the

[2] To my knowledge, no studies exclusively investigate French masculine generic role nouns in the narrower sense. For studies that have integrated some masculine generic role nouns in the narrower sense into their study design, see Irmen & Köncke (1996); Irmen & Roßberg (2004) and Heise (2000) for German; see also Kotthoff & Nübling (2018: 91, 95, 103). For empirical findings on Dutch, see Redl et al. (2022).

semantic feature [+male] is cancelled from the specific meaning. More specifically, when directly opposed to each other, a masculine role noun and a feminine role noun exclude each other (Schwarze 2008: 217 f., 221 f.). For instance, this is the case when *étudiant* 'student$_{M.SG}$' and *étudiante* 'student$_{F.SG}$' are used side-by-side as in (13) (Coseriu 1992: 218, 224, 226):

(13) *Une étudiante et un étudiant se sont inscrits.*
'A female student$_{F.SG}$ and a male student$_{M.SG}$ have registered.'

In this case, the masculine role noun *étudiant* refers to a man and carries the semantic feature [+male], while the feminine role noun *étudiante* refers to a woman and carries the semantic feature [+female]. Following Coseriu, this can be illustrated as follows (Fig. 3.1):

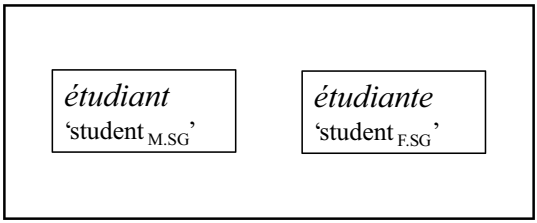


Fig. 3.1 Masculine and feminine role nouns when directly opposed to each other.[3] (Based on Coseriu 1992: 201, 218)

However, when the generic meaning is derived from the specific meaning, the functional opposition between the masculine and the feminine role noun is neutralized (Klein 2001: 23, 27 f.): the masculine role noun encompasses the feminine role noun. In such an inclusive opposition, the feminine term still carries the feature [+female], while the masculine term's feature [+male] is cancelled and becomes zero [+male → Ø] or, put differently, [−female].[4] As a result, the feminine term is considered as (semantically) marked [+female], while the masculine term, which presents fewer semantic features, is the unmarked term. In other words, the masculine role noun (e.g., *étudiant*) functions as hypernym

[3] See also Kalverkämper (1979: 59); Ulrich (1988: 393).

[4] In the light of my research aim, I concentrate on the opposition between masculine and feminine role nouns. However, more generally, from a structuralist point of view, we can define the opposition between masculine and feminine forms as [-feminine]. Note that not all oppositions in which a feminine and a masculine term are opposed can be neutralized (see Sect. 2.2.2). Moreover, the feminine term can sometimes function as the generic term. Still, we have to refer to animals to find such examples (e.g., Fr. *oies* 'geese$_{F.PL}$', which can include *jars* 'gander$_{M.SG}$') (Lyons 1977: 317; Schwarze 2008: 220, 223).

of the pair and can be used to refer to both men and women (Coseriu 1992: 214–216, 224, 22; Schwarze 2008: 217–222).[5] The generic meaning of a masculine role noun can be illustrated as follows (Fig. 3.2):

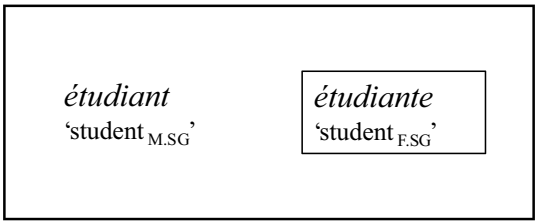


Fig. 3.2 Masculine and feminine role nouns in an inclusive opposition.[6] (Based on Coseriu 1992: 215, 218)

In order to summarize the dual function of a masculine role noun within a lexical pair, Coseriu proposes the following scheme (Fig. 3.3):

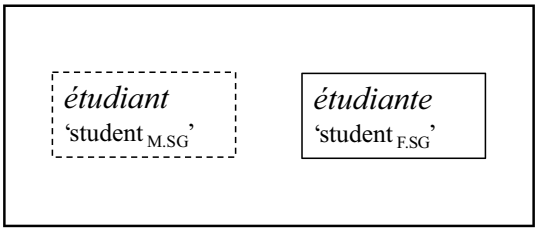


Fig. 3.3 The dual function of masculine role nouns. (Based on Coseriu 1992: 218)

In Fig. 3.3, the dashed lines around the role noun *étudiant* indicate the dual function of masculine role nouns: if the masculine and the feminine role noun were directly opposed to each other, there would be a box around *étudiant* like there is around *étudiante* (see Fig. 3.1). When the opposition between the masculine and the feminine role nouns is neutralized, the dashed box around *étudiant* disappears, indicating that the masculine term can entail the feminine term. In this case, there would be a superordinated box including the masculine role noun and the feminine role noun in its own box (see Fig. 3.2) (Coseriu 1992: 201, 215; Schwarze 2008: 218, 221 f.).[7]

[5] See also De Backer (2009: 19 f.).

[6] See also Kalverkämper (1979: 59); Ulrich (1988: 391–393).

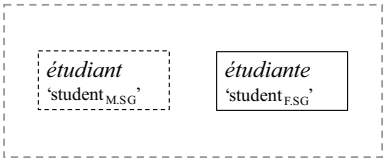
[7] See also De Backer (2009: 20); Klein (2001: 27). In the scenario in which the masculine role noun takes its specific meaning, and in which both terms exclude each other as indicated

Moreover, the dashed lines in Fig. 3.3 indicate two important points Coseriu makes concerning the dual function of a masculine role noun (Schwarze 2008: 221 f.). Firstly, in the *langue*, we can only speak of the *systematic possibility for neutralization* (Ger. *Neutralisierbarkeit*). Secondly, an opposition can, but does not have to be *effectively neutralized* (Ger. *Neutralisierung*) in the *parole* (Coseriu 1992: 220 f.; De Backer 2009: 19 f.).[8] Coseriu stipulates:

> Die Neutralisierung als solche ist ein ‚Redefaktum', die ‚Neutralisierbarkeit' jedoch ist ein sprachliches Faktum bzw. eine Möglichkeit der Sprache, die im Sprechen realisiert wird. (Coseriu 1992: 220 f.)
>
> 'Effective neutralization as such is a 'fact of discourse'; 'the systematic possibility for neutralization', however, is a fact of the language system or a possibility of a language that is realized in discourse.'

Thus, while a masculine role noun has different meanings (i.e., the generic and the specific meaning) in the *langue*, close analysis is required to determine whether the generic meaning is effective in the *parole* (Schwarze 2008: 217–222). In this vein, Lyons (1977: 309) stresses that "[t]here can be no doubt […] that semantic marking is a matter of degree".[9] Correspondingly, the question arises as to when an opposition of the type *étudiant vs. étudiante* is neutralized (Coseriu 1992: 218, 224, 226, 229). Coseriu (1992: 212 f.) explains that the generic meaning of a masculine term is accessed more often in the plural than in the singular form.

by the separate boxes enclosing each term, no superordinate box is needed. It would therefore be more coherent to mark the superordinate box with dashed lines, too; see the below illustration adapted from Coseriu. For the sake of consistency, I stuck to Coseriu's original visualization in Fig. 3.3 (Coseriu 1992: 201, 215, 218).



[8] See also Klein (2001: 27 f.); Lyons (1977: 239, 307–310).

[9] Coseriu considers the systematic possibility of neutralization (and thus the markedness of a term) as continuous (Ger. *Neutraliserbarkeitsgrad*) when analyzing the value of a masculine generic term as being reduced to [Ø] (Coseriu 1992: 225 f.; Schwarze 2008: 222). According to Klein (2001: 28, 31 f.), the assumption that the masculine term's value, in opposition to the feminine term, can be [Ø] is contradictory to the assumption that the systematic possibility of neutralization is gradual. However, according to Coseriu (1992: 225 f.; see also Lyons 1977: 308 f.), the gradual character of markedness concerns different terms of a language or a specific term in different contexts.

Moreover, according to Coseriu (1992: 224; see also 229), one of the generic meanings of a masculine role noun is accessed in the following cases:[10]

> a) wenn der Unterschied als überflüssig angesehen wird, weil er redundant ist (d.h. weil er schon auf andere Art, nämlich durch Situation oder Kontext gegeben ist); b) wenn man nicht spezifizieren kann oder will; c) wenn das, worauf man sich bezieht, gerade das dem […] generischen Wert Entsprechende ist.
>
> 'a) when the difference is considered irrelevant because it is redundant (i.e., because it has already been stated in another way, namely by the situation or the context); b) when one cannot or does not want to specify; c) when what is referred to is precisely what corresponds to the [...] generic value.'

Nonetheless, Coseriu neither explains in detail in which specific situations and contexts the generic interpretation of a masculine role noun is effectively accessed nor how it is accessed (Schwarze 2008: 228). The explanation by Lyons (1977: 308) is not more informative: "the unmarked member has both a more general and a more specific sense according to context".[11]

Traditional grammar, such as Grévisse's *Bon usage*, sticks to the structuralist approach that masculine forms function as generics (see Sect. 2.2.2). This view is also supported by the official institution of the French language, the Académie française, which claims the following:

---

[10] See also De Backer (2009: 19 f.); Lyons (1977: 308–311).

[11] For a more differentiated view on markedness (i.e., *semantic, formal, and distributional markedness*), see Lyons (1977: 305–311, 317). See Kubczak (1991: 414 f.), who criticizes Coseriu's assumption that the neutralization of an opposition is only effective in the *parole*. He therefore suggests speaking of polysemy (already in the *langue*) instead. However, in the literature explaining the functioning of masculine role nouns, the explanation based on polysemy has not been implemented, which is why I do not consider it further (Schwarze 2008: 216 f.; but see Gygax et al. 2021a: 5; Safina 2024: 64). Moreover, Lyons (1977: 308), explicitly refuses to explain the generic function of masculine forms based on the concept of polysemy: "[i]t is a direct consequence of semantic marking and should not be treated as an instance of polysemy". See Diewald (2018: 290–293) for a criticism of the structuralist assumption that a masculine role noun such as *Student* 'student$_{M.SG}$' is the hypernym of the feminine role noun *Studentin* 'student$_{F.SG}$'. She suggests that the hypernym of both is *Studierende* 'student body'. For a severe critique of the various senses of markedness, see Haspelmath (2006), who proposes to abandon the concept of markedness and to explain structural asymmetries as frequency effects or, in other cases, as phonetic difficulties and pragmatic inferences (Haspelmath 2006: 25). See also Corbett (1991: 290–293), who does not accept markedness as an explanation for the interpretation of nouns marked for grammatical gender.

> le français peut […], quand le sexe de la personne n'est pas plus à prendre en considération que ses autres particularités individuelles, faire appel au masculin à valeur générique, ou 'non-marqué'. (Académie française 2004; see also Académie française 2017 and 2021)
>
> 'the French language may [...], when the sex of the person is no more to be taken into consideration than other individual characteristics, use the masculine gender with a generic or 'unmarked' value.'

Still, in 2019, the Académie Française accepted the use of 'novel' feminine occupational nouns when reference is made to a specific woman. At the same time, it vehemently disapproved of *écriture inclusive* 'inclusive writing' (Académie française 2019, 2021), which entails the use of complete or contracted double forms instead of the masculine form in a generic sense (e.g., *étudiantes et étudiants* 'female students$_{F.PL}$ and male students$_{M.PL}$'[12] or *étudiant·es* 'students$_{M\cdot F.PL}$'[13] instead of *étudiants* 'students$_{M.PL}$') (Tibblin et al. 2023a: 28).[14] In 2021, it reaffirmed:

> les propagateurs de l'écriture inclusive méconnaissent naïvement les règles du genre grammatical, où masculin et féminin ne correspondent pas systématiquement à des catégories sexuées. (Académie française 2021)
>
> 'the propagators of *écriture inclusive* naively ignore the rules of grammatical gender, in which masculine and feminine do not systematically correspond to gendered categories.'

[12] For the complete double forms several rules of order are currently discussed: the traditional order *masculine-feminine*, the more novel order *feminine-masculine*, and the similarly novel suggestion of alphabetical order. The latter is suggested by the *Haut Conseil à l'Égalité entre les femmes et les hommes* (2016: 30 f.). In the examples in this book, I use the order *feminine-masculine* as this seems to be the one that has been established at least in French universities. For the impact of the referent's social status on the word order in binominals (e.g., the mention of men before women), see Hegarty et al. (2016).

[13] Note that I present the contracted double forms as suggested by Viennot (2018: 102–106): *étudiant·es* 'students$_{M\cdot F.PL}$', while the *Haut Conseil à l'Égalité entre les femmes et les hommes* formerly recommended the abbreviation of double forms as *étudiant·e·s* 'students$_{M\cdot F\cdot PL}$' (*Haut Conseil à l'Égalité entre les femmes et les hommes* 2016: 63). I use the former as it seems to have gained broader acceptance than the latter; see for instance Tibblin et al.'s (2023a) study on contracted double forms, which applies Viennot's rules, as well as the *Haut Conseil à l'Égalité entre les femmes et les hommes*' more recent recommendations (*Haut Conseil à l'Égalité entre les femmes et les hommes* 2022: 16).

[14] In the Académie's statement on the *écriture inclusive* (2021) it is not clear which linguistic practices exactly are criticized. However, given the debate in the French media, it seems that the use of the interpunct in contracted double forms is at the heart of the discussion (Pozniak et al. 2023: 2).

Empirical support for the theoretical assumption that masculine role nouns function as generics comes from De Backer & De Cuypere's (2012) survey study, which is presented in the next section.

3.1.2 Linguistic Information Only—Empirical Evidence: Masculine Plural Role Nouns are Generics

In De Backer & De Cuypere (2012), German-speaking informants had to judge whether stereotypically neutral role nouns in the German masculine plural form in sentences such as (14) could refer to *male* referents, *female* referents, or *male and/or female* referents (De Backer & De Cuypere 2012: 256–259):[15]

(14) *Die/Ø/Besucher aus Taiwan waren vor allem an der Berliner Architektur interessiert.*
'The/Ø/visitors$_{M.PL}$ from Taiwan were mainly interested in Berlin architecture.'

The data showed that masculine plural forms were overwhelmingly accepted as generic terms: 97% of plural forms were judged as having a male and/or female reference (De Backer & De Cuypere 2012: 253, 260–262, 267). Finally, gender stereotypes should not have affected the interpretation of the masculine role nouns, as only stereotypically neutral role nouns were investigated.[16] Correspondingly, De Backer & De Cuypere's study cannot exclude an influence of stereotypical information in other conditions. I focus on other aspects of De Backer & De Cuypere's (2012) study in Sects. 3.2.3.2 and 3.2.3.4.

The finding that masculine plural role nouns are interpreted generically is only supported by Nissen (2013). In his questionnaire study on Spanish, which compared data from 1995 and 2005, Nissen found that masculine nouns were no

[15] The authors also investigated Dutch (De Backer & De Cuypere 2012: 261 f.). As the Dutch grammatical gender system, which combines grammatical and natural gender, is less comparable to the French grammatical gender system than that of German, a grammatical gender language, I concentrate on the author's findings on German.

[16] The authors claim to have controlled for stereotypicality without explaining how they did so (De Backer & De Cuypere 2012: 256). However, it can be argued that role nouns such as *Politiker* 'politicians$_{M.PL}$' are stereotypically male (Misersky et al. 2014: 863–871). This might have influenced the outcome of the study although its data suggest a generic interpretation of the masculine role nouns in the plural form (De Backer & De Cuypere 2012: 260–262). Moreover, indications like *being interested in architecture* may carry stereotyped information, too.

longer interpreted specifically in 2005 (Nissen 2013: 100, 105, 112 f.). Crucially, while De Backer & De Cuypere's (2012) and Nissen's (2013) studies used offline measures only, research using online measures generally finds a male bias even in the stereotypically neutral condition.[17] Findings indicating that masculine role nouns tend to be interpreted specifically are presented in the next section.

3.2 Masculine Role Nouns are Interpreted Specifically

In opposition to the structuralist approach and the findings of De Backer & De Cuypere (2012) on masculine role nouns in German and Nissen (2013) on masculine role nouns in Spanish, most research suggests that masculine role nouns are interpreted specifically. In this vein, the upcoming sections concentrate on research stipulating that this is due to linguistic information (Sect. 3.2.1), extra-linguistic information (Sect. 3.2.2), or both (Sect. 3.2.3).

3.2.1 Linguistic Information Only

This section presents research that ascribes the specific interpretation of masculine role nouns to linguistic information, namely to the morphosyntactic factor *masculine form*. After discussing the theoretical approach presented by Feminist Linguistics in Sect. 3.2.1.1, in Sect. 3.2.1.2, I analyze whether empirical research supports the assumptions of the approach.

[17] See Rothermund & Strack (2024: 474–478) on recent findings on online measures suggesting that the male bias is not robust in all conditions tested for role nouns in German. On recent findings suggesting a generic interpretation of masculine forms in N-N compounds in German, see Bross & Kurz (2023: 397, 419, 421; see Sect. 3.2.3.4). See Pozniak et al. (2023: 1, 11–14, 16–18) on contextual dilution effects in gender-fair French. See also Redl (2021: 120–122), who ran several experiments based on online measures on masculine pronouns in Dutch and who did not find a male bias in all conditions. See Safina (2024: 60, 72 f., 75) who does not find a male bias in her online measures study on Italian epicene nouns in their masculine form. See Trutkowski (2018: 83), whose study was based on acceptability judgements. She suggests that, in German, masculine singular occupational nouns referring to men and women as predicatives/in object position/as targets of agreement function as generics. However, these findings are contrary to De Backer & De Cuypere's (2012: 260 f.) investigations on occupational nouns in the masculine singular form in subject position: they find the latter to be interpreted specifically in 83% of the cases. See Claus & Willy (2022) for a diverging interpretation of findings comparable to those of Trutkowski (2018).

3.2.1.1 Theoretical Approach: Feminist Linguistics

Feminist Linguistics conceives of language as intrinsically tied to society and also claims that language can affect cognition. Accordingly, certain linguistic habits can both influence speakers' perception of the extra-linguistic world and affect social structures. Specifically, according to Feminist Linguistics, the grammatical gender of role nouns is generally associated with biological/social gender. Thus, masculine role nouns are assumed to be associated with men (Schwarze 2008: 202, 211, 213 f.).[18]

Feminist Linguistics states that masculine role nouns are likely to be interpreted specifically. Houdebine (1987: 19) stipulates "le genre masculin est associé au trait mâle" 'the masculine grammatical gender is associated with maleness'. This is supported by the *Le Haut Conseil à l'Égalité entre les femmes et les hommes* (2016: 13, 17, 27 f.), which has edited a language guide discouraging the generic use of masculine role nouns. It also perceives the respective linguistic usages as a tool to effect social change (Martyna 1983: 30):

> Ne pas pouvoir nommer le féminin, ou le faire disparaître dans un genre prétendument indifférencié, c'est organiser l'invisibilité donc l'absence des femmes dans la sphère publique […]. [L]e Haut Conseil à l'Égalité entre les femmes et les hommes […] engage une dynamique constructive: celle de faire de la communication un vecteur de changement de notre société. (*Haut Conseil à l'Égalité entre les femmes et les hommes* 2016: 7)
>
> 'Not being able to name the feminine, or to make it disappear by a supposedly unmarked gender, is to organize the invisibility and thus the absence of women in the public sphere [...]. The *Haut Conseil à l'Égalité entre les femmes et les hommes* is committed to a constructive dynamic: that of making communication a vehicle for change in our society.'

In this vein, although masculine role nouns may be intended as generics, they are assumed to render women not only linguistically invisible but also less cognitively available. Crucially, Feminist Linguistics suggests that this male bias is mostly language-driven: masculine role nouns such as *voisins*, for which an

[18] In this section, I summarize the main claims of Feminist Linguistics. For a review of opposing opinions within Feminist Linguistics itself, see Schwarze (2008: 182–216). Moreover, in alliance with my research purposes, I concentrate on Feminist Linguistics' explanation of the interpretation of masculine role nouns. For a discussion of the sociohistorical description of the generic use of masculine forms and its alternatives presented by Feminist Linguistics, see Viennot (2014) on French; see Doleschal (2002); Stevanović (2023); Trutkowski & Weiß (2023) on German. See also footnote 1. See Albert (1997) on feminine agent nouns in Latin. On feminine forms in Old French, see *Le bon usage* (2011: §487); Melka & Zwanenburg (1993); see Boileau (2012): *Le Livre des métiers (1897).*

equal proportion of men and women can be assumed, should still trigger more male than female associations (Schwarze 2008: 203 f., 211–214, 229).[19]

Feminist Linguistics is often related to the (Sapir-)Whorf hypothesis (Whorf & Caroll 1956). This hypothesis proposes that the structure of a language determines the way in which its speakers perceive the world. Moreover, it assumes that language shapes its users' thoughts and actions (Boroditsky 2003: 917 f.; Koster 2016: 12). Correspondingly, Feminist Linguistics suggests that speakers of languages in which masculine role nouns are used as generics perceive the world in a male-biased way (Samel 2008: 83 f.; Schwarze 2008: 192). In order to overcome this male-biased world view, or at least to adjust language as a part of society (Martyna 1983: 30), Feminist Linguistics proposes using alternative forms instead of masculine role nouns when reference is made to both men and women (e.g., double forms like *les artisanes et artisans* 'the female artisans$_{F.PL}$ and male artisans$_{M.PL}$') (Schwarze 2008: 192–195).[20]

The deterministic version of the Whorfian position has lost support over the years, both globally and within the Feminist Linguistics community (Koster 2016: 13, 63; Martyna 1983: 30). Notably, the experimental paradigms used to investigate the mental representation of masculine role nouns access language processing directly. They thus cannot provide empirical support for the assumption that language affects cognition in general. A more pertinent theoretical framework to explain the influence of linguistic information on the mental representation of a referent's biological/social gender is the *thinking-for-speaking hypothesis*. This approach was proposed by Slobin (1996, 2003) and presents a weaker interpretation of the assumption that language influences thought (Gygax et al. 2021a: 7; Lucy 1997: 300).[21] Although feminist theories of language do not explicitly refer to the thinking-for-speaking hypothesis, recent psycholinguistic research on the interpretation of masculine role nouns has framed its empirical work in relation to this hypothesis (e.g., Sato et al. 2013 on French-English bilinguals).

Contrary to Whorf, who claimed that language shapes cognition in general, Slobin argues that language only influences language-mediated cognition: as many of our experiences are encountered through discourse, the storage and

[19] See also Burr (1999); Groult (1984: 21 f.); Houdebine-Gravaud (1995: 393).

[20] See also Abbou (2011: 72); Bierbach & Ellrich (1990: 248–253, 255, 257); Stahlberg et al. (2001: 464 f., 468). See Elmiger (2017) and Viennot (2018) for a presentation of alternatives to the generic use of masculine forms in French and Elmiger (2021a, 2021b, 2022a) for a review of language guides and the gender-fair use of the French language.

[21] See also Gabriel & Gygax (2016: 177–181, 189); Gygax et al. (2019a: 4 f.); Sato et al. (2017: 117 f., 127 f., 130); Samuel et al. (2019: 1762, 1770, 1772, 1778, 1781 f.).

evaluation of experiences may be influenced by language (Slobin 1996: 76, 89, 91; 2003: 158 f., 163 f., 172 f., 177). In a nutshell, Slobin's approach stipulates "that as we prepare ourselves to verbally formulate our ideas, we tend to focus on information that is highlighted by the linguistic features specific to a language" (Jäggi et al. 2020: 3). In this way, a specific language leads its speakers to pay special attention to certain characteristics of the extra-linguistic world (Koster 2016: 13, 63). For instance, the obligation to indicate grammatical gender on French role nouns forces French speakers to be attentive to biological/social gender (e.g., *la voisine* 'the female neighbor$_{F.SG}$' and *le voisin* 'the male neighbor$_{M.SG}$' vs. the grammatically genderless *neighbor* in English). Therefore, biological/social gender becomes particularly salient in French speakers' perceptions, although whether a neighbor is a man or a woman might objectively not be relevant. Accordingly, the mental representations people construct when interpreting masculine role nouns may be male-biased (Gygax et al. 2021a: 2–4; Jäggi et al. 2020: 3).[22]

In sum, according to Feminist Linguistics, masculine role nouns are usually interpreted specifically. Accordingly, within this framework, changes in certain linguistic habits can also contribute to social change in general. Empirical evidence for the assumption that it is the masculine form itself that triggers a specific interpretation of the role noun comes from Gygax et al.'s (2008) study, which I discuss in the next section.

3.2.1.2 Empirical Evidence: Linguistic Information Overrides Stereotypicality[23]

Gygax et al. (2008) investigated whether the use of a role noun in the masculine plural form (e.g., *voisins*) in the grammatical gender languages French and German leads to a generic or a specific interpretation of the group portrayed (i.e., a group consisting of both men and women vs. a male-only group). In order to examine the interplay between stereotype information (i.e., an extra-linguistic factor) and the masculine form (i.e., a linguistic/morphosyntactic factor), Gygax et al.'s (2008) experiment was based on experimental sentence pairs, in which

[22] See also Lucy (1997: 300); Sato et al. (2013: 13 f.); Sato et al. (2016: 3, 10 f.); Sato et al. (2017: 117 f., 121–123, 125, 127, 130).

[23] Gygax et al. (2008) speak of *grammatical information overriding stereotype information.* I henceforth use *override* in the sense of 'prevail over'. Obviously, the claim that linguistic information *overrides* extra-linguistic information has to be further analyzed (Gygax et al. 2008: 481). For instance, Braun et al. (1998: 272 f., 281) found an influence of stereotype information when examining longer texts featuring masculine role nouns in German.

the first sentence presented a stereotypically male, neutral[24] or female role noun in the masculine plural form. Moreover, the authors investigated the interpretation of English role nouns without any grammatical gender marking as a control for a stereotype bias only. An example of a French experimental sentence pair featuring a stereotypically neutral role noun in the first sentence and the second sentence featuring either women or men is the following (Gygax et al. 2008: 464, 471 f., 475):

(15a) *Les voisins sortaient de la cafétéria./*
'The neighbors$_{M.PL}$ were coming out of the cafeteria./'

(15b1) *A cause du temps nuageux, une des femmes avait un parapluie.*
'Because of the cloudy weather, one of the women had an umbrella.'

The authors found a role noun's stereotypicality to influence participants' mental representations of the referents' biological/social gender when no grammatical gender cues were available—i.e., in English. Conversely, in French and German, irrespective of stereotypicality, the role nouns were interpreted specifically. Thus, the linking of a masculine role noun with a female referent is more difficult than the linking of a masculine role noun with a male referent, no matter what the role noun's stereotypicality (Gygax et al. 2008: 464, 476–480, 483).[25]

The finding that masculine plural role nouns in French tend to be interpreted specifically, irrespective of the stereotypicality of the role noun, has been further corroborated by several experiments (see Sato et al. 2013 for a replication with French-English bilinguals, supporting the thinking-for-speaking hypothesis; Gygax et al. 2019b on French toddlers; Brauer & Landry 2008: Experiment 5).[26] Besides that, Gygax & Gabriel (2008) found data patterns similar to those of Gygax et al. (2008) and further demonstrated that the specific interpretation of masculine role nouns in French is even more persistent when participants

[24] As already indicated (see footnote 6 in Chap. 2), *neutral* means that the role noun does not evoke any stereotypes genderwise. Although it would make more sense to call them *non-stereotypical* (as done, for example, in Gabriel et al. 2017), I keep Gygax et al.'s (2008) terminology and speak of *stereotypically neutral role nouns* (Gygax et al. 2008: 472).

[25] See also Gabriel et al. (2017: 797); Misersky et al. (2019: 644).

[26] Similar findings and substantial evidence for a male bias have been reported in naming studies; for instance, in Stahlberg et al. (2001) on German role nouns. See Misersky et al. (2019), who find a male bias in their ERP study investigating stereotypically neutral masculine role nouns in German. For more recent findings on stereotypically neutral role nouns in German, see Glim et al. (2024), who show in their ERP study that masculine role nouns are not interpreted generically.

are exposed to feminine and masculine role nouns. Interestingly, this effect was present even when the feminine role nouns were presented in a different source (i.e., an introductory job advertisement) than the masculine role nouns (i.e., a subsequent association task) (Gygax & Gabriel 2008: 143, 148–150).[27] I come back to Gygax et al.'s (2008) study in Chap. 4.

3.2.2 Extra-linguistic Information Only

In opposition to Feminist Linguistics and Gygax et al. (2008), other researchers argue that it is not linguistic information but only extra-linguistic information that influences whether a masculine role noun is interpreted generically or specifically. I now turn to this claim and its empirical verification.

3.2.2.1 Theoretical Approach: Stereotypicality Overrides Linguistic Information[28]

Eisenberg (2018) analyzes the different meanings of masculine role nouns by focusing on grammar-internal arguments regarding the functioning of masculine role nouns; his approach is therefore similar to that of structuralism (see Sect 3.1.1).[29] Yet Eisenberg assumes that extra-linguistic information can play a role when masculine role nouns are interpreted. Moreover, in opposition to the structuralist approach, which discusses the different generic meanings of masculine role nouns (i.e., generic in the narrower and broader sense), Eisenberg (2018) claims that masculine generic role nouns, such as *Lehrer* 'teacher$_{M.SG}$'

[27] See also Gygax et al. (2021a: 5). See Schmitz et al. (2023) who present a novel perspective on the interpretation of masculine role nouns in German, combining distributional semantics and discriminative learning: the authors find a male bias in masculine forms without any effect of stereotypicality.

[28] Strictly speaking, the morphosyntactic information *masculine form* is not overridden: an anaphoric personal pronoun would still be marked for masculine gender (e.g., *voisins—ils* 'they$_{M.PL}$'). *Overridden* thus means that stereotypicality *prevails* over the grammatical gender marking when a masculine role noun is interpreted; see footnote 23.

[29] Concerning Eisenberg's approach to masculine role nouns in German, it would be better to speak of an approach that differentiates between the Chomskyan *competence* and *performance* instead of the Saussurean *langue* and *parole*. However, as Eisenberg also puts forward grammar-internal arguments to explain the functioning of masculine role nouns, I group him together with the authors focusing on the *langue*. Still, as will become obvious below, Eisenberg also takes into consideration extra-linguistic information when discussing how masculine role nouns might be interpreted specifically.

or *Spion* 'spy$_{M.SG}$' in German, do not carry a gender-spread meaning when reference is made to mixed groups but instead have a gender-open or completely gender-neutral meaning. Put differently, according to Eisenberg (2018), masculine role nouns function as generics in the narrower sense. In this vein, {*Lehr-}{-er}* '{teach-}{-er$_{M.SG}$}' signifies 'someone who teaches' and does not refer to any biological/social gender in the sense of 'a male or female teacher'.

Eisenberg further exemplifies his argument by stating that a derived meaning does not change the literal meaning (Ger. *Grundbedeutung*) of a word. For instance, the literal meaning of *Träger* is 'someone who carries', and the meaning 'a frame attached to a vehicle for carrying luggage' can be derived from it. Yet the conveyed meaning 'a frame attached to a vehicle for carrying luggage' does not change the literal meaning of *Träger*. In the same way, *Träger* in the sense of 'male carrier' does not change the semantic meaning of *Träger* 'someone who (or something that) carries' either.

At the same time, Eisenberg states that masculine role nouns are frequently associated with men. However, according to him, these associations are not based on the masculine form, but only on extra-linguistic information: he considers stereotypes (e.g., *spies are male*) to be one of the causes of the stated male biases. Moreover, he assumes that prototypes in the sense of 'men are more salient members of the category *humans*' also play a role. The latter is also known as the *male as norm principle*. It suggests that, in our society, men function as the default, while women are the exception (Kotthoff & Nübling 2018: 104, 93, 96). In this sense, the linking of men with (masculine) role nouns would be a prototypical effect (Schwarze: 2008: 261; 214 f., 236). In sum, from Eisenberg's point of view, masculine role nouns function as generics. Corresponding gendered associations thus cannot be altered by linguistic change, but only by societal change; for instance, when more women have become engineers (Eisenberg 2018).[30]

The assumption that language change will not itself change society is also present within the discussion on gender-fair usage of French and is supported by Hagège (2017),[31] who claims the following:

[30] Eisenberg's explanation could be classified under *Grammar only/Masculine role nouns are interpreted generically* as in Sect. 3.1.1. However, I decided to classify his argumentation under *Stereotypes only/Masculine role nouns are interpreted specifically* as he argues that extra-linguistic information (e.g., *engineers are male*) can influence the interpretation of masculine role nouns so that a male bias is caused. See also Lenz (2021).

[31] See also Aebischer & Forel (1992: 16).

> ce n'est pas la langue elle-même qui est sexiste. Ceux qui le sont, ce sont les hommes […]. Ce n'est pas l'intervention sur la langue qui transformera les comportement sociaux. (Hagège 2017: 1 f.)
>
> 'it is not language itself that is sexist. Those who are sexist are people [...]. It is not the intervention into language that will transform social behavior.'

In the next section, we turn to empirical research that underpins the assumption that stereotypes influence the use and understanding of masculine role nouns; on the influence of stereotype information on the interpretation of masculine role nouns, see also Sect. 3.2.3.4.

3.2.2.2 Empirical Evidence: The Impact of Stereotypicality

Michard (1999, 2019), analyzing texts by (male) anthropologists, showed that French nouns such as *indiens*, *adolescents*, *le village entier* 'indians$_{M.PL}$, youngsters$_{M.PL}$, the whole village' also present a male bias, as they are opposed to *indiennes*, *adolescentes*, *la population feminine du village* 'female indians$_{F.PL}$, female youngsters$_{F.PL}$, the female population of the village' (Michard 1999: 61 f.; 2019: 182). This finding shows that an androcentric worldview, which assumes men to be the norm, can be reflected in language without necessarily being linguistically conditioned. However, as language production is analyzed, the study is uninformative concerning the actual interpretation of masculine role nouns.

Moreover, in an eye-tracking study, Redl et al. (2018) tested whether the Dutch masculine *zijn* 'his' leads to a male bias in stereotypically male, female and neutral conditions and did not find the masculine form to generate any processing difficulties.[32] However, they found an influence of gender stereotype violation: a male referent featured in the stereotypically female condition increased reading times, while the reverse did not hold (Redl et al. 2018: 1, 16). According to the authors, this suggests that men are penalized more than women for gender-nonconforming behavior (Redl et al. 2018: 1, 16 f.). Redl et al. (2018: 1) thus assume "that language processing is not only affected by the strength of stereotype[s] […]; the associated disapproval of violating these gender stereotypes affects language processing, too".[33]

---

[32] See Redl (2021: 105–116) on the Dutch masculine personal pronoun *hij* 'he', which turned out to be interpreted specifically.

[33] See also Khaznadar (2002: 78 f.); Michard (2002); Richy & Burnett (2021: 6); Spinelli et al. (2023: 8 f.). An androcentric influence on language comprehension is further corroborated by research on the genderless language Turkish in which the human noun *kişi* 'person' has been found to be more easily associated with men. However, this male bias was mediated by the stereotype condition in which the word was featured (e.g., *person* in a stereotypically

Furthermore, Redl et al. (2021: Experiment 1) did not replicate their 2018 findings after slightly adapting the study's stimuli: in 2021, they found a slight male bias. Specifically, processing difficulties were found in the stereotypically neutral condition and for male participants. In other words, in the stereotypically male and female condition for male participants and in all conditions for female participants, no processing differences for male and female referents were found (Redl et al. 2021: 1, 15 f., 23 f.). Thus, the findings regarding the Dutch *zijn* 'his' do not confirm Eisenberg's assumption that stereotypically male conditions always lead to a male bias. At the same time, it should be noted that the processing of masculine possessive pronouns in a grammatical and natural gender language such as Dutch might differ from the processing of masculine role nouns in a grammatical gender language such as French (Redl et al. 2018: 22).

Richy & Burnett (2021) found that French speakers' interpretation of role nouns is influenced by stereotypes when grammatical gender information is neutralized, namely, in sentences where epicene nouns and adjectives such as *l'habile fleuriste* 'the$_{M./F.SG}$ skilled$_{M./F.SG}$ florist$_{M./F.SG}$' are featured. However, when linguistic information (i.e., the masculine form) is available (e.g., *le fleuriste* 'the$_{M.SG}$ florist$_{M.SG}$'), participants tend to interpret the masculine forms specifically (Richy & Burnett 2021: 21 f.). Thus, the study shows that forms that are not marked for masculine grammatical gender can reduce the male bias that is triggered by masculine role nouns in the grammatical gender language French (Kim et al. 2023a: 4). Apparently, the neutralization of grammatical gender allows a stronger influence of stereotypicality. However, in contrast to Eisenberg's assumption, Richy & Burnett's (2021) experiment suggests that stereotypes impact the interpretation of role nouns only when grammatical gender information is neutralized (Richy & Burnett 2021: 21 f.). At the same time, the study's findings indicate that the male-as-norm principle cannot be the main influence when masculine role nouns are processed; if this were the case, at least stereotypically neutral masculine role nouns should have been associated more easily with men (see Gygax et al. 2008 on the processing of role nouns in English; Sect. 3.2.1.2). However, this was not the case. Conversely, Spinelli et al. (2023: 1, 5–7, 8 f.)

female condition). At the same time, the interpretation of stereotypically male and female (but grammatically genderless) role nouns such as *goldsmith* and *secretary* were influenced by the stereotypicality of the role noun even when presented in stereotypically female and male conditions (e.g., a secretary in the context of soccer) (Braun 2001: 290 f., 298). In the same vein, Gygax et al. (2008: 464, 476–480) showed that the interpretation of grammatically genderless role nouns in English is influenced by stereotype information such that, for instance, stereotypically neutral role nouns were associated with both men and women, while stereotypically female role nouns were associated with women (see Sect. 3.2.1.2).

found stereotypically neutral epicene nouns in French to present a male bias, which they relate to the use of the masculine as the grammatical default gender (e.g., *aller voir un orthopédiste* 'see an$_{M.SG}$ orthopedist$_{M.SG}$') and/or to the male-as-norm principle.[34]

In their rating and naming replication study on German (based on Gabriel et al. 2008; Stahlberg & Sczesny 2001), Schunack & Binanzer (2022) compared masculine role nouns to gender-fair alternatives such as double forms and found that stereotypicality plays a role when role nouns are processed, irrespective of the word form. For instance, when stereotypically female role nouns were presented, participants thought more often of women than when stereotypically male role nouns were presented for both the masculine role nouns and the gender-fair forms (see Yeaton et al. 2023: 7 for similar findings on stereotypically female masculine role nouns in Spanish). Also, in 2022, irrespective of the word form, participants globally named more women (e.g., a famous singer) than in the 2000s. Accordingly, the data from this study indicate "that a comparatively strong gender stereotype can be overruled by a strong exemplar of the non-stereotypical gender" (Schunack & Binanzer 2022: 333). For example, the stereotypically male role *politician* was predominantly associated with Angela Merkel, the German chancellor at that time. Thus, the study indicates that stereotype information plays a role during language processing, as suggested by Eisenberg. Moreover, extra-linguistic information other than (male) stereotypicality can impact the interpretation of role nouns too: for instance, the existence of a famous person who counteracts existing stereotypes (Schunack & Binanzer 2022: 309, 318–320, 331–334).[35] Nonetheless, for the time being, Eisenberg's assumptions seem unable to explain all the empirical facts on the interpretation of masculine role nouns in grammatical gender languages. At the same time, as indicated by the empirical research presented, this does not mean that extra-linguistic information does not influence language processing at all.

[34] But see Tibblin et al. (2023a), who find stereotypically neutral epicene, generic and collective nouns to trigger gender-equal representations; the findings from Kim et al. (2023a) go in the same direction. See Safina (2024), who finds Italian epicene nouns and their gender-fair alternatives to generate gender-equal representations.

[35] See Rothermund & Strack (2024: 468, 472–477, 480–482) on recent findings showing that disambiguating information, for instance in the form of gender-stereotyped clothing, eliminates a male bias when stereotypically neutral role nouns in German are interpreted (e.g., *The newscasters*$_{M.PL}$ *wore fancy suits and dresses* vs. *The newscasters*$_{M.PL}$ *wore fancy clothes.*). See Pozniak et al. (2023: 11 f.) on the influence of male stereotypicality when masculine and gender-fair forms are interpreted.

3.2.3 Interplay of Linguistic and Extra-Linguistic Information

Grosso modo, the literature that I have reviewed so far assumes that either linguistic- or extra-linguistic information is the main influence on whether the generic or specific meaning of a masculine role noun is accessed. Research that claims the interpretation of masculine role nouns to be influenced by a variety of linguistic and extra-linguistic information is presented in the following sections.

3.2.3.1 Theoretical Approach 1: Pragmatics

In opposition to the structuralist view (see Sect. 3.1.1), which stipulates that features of the specific meaning are canceled to access the generic meaning, the pragmatic approach to masculine role nouns presented by Becker (1997, 2008) and Klein (2001) suggests the opposite. More specifically, it stipulates that the generic meaning can be further specified in accordance with the conversational context and its pragmatic rules, resulting in the specific meaning of masculine role nouns. Thus, in the long run, the specific interpretation of masculine role nouns could become the default (Becker 2008: 73; Klein 2001: 40 f., 51 f., 65 f.).[36] Obviously, this approach focuses on how a specific masculine role noun actually functions in the *parole*. Moreover, Klein (2001: 62–64) and Becker (1997: 64; 2008: 73) define the generic/specific use of masculine role nouns as *autohyponymy*. In doing so, they place the discussion of the use of masculine role nouns in a broader context: autohyponymy is not limited to masculine role nouns, but is a pervasive phenomenon in the lexicon, which is triggered by conversational implicature (Becker 2002: 105; 2008: 65). Accordingly, in this section, I present how the specific interpretation of the masculine role noun is explained based on Grice's cooperative principle. According to Grice's maxims, we can assume cooperative speakers to provide as much relevant information as needed—and no more—in conversations (the *maxims of quantity* and *relevance*), to communicate

[36] In this section, I present Becker's (1997, 2008) and Klein's (2001) approach to analyzing masculine role nouns from a pragmatic perspective. However, in opposition to their above-presented approach, from a (different) pragmatic point of view, it would also be possible to consider masculine role nouns (like other lexemes) as not having a default meaning. Hence, the specific context alone would impact the interpretation or meaning of a masculine role noun (Mihatsch 2018: 117). Yet, to the best of my knowledge there is no such pragmatic approach to the interpretation of masculine role nouns. For an in-depth pragmatic analysis of masculine role nouns in the context of autohyponymy in German, see Klein (2001: 51 f.). More recently, conversational implicatures in the context of masculine role nouns have been discussed by Diewald (2023) in her talk at the annual conference of the *Gesellschaft für deutsche Sprachwissenschaft*.

trustworthily (the *maxim of quality*) and to be as clear as possible (the *maxim of manner*) (Grice 1975: 45–47). When it comes to the analysis of masculine role nouns, the *maxim of quantity* is fundamental: we presume that the communicator uses the most informative term that is compatible with the other conversational maxims. Within our society, the biological/social gender of a person is generally considered an important part of a person's identity. Accordingly, the specification of a referent's biological/social gender is generally perceived as relevant information (Klein 2001: 42 f., 51 f.; Mihatsch 2018: 102). Theoretically, in a German sentence such as (16), the referent could be either male or female (Klein 2001: 51):

(16) *Ein Student hat mir die Tür geöffnet.*
'A student$_{M.SG}$ opened the door for me.'

If the referent is male, the most informative term would be *männlicher Student* 'male student$_{M.SG}$'. At the same time, this would be redundant and thus violate the manner and quantity maxims. As the alternative to *Student*, *Studentin* 'female student$_{F.SG}$', would refer to a female person, the addressee can assume the speaker's choice of *Student* to imply a male reference—provided that the referent's biological/social gender is relevant (Becker 2008: 65; Klein 2001: 42 f., 51 f.). Conversely, if the gender of a person becomes less relevant, masculine role nouns could conventionally be interpreted generically (Becker 1997: 64 f., 68; Klein 2001: 42 f., 51 f.).[37]

If people continue to consider biological/social gender a relevant factor when reference is made to humans, the use of feminine role nouns for female references will be generalized. Moreover, most speakers will expect others to do so as well. Accordingly, the conversational implicature that masculine role nouns are interpreted specifically could conventionalize, and the feature [+male] could become an integral element of the signification of masculine role nouns (Becker 1997: 65; 2008: 66, 72 f.; Klein 2001: 63 f.).

Indeed, on the basis of recommendations for the gender-fair use of language, which discourages the generic use of masculine role nouns and encourages the use of alternative forms such as double forms instead, the specific interpretation of masculine role nouns seems to be becoming the default.[38] However:

[37] See also Elmiger (2021b: 2).

[38] Conversely, Diewald (2023), in her talk at the annual conference of the *Gesellschaft für deutsche Sprachwissenschaft* on masculine role nouns and conversational implicatures, stipulates that masculine role nouns are not interpreted generically any longer in any sentential

> Ein vollständiger Bedeutungswandel der generischen Maskulina zu geschlechtsspezifischen Bezeichnungen ist […] unwahrscheinlich, weil kein Lexem existiert, das die Lücke schließen könnte, die die generischen Maskulina hinterließen. (Klein 2001: 64)
>
> 'A complete semantic shift of the masculine generic forms to gender-specific terms is […] unlikely because there is no lexeme that could fill the gap vacated by the masculine generic forms.'

For the time being, in the pragmatic sense, whether the specific interpretation is the most likely interpretation seems to depend on the relative frequency of the feminine form. For example, the feminine form of Ger. *Kindergärtner* 'kindergarten teacher$_{M.SG}$' in (17) is far more frequent than that of Ger. *Gutachter* 'surveyor$_{M.SG}$' in (18), so that the conversational implicature *not a female person* is more likely in (17) than in (18) (Becker 1997: 64 f., 68; 2008: 66 f., 71–73):[39]

(17) *Sie suchen einen Kindergärtner +> keine Kindergärtnerin*
'They are looking for a kindergarten teacher$_{M.SG}$ +> not a female kindergarten teacher$_{F.SG}$'

vs.

(18) *Sie suchen einen Gutachter +> keine (?) Gutachterin*
'They are looking for a surveyor$_{M.SG}$ +> not (?) a female surveyor$_{F.SG}$'

To conclude, the pragmatic explanation of the interpretation of masculine role nouns presented by Becker (1997, 2008) and Klein (2001) integrates the influence of linguistic (e.g., grammatical gender marking) and extra-linguistic information (e.g., expectations regarding references to men and women). Put differently, the context in which a specific linguistic item is used is taken into account to some extent. Correspondingly, although the pragmatic approach to masculine role nouns assumes the specific meaning to be derived from the generic meaning, it suggests that the specific interpretation is becoming the most commonly accessed one (Klein 2001: 60, 63 f.).[40]

---

context. Whether the specific interpretation of a masculine role noun can be considered a conventional or a conversational implicature (if any) is an open question. While this question is far from being trivial, it is not at issue here. However, I encourage future research to systemically test whether the specific interpretation of a masculine role noun can be considered a (conversational) implicature (see Sect. 7.4).

[39] See also Klein (2001: 42 f., 51 f., 60, 63–66).

[40] See also Pozniak & Burnett (2021: 10 f.).

Only a few experiments on masculine role nouns have been run from a more pragmatic point of view. I present those of which I am aware in the following section. Specifically, the *maxim of quantity*, *relative frequency* and *pragmatic violations* will be examined.

3.2.3.2 Empirical Evidence: Gricean Quantity, Relative Frequency and Pragmatic Violations

Empirical evidence for the assumption that the enunciation of biological/social gender is informativity-driven (i.e., Gricean quantity) is provided by Pozniak & Burnett (2021). In a completion task study, they asked French-speaking informants about their cities' mayors-to-be. They found that participants used feminine forms more often when there was a high probability of a woman becoming the mayor. In other words, a stronger expectation of a female referent decreased the use of masculine forms.[41] Yet masculine forms were still used more often than feminine forms, even when the expected mayor-to-be was a woman. As feminine forms are much more informative than masculine forms for indicating female biological/social gender, the authors concluded that participants' use of grammatical gender is not solely driven by informativity but is mainly driven by the male stereotypicality of *maire* 'mayor$_{M./F.SG}$'. Based on their findings, Pozniak & Burnett propose to incorporate expectations based on stereotypes into Gricean pragmatics (Pozniak & Burnett 2021: 1, 3, 9–11). Conversely, other linguists might interpret this finding as a good example of the generic use of masculine forms or as a pure frequency effect.

Furthermore, in the study by De Backer & De Cuypere (2012) already mentioned in Sect. 3.1.2, the authors tested, amongst other aspects, whether *relative frequency* (i.e., the ratio between the frequency of the masculine and feminine role nouns) impacts the interpretation of masculine role nouns in German. The factor *relative frequency* turned out to mediate only the interpretation of non-occupational singular nouns: while 31% of non-occupational singular occurrences were interpreted generically when the feminine form was relatively infrequent, 9% of non-occupational singular occurrences were interpreted generically when

[41] Accepted completions were role nouns such as *le/la maire* 'the$_{M./F.SG}$ mayor$_{M./F.SG}$', pronouns like *il/elle* 'he/she' or the actual candidate's name (Pozniak & Burnett 2021: 8). Note that I generally focus on masculine role nouns in this section. Also, Pozniak & Burnett's research aim was to analyze the way in which speakers' expectations and stereotypes result in different gender marking in speech production. See also Burnett & Pozniak (2021: 820), who find French universities to use more alternatives to the generic use of masculine role nouns when the student population and the university's staff is predominantly female.

the feminine role noun was relatively frequent. Conversely, *relative frequency* neither influenced the interpretation of masculine plural forms in general nor that of occupational singular forms (De Backer & De Cuypere 2012: 260 f., 267). Hence, the factor *relative frequency*, which plays an important role in the pragmatic approach (see Sect. 3.2.3.1), seems to influence a masculine role noun's interpretation only for singular role nouns. We turn to De Backer & De Cuypere's (2012) study once again in Sect. 3.2.3.4.

Finally, Szuba et al. (2022) investigated whether masculine and feminine grammatical gender marking on Polish second person singular past tense verbs creates a processing disadvantage when the grammatical gender is incongruent with the addressee's biological/social gender. Interestingly, the experimental items consisted of mini-narratives featuring directive speech acts. The use of non-assertive speech acts is novel: so far, only assertives featuring masculine forms have been examined.[42] However, the test items' critical forms such as *sprawdziłeś* 'checked$_{M}$' in (19) do not form part of the directive speech act. Example (19) presents an experimental item from Szuba et al.'s (2022) study featuring a masculine form in the past tense, which was presented to female participants (male participants read the same sentence featuring the feminine form *sprawdziłaś* 'checked$_{F}$' (Szuba et al. 2022: 819, 823, 825 f.):

(19) *Wyobraź sobie, że wyprowadzasz się do Norwegii na pół roku. Gdy już sprawdziłeś dojazd na lotnisko, zamierzasz pożegnać się z rodziną. Jednak w tym momencie babcia zaczyna pakować ci zapasy jedzenia do walizki.* (Szuba et al. 2022: 825)
'Imagine that you are moving to Norway for half a year. Once you have checked$_{M}$ the transport to the airport, you want to say goodbye to your family. But in that moment, your grandmother starts to pack food into your suitcase.'

[42] But see Kotthoff & Nübling's (2018) scheme on the degree of referentiality of masculine role nouns in Table 3.2 in Sect. 3.2.3.3. A psycholinguistic approach to speech acts other than assertives would indeed be fruitful in order to get more diverse insights on the processing of masculine forms in different speech acts. Interestingly, Yeaton et al. (2023: 1, 8, 12) approach the interpretation of double forms in Spanish (e.g., *fontaneras o fontaneros* 'female plumbers$_{F.PL}$ or male plumbers$_{M.PL}$') from a pragmatic point of view. The authors suggest that hearers treat gender-fair language as a markedness implicature, which encourages the hearers to contrast the masculine role nouns with their prior expectations about professional gender stereotypes (e.g., *women can be plumbers, too*).

In Polish, while it is appropriate to address women using masculine grammatical gender marking, the opposite is not true. However, Szuba et al. (2022: 819, 823, 832 f.; see also Misersky et al. 2019: 652) found that:

> incongruent gender marking on the verb affects processing for women to the same extent as it does for men, despite the fact that the former does not constitute a pragmatic violation and the latter does. (Szuba et al. 2022: 832 f.)

As the study did not systemically control for directive speech acts compared to other types of speech acts, it cannot give insights into how the processing of masculine forms featured in different speech acts might differ. Nonetheless, it suggests that the use of masculine forms when addressing women is as problematic as the use of feminine forms when addressing men (Szuba et al. 2022: 832 f.).

In sum, as not only Gricean quantity and the relative frequency of feminine forms seem to influence the interpretation of masculine role nouns, the pragmatic approach to masculine role nouns (see Sect. 3.2.3.1) cannot entirely explain whether a masculine role noun is preferentially associated with men or with both men and women. Nonetheless, the pragmatic approach takes into account more factors than the structuralist approach does. The next section presents another explanation for how one of the multiple meanings of masculine role nouns is accessed. This explanation, like the pragmatic one, assumes that both linguistic and extra-linguistic information influence the interpretation of masculine role nouns.

3.2.3.3 Theoretical Approach 2: The Importance of Referentiality

Another theoretical approach that attempts to explain under which circumstances masculine role nouns are interpreted generically or specifically comes from Kotthoff & Nübling (2018). In this framework, the actual use of a masculine role noun (i.e., the *parole*) is examined: the authors present a scheme (see Table 3.1) which includes the high or low level of referentiality a masculine role noun can take, as well as the relevance of the biological/social gender of the role noun's referent (Kotthoff & Nübling 2018: 92 f.).[43] I call this approach *the importance of referentiality* and I will continue to use this phrase when comparing it to other theoretical approaches.

[43] See also Diewald & Steinhauer (2022: 112–118).

Table 3.1 Some syntactic categories and some categories of linguistically relevant referential properties and their relation to the referentiality and relevance of biological/social gender (my translation). (Based on Kotthoff & Nübling 2018: 93)

	Examples	Categories	++ Referenzialität -- 'referentiality' ++ Relevanz von Geschlecht -- 'Relevance of biological/social gender'
a	*Lieber Rentner!*[44] 'Dear pensioner$_{M.SG}$!'	adressierend 'address'	
b	*Dieser Rentner bezieht gleich sein Zimmer.* 'This pensioner$_{M.SG}$ is about to move into his (their) room.'	referierend: spezifisch, demonstrativ, Agens 'referential: specific, demonstrative, agent'	
c	*Der Rentner sucht noch seinen Koffer.* 'The pensioner$_{M.SG}$ is still searching for his (their) suitcase.'	spezifisch, definit, Agens 'specific, definite, agent'	
d	*Ich habe den Rentner begrüßt.*[45] 'I greeted the pensioner$_{M.SG}$.'	spezifisch, definit, Patiens 'specific, definite, patient'	
e	*Ich begrüße nachher noch einen [bestimmten] Rentner.* 'I will say hello to a [specific] pensioner$_{M.SG}$ later.'	spezifisch, indefinit 'specific, indefinite'	
f	*Im Wirtshaus kommt nachher sicher noch [irgend] ein Rentner vorbei.* 'I am sure [some] pensioner$_{M.SG}$ will come by the pub later.'	nicht-spezifisch, indefinit 'non-specific, indefinite'	
g	*Ein (der) Rentner ist immer willkommen.* 'A (the) pensioner$_{M.SG}$ is always welcome.'	generisch, Subjekt 'generic, subject'	
h	*Du bist jetzt (ein) Rentner.*[46] 'You are a pensioner$_{M.SG}$ now.'	Prädikativ 'predicative'	

[44] However, in an emergency situation where sentences such as *Ist ein Arzt an Bord?* 'Is a doctor$_{M.SG}$ on board?' in the sense of 'If you are a doctor, please come!' are used, it should be clear that both female and male doctors are invited to help. Thus, the *necessity* of indicating biological/social gender should also be discussed. For example, contextual urgency also seems to influence the referentiality of masculine forms.

[45] It could be questioned whether the fact that *retraité* 'pensioner$_{M.SG}$' functions as a patient and as an agent in the following examples really influences whether *retraité* 'pensioner$_{M.SG}$' is interpreted differently: *Ce retraité a été cambriolé* 'This pensioner$_{M.SG}$ was robbed' vs. *Ce retraité vit seul.* 'This pensioner$_{M.SG}$ lives alone'. As reference is made to a specific pensioner and as only arguments are featured in both cases, it could be argued that the degree of referentiality is rather high. Accordingly, this should engender a specific interpretation of the masculine role noun. See von Heusinger's referentiality scale (von Heusinger 2008: 5; 2011) indicating that non-argumentals rank lowest, while definite noun phrases are ranked before indefinite specific noun phrases on the said scale.

[46] As *h)* directly addresses the pensioner, the degree of referentiality might not be low, but high, as suggested in *a).*

According to Kotthoff & Nübling (2018: 92), the referentiality of a masculine role noun is linked to its "degree of identifiability, 'visibility' and definiteness" (my translation). The following factors are considered to impact whether a masculine role noun is interpreted generically or specifically: *definiteness*, *specificity* and *syntactic function* (and the corresponding semantic roles). Correspondingly, biological/social gender is most relevant when we denote specific referents (see cases *a-e* in the scheme).[47] In this sense, the stronger the referential function of a role noun, the more important it is to indicate the referent's biological/social gender. For instance, a masculine role noun, which can be classified as specific, definite and as a subject (and an agent) (e.g., *le retraité cherche sa valise* 'the pensioner$_{M.SG}$ is looking for his (their) suitcase'; cf. *c* in Kotthoff & Nübling's (2018) scheme), would be associated with a man (e.g., in the sense of 'the pensioner$_{M.SG}$ is looking for *his* suitcase'). In the same vein, the use of a feminine form would be expected if reference was made to a woman (e.g., *la retraitée cherche sa valise* 'the female pensioner$_{F.SG}$ is looking for her suitcase'). However, a *non-specific*, *indefinite* masculine role noun in subject position (e.g., *un (quelconque) retraité* 'a (any) pensioner$_{M.SG}$'; cf. *f* in Kotthoff & Nübling's (2018) scheme) is less referential and relates less to a (male) referent. Hence, a *non-specific*, *indefinite* masculine role noun in object position can be more easily associated with both men and women than a *specific*, *definite* masculine role noun (Kotthoff & Nübling 2018: 92–94).

Similarly, role nouns in subject position (and functioning as agents) or role nouns in adverbial phrases do not display the same degree of referentiality. Following the authors' logic, *coiffeur* 'hairdresser$_{M.SG}$' in (20) is more likely to be associated with a male referent than in (21) (Kotthoff & Nübling 2018: 92–94 f.).[48]

(20) *Mon coiffeur conseille le balayage californien.*
'My (male) hairdresser$_{M.SG}$ recommends the Californian sweep.'

vs.

[47] See Schafroth (2003: 109 & 2004: 354) on the influence of syntactic and text-linguistic factors and the necessity of identification on whether a masculine or feminine role noun is used in French when reference is made to a woman. See also footnote 142.

[48] Note that Trutkowski (2018) also differentiates between several functions of masculine nouns in her survey. However, this includes generic nouns like Ger. *Gast* 'visitor$_{M.SG}$' for which no commonly used feminine counterpart exists. This is why I do not further report her findings.

(21) *J'ai rendez-vous chez le coiffeur.*
'I have an appointment at the hairdresser$_{M.SG}$'s.'

Moreover, based on their literature review, the authors expect at least the following additional factors to influence the association of masculine role nouns with male and female referents: *number* is assumed to play an important role, with plural masculine role nouns being interpreted generically more easily than singular forms. Other factors are the *social gender* associated with a role noun, which is the result of extra-linguistic information (e.g., the stereotypically male *professeurs* 'professors$_{M.PL}$' vs. the stereotypically neutral *touristes* 'tourists$_{M.PL}$'), *relative frequency* (i.e., the ratio between the frequencies of the masculine and feminine role nouns) and *participant-specific factors* (Kotthoff & Nübling 2018: 92–96; 115–119).

To conclude, Kotthoff & Nübling (2018) assume that both linguistic information (e.g., referentiality) and extra-linguistic information (e.g., stereotypes) influence the interpretation of masculine role nouns. Crucially, some of the factors defined seem to reduce the probability of a masculine role noun being interpreted generically, while others may increase the probability that a masculine role noun is interpreted specifically. However, the authors are unsure whether masculine role nouns can function as generics at all and ultimately rely on psycholinguistic findings that suggest that masculine role nouns tend to be interpreted specifically (Kotthoff & Nübling 2018: 91). Some of the linguistic factors defined by Kotthoff & Nübling (2018) that foster or discourage a generic interpretation of masculine role nouns have already been empirically investigated. These are reviewed in the following section (on the factor *relative frequency*, see Sect. 3.2.3.2). We then turn to *participant-specific factors* in Sect. 3.2.4.

3.2.3.4 Empirical Evidence: Definiteness, Syntactic Roles, Specificity and Stereotypicality

In their survey study mentioned in Sects. 3.1.2 and 3.2.3.2, De Backer & De Cuypere (2012) tested whether linguistic factors such as *number* (i.e., singular vs. plural forms), *definiteness* (definite vs. indefinite nouns), *role noun type*[49] (occupational vs. non-occupational nouns) and *relative frequency* (the ratio between the frequency of masculine and feminine role nouns; see Sect. 3.2.3.2) influence the perception of masculine role nouns in German. In essence, informants had to judge whether stereotypically neutral role nouns in sentences such as (22)

[49] Note that De Backer & De Cuypere (2012: 261) speak of *lexical unit type*. As I judged it to be a more suitable term, in this book, I use *role noun type* instead.

could refer to *male* referents, *female* referents, or *male and female* referents (De Backer & De Cuypere 2012: 256–259):

(22) *Der/Ein/Die/Ø/Besucher aus Taiwan war/waren vor allem an der Berliner Architektur interessiert.*[50]
'The$_{SG}$/A/The$_{PL}$/Ø/visitor$_{M.SG}$/visitors$_{M.PL}$ from Taiwan was/were mainly interested in Berlin architecture.'

De Backer & De Cuypere's (2012) data showed that plural role nouns were mostly interpreted in a generic way: 97% of plural forms were immediately judged as having *male and/or female* reference. In contrast, singular masculine role nouns were interpreted generically in only 17% of cases (De Backer & De Cuypere 2012: 260 f.).[51]

Moreover, De Backer & De Cuypere found that *role noun type* was a relevant factor, with non-occupational nouns being interpreted generically more often than occupational plural nouns (99% vs. 95% for plural and 26% vs. 8% for singular forms) (De Backer & De Cuypere 2012: 260 f., 267). Contrary to Kotthoff & Nübling's (2018: 92–94 f.) assumption, *definiteness* turned out to have no significant influence on the interpretation of German masculine nouns (De Backer & De Cuypere 2012: 260–262, 267). It is noteworthy that Bross & Kurz' (2023: 397, 419, 421) study on N-N compounds in German suggests that masculine forms used as the first element of the compound (e.g., *Studentenbefragung* 'student$_{M.PL}$ survey$_{F.SG}$') are accepted for reference to both men and women.

Furthermore, Richy & Burnett (2020) showed in their corpus analysis of constructed examples drawn from the scientific journal *Langue Française* that men were more likely to be in subject position and were more likely to be agents than women. At the same time, masculine role nouns that did not explicitly refer to men behaved differently from true male references and, in terms of syntactic functions and thematic roles, were comparable to forms that referred to women.[52]

[50] In Sect. 3.1.2, I have cited the above example without the singular forms as they were not of interest (cf. example (14)).

[51] See Redl et al. (2022: 840) for comparable findings on Dutch pronouns; see also Claus & Willy (2022: 230 f., 236) who found that masculine German role nouns in the singular form were less often interpreted as to be able to refer to women than plural forms. See Rothermund (1998) for a discussion of masculine role nouns and number; see Kusterle (2011) on the influence of factors such as *number* on masculine role nouns in German; De Backer & De Cuypere (2012: 261 f.) and Redl et al. (2022) on Dutch.

[52] But see Schmitz et al. (2023), who find masculine generics in German to function like masculine specifics.

While the study cannot give insights into the interpretation of masculine role nouns, it clearly shows that, in production, the syntactic function of subject and agentivity are generally associated with men. In other words, masculine forms that are presumably intended generically are far more often used as non-agents than masculine forms that explicitly refer to men (Richy & Burnett 2020: 47; 59 f.; 62–64; 69 f.; see Da Cunha & Abeillé 2022: 8, 13 f. on French and English).

Finally, Redl et al. (2022) investigated the interpretation of masculine forms that are generic in the narrower sense and tested whether the Dutch masculine pronoun *zijn* 'his' results in a male bias when it is embedded in a sentence featuring no specific real-world referent (e.g., *Someone with perfect pitch can tune his instrument quickly*). Their results suggest that *zijn* 'his' leads to a male bias in sentences featuring a conceptually singular generic form, but only for male participants. Put differently, for sentences featuring a conceptually plural generic form, no male bias was found for male participants, nor was any male bias found for female participants in any condition (Redl et al. 2022: 828, 840 f.). When comparing these results to those of Redl (2021: 121), who investigated *zijn* integrated into sentences featuring a specific real-world referent (i.e., genericity in the broader sense), the authors assume that masculine generic forms in the narrower sense generate a weaker male bias than masculine generic forms in the broader sense. This is in line with Kotthoff & Nübling's (2018) assumption that a less important referential function resulting from the lower degree of specificity of a masculine form is less strongly associated with male biological/social gender. Whether their claims concerning the influence of stereotype information are also corroborated by empirical research is examined in the next section (see also Sect. 3.2.2.2).

The influence of linguistic and stereotype information on the interpretation of masculine role nouns was examined by Sato et al. (2016). They asked their participants whether the role nouns displayed (e.g., *infirmiers* 'nurses$_{M.PL}$') matched the visual targets presented, which showed either a pair of male faces or the faces of a man and a woman. Although this study, unlike previous research, used a visual target, the authors found representations of biological/social gender to be male-biased in both French and German (i.e., more and quicker responses were observed for pairs of male faces than for pairs of mixed faces) (Sato et al. 2016: 1, 3 f., 9 f.).

However, stereotype information did influence the outcome of the experiment: the processing of targets following stereotypically male and masculine role nouns in the plural form resulted in significantly quicker *yes* answers, while stereotypically female and masculine role nouns took longer to respond to. Both the morphosyntactic factor *masculine form* and the factor *stereotypicality* thus seem

to influence the interpretation of masculine role nouns. The authors argue that using non-verbal targets in combination with stereotype information might be able to reveal the impact of stereotypes on the interpretation of masculine role nouns, while it is not possible to do this using linguistic targets. They also speculate whether the use of their specific linguistic stimuli (i.e., role nouns only) allowed stereotype effects to be more persistent than they would have been in a discursive context as featured in sentence-evaluation paradigms (Sato et al. 2016: 1, 3, 9 f.).[53]

Yet, data patterns revealing the influence of a role noun's stereotypicality when masculine role nouns are interpreted have also been found in several language-on-language task-based studies. Experiments on masculine plural role nouns have mostly shown that the male bias attributed to the masculine role nouns is reinforced in combination with stereotypically male role nouns (see Garnham et al. 2012 on French and German; Lévy et al. 2014 on French; Anaya-Ramírez et al. 2022 on Spanish; Rothmund & Scheele 2004 on German) or attenuated in the female stereotype condition (see Gygax et al. 2012 on French; see Gabriel & Gygax 2008 and Gabriel et al. 2017 on Norwegian, which presents a different data pattern due to its specific gender system).[54] Whether or not a possible male bias concerns all language users is discussed in the next section.

3.2.4 Participant-Specific Factors

The findings on the interpretation of masculine role nouns presented in the previous sections make statements that potentially apply for all users of the languages investigated. However, it could be argued that participant-specific factors could also mediate the interpretation of masculine role nouns. Empirical research has defined some factors specific to the individual that may reduce or strengthen the male bias ascribed to masculine role nouns (see Sect. 3.2.3.3 on Kotthoff & Nübling 2018: 115–119).

[53] See Zacharski & Ferstl (2023: 310) who show in their word-picture matching task that stereotypicality influences the interpretation of masculine role nouns in German.

[54] See Anaya-Ramírez et al. (2022) on Spanish. See Kim et al. (2023b) on Norwegian, who show that visual targets (i.e., face pairs) are primed by stereotypical role nouns (e.g., *ballet dancers*) presented in the written code.

Sociolinguistic Factors

In studies on the interpretation of masculine role nouns that have tested for *participant gender*, the biological/social gender of participants has sometimes been found to impact the interpretation of masculine role nouns. Generally, the data have shown that men exhibit stronger male biases than women. This has been interpreted as biological/social gendercentricism (e.g., Brauer & Landry 2008: 268, Experiment 2 on French; Stahlberg et al. 2001: 468; Stahlberg & Sczesny 2001: 138 on German; Kaufmann & Bohner 2014: 12; Nissen 2013: 111 f. on Spanish).

However, not all studies have found an impact of the participants' biological/social gender on the interpretation of masculine role nouns (Körner et al. 2024: 173). In particular, studies with experimental designs accessing the online processing of masculine role nouns generally do not find an effect of participants' biological/social gender on the interpretation of masculine role nouns (Gabriel et al. 2017: 802; Körner et al. 2024: 165, 170). An exception is Redl et al.'s (2021) eye-tracking study, which found the Dutch masculine pronoun *zijn* 'his' to cause a male bias for male participants only (and in the stereotypically neutral stereotype condition only) (Redl et al. 2021: 1, 13; for similar findings see Redl et al. 2022: 840; Stetie & Zunino 2022a: 29 find Spanish-speaking women to show a more pronounced male bias than men in their online measures study).[55]

As most studies have tested student populations, it has not been analyzed in depth whether the factor *age* mediates the interpretation of masculine role nouns. Nonetheless, some studies suggest that masculine role nouns generate male-biased representations regardless of the age of informants (e.g., Brauer & Landry 2008: Experiment 4 on French; Nissen 1997: 229 on Spanish; Körner et al. 2024: 165, 170 on German). Moreover, Gygax et al.'s (2019b) experiment with French-speaking children suggests that masculine role nouns already start to cause a male bias in mental representations by the age of 3, while stereotypes influence young children more than they influence adult speakers (Gygax et al. 2019b: 1, 8 f.; see Lévy et al. 2016, who find French-speaking toddlers to be influenced by their own biological/social gender as well as by stereotype information). At the same time, other studies have not found participants' age to moderate the stated effects (e.g., Lévy et al. 2014: 35, 37; Richy & Burnett 2021 on French; Körner et al. 2024: 165, 170; Schunack & Binanzer 2022: 331 on German).

[55] For a discussion about differences in language acquisition between boys and girls and the teaching of the different meanings of masculine forms, see Gygax et al. (2021b: 61–65); Redl et al. (2022: 843).

While the acceptance and use of masculine role nouns has been shown to be influenced by the participants' home region/dialect, across which usages of masculine role nouns and their alternatives, as well as sociopolitical factors, may differ (e.g., Arnold 2024: 623–625 on French; Diehl 1992: 384; Schröter et al. 2012: 374 f. on German), whether the interpretation of masculine role nouns is influenced by the factor *region/dialect* has received little attention. I am aware of only one study that has systemically compared two populations of one language: Kim et al. (2023a: 1, 23) found that both Swiss French and Quebec French speakers interpreted masculine role nouns specifically.[56]

Moreover, the way in which participants conceive of gender-fair language may also impact the interpretation of masculine role nouns. We turn to this aspect of participant-specific factors below.

Attitudes on Gender-Fair Language

Spanish-speaking participants with a positive attitude toward gender-fair language have been found to show a less pronounced male bias than those who reject gender-fair language (Anaya-Ramírez et al. 2022: 1260, 1268, 1270), while Stahlberg & Sczesny (2001: 137) found German-speaking participants in favor of gender-fair language to show the opposite effect. In this vein, Stetie & Zunino (2022b: 171) found Spanish-speaking participants who frequently used gender-fair language to show a more pronounced male bias than those who did not. At the same time, other studies have not found participants' attitudes towards gender-fair language to moderate the stated effects (e.g., Kaufmann & Bohner 2014: 14 on Spanish; Körner et al. 2022: 560, 565; Körner et al. 2024: 166, 171, 173; Schunack & Binanzer 2022: 331 on German).[57] All in all, studies that have analyzed whether participant-specific factors impact the interpretation of masculine role nouns have shown inconsistent results (Körner et al. 2024: 173).

Having presented both theoretical and empirical findings that attempt to explain the multiple meanings of masculine role nouns, I now summarize and evaluate the results reviewed in Chap. 3 and highlight those that are of particular interest for my experiments, which are presented in Chaps. 4 and 5.

[56] For a comparison of the processing of Dutch *zijn* 'his/its' and Limburgian *zien* 'his/its', see Redl (2021: 93–104). However, the dialects' usages of the pronouns differ so that the stated differences in the processing of the pronouns had been expected.

[57] On the relationship between the knowledge of gender-fair language, attitudes towards it and political orientation, see Sauteur et al. (2023).

3.3 Overall Synthesis

When synthesizing the overall findings of the literature reviewed in Chap. 3, it can be stated that some of the research concentrates on describing which values are assigned to masculine role nouns by the language system (e.g., structuralism; Eisenberg 2018, to some extent), while other approaches concentrate on analyzing how masculine role nouns actually function in the *parole* (e.g., Feminist Linguistics, pragmatics, the importance of referentiality, empirical research). At the same time, theoretical research on masculine role nouns often relates to genericity in both the narrower and broader sense (e.g., structuralism; Eisenberg 2018; the importance of referentiality), while empirical research mainly focuses on genericity in the broader sense (Kotthoff & Nübling 2018: 91). Thus, the different approaches explaining the multiple meanings of masculine role nouns are somehow at cross-purposes (Schwarze 2008: 228, 230 f.).

Nonetheless, based on previous research, we can state that the following factors may influence whether a masculine role noun is more likely to be interpreted generically or specifically: *number*, *role noun type*, *referentiality*, *relative frequency*, *participant-specific factors* and *stereotypicality*. For instance, concerning *number*, masculine role nouns have been found to be interpreted specifically more frequently in the singular than in the plural form (e.g., *un étudiant* 'a student$_{M.SG}$' vs. *des étudiants* 'some students$_{M.PL}$'). Accordingly, the systematic synthesis of the findings of previous research shows that at least three domains of language, as well as extra-linguistic factors, contribute to whether a masculine role noun is interpreted generically or not: morphosyntactic factors (i.e., *number*), lexico-semantic factors (i.e., *role noun type*, *referentiality*), pragmatic factors (i.e., *relative frequency, participant-specific factors*) and extra-linguistic factors (e.g., *stereotypicality*). In this vein, Table 3.2 summarizes the factors that have so far been found to influence the interpretation of masculine role nouns.

In a similar vein as Table 3.2, Kotthoff & Nübling (2018: 115–119) highlight the following factors that may influence a German masculine role noun's interpretation: *number*, *referentiality*, *relative frequency*, *participant-specific factors*,

Table 3.2 Factors that influence whether a masculine role noun is interpreted generically or specifically. (Based on previous research)

Factor	Language	Theoretical/empirical approach *(selection)*	Suggested by *(selection)*
Morphosyntactic Factors			
Number (i.e., singular vs. plural)	French German	Theoretical Empirical	Structuralism – Coseriu 1992; De Backer & De Cuypere 2012
Lexico-semantic Factors			
Role Noun Type (e.g., occupational noun vs. non-occupational noun)	German German	Theoretical Empirical	Becker 2008; De Backer & De Cuypere 2012
Referentiality (i.e., high vs. low degree)	German	Theoretical	Kotthoff & Nübling 2018
Pragmatic Factors			
Relative Frequency (i.e., high vs. low frequency of feminine role nouns)	German German	Theoretical Empirical	Pragmatics – Becker 1997; De Backer & De Cuypere 2012
Participant-specific Factors (e.g., participant's biological/social gender)	French Spanish	Empirical Empirical	Brauer & Landry 2008; Stetie & Zunino 2022a
Extra-linguistic Factors			
Stereotypicality (e.g., male vs. female associations)	German French	Theoretical Empirical	Eisenberg 2018; Sato et al. 2016

Note: the gray-shaded factors are those that will be examined in my experimental study (i.e., *stereotypicality* in Experiment 1; *role noun type* in Experiment 2).[58]

[58] See Rothermund & Strack (2024: 468, 472–477, 480–482) on recent findings suggesting that contextual information indicating that a group consists of both men and women leads to a generic interpretation of stereotypically neutral masculine role nouns in German, while sentences without such information lead to a specific interpretation. See Pozniak et al. (2023:

stereotypes[59,60]. Moreover, Redl (2021: 120–122), who summarizes her empirical research on masculine pronouns in Dutch, also finds similar factors to mediate the interpretation of the masculine pronouns examined: *conceptual number*, *type of pronoun*, *genericity*, *participant gender*, *stereotypes*. Redl also includes *method* as a factor (i.e., a male bias was found in her eye-tracking study, but not in her SPR SEV study).[61] However, in my opinion, the method of a study does not influence the interpretation of a masculine role noun, but may tap into different stages of language processing.

The number of different factors that have been found to influence the interpretation of masculine role nouns (see Table 3.2) suggests that the interpretation process could be approached from different angles. Yet, although no theory or study assumes masculine forms to be interpreted exclusively generically or exclusively specifically (Gygax et al. 2021a: 5 f.; Kotthoff & Nübling 2018: 115–117; Redl 2021: 120–122), previous research has presented rather one-sided claims on the issue: on the one hand, it is supposed that masculine role nouns tend to function as generics without a problem. This is primarily affirmed by theoretical approaches (e.g., Structuralism; l'Académie française 2004, 2017, 2021; Eisenberg 2018), while empirical proof for this claim is scarce. On the other

1, 11–14, 16–18) on contextual dilution effects in gender-fair French; see Zapf (2025: 405–407) on Spanish. Note that these novel and important findings could not be included in detail in the present research and thus are not integrated into Table 3.2.

[59] Kotthoff & Nübling (2018: 115) also include *context of the test sentences* as a separate factor. However, as these are based on stereotypical information (e.g., *ice hockey is a male sport*), I subsume them under the factor *stereotypicality*. See Rothermund & Strack (2024: 468, 472–477, 480–482) on recent findings indicating that the explicit indication of the biological/social gender of the referents enables a generic interpretation of masculine role nouns. See Samuel et al. (2019: 1767, 1769, 1778, 1784) who, based on their literature review focusing on inanimate and non-human animate nouns, conclude that a possible influence of grammatical gender on mental representation is context-dependent. In this vein, Samuel et al. (2019: 1769, 1771, 1779 f.) highlight the factor *salience of grammatical and biological/social gender* within their study. I come back to this point in Sects. 6.2.2.2 and 7.3.

[60] In contrast to my list, Kotthoff & Nübling (2018: 115) do not enumerate *role noun type* (e.g., occupational vs. non-occupational nouns) as a factor in their literature review summary, although they mention it when reviewing De Backer & De Cuypere's (2012) study.

[61] See Gygax et al. (2021a: 5) and Gygax et al. (2012: 405, 407) on judgements vs. response times. See Samuel et al. (2019: 1767, 1769, 1772–1781) who, when focusing on inanimate and non-human animate nouns, find the specific task to influence the outcome of a study on grammatical gender.

hand, it is suggested that masculine role nouns are mainly interpreted specifically (Rothermund & Strack 2024: 468). This view is presented by theoretical approaches including Feminist Linguistics, the importance of referentiality and pragmatics, and is corroborated by nearly all the empirical research that has analyzed the interpretation of masculine role nouns (i.e., all studies on masculine role nouns presented in this chapter except the offline measures survey studies by De Backer & De Cuypere 2012 and Nissen 2013).[62]

Moreover, theoretical approaches attribute the specific interpretation of a masculine role noun to different sources: to linguistic information in the form of the masculine form only (e.g., Feminist Linguistics), to extra-linguistic information, such as stereotypes (e.g., Eisenberg 2018), or to both sources of information (e.g., the importance of referentiality). In this vein, empirical research has also obtained different findings on the issue: Gygax et al. (2008) showed for French and German that the stereotypicality of the role nouns did not alter their interpretation; they conclude: "when a grammatical mark of gender is provided, the representation of gender is based on that mark of gender" (Gygax et al. 2008: 480, see also 464). Conversely, other experimental studies have found that both stereotype information and the masculine form influence a role noun's interpretation (e.g., Sato et al. 2016 on French). Accordingly, given the current interest in the issue, it seems fruitful to further investigate it.

Indeed, as gender equality, especially in regard to language, has been heatedly discussed in the past decade in French society, it is particularly interesting to first verify whether previous findings on the influence of stereotypicality and the masculine form on the interpretation of French masculine role nouns still hold true today and/or whether they can be extended. I thus concentrate on the influence of the extra-linguistic factor *a role noun's stereotypicality* on masculine role noun interpretation in Experiment 1, which is a replication of Gygax et al.'s (2008) French sample (see Chap. 4).

[62] But see Bross & Kurz (2023) on N-N compounds in German. See also the study by Safina (2024: 60, 67, 72 f., 75) on Italian epicene nouns in their masculine form (e.g., *Tutti i contabili* 'all$_{M.PL}$ the$_{M.PL}$ company's accountants$_{(F/)M.PL}$'). See Rothermund & Strack (2024: 468, 472–477, 480–482) on how contextual information can lead to a generic interpretation of masculine role nouns in German. See Trutkowski (2018) on diverging findings concerning German (but see Claus & Willy 2022). See Redl et al. (2018) on masculine pronouns in Dutch. See Pozniak et al. (2023); Spinelli et al. (2023) on the efficacy of gender-fair French.

Moreover, it can be stated that the influence of different factors (e.g., the lexico-semantic factor *role noun type*) on the interpretation of masculine role nouns in French has been investigated less extensively than in German, for which more diverse findings exist (as in De Backer & De Cuypere 2012). In this vein, Experiment 2 focuses on the factor *role noun type*, namely on the interpretation of occupational vs. non-occupational role nouns (see Chap. 5). As the world of work in general might be more tied to maleness than to femaleness, occupational nouns might be more easily associated with men than non-occupational nouns, irrespective of their stereotypicality (Becker 2008: 66; De Backer & De Cuypere 2012: 257, 261 f., 266 f.). In Experiment 2, I thus focus on stereotypically neutral masculine role nouns.

3.4 Summary

Theoretical and empirical research on whether masculine role nouns are interpreted generically or specifically can be subdivided into two major groups presenting rather clear-cut claims on the issue. On the one hand, there is research suggesting that the generic meaning of masculine role nouns can easily be accessed. This kind of research is mostly theory-driven and focuses on the values the *langue* assigns to masculine role nouns. On the other hand, the branch of research that analyzes the *parole* generally claims that masculine role nouns tend to be interpreted specifically. Meanwhile, the vast majority of empirical studies suggest that masculine role nouns tend to be interpreted specifically.

Different types of information are assumed to influence the interpretation of masculine role nouns. Firstly, the specific interpretation of masculine role nouns is ascribed to linguistic information. Secondly, the specific interpretation of masculine role nouns is thought to be caused by extra-linguistic information such as stereotypes. Thirdly, the interpretation of masculine role nouns is assumed to be influenced by the two types of information. Morphosyntactic factors (i.e., *number*), lexico-semantic factors (i.e., *role noun type*, *referentiality*), pragmatic factors (i.e., *relative frequency*, *participant-specific factors*) and extra-linguistic factors (e.g., *stereotypicality*) have all been found to have an effect. Crucially, the influence of various factors on the interpretation of masculine role nouns has not thoroughly been tested for French.

Given the different findings concerning whether the extra-linguistic factor *stereotypicality* and/or the masculine form itself influences a masculine role noun's interpretation, and given the ongoing social debate on the gender-fair use of language in France, it seems fruitful to first examine whether previous findings on the issue still hold true today. This is tackled in Experiment 1, which replicates Gygax et al.'s (2008) French sample. Experiment 2 broadens the perspective on the interpretation of stereotypically neutral masculine role nouns by investigating whether the lexico-semantic factor *role noun type* (i.e., occupational nouns vs. non-occupational nouns) has an influence.

Experiment 1

4

This chapter presents Experiment 1, which is a replication of the French sample of a study by Gygax et al. (2008). Experiment 1 investigates the influence of linguistic information, namely the morphosyntactic factor *(a role noun's) masculine form* and the extra-linguistic factor *stereotypicality* (i.e., stereotypically male/neutral[1]/female role nouns), on the interpretation of role nouns in French). The chapter is structured as follows. The research questions and hypotheses put forward by Gygax et al. (2008), as well as the study's design and results, are presented in Sect. 4.1. Section 4.2 discusses the necessity of replication studies in general and then focuses more on the specific reasons for replicating Gygax et al. (2008), while Sect. 4.3 explains the changes that were made when replicating this study. The research questions, hypotheses and method of Experiment 1 are described in Sects. 4.4.1 and 4.4.2, while Sect. 4.4.3 presents the main results. Section 4.4.4 focuses on further analyses and additional observations on the data. Section 4.4.5 discusses findings and limitations while giving an outlook on research questions for future experiments, including Experiment 2. A summary of the chapter is provided in 4.5.

[1] See footnote 24 in Chap. 3.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/978-3-662-71663-2_4.

C. Stumm, *When Voisins Can Be Women and When They Cannot – Masculine Generics in French*, Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics, https://doi.org/10.1007/978-3-662-71663-2_4

4.1 The Initial Study: Gygax et al. (2008)

I have presented Gygax et al.'s (2008) study in Sect. 3.2.1.2; I now present it more in detail in order to replicate its French part as carefully as possible in Experiment 1. In this vein, while presenting the whole study, I concentrate on Gygax et al.'s French sample.

Gygax et al.'s (2008) study was one of the first empirical studies to explicitly evaluate whether both a role noun's masculine form (i.e., linguistic input) and its stereotypicality (i.e., extra-linguistic input) influence its interpretation (Gygax et al. 2008: 464 f., 470). The experiment was based on experimental sentence pairs, in which the first sentence presents a stereotypically male, stereotypically neutral or stereotypically female role noun in the masculine plural form (e.g., *voisins* 'neighbors$_{M.PL}$', which is stereotypically neutral).

Note that, unlike generic nouns like the grammatically masculine *témoin* 'witness$_{M.SG}$', which carries a fixed grammatical gender (see Sect. 2.2.1; Table 2.1), for the masculine role nouns that are analyzed here, feminine counterparts can be formed thanks to suffixation (e.g., *voisins* '(male) neighbors$_{M.PL}$' vs. *voisines* 'female neighbors$_{F.PL}$'). Further, while personal nouns, which include kinship terms such as *mère* 'mother$_{F.SG}$' and *frère* 'brother$_{M.PL}$', carry biological/social gender as part of their core lexical meaning (i.e., *lexical gender*; see Sect. 2.2.1.3), the role nouns under investigation in the present research do not (Gygax et al. 2021a: 2, 3, 5). Importantly, the rule indicating that the masculine or feminine grammatical gender of a role noun generally correlates with the referent's biological/social gender, while masculine nouns have a generic and a specific meaning (see Sect. 2.2.2), also applies to the role nouns investigated in the present research.

Gygax et al.'s (2008) participants evaluated whether the second sentence of an experimental pair was a *sensible continuation* of the first sentence. Their responses (*yes* vs. *no*) and response times were taken as an indication of the difficulty of combining the masculine role noun with a continuation featuring either *men* or *women* (i.e., *hommes* and *femmes* in French). The experiment was conducted in the grammatical gender languages French and German and in the natural gender language English. The English role nouns without any grammatical gender marking thus served as a control for a stereotype bias only (e.g., *beauticians are women*) (Gygax et al. 2008: 464, 471 f., 475).

I now turn to Gygax et al.'s (2008) research questions and hypotheses and then present the method and the procedure of their study.

4.1.1 Research Questions and Hypotheses

Research Questions

With their experiment, Gygax et al. (2008) addressed three research questions: they wanted to know whether (1) grammatical information (i.e., the masculine plural form of a role noun), (2) stereotype information (i.e., the male/female/neutral stereotypicality of a role noun), or (3) both information types influence the interpretation of stereotyped role nouns in the masculine plural form (Gygax et al. 2008: 470 f.; see my RQs 1 and 2 in Sect. 1.1).[2]

Hypotheses

Before running their experiment, Gygax et al. (2008) assumed that, concerning French, there were "three possible ways in which stereotype and grammatical information might interact" (Gygax et al. 2008: 470 f.); these three hypotheses are linked to the possible outcomes below:[3]

H1: Grammatical information (i.e., the masculine form of a role noun) may override a role noun's male/neutral/female stereotypicality when a role noun is interpreted.

- If this was the case, role nouns in French in the masculine plural should be interpreted specifically (= more and quicker *yes* answers for sentence pairs with a second sentence featuring *hommes*, while sentence pairs with a second sentence featuring *femmes* should generate less and slower *yes* answers) (Gygax et al. 2008: 470 f.).

[2] As mentioned in Sect. 2.1, Gygax et al. (2008: 464, 470 f.) differentiate between *grammatical information* and *stereotype information*. While Gygax et al.'s (2008) original terminology is used above when citing the authors' research questions and hypotheses, in the present book, I differentiate between *linguistic* and *extra-linguistic information* when analyzing the different factors that may influence the interpretation of masculine role nouns.

[3] As already mentioned, the initial study examined role nouns in the plural form in French, German and English. However, focusing on the French sample only (see Sect. 4.2), I do not enumerate the research hypotheses of Gyxax et al. (2008) which are not relevant for my replication study; for the hypotheses on the natural gender language English and the possible influence of cross-linguistic differences, see Gygax et al. (2008: 470 f.).

H2: Stereotype information (a role noun's male/neutral/female stereotypicality) may override[4] grammatical information (i.e., the masculine form of a role noun) when a role noun is interpreted.

- If this was the case, stereotypically male role nouns should generate a male bias, whereas stereotypically female role nouns should generate a female bias. Stereotypically neutral role nouns, however, should not show any of these biases (= more and quicker *yes* answers for sentence pairs with a second sentence featuring *hommes* for stereotypically male role nouns, more and quicker *yes* answers for sentence pairs with a second sentence featuring *femmes* for stereotypically female role nouns, an equal number of *yes* answers for both *hommes* and *femmes* continuations for stereotypically neutral role nouns in approximately the same time) (Gygax et al. 2008: 471).

H3: Both types of information might influence the interpretation of masculine role nouns.

- If this was the case, stereotypically female role nouns in the masculine plural form should not yield any bias as the two influences would cancel each other out (= an equal number of *yes* answers for both *hommes* and *femmes* sentences for stereotypically female role nouns in approximately the same time); stereotypically male role nouns in the masculine form would trigger a significant male bias (= more and quicker *yes* answers for *hommes* sentences for stereotypically male role nouns) and stereotypically neutral role nouns in the masculine form would generate a slight male bias (= slightly more and quicker *yes* answers for *hommes* sentences) (Gygax et al. 2008: 471).[5]

Before turning to the study's results in Sect. 4.1.3, we now turn to Gygax et al.'s (2008) method.

[4] *Overridden* means that stereotypicality *prevails* over grammatical gender marking when a masculine role noun is interpreted; see footnote 28 in Chap. 3.

[5] See also Gabriel & Gygax (2008: 453).

4.1.2 Method

Participants
The study's final French sample consisted of 35 students from Fribourg University in French-speaking Switzerland. A similar number of English- and German-speaking students from the University of Sussex and the University of Bern were tested for the English and German parts of the experiment. The participants received course credits or £4 (Gygax et al. 2008: 471).

4.1.2.1 Materials and Design

In this section, I present Gygax et al.'s (2008) experimental design. I first present the design of the experimental and filler items and then turn to the apparatus and the procedure. As Experiment 1 replicates the French part of Gygax et al.'s (2008) study, I concentrate on the French stimuli and instructions in the following.

4.1.2.1.1 Experimental Items

The experimental items used by Gygax et al. (2008) consisted of 36 sentence pairs. The first sentence of each pair introduced a group of people by using a masculine role noun in the plural form. The second sentence represented either some men or some women (i.e., *hommes* or *femmes*), indicating that the characters mentioned in the first sentence were a mixed group (Gygax et al. 2008: 271 f.). An example of an experimental item in French representing a stereotypically neutral role noun and *femmes* is:

(15a) *Les voisins sortaient de la cafétéria./*
'The neighbors$_{M.PL}$ were coming out of the cafeteria./'
(15b1) *A cause du temps nuageux, une des femmes avait un parapluie.*
'Because of the cloudy weather, one of the women had an umbrella.'

The experiment is based on two important experimental manipulations: the first concerns the stereotypicality of the role noun introduced in the first sentence. The items featured either a stereotypically male, neutral or female role noun. The role nouns had been chosen from a norming study by Gabriel et al. (2008) in which participants had to indicate the percentage of men and women they thought of as occupying these roles. The role nouns with the strongest (male/neutral/female) stereotypicality were used (see Table 4.1). Moreover, in the study, stereotype information is thought to be conveyed only by the role noun (Gygax et al. 2008: 472, 475; Gabriel & Gygax 2008: 453 f.).

Table 4.1 Evaluated proportion of men, Gygax et al. (2008: 473). (From Gabriel et al. 2008)

Male stereotypes		Neutral stereotypes		Female stereotypes	
Espions 'spies'	74%	Chanteurs 'singers'	48%	Esthéticiens 'beauticians'	18%
Golfeurs 'golfers'	73%	Promeneurs 'pedestrians'	52%	Assistants maternels 'birth attendants'	18%
Politiciens 'politicians'	72%	Spectateurs de cinema 'cinema goers'	50%	Diseurs de bonne aventure 'fortune tellers'	28%
Policiers 'police officers'	70%	Auditeurs de concert 'concert goers'	51%	Caissiers 'cashiers'	24%
Statisticiens 'statisticians'	74%	Ecoliers 'schoolchildren'	53%	Infirmiers 'nurses'	30%
Patrons 'bosses'	74%	Spectateurs 'spectators'	51%	Coiffeurs 'hairdressers'	38%
Informaticiens 'computer specialists'	67%	Voisins 'neighbors'	50%	Etudiants en psychologie 'psychology students'	33%
Chirurgiens 'surgeons'	75%	Nageurs 'swimmers'	50%	Diététiciens 'dieticians'	37%
Techniciens 'technicians'	75%	Joueurs de tennis 'tennis players'	54%	Couturiers 'dressmakers'	40%
Ingénieurs 'engineers'	74%	Auteurs 'authors'	54%	Danseurs 'dancers'	29%
Etudiants en physique 'physics students'	67%	Musiciens 'musicians'	59%	Vendeurs 'sales assistants'	37%
Aviateurs 'pilots'	74%	Skieurs 'skiers'	55%	Assistants sociaux 'social workers'	33%
Mean	*72%*		*52%*		*30%*

In total, there were 36 experimental sentence pairs of which 12 were introduced by a stereotypically male role noun, 12 items by a stereotypically neutral one and 12 by a stereotypically female one. The factor *stereotypicality of the role noun* (male/neutral/female) varied between items, but within participants. A first

sentence with a stereotypically female role noun is shown in (23) and with a stereotypically male one in (24) (Gygax et al. 2008: 471 f., 475):

(23) *Les infirmiers marchaient dans la gare./*
'The nurses$_{M.PL}$ were walking through the station./'
(24) *Les ingénieurs étaient déjà devant la fontaine./*
'The engineers$_{M.PL}$ were already at the fountain./'

The second experimental manipulation is the mention of *femmes* or *hommes* in the second sentence of the pair. 18 of the 36 second sentences mentioned *femmes*, 18 mentioned *hommes*. The factor *continuation* varied within both items and participants (Gygax et al. 2008: 474 f.).[6] The same sentence pair as (15a)–(15b1) with a *hommes* continuation would thus be:

(15a) *Les voisins sortaient de la cafétéria./*
'The neighbors$_{M.PL}$ were coming out of the cafeteria./'
(15b2) *A cause du temps nuageux, un des hommes avait un parapluie.*
'Because of the cloudy weather, one of the men had an umbrella.'

Hence, each participant saw 18 *femmes* continuations in the second sentences preceded by six sentences introducing a stereotypically female role noun, six introducing a stereotypically male one and six introducing a stereotypically neutral one. Conversely, every participant saw 18 second sentences featuring *hommes* that were preceded by six first sentences introducing a stereotypically female role noun, six introducing a stereotypically male one and six introducing a stereotypically neutral one (see the 2×3 design in Table 4.2). The intended interpretation of the masculine role nouns in all stereotype conditions was the generic interpretation. Accordingly, *femmes* in the second sentence should be interpreted as a subset of the group denoted by a masculine role noun[7] in the first sentence.[8]

[6] See also Gabriel & Gygax (2008: 454).

[7] Obviously, in the English stimuli, serving as a control for a stereotype influence only, the role nouns did not present any mark of grammatical gender.

[8] Strictly speaking, the subset featured in the second sentences is a sub-subset of the main group. For instance, *la majorité des femmes* is intended to be understood as 'the majority of the women among the women that are part of a group composed of both men and women'. In this vein, in example (15a)–(15b1), *une des femmes* means 'one of the female neighbors in a group of male and female neighbors has an umbrella'. In the language and gender literature, the (sub-)subset is sometimes referred to as *anaphor* (e.g., in Anaya-Ramírez et al. 2022). While the generic or specific interpretation of masculine role nouns shares similarities with

Moreover, the second sentences qualified the *femmes* and *hommes* with *un/e des*, *la majorité des*, *quelques*, *la plupart des*, *une partie des* or *plusieurs hommes/femmes* 'one$_{M/F.SG}$ of the, the majority of the, few of the, most of the, some of the or several of the men/women'[9] (Gygax et al. 2008: 472, 475).

The first sentences varied in terms of the activity the subjects of the sentence were doing, for which six different verb types were used: the first sentences portrayed a group of people either 1) *coming out of a place*, 2) *waiting somewhere*, 3) *going into a place*, 4) *being somewhere*, 5) *walking somewhere* or, 6) *going across a place*. Role nouns were randomly assigned to one of the six content types (Gygax et al. 2008: 472).

For the second sentences, three different content types were used, displaying either an emotion, a weather condition or an action. More precisely, the content types portrayed the emotions *calm*, *sad*, *angry* and *good mood*, the weather conditions *sunny/wear a hat*, *heat/no coat*, *bad weather/umbrella*, *bad weather/raincoat* and the actions *leave*, *stay*, *take a break* and *walk away*.[10] Thus, the three content types of the second sentences differed slightly in combination with the different role nouns from the first sentences; for instance, *skieurs* 'skiers$_{M.PL}$' was matched with *hat*, *walk away* or *calm*, while *couturiers* 'tailors$_{M.PL}$' was matched with *sad*, *umbrella* or *take a break* in the second sentence (Gygax et al. 2008: 475).

anaphora resolution in the sense that a link (an anaphorical relation) is established between the previous mention of an entity and the 'repeated' reference (Garrod 2001: 490), the female subset (e.g., *la majorirté des femmes*) and the main group, the 'antecedent' (e.g., *les voisins*) are not coreferential. Moreover, in contrast to an anaphor, a noun phrase like *la majorirté des femmes* is not bound to the antecedent's governing category (Levinson 2000: 281). I therefore chose not to speak of the (female) subset as an *anaphor referring to the main group*. Instead, in order to be as precise as possible, in the present book, I speak of the *(female) subset referring to the main group denoted by a masculine role noun.*

[9] In the remainder of this book, the translation of *un/e des*, *la majorité des*, *quelques*, *la plupart des*, *une partie des* or *plusieurs (hommes/femmes)* 'one$_{M/F.SG}$ of the, the majority of the, few of the, most of the, some of the or several of the (men/women)' is ommitted.

[10] The article by Gygax et al. (2008: 474) cites some non-existing content type examples (e.g., *put some sun cream on*). However, the stimuli actually used cover the three content types indicated above.

Table 4.2 2×3 Design, Gygax et al. (2008), Experiment 1

		Continuation	
		hommes	***femmes***
Stereotypicality	**Male**	*Les **ingénieurs** étaient déjà devant la fontaine./* 'The engineers$_{M.PL}$ were already at the fountain./'	
		*A cause de la chaleur, une partie des **hommes** portait un chapeau.* 'Because of the heat, some of the men were wearing a hat.'	*A cause de la chaleur, une partie des **femmes** portait un chapeau.* 'Because of the heat, some of the women were wearing a hat.'
	Neutral	*Les **voisins** sortaient de la cafétéria./* 'The neighbors$_{M.PL}$ were coming out of the cafeteria./'	
		*A cause du temps nuageux, un des **hommes** avait un parapluie.* 'Because of the cloudy weather, one of the men had an umbrella.'	*A cause du temps nuageux, une des **femmes** avait un parapluie.* 'Because of the cloudy weather, one of the women had an umbrella.'
	Female	*Les **infirmiers** marchaient dans la gare./* 'The nurses$_{M.PL}$ were walking through the station./'	
		*Du beau temps étant prévu, la majorité des **hommes** n'avait pas de veste .* 'Since sunny weather was forecast, the majority of the men weren't wearing a coat.'	*Du beau temps étant prévu, la majorité des **femmes** n'avait pas de veste .*[a] 'Since sunny weather was forecast, the majority of the women weren't wearing a coat.'

[a] For the sake of consistency, I present the stimuli as they were featured in Experiment 1; Gygax et al.'s (2008) stimuli may differ slightly (see Sect. 4.3.2)

Across the experiment, based on the different content types of the second sentences, Gygax et al. (2008) created six lists (i.e., 3 content types × 2 continuations (i.e., *hommes* vs. *femmes*)), ensuring that each role noun was equally often followed by *femmes* and *hommes*. Each participant saw one list. More precisely, each participant saw one role noun (e.g., *voisins*) only in combination with one continuation type (i.e., *hommes* or *femmes*) and one content type (e.g., *bad weather*) in the second sentence. The first sentence of an experimental pair was the same for all participants (Gygax et al. 2008: 472, 474 f.; see the 2×3 design in Table 4.2). For more information on the pre-testing of the role nouns and the construction of the experimental pairs, see Gygax et al. (2008: 471–475).

4.1.2.1.2 Filler Items

Gygax et al.'s study (2008) featured 36 filler sentence pairs, which were generated to elicit a clear *no* response to counterbalance the experimental items for which the predicted response was *yes*. The 36 filler items were randomly interspersed with the experimental sentence pairs and consisted of three different filler types. Filler type 1 presented sentences in which the subjects of the first and second sentences did not match (Gygax et al. 2008: 471–475):[11]

(25a) *Les allergologues sortaient de l'université./*
'The allergists$_{M./F.PL}$ were leaving the university./'

(25b) *Après un certain temps, quelques dactylographes semblaient vouloir s'en aller.*
'After some time, some of the typists$_{M./F.PL}$ seemed to want to leave.'

Filler type 2 presented role nouns in the first sentence whose biological/social gender did not match the continuation (Gabriel et al. 2017: 799):

(26a) *Les moines traversaient le cloître./*
'The monks$_{M.PL}$ were walking through the cloister./'

(26b) *On pouvait voir que la majorité des femmes était vraiment de bonne humeur.*
'It was obvious that the majority of the women were in a really good mood.'

Filler type 3 presented sentence pairs which were semantically inconsistent (Gabriel et al. 2017: 799):

[11] See also Gabriel et al. (2017: 799); Gabriel & Gygax (2008: 453 f.).

(27a) *Les fleuristes attendaient sous la* pluie./
'The$_{M./F.PL}$ florists$_{M./F.PL}$ were waiting in the rain./'

(27b) *Étant donne le beau temps, une partie des hommes n'avait pas de veste.*
'Since sunny weather was forecast, some of the men weren't wearing a coat.'

4.1.2.2 Apparatus and Procedure

Apparatus

Gygax et al. (2008) used a Power Macintosh computer 4400 using PsyScope Software and a button box that permitted millisecond accuracy (Gygax et al. 2008: 475).

Procedure

During the experiment, the participants' task was to decide whether the second sentence of an experimental item, which either featured *hommes* or *femmes*, was a *continuation possible* 'sensible continuation'[12] of the first sentence, featuring a stereotypically male/neutral/female masculine plural role noun (Gygax et al. 2008: 472, 475).

The participants were presented with one sentence at a time and were instructed to read each sentence at their normal reading pace. Before each passage, *Prochaine paire ?* 'Next pair?' appeared on the screen. When the participants pressed the *yes* button, the first sentence appeared. After having read the first sentence, participants pressed the *yes* button again to make the first sentence disappear and to make the second sentence appear. According to their response, they then pressed the *yes* or the *no* button (= *it's (not) a sensible continuation*). The participants were instructed to respond as quickly yet as precisely as possible, by pressing *yes* or *no* after having read the second sentence (Gygax et al., 2008: 475 f.). I henceforth call this presentation mode *Self-Paced Reading Whole Sentence Presentation* (SPR WSP).

Now that the rationale and method of the study on which Experiment 1 is based has been thoroughly presented, in the next section, I briefly discuss its outcome.

[12] Fr. *Continuation possible* is the original translation of *sensible continuation* in English by Gygax et al. (2008). It can be discussed whether this was the closest translation possible (in French, *continuation logique* or *sensée* could be considered to be closer). However, as I wanted to replicate the experiment as closely as possible, I decided to stick to the original wording.

4.1.3 Results

The inspection of the French and German data showed that there were fewer and slower *yes* responses for *women* continuations than for *men* continuations in French and German. Importantly, this was the case across all stereotype conditions. Conversely, in English, after sentences containing stereotypically female role nouns, there were more positive responses for *women* continuations; after sentences containing stereotypically male role nouns, there were more positive responses for *men* continuations; there was a balanced number of *yes* responses for both continuation types in the stereotypically neutral condition. Thus, the role nouns' stereotypicality influenced the English participants' mental representations of the referents' biological/social gender, whereas the morphosyntactic factor *masculine form* seems to have prevailed over the extra-linguistic factor *stereotypicality* in French and German. The authors concluded that masculine role nouns intended as generics are interpreted specifically in French and German, regardless of the stereotypicality of the masculine role nouns (Gygax et al., 2008: 464, 476–480, 483).[13] I present Gygax et al.'s (2008) French results in more detail when comparing them to the outcome of Experiment 1 in Sect. 4.4.3.

4.2 The Rationale Behind the Replication

In the present section, I explain why replication research is needed and why it constitutes a path to further knowledge. Further, I give examples of replication studies that have focused on the interpretation of masculine forms and discuss in more detail why I judged it necessary to replicate Gygax et al.'s (2008) French sample about ten years after the initial study was run.[14]

[13] See also Gabriel et al. (2017: 797); Misersky et al. (2019: 644).

[14] Gygax et al. seem to have run the experiment in 2006, but it was first published in 2008. As the study is commonly known as Gygax et al. (2008), for the sake of simplicity, I stick to the year 2008 when mentioning their experiment. However, I am aware of the fact that there is a bigger difference in time between the running of the initial experiment and the replication study (i.e., 2006 to 2019, rather than 2008 to 2019). However, as previously indicated, a lively discussion of alternative forms for the generic use of masculine role nouns in France only started in 2017. It should thus not make a difference whether the initial data were collected in 2008 or 2006, as they could not have been influenced by the more common integration of (contracted) double forms like *artisan·es* ('artisans$_{M\cdot F.PL}$') in either case. This also applies to previous replications of Gygax et al. (2008) conducted by Garnham et al. (2012) and Sato et al. (2013).

The so-called *replication crisis* appeared on the academic scene around the year 2015, when only 39 replication studies of 100 psychology experiments that had been published in highly ranked journals were judged to have replicated the original results (Open Science Collaboration 2015: aac4716–7). This has raised fundamental questions about the validity and reliability of scientific findings. While replication research can be seen as a key element of the scientific process and as the basis of good scientific practice, academia still presents low rates of replication research. Within applied linguistics, too, replication research remains scarce, which results in the same findings being reiterated without verification, while the conducting of 'innovative' studies is encouraged. Yet, replication is required precisely to examine novel findings (Marsden et al. 2018: 323, 363, 375; Porte & McManus 2019: 1, 3–5). However, the interpretation of replicated data is quite challenging. This is why scientists have recently called for more clearly defined standards for replications. Furthermore, in order to analyze the extent to which the effects stated in the initial study replicate, more than one replication study is needed. Also, one has to explain exactly why a certain study should be repeated and why it should be replicated in a certain way (Schauer & Hedges 2021: 138).[15] In the following section I explain why Gygax et al.'s (2008) study sparked my interest in doing a replication study.

The study by Gygax et al. (2008) has made a significant contribution to the field of language and gender: Kotthoff & Nübling (2018: 108) consider it the most comprehensive and sophisticated study on the question of whether masculine role nouns are interpreted specifically. First, by investigating the grammatical gender languages French and German and by comparing them to the natural gender language English, it is one of the few cross-linguistic studies that exist in the field. Secondly, by investigating French, the study contributed to the closing of a significant research gap, as research on the interpretation of masculine role nouns in French (and Romance languages in general) had been scarce so far. Thirdly, Gygax et al. (2008) present a carefully designed study, which only implicitly hints at a group's biological/social gender composition, thanks to a sentence evaluation paradigm and the recording of response times. This permits a more subtle analysis of the interpretation of masculine role nouns than other experiments with more explicit designs, such as explicitly asking the participants to judge the biological/social gender composition of a previously named group, as done by Brauer &

[15] See also Hedges & Schauer (2019a: 550 f., 563, 567); Hedges & Schauer (2019b: 557 f.); Porte & McManus (2019: 3, 12–15, 22–25).

Landry (2008).[16] Finally, the study's relevance is also illustrated by its frequent citation by scholars examining the issue (about 100 citations on Google Scholar in 2019),[17] but it is also mentioned in non-scientific discussions promoting a gender-fair use of language (e.g., Lobin & Nübling in the *Süddeutsche Zeitung*, 2018/06/07; the best seller *Invisible Women* on data bias by Caroline Criado-Perez, 2019; and the comic *Sea, sexisme and sun*, by Marine Spaak, 2019).

Furthermore, in the 2010s, the study was extended and adapted to other linguistic backgrounds (i.e., for French-English bilinguals, see Sato et al. 2013; for speakers of Norwegian, see Gabriel & Gygax 2008) and has been repeated with a different experimental setup integrating pronominal reference (e.g., *ils* 'they$_{M.PL}$') (Garnham et. al. 2012). While these replications have confirmed the stability of the effects stated by Gygax et al. (2008), several years have passed since the experiment was last repeated for French (by Sato et al. 2013).[18] Concerning the French sample, this is especially surprising as gender equality has been a key issue in the past decade: from 2012–2014, François Hollande reconstituted the Ministry of Women's Rights for his administration and Emmanuel Macron declared in 2015 that gender equality would be a major cause during his mandate.[19] Indeed, in the past decade French society has moved on and women are more actively involved in diverse domains of the labor market (*European Institute for Gender equality* (= EIGE) 2005–2019); *Institut national de la statistique et des études économiques* (= INSEE) 2018: 39). This could result in an easier association of women with masculine role nouns (Eisenberg 2018). Moreover, since 2017, the *#MeToo/BalanceTonPorc* movement has sparked new discussions on feminism and the role of women in society in general.

[16] See also the studies run by Braun et al. (1998) and Rothmund & Scheele (2004) on German.

[17] To date, the study remains Pascal Gygax's most cited study. The interest in it has increased since 2019; on 2022/04/25 it had been cited 231 times according to Google Scholar (<https://scholar.google.ch/citations?user=OUzhe58AAAAJ&hl=fr>).

[18] Of course, studies have explored the findings in new ways, such as Lévy et al. (2014) on French masculine role nouns, who gradually increased the level of exposure to female referents, or Vervecken & Hannover (2015) on Dutch and German. Note that the French sample has very recently been replicated by Tibblin et al. (2023a, 2023b). Moreover, Glim et al. (2023) and Körner et al. (2022, 2024) adapted Gygax et al.'s (2008) stimuli for German, as did Anaya-Ramírez et al. (2022) for Spanish. I do not include the latter replication studies in the main text as they were published after I had run Experiment 1 in 2019, and thus obviously could not have influenced my decision to replicate Gygax et al.'s (2008) French sample.

[19] See the *Ministère chargé de l'Égalité entre les femmes et les hommes, de la Diversité et de l'Égalité des chances* <www.egalite-femmes-hommes.gouv.fr/25948> [12.09.2022].

Crucially, the mid-2010s can be considered as a turning point concerning the discussion on the use of gender-fair language in France. For instance, the use of double forms instead of the generic use of masculine role nouns has been officially promoted (e.g., *Pour une communication sans stéréotype de sexe*, edited by the *Haut Conseil à l'Égalité entre les femmes et les hommes* 2016). *L'écriture inclusive*[20] 'inclusive writing' has been broadly discussed by national educational, political and linguistic institutions, as well as in the media, since then. This was triggered in 2017 by the publication of the first French schoolbook (*Questionner le Monde*, by Sophie Le Callennec) using elements of the *écriture inclusive*; in order to avoid the generic use of masculine role nouns, contracted double forms such as *artisan.e.s* 'artisans$_{\text{M·F.PL}}$' were used. The publication of the schoolbook led to a statement on the topic by the French Prime Minister Édouard Philippe, defining the gender-fair use of the French language in official documents. While the French government encourages the use of both masculine and feminine role nouns (e.g., complete double forms), it bans the abbreviation of double forms with the *point médian* 'interpunct' (e.g., *artisan·es* 'artisans$_{\text{M·F.PL}}$') from official speech (*Circulaire du 21 novembre 2017 relative aux règles de féminisation et de rédaction des textes publiés au Journal officiel de la République française*).[21] The Académie française also responded immediately to the publication of the schoolbook and characterized *l'écriture inclusive* as "a mortal danger" (my translation) to the French language. However, in early 2019, the Académie revised its critical position on feminization,[22] and finally accepted the latter (e.g., *une architecte* 'an$_{\text{F.SG}}$ architect$_{\text{F.SG}}$') (l'Académie française 2017, 2019).[23]

Importantly, the social debate on the generic use of masculine role nouns and an increase in the use of feminine role nouns (Abbou 2011: 60 f.)[24] may have influenced the interpretation of masculine role nouns such that they tend to be even more readily associated with men than they were before (Gygax & Gabriel. 2008: 146 f.; Lévy et al. 2014: 37).[25]

[20] For a detailed diachronic and synchronic analysis of the term *écriture inclusive*, see Abbou (2023).

[21] The schoolbook *Questionner le Monde* had however not used the interpunct, but abbreviations like *artisan.e.s* 'artisans$_{\text{M.F.PL}}$'.

[22] *Féminisation* 'feminization' is the discussion about how to create feminine forms for job titles that so far have been used in the masculine form for men and women (see footnote 6 in Chap. 1).

[23] For an analysis of the debate on gender-fair writing in French, see Cerquiglini (2018); Elmiger (2022a).

[24] See also Tibblin et al. (2023a: 29).

[25] See also Stahlberg & Sczesny (2001: 138).

However, Miller & James (2009) observed that the 1980s empirical finding that the generic *he* in English is interpreted specifically usually caused great disbelief 30 years later. Their students, who seemed to perceive themselves as being free from social bias compared to and unlike previous generations, were skeptical. This is why Miller & James indicated a "need for replication" (Miller & James 2009: 486) and decided to repeat MacKay & Fulkerson's 1979 study. Following the initial study design, Miller & James analyzed whether a sentence featuring a role noun (e.g., *runner*) followed by a *he* was judged as being able to "refer to one or more females" (Miller & James 2009: 487). After inspection of their data, the authors conclude that the male bias of the generic *he* seems to have remained stable between 1979 and 2009 (Miller & James 2009: 485 f., 492–494).

The findings of the studies by Garnham et al. (2012) and Sato et al. (2013) that replicated Gygax et al. (2008) go in the same direction: both find that the claims by Gygax et al. (2008) concerning French are robust, irrespective of the linguistic background of the participants (French-English bilinguals in Sato et al. 2013) and the addition of pronouns to the stimuli (e.g., *ils* 'they$_{M.PL}$' in Garnham et al. 2012). They thus confirm that, in French, role nouns in the masculine plural form continue to bias readers towards a specific interpretation (Garnham et al. 2012: 497 f.; Sato et al., 2013: 11, 13).[26] Moreover, Garnham et al. (2012: 493, 498) showed in their replication that the male bias was stronger for stereotypically male role nouns than for stereotypically neutral and female role nouns.

In contrast to these findings, Nissen (2013) (see Sect. 3.1.2) investigated masculine plural role nouns in Spanish and showed, in a questionnaire study in which participants had to fill in first names following masculine role nouns, that masculine role nouns were interpreted generically in 2005, while they had been interpreted specifically ten years before (Nissen 2013: 100, 105, 112 f.).

[26] This is further corroborated by replication studies based on Gygax et al. (2008) that have been published since I ran Experiment 1, namely by Tibblin et al. (2023 a, 2023b) on French, by Körner et al. (2022, 2024) on German and by Anaya-Ramírez et al. (2022) on Spanish. As Schunack & Binanzer's (2022) study was published after I ran my replication study in 2019, I do not integrate their findings into the main text as they did not influence my considerations when deciding to replicate Gygax et al.'s (2008) French sample. Yet it should be noted that they replicated a norming study (Gabriel et al. 2008) and a naming study (Stahlberg & Sczesny 2001) featuring masculine role nouns in German and found the same trends indicating a male bias ascribed to the masculine role nouns as those at the start of the 2000s. However, not all of these trends were statistically significant (any longer) (Schunack & Binanzer 2022: 309, 318–320, 324, 332–334). See Keith et al. (2022) for similar findings on German when replicating Stahlberg et al. (2001).

Still, we cannot be sure whether the finding concerning the instability of the interpretation of masculine role nouns in Spanish can be transferred to French, as the French grammatical gender system is quite different from the Spanish one, even though both are Romance languages. Moreover, we also do not know whether the claims made by Miller & James concerning a pronoun free of grammatical gender marking (e.g., *he*) hold true for French role nouns as well, or, if so, to what extent this is the case, especially as French presents a completely different grammatical gender system than English. Additionally, the use of gender-fair language has not been implemented simultaneously in all (French-speaking) countries and thus may impact the interpretation of masculine role nouns differently (Gygax et al. 2019a: 5). Accordingly, in the context of the controversial and very emotional social debate on gender-fair language, there seems to be an urgent need for interchangeable data: to establish a valid basis for reasons for and against language policies, it is crucial to investigate whether prior findings can (still) be considered stable over time (Gygax et al. 2008: 481; Porte & McManus 2019: 22–24).

Only a *close* replication permits a direct comparison of previous and present findings and that is why I decided to run a close replication. A *close replication* is a replication "whereby only one major variable is modified each time […] and all others are kept as constant as possible" (Porte & McManus 2019: 73). The rationale behind this is that it helps when it comes to analyzing the replicated data. If we only change one major variable (e.g., the point in time when the data were collected), a different outcome would suggest that it could be that this particular variable contributes to the observed effect to a much greater extent than the initial study suggested. If the outcome of a close replication is identical to that of the initial study, this would suggest that the changing of the major variable has not influenced the observed effect significantly (Porte & McManus 2019: 71–73). Put differently, if I find the same data patterns in 20219 as Gygax et al. (2008), the interpretation of masculine role nouns in French has not been affected by the factor *time*. In this vein, my close replication also analyzes whether the interpretation of masculine role nouns is influenced by language and social change.

Thus, the use of the same study design as Gygax et al.'s (2008) French sample will lead to a more nuanced understanding of prior claims and will permit a direct comparison between prior and current findings. Moreover, SPR WSP combined with a SEV paradigm, which was used by Gygax et al. (2008), is an established method in psycholinguistic research in general (Cook & O'Brien 2023: 244; Sato & Vanek 2023: 218, 225 f.) and has shown repeatedly that it generates interpretable results when the interpretation of masculine role nouns is analyzed (as in Garnham et al. 2012). Importantly, the *yes*/*no* responses are

directly related to the interpretation of the masculine role nouns and thus to my main research question (RQ 1: *Do masculine role nouns in French trigger a male-specific interpretation?*), while the length of the response times indicates the ease or difficulty of processing the stimuli (see the hypotheses put forward by Gygax et al. in Sect. 4.1.1 and the experiment's procedure in Sect. 4.1.2.2; Cook & O'Brien 2023: 244 f.; Sato & Vanek 2023: 217 f., 225 f.). Finally, the conclusions based on my replication may serve as a basis for future experiments on masculine role nouns in general and for my second experiment in particular (Porte & McManus 2019: 13 f.).

I now explain the way in which the initial study was modified before I ran the close replication (i.e., Experiment 1).

4.3 From Gygax et al. (2008) to Experiment 1

As mentioned before, since a close replication was to be carried out, all efforts were made to replicate Gygax et al.'s (2008) French sample in the most faithful of ways (Porte & McManus 2019: 73). Apart from the manipulation of one major variable (i.e., data collection in 2019 instead of 2008), only minor changes were made. These are summarized below. First, I introduce the major change; secondly, I explain the minor adaptions.

4.3.1 Major Change: Factor *Time*

While the initial study was run in 2008,[27] Experiment 1 was conducted in 2019. As previously indicated, the lapse of time between the studies includes several social evolutions such as a more gender-fair labor market (INSEE 2018: 39; EIGE 2005–2019) and a feminist language reform encouraging the use of feminine role nouns in parallel with masculine role nouns when reference is made to both men and women (Abbou 2011: 60 f.; *Pour une communication sans stéréotype de sexe* (2016) by the *Haut Conseil à l'Égalité entre les femmes et les hommes*). Given these important societal and linguistic changes that occurred between 2008 and 2019 (see Sect. 4.2), I considered the factor *time* a major change.

Given the lively and recent discussions on gender-fair language in France, I can consider my participants to be more used to role nouns in the feminine form

[27] See footnote 14.

than the participants from 2008.[28] Moreover, the 2000s mainly concentrated on the feminization of job titles, while alternatives to the generic use of masculine role nouns (e.g., double forms) have been at the center of more recent discussions on the gender-fair use of French (Elmiger 2000: 213). My participants (see Sect. 4.3.2.1) should thus at least be aware of the existence of alternatives to masculine role nouns. Apart from public discussions on the gender-fair use of language, we have to take a closer look at the linguistic environment within which my participants were receiving their academic education.

Judging by the language used on the website of the Aix-Marseille University (= AMU), we can proceed from the assumption that its students are used to gender-fair language. For instance, on the home page, double forms for most of the role nouns are used (e.g., *étudiantes et étudiants* 'male students$_{M.PL}$ and female students$_{F.PL}$'). We can also find some abbreviations using the *point median* 'interpunct' (AMU's website as in October 2019: <www.univ-amu.fr>). However, while double forms are frequently used on the home page, masculine role nouns (most probably generically intended) are used when more detailed information on a topic is provided. For instance, when clicking on *étudiantes et étudiants* 'male students$_{M.PL}$ and female students$_{F.PL}$' on the website, one is redirected to the site *étudiants* 'students$_{M.PL}$'. These inconsistencies in linguistic style reflect the fact that AMU does not have an official policy for gender-fair language (which is the case for most French universities). Nonetheless, AMU has acted in response to recent discussions, especially by using feminine and masculine role nouns side by side when reference is made to both men and women. Thus, the participants of the replication study can be expected to have been exposed to a mix of supposedly generically intended masculine role nouns and gender-fair alternatives like double forms.

4.3.2 Minor Changes

Apart from the factor *time*, I considered all the other adaptions I made when replicating Gygax et al. (2008) to be minor changes. In what follows, I explain these minor changes, starting with the comparison of Experiment 1's sample and Gygax et al.'s (2008) French sample before turning to the stimuli used in Experiment 1. I then present the ways in which Experiment 1's apparatus, procedure

[28] However, the broader and earlier discussion in German-speaking Switzerland might already have influenced the initial study's participants in 2008. Likewise, the feminization of job titles is a less recent phenomenon in French-speaking Switzerland than in France (Gygax et al. 2019a: 5).

and corresponding instructions, as well as the statistical analyses used to interpret the results, differ from the initial study.

4.3.2.1 Participants

While the participants for the French sample in the initial study were students from Fribourg University in French-speaking Switzerland, the participants in the replication study were students from AMU. As the grammatical gender system is a fundamental phenomenon of the French language and does not differ between Hexagonal and Helvetian French, I considered the change in location as a minor variable (Porte & McManus 2019: 99).

Gygax et al.'s final sample was composed of 35 participants (Gygax et al. 2008: 471); I tested 44 students. Unfortunately, I did not have any further information on the original sample before running the experiment. However, in Gabriel & Gygax's work on masculine role nouns in Norwegian (Gabriel & Gygax 2008: 453), we get information on the age and biological/social gender of the participants in the study on French: the Swiss French-speaking students must have been in their early twenties and the group comprised around as many women as men. Although I was not aware of this before running the replication, the participants from my replication study were more or less of the same age (my sample's $M = 19.95$, $SD = 1.95$). My sample comprised nine males and 35 females. Moreover, for Experiment 1, only French monolinguals were recruited—bilinguals were excluded from the study; there was no indication of the possible multilingualism of the participants in Gygax et al. (2008).

4.3.2.2 Experimental Items

Given the societal changes that have occurred in France in the past decade (see Sect. 4.2), assumptions concerning gender roles might have changed. I therefore checked the stereotypicality of the role nouns used by Gygax et al. (2008) by comparing them to the more recent norming study by Misersky et al. (2014), which showed that the stereotypicality index of the role nouns remained almost the same between 2008 and 2014.[29] I therefore cautiously assume that from 2014 to 2019, no huge changes concerning the perception of gender roles have

[29] The biggest differences concerned *coiffeurs* 'hairdressers$_{M.PL}$' (rated as 62% female in 2008 and as 75% female in 2014) and *couturiers* 'dressmakers$_{M.PL}$' (rated as 60% female in 2008 and as 73% female in 2014). However, the role nouns remained within their respective categories, i.e., stereotypically *female*, *male* or *neutral*, which is the most important point in terms of comparability. Nevertheless, note that *chanteurs* 'singers$_{M.PL}$' was rated 52% female, thus *neutral* in 2008, and 58% female in 2014, which approaches the category of stereotypically female (yet, in my experiment, on a descriptive level, *chanteurs* received

occurred. The role nouns used in the experimental items thus did not have to be adapted and were exactly the same as in the initial study.

Based on the slightly adapted materials from Gygax et al.'s (2008) French sample (see Sect. 4.1.2.1 and the 2×3 design in Table 4.2), I created six lists of stimuli (see Sect. 1.1 of Appendix 1 in the electronic supplementary material). Most of the changes were slight grammatical and lexical changes. Below, for the sake of illustration, I present a sentence pair in which five minor changes were made (three lexical and two grammatical). The initial and adapted experimental items are presented in (28a)–(28b) and (29a)–(29b) respectively. In the following, the arrow → indicates that something has been changed in the replication study.

(28a) *Les diseurs de bonne aventure entrèrent dans le kiosque./*
'The fortune tellers$_{M.PL}$ went into the kiosk./'

(28b) *Après autant de temps, la plupart des hommes [femmes] semblaient vouloir partir.*
'After so much time most of the men [women] seemed$_{PL}$ to want to leave.'
→

(29a) *Les voyants entraient dans la boulangerie./*
'The fortune tellers$_{M.PL}$ were going into the bakery./'

(29b) *Après un certain temps, la plupart des hommes [femmes] semblait vouloir partir.*

---

relatively few *yes* responses to *femmes* items (41% of *yes* responses for *femmes* items compared to 86% for *hommes* items). For the role nouns *promeneurs* 'walkers$_{M.PL}$', *auditeurs de concert* 'concert goers$_{M.PL}$' and *écoliers* 'school children$_{M.PL}$', which were used in 2008, *piétons* 'pedestrians$_{M.PL}$', *spectateurs* 'spectators$_{M.PL}$' and *élèves* 'students$_{M.PL}$' had to be checked, since the original role nouns had not been rated in 2014. Note that Gabriel et al.'s (2008) and Misersky et al.'s (2014) norming studies are based on judgements from Swiss French-speaking participants. I thus cannot be sure that the stereotypicality of all of the role nouns is exactly the same in France. However, to ensure the comparability of the data, I decided to stick to the original role nouns from Gygax et al. (2008) for the replication. Accordingly, I also kept *politiciens* 'politicians$_{M.PL}$', which is used pejoratively in France and whose feminine form, *politiciennes* 'politicians$_{F.PL}$', is rarely used to refer to female politicians. However, the more frequently used *hommes/femmes politiques* would have stressed the referent's biological/social gender, which is why I decided to stick to the original role noun used by Gygax et al. (2008). Importantly, Misersky et al.'s (2014) data indicate that participants of all European languages investigated showed a high consensus when judging the role nouns (Misersky et al. 2014: 847; Xiao et al. 2023: 88). Moreover, the reliability of Misersky et al.'s (2014) norming study has been demonstrated for Hexagonal French for epicene nouns by Richy & Burnett (2021: 10–12). See Sebastián-Tirado et al.'s (2023) recent findings on the stability of stereotypes concerning occupations.

'After some time, most of the men [women] seemed$_{SG}$ to want to leave.'

Lexical Changes

First, *diseurs de bonne aventure* in (28a)–(28b) has been changed to *voyants* in (29a)–(29b), which is more commonly used in France nowadays (*Trésor de la langue française informatisé:* s.v. "diseur, -euse", "voyant, -ante"). Additionally, the stereotypical perception of *voyants* (female stereotype) is comparable to that of *diseurs de bonne aventure* (Misersky et al. 2014: 853, 865). Secondly, in France, a *kiosque* is a small street shop that you stand in front of to buy newspapers from the staff behind the counter. Unlike the Swiss *kiosque*, it is not a building that you enter (*Le Grand Robert* 2017: s.v.). Therefore, *entrer dans le kiosque* has been changed to *entrer dans la boulangerie*. Thirdly, the noun phrase *après autant de temps*, which would sound peculiar to French speakers from France, was changed to *après un certain temps*. These changes were implemented in order to adapt the stimuli so that speakers from France would consider them idiomatic without being distracted by Helvetisms.

Grammatical Changes

In Gygax et al. (2008), the grammatical tense of most sentences was the *imparfait*; there were only a few in the *passé simple*, with no obvious reason for this choice. These few sentences might thus stand out and create confusion among participants. Additionally, the *passé simple* is used primarily in literary texts in France and might trigger literary connotations among the French participants. As there was no semantic or grammatical necessity to use the *passé simple* in (28a), the tense was changed to the *imparfait* in (29a).

Finally, in the second sentence, a singular instead of the original plural agreement to *la plupart des* was chosen. This is consistent with common usage in France.

4.3.2.3 Filler Items

Original Fillers

Gygax et al.'s (2008) study featured 36 fillers. Gygax et al.'s (2008) fillers were intended to generate *no* answers. However, in some cases, it was possible to interpret the filler pairs in an affirmative way. Adaptions thus were made so that these items would elicit a clear *no* answer. Also, grammatical and lexical changes of the same nature as those concerning the experimental items were implemented. An example goes as follows:

(30a) *Les gouverneurs profitaient du soleil./*

'The governors$_{M.PL}$ were enjoying the sun./'

(30b) *Du mauvais temps étant prévu, la plupart des hommes portaient un imperméable.*
'Since bad weather was forecast, most of the men had an umbrella.' →

(31a) *Les gouverneurs profitaient du soleil./*
'The governors$_{M.PL}$ were enjoying the sun./'

(31b) *Etant donné le mauvais temps, la plupart des hommes portait un imperméable.*
'Given the bad weather, most of the men had an umbrella.'

In (30a)–(30b), the *forecast* of bad weather might be interpreted as a valid reason for wearing a raincoat. In (31a)–(31b), however, the actual bad weather conditions make it less plausible that the governors in the sun are wearing raincoats.

Additionally, four *no* fillers from Gygax et al.'s (2008) filler type 3 (*semantic inconsistence*) were entirely replaced by new ones as the original ones had been estimated to be quite likely to trigger a *yes* answer, e.g.:

(32a) *Les manucures prenaient leur petit-déjeuner./*
'The$_{M./F.PL}$ manicurists$_{M./F.PL}$ were having their breakfast./'
→

(32b) *A la fin de la journée, la majorité des hommes semblait vouloir partir*.'
At the end of the day, the majority of the men seemed to want to leave.'
→

I considered that *à la fin de la journée* in the second sentence (32b) could simply be understood as *later in the day*, i.e., after the breakfast mentioned in the first sentence (32a), which would generate a *yes* response, and not, as intended, a *no* response. I thus changed the filler as follows:

(33a) *Les manucures marchaient sous la pluie./*
'The$_{M./F.PL}$ manicurists$_{M./F.PL}$ were walking in the rain./'

(33b) *Etant donné le beau temps, la majorité des hommes n'avait pas de veste.*
'Given the good weather, the majority of the men weren't wearing coats.'

Due to the contradiction between *rain* in the first sentence (33a) and the good weather in its continuation (33b), the new filler item seems to be more evidently semantically inconsistent and should elicit a *no* response.

Additional Fillers

The rationale from Gygax et al. (2008) was that 36 *no* fillers should balance out 36 experimental items, which should generate *yes* responses. However, as the research topic *language and gender* does not seem to be too difficult to guess, I decided to double the number of filler items for Experiment 1 and created 36 new filler items. In addition, to reduce the possibility of a strategic answering process among participants, I decided that half of the additional fillers (i.e., 18 items) should elicit a clear *yes* response. The new fillers were eight subject fillers (filler type 1) and ten biological/social gender fillers (filler type 2) (see Sect. 4.1.2.1.2). Additional fillers based on semantic incongruence (filler type 3) were not implemented as, in combination with a positive response, they would have been of the same structure as the experimental items. An example of a *yes* filler is the following sentence in which the biological/social gender of *uncles* matches the *hommes* continuation (filler type 2):

(34a) *Les oncles attendaient au bar./*
'The uncles$_{M.PL}$ were waiting at the bar./'

(34b) *A la fin de la journée, un des hommes semblait vouloir rester.*
'At the end of the day, one of the men seemed to want to leave.'

To sum up, Experiment 1 comprised 36 experimental items and 72 filler items. The fillers comprised 54 items whose intended response was *no* and 18 items whose intended response was *yes*. Overall, including the experimental items, 54 items were intended to elicit a *yes* and 54 items a *no* response.

Interspersion of Filler and Experimental Items

In the initial study, the filler items were randomly interspersed with the experimental sentence pairs. I decided to pseudo-randomly combine experimental and filler items in the replication study so that the experiment does not start with an experimental item and so that not too many experimental items succeed each other.

4.3.2.4 Apparatus, Procedure and Instructions

The initial study had used a Power Macintosh computer 4400 using PsyScope Software and a button box that permitted millisecond accuracy (Gygax et al. 2008: 475). In the replication study, the stimuli were presented on a Lenovo ThinkPad L480 laptop using DMDX Software. Responses were collected using a gamepad permitting millisecond accuracy. These changes were made due to different technical conditions.

Gygax et al. (2008) had asked their participants to keep the index finger of their dominant hand on the *yes* button. On my gamepad, the *yes* button was on the right, the *no* button on the left. This change hence was made due to different technical conditions. Also, in the initial study, the participants could pause the experiment whenever they wanted between the sentence pairs (Gygax et al. 2008: 475 f.). In Experiment 1, in order to systematize the pausing, I integrated a pause after each fifth of the experiment; participants were free to choose the length of each break.

The instructions given to the participants were based on the original instructions from Gygax et al. (2008). However, as the procedure had been changed slightly (e.g., pauses, *yes*/*no* buttons), this information was updated for the replication.

4.3.2.5 Statistical Analyses

Since the 2000s, novel insights into the statistical analysis of linguistic data have emerged. Accordingly, instead of running ANOVAs like in the initial study, the replication study used logit mixed models for the *yes*/*no* answers and linear mixed models for the response times (as done in Gabriel et al. 2017: 801).[30]

As for the response times, they were log-transformed in the replication study (as in Gabriel et al. 2017: 802), which was not the case for the initial study. The former was helpful, as after the trimming, the replication's data approximated normality more closely.

Additionally, the outlier treatment differed between the two studies. Gygax et al. (2008: 478) decided to replace data points 2.5 SD or more above each participant's mean by the 2.5 SD cut-off, which affected 2.4% of the response times for positive responses. In Experiment 1, data points 2.5 SD above or below each participant's mean were considered outliers and were excluded. This affected 17 data points in the response times for positive responses, i.e., 1.5% of data. This represents the individual differences in response times more accurately than Gygax et al.'s (2008) process would have done. In this vein, excluding the data points I had defined as outliers respects the fact that I cannot know the reason for an especially long or short response time. In all, the above-listed adaptions were made while preserving the initial study design and can be considered as minor modifications.

[30] See also Koster et al. (2018: 42). For a theoretical discussion of mixed-effects models, see Baayen (2008); Baayen & Milin (2010).

4.4 The Replication Study: Experiment 1

Having pointed out all the modifications made to the initial study, I present my replication study, Experiment 1, in detail. We now turn to the research questions and hypotheses I formulated before running Experiment 1, then move on to the method.

4.4.1 Research Questions and Hypotheses

Research Questions
As discussed in Sect. 1.1, and in line with Gygax et al.'s (2008) research questions (Gygax et al. 2008: 470 f.; see Sect. 4.1.1), Experiment 1 aims to answer the following main research questions:

RQ 1: Do masculine role nouns in French trigger a male-specific interpretation?
RQ 2: Does stereotypicality (i.e., stereotypically male/neutral/female role nouns) influence the interpretation of masculine role nouns?

As I only investigate masculine role nouns, Experiment 1 obviously aims to analyze the interaction of the masculine form (a morphosyntactic factor) and stereotypicality (an extra-linguistic factor), which results in the following additional research question. Note that, in order to stick to the numeration of my research questions as presented in the introduction (Sect. 1.1), in which RQ 3 is linked to Experiment 2, I continue with RQ 4:

RQ 4: Do the masculine form and stereotypicality (i.e., stereotypically male/neutral/female role nouns) interact when a masculine role noun is interpreted?

Furthermore, Gygax et al.'s (2008) data present a (statistically non-significant) tendency toward a reinforced male bias in the male stereotype condition. In Experiment 1, when replicating Gygax et al. (2008), I want to further investigate this issue, which results in the following additional research question:

RQ 5: Are stereotypically male role nouns more often interpreted specifically than stereotypically female and stereotypically neutral role nouns in comparison to what has been previously suggested?

Finally, the main difference between Gygax et al.'s (2008) study and Experiment 1 is the factor *time*: I replicate Gygax et al. (2008) about a decade later; during the intervening period French society has evolved, both in terms of gender equality and the generic use of masculine role nouns (Abbou 2011: 60 f.;[31] INSEE 2018: 39; EIGE 2005–2019). Thus, it is important to ask the following question:

RQ 6: To what extent do the findings from Gygax et al. (2008) hold true today?

Hypotheses

The hypotheses of my replication study are basically identical to the three hypotheses put forward by Gygax et al. (2008: 470 f.), which I have reported in Sect. 4.1.1 (see Sect. 4.1.1 for the possible outcomes linked to these hypotheses). They can briefly be summarized as follows:

H1: The masculine form (a morphosyntactic factor) might influence the interpretation of masculine role nouns.

H2: A role noun's stereotypicality (an extra-linguistic factor) might influence the interpretation of masculine role nouns.

H3: An interaction of both factors might influence the interpretation of masculine role nouns.

In the sense of RQ 6, when replicating Gygax et al. (2008), I focus on the factor *time*. Correspondingly, the differences (if any) between my findings and the initial study should be insightful regarding the different interpretation of masculine role nouns over this time span. In this sense, if the findings from Gygax et al. (2008) are replicated (at least to some extent), they can be considered to be stable across time (at least to some extent). Conversely, if Gygax et al.'s (2008) finding that masculine role nouns generate a male bias is not replicated in 2019, the findings of Gygax et al. (2008) might not be stable across time.

Having formulated the assumptions that guide my investigation, I present the method of Experiment 1. I first present my sample and then illustrate my materials and design. Afterwards, we turn to the apparatus and then the procedure. As already explained, I followed the original method as much as possible (see Sect. 4.3). The following descriptions are thus based on Gygax et al.'s (2008) study (see Sect. 4.1) and remain brief where no further explanations are needed.

[31] See also Tibblin et al. (2023a: 29).

4.4.2 Method

Participants

44 students (35 females) from AMU participated in this experiment; 31 students received course credits for their participation. The sample included participants aged between 17 and 28 years (M = 19.95, SD = 1.95). All participants were French native monolinguals (native bilinguals could not take part in the experiment).

All participants provided written informed consent. The study was approved by the ethics committee of the University of Bonn (*Ethikkommission an der Medizinischen Fakultät der Rheinischen Friedrich-Wilhelms-Universität Bonn*), my home university; AMU did not require any further ethical approval for the running of the experiment.

Materials and Design

Materials

Based on the slightly adapted experimental and filler items from Gygax et al.'s (2008) French sample (see Sect. 4.1.2.1), I created six lists of stimuli. 72 filler sentence pairs (= original and new filler items), comparable to the experimental items, were pseudo-randomly interspersed with 36 experimental sentence pairs (see Sect. 4.3.2 and the 2×3 design in Table 4.2). All experimental and filler items for Experiment 1 can be found in Sects. 1.1 and 1.2 of Appendix 1 in the electronic supplementary material.

Apparatus

The stimuli were presented on a Lenovo ThinkPad L480 laptop using DMDX Software (Forster & Forster 2003). Responses were collected using a gamepad permitting millisecond accuracy (Gygax et al. 2008: 475).

Procedure

The participants were tested one by one in a small quiet room. Before the beginning of the experiment, they received oral and written information concerning the experiment's procedure and filled in a sociodemographic questionnaire. After the experiment, the participants filled in a questionnaire on their knowledge and usage of gender-fair language and feminist attitudes and then were debriefed.

Just as in Gygax et al. (2008), during the experiment, the participants' task was to decide whether the second sentence (with either a *hommes* or a *femmes* continuation) was a *continuation possible* of the first sentence, which had introduced a stereotypically male/neutral/female masculine role noun in the plural form. The *yes* button was on the right, the *no* button on the left side of the gamepad. Participants

were asked to keep their fingers on the gamepad during the experimental session (Gygax et al. 2008: 472, 475 f.). To minimize fatigue, there was a break after each fifth of the experiment; participants were free to choose the length of each break.

Before the experiment started, participants received instructions on the experiment's procedure and were familiarized with the procedure through six practice trials. These trials were the same as used in Gygax et al. (2008).

I now present Experiment 1's outcome. When analyzing the results of my replication study, in Sect. 4.4.3.1, I concentrate on the proportion of the *yes*/*no* responses from my participants, compared to those from 2008. In Sect. 4.4.3.2, I analyze the *yes* responses' response times.

4.4.3 Results: Main Analyses

As in Gygax et al. (2008), the participants' *yes* and *no* answers were recorded, as well as the time it took them to read the second sentence and respond to the question *continuation possible ?* Following Gygax et al. (2008), these measures were considered to serve as an indication of how easy it was for participants to integrate the information in the target sentence: if respondents have no difficulties doing so, they should be more likely to respond *yes* quite quickly. However, if they have difficulties integrating the information, they should be more likely to respond *no* and/or take more time responding *yes* (or *no*). In other words, the *yes* and *no* answers, as well as the associated response times, should show whether or not it was difficult to link the stereotypically male/neutral/female masculine plural role nouns of the first sentence to the *hommes*/*femmes* continuations of the second sentence (Gygax et al. 2008: 476).[32]

Data Analyses

Mixed-effect logistic regression was used to model participants' *yes*/*no* responses to the question *Continuation possible ?*. Linear mixed-effects regression was used to analyze participant's response times. All analyses were performed using R; p-values were obtained using the lmerTest package (Gabriel et al. 2017: 801).

As for the response times, in a first step, the response times for all responses (*yes* and *no*) were log-transformed; the response time distributions then approximated normality more closely. Secondly, individual response times that deviated more than 2.5 standard deviations from each participant's mean were considered outliers and

[32] See also Gabriel et al. (2017: 804).

excluded from the analysis. This affected 17 data points of the *yes* responses (i.e., 1.5% of data).

4.4.3.1 Mean Percentage of *Yes* Responses

Descriptive Statistics

As can be seen in Table 4.3, sentence pairs featuring *hommes* in the second sentence generated more *yes* responses (M = 85%, SD = 36%) than *femmes* continuations (M = 59%, SD = 49%). This is a mean difference of 26%. Moreover, the numerical effect of *hommes* continuations generating more positive answers than *femmes* continuations is more or less equal for all three stereotype conditions (i.e., stereotypically male/neutral/female role nouns). Nevertheless, we can distinguish a trend towards an interaction: the difference between the acceptance of *hommes* and *femmes* continuations is largest in the male stereotype condition at 30%, while it is at approximately 24% in both the stereotypically female and neutral condition. The effect sizes per condition are shown in Table 4.3 and show quite robust effects.

Moreover, the results shown in Table 4.3 are quite similar to those of Gygax et al.'s (2008) French sample (see Table 4.4). Both samples thus show the same main trends. Generally speaking, the sample from 2019 was more affirmative for the *hommes* continuations, while the acceptance of the *femmes* continuations remained roughly the same. Therefore, the effect sizes of the replication are bigger than in the initial study.

Table 4.3 Mean percentage of yes responses: effect sizes in percentage points (= pp), Experiment 1

		Stereotypicality				
Continuation	Effect size	**Male**	Effect size	**Neutral**	Effect size	**Female**
Hommes		87 %		84%		83%
Femmes	*−30 pp*	57%	*−23 pp*	61%	*−25 pp*	58%

Table 4.4 Mean percentage of yes responses: effect sizes in percentage points (= pp), Gygax et al. (2008: 477)

		Stereotypicality				
Continuation	Effect size	**Male**	Effect size	**Neutral**	Effect size	**Female**
Hommes		83%		73%		77%
Femmes	*−25 pp*	58%	*−17 pp*	56%	*−18 pp*	59%

Inferential Statistics

The final linear mixed-effects model (1584 data points) contained *stereotypicality*, *continuation* and their interaction as fixed effects and *subjects* and *items* as random effects (random intercepts) and random slopes by subjects and items for the factor *continuation* (Barr et al. 2013: 255).

There was a statistically significant main effect of continuation ($p < .0001$), with *hommes* continuations generating more *yes* answers than *femmes* continuations. There was no statistically significant effect of stereotypicality ($p > .05$), nor an interaction ($p > .05$). These results are shown in Table 4.5. They indicate that participants were biased towards a specific interpretation of the masculine role nouns, regardless of stereotypicality.

Table 4.5 Answers to comprehension questions—inferential statistics, Experiment 1

	Estimate	Std. Error	Wald's *z*	p	
(Intercept)	1.130	.134	8.431	< .001	***
Continuation (*hommes* vs. *femmes*)	**−1.361**	**.168**	**−8.140**	**< .001**	***
Stereotypicality 1 ('female vs. neutral')	−.062	.233	−.265	.791	
Stereotypicality 2 ('female vs. male')	−.110	.236	−.466	.642	
Continuation x Stereotypicality 1 ('female vs. neutral')	−.411	.359	−1.145	.252	
Continuation x Stereotypicality 2 ('female vs. male')	.601	.369	1.632	.103	

Note: Mixed-effects logistic regression model for answers to comprehension questions. Formula: answer/ansyes ~ continuation * stereotypicality + (1 + continuation | participant) + (1 | item)

The analysis of the *yes*/*no* responses gives insights into how the experimental items were actually interpreted. Therefore, it is the most direct measurement relating to Experiment 1's aim of examining whether the role noun's masculine form and/or stereotypicality influences whether it is interpreted generically or specifically. However, compared to this offline measurement, a more subtle measurement is the evaluation of the online measure, the corresponding response times, which make it possible to evaluate the difficulty or ease with which masculine role nouns are linked to *femmes* and *hommes* continuations. We now proceed to the presentation of the response times, i.e., the measurements of the time it took participants to read the second sentences and to answer the final question (i.e., *continuation possible ?*).

4.4.3.2 Response Times for *Yes* Responses

Descriptive Statistics

As shown in Table 4.6, within all three stereotype conditions, experimental items with *hommes* continuations generated quicker *yes* responses (M = 3002 ms, SD = 1230), while participants took more time to respond *yes* for second sentences containing a *femmes* continuation (M = 3436 ms, SD = 1602). The mean difference between the two continuation types is 434 ms. This indicates that it takes more time to consider *femmes* to be a *continuation possible* of the first sentence than *hommes*. Note that the standard deviations for *femmes* continuations are higher, which indicates a higher variance in participants' reactions to these stimuli.

More exactly, the difference between the response times for second sentences containing a *hommes* or *femmes* continuation was smallest within the female stereotype condition (+328 ms for the *femmes* continuations); it was slightly higher in the neutral condition (+350 ms for the *femmes* continuations). Finally, the difference between response times was highest in the male stereotype condition (+609 ms for the *femmes* continuations). The latter indicates a higher male bias in the male stereotype condition. However, the differences in response times are quite small.

The response times of Experiment 1 (see Table 4.6) are comparable to those of Table 4.7, which summarizes Gygax et al.'s (2008) French sample. The 2008 participants were generally slower to react than the 2019 participants. In contrast to the replication study, the difference between the *hommes* and *femmes* continuation in Gygax et al.'s (2008) French sample was second highest in the female stereotype condition. Essentially, the mean differences between the *hommes* and *femmes* continuations in the three stereotype conditions are quite small in the sample of 2008, smaller than in the replication in 2019. Also, both the 2008 and 2019 studies show high values for standard deviations, indicating a high variance in response times (however, reading times are quite variable in nature).

Table 4.6 Mean response times for yes responses across conditions (in milliseconds) (SD in brackets), Experiment 1

	Stereotypicality					
Continuation	Effect size (ms)	**Male**	Effect size (ms)	**Neutral**	Effect size (ms)	**Female**
Hommes		2783 (1096)		3143 (1337)		3088 *(1223)*
Femmes	*+609*	3392 (1325)	*+350*	3493 (1939)	*+328*	3416 *(1448)*

Note: Being a quantitative standardized index, milliseconds serve as effect sizes.

Table 4.7 Mean response times for yes responses across conditions (in milliseconds) (SD in brackets), Gygax et al. (2008: 478)

	Stereotypicality					
Continuation	Effect size (ms)	**Male**	Effect size (ms)	**Neutral**	Effect size (ms)	**Female**
Hommes		*3523 (1380)*		*3701 (1102)*		*3665 (1626)*
Femmes	*+340*	*3863 (1794)*	*+172*	*3873 (1355)*	*+206*	*3871 (1486)*

Note: Being a quantitative standardized index, milliseconds serve as effect sizes.

Inferential Statistics

The final model (1567 data points) contained random intercepts by subject and by item and continuation slope by item (Barr et al. 2013: 255).

As shown in Table 4.8, there was a statistically significant main effect of continuation ($p < .0001$). There was no significant main effect of stereotypicality (i.e., stereotypically male/neutral/female role nouns) ($p > .05$) but there was an interaction of continuation and the male (vs. female) condition ($p = .0245$).

First, the results from the positive response times indicate that it takes more time to respond when a *femmes* continuation is a *continuation possible* of the first sentence. Secondly, this suggests that it is more difficult to associate *femmes* with a masculine plural role noun than *hommes* (Gygax et al. 2008: 479). Thirdly, the trend that was observed in the descriptive part concerning the proportions of *yes* responses is confirmed: in the male stereotype condition, the male bias is reinforced.

It is thus even more difficult to map *femmes* to a stereotypically male role noun in the masculine plural form.

Table 4.8 Response times for the second sentence for yes responses across conditions—inferential statistics, Experiment 1

	Estimate	Std. Error	df	t value	Pr(>|t|)	
(Intercept)	799.351	.038	5.128.112	207.373	< .001	***
Continuation (*hommes* vs. *femmes*)	**.121**	**.024**	**3.154.519**	**4.934**	**< .001**	***
Stereotype 1 ('female vs. neutral')	−.027	.044	3.153.137	−.623	.5376	
Stereotype 2 ('female vs. male')	.054	.044	3.185.619	1.227	.2289	
Continuation x Stereotype 1 ('female vs. neutral')	.067	.068	3.009.639	.983	.3334	
Continuation x Stereotype 2 ('female vs. male')	**−.163**	**.069**	**3.082.189**	**−2.364**	**.0245**	*

Note: Linear mixed-effects model for log-transformed response times for the second sentence. Only *yes* answers were analyzed; *no* answers were excluded.
Formula: logrt ~ continuation * stereotypicality + (1 | id) + (1 + continuation | item)

In the present section, I conducted statistical analyses that were directly linked to the initial study design. However, after the inspection of my data, I wondered whether or not participant-specific factors such as *feminist attitude* influence the interpretation of masculine role nouns (Körner et al. 2024: 173). Of course, the analyses related to this question have to be evaluated carefully as I did not previously control for *participant-specific factors*. The additional analyses concerning participants' feminist attitude therefore only serve as propositions for further research, which would adapt the study design accordingly.[33] Note that Gygax et al. (2008) did not

[33] See Appendix 1 in the electronic supplementary material, Sect. 1.3, for a data split according to participants' biological/social gender. In sum, *hommes* continuations get more *yes*

examine the following issues. Thus, I cannot compare my additional results to their data.

4.4.4 Results: Additional Analyses—Variation According to Participants' Feminist Attitude

After the experiment, I asked my participants whether they defined themselves as feminists, whether they were in favor of *langage inclusif*[34] 'gender-fair language' and whether they used it frequently. To check whether they knew what *langage inclusif* meant, I asked them to define it before asking the questions on their perception and use of *langage inclusif* (see the post-experiment questionnaire in Sect. 1.4 of Appendix 1 in the electronic supplementary material). Nearly two thirds of my participants were unable to define *langage inclusif* properly and the questions related to the use of *langage inclusif* could not be evaluated. However, as participants had also indicated their feminist attitudes on a five-step graded scale, I used these scores to evaluate the possible influence of feminist attitudes on the responses to my stimuli.[35]

Descriptive Statistics

My participants' overall mean score on the five-step graded scale (i.e., 1 = *pas du tout* 'not at all'—5 = *tout a fait féministe* 'completely feminist') was 3.64 (SD = 0.9; range = 2–5). Overall, this indicates a rather feminist sample.

In Figs. 4.1 and 4.2, I split my participants into one group with a high feminism score and one group with a lower one (i.e., 2–3 vs. 4–5).

---

answers than *femmes* continuations across all stereotype conditions and among both male and female participants. Note, however, that the male sub-group is very small (N = 9/44). Accordingly, the female subgroup generated the vast majority of my data, which implies that an analysis of the data based on the split according to participants' biological/social gender is not accurate. This is why I did not integrate these analyses into this section.

[34] I used the term *langage inclusif* 'gender-fair language' instead of the more commonly used *écriture inclusive* 'inclusive writing' as the latter focuses on the written code. While this might have created confusion among my participants, the discussion I had with them after the experiment revealed that most of them were just not familiar with the concept of *gender-inclusive language*.

[35] For a general analysis of the relationship between sexism and attitudes toward gender-fair language, see Sarrasin et al. (2012) and De Lemus & Estevan-Reina (2021).

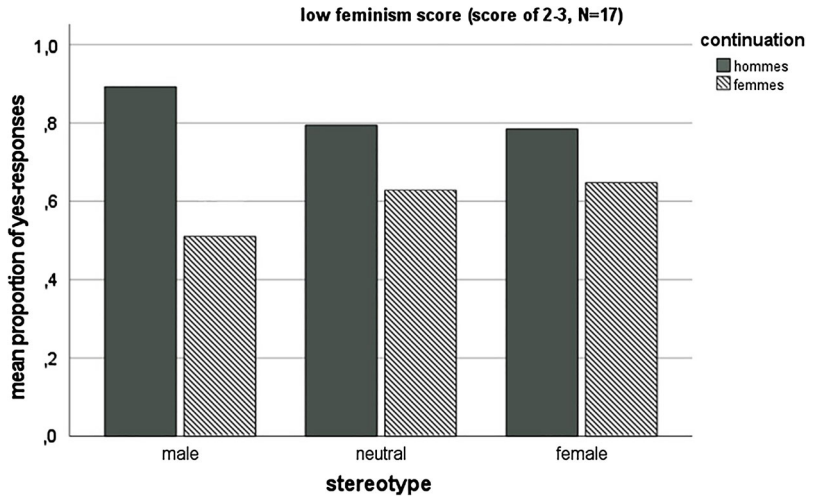


Fig. 4.1 Mean proportions of yes responses for less feminist participants, Experiment 1

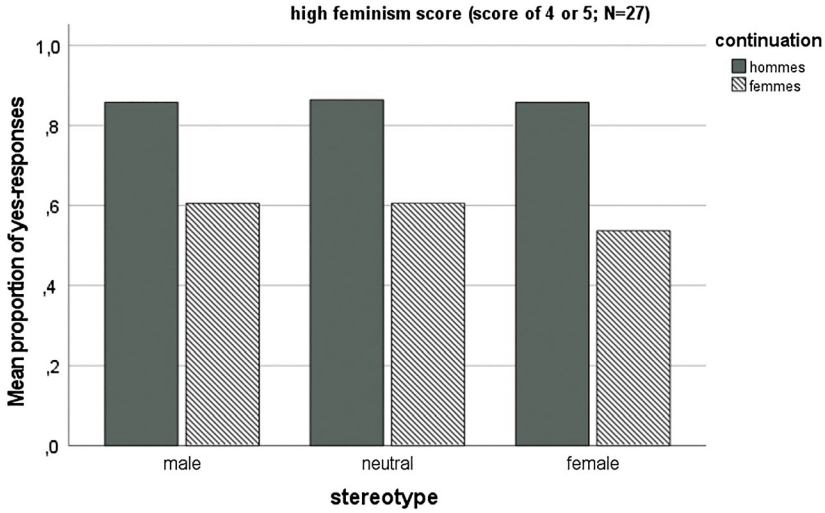


Fig. 4.2 Mean proportions of yes responses for feminist participants, Experiment 1

Figures 4.1 and 4.2 show that the male bias is present among all participants and across all stereotype conditions, irrespective of the feminism score. That is, *femmes* continuations generally get fewer *yes* answers than *hommes* continuations.

Nevertheless, the effect seems to be strengthened according to the (non-)feminist attitude of the participant within certain stereotype conditions. On the one hand, we can observe a stronger effect in the male stereotype condition for less feminist participants (i.e., in the male condition, the difference between *hommes* and *femmes* continuation is 38%, vs. 16% and 13% in the neutral and female conditions respectively; see Fig. 4.1). On the other hand, feminist participants show a fairly equal effect across the different stereotype conditions, with a slightly more important effect in the female condition (i.e., differences of 26%, 26% and 32% between the *hommes* and *femmes* continuations in the male, neutral and female conditions respectively; see Fig. 4.2). The less feminist participants hence give even fewer *yes* responses to *femmes* continuations if they are preceded by stereotypically male role nouns. The more feminist participants, in contrast, answer *no* to *femmes* continuations quite consistently. However, note that the feminist sub-group includes 27 of the 44 participants; they thus generate the majority of the data analyzed.

Inferential Statistics

Data Analyses

Mixed-effects logistic regression was used to model a possible influence of participants' feminist attitudes on their answers to the final question. The final model (1584 data points) contained random intercepts by subject and by item and a random slope for the predictor continuation by item (Barr et al. 2013: 255). The inferential statistics are shown in Table 4.9.

Table 4.9 Answers to comprehension questions linked to the feminist attitudes of participants—inferential statistics, Experiment 1

	Estimate	Std. Error	z-value	Pr(>|z|)	
(Intercept)	118.017	.140	8.406	< .001	***
Feminism score (z-value)	.191	.129	1.478	.13943	
Continuation (*hommes* vs. *femmes*)	**−152.384**	**.132**	**−11.542**	**< .001**	***
Stereotypicality 1 ('female vs. neutral')	−.131	.234	−.561	.57503	
Stereotypicality 2 ('female vs. male')	.090	.237	.384	.70122	
Feminism score (z-value): continuation.main effect	−.130	.132	−.984	.32510	
Feminism score (z-value): stereotypicality 1 ('female vs. neutral')	.090	.182	.494	.62140	
Feminism score (z-value): stereotypicality2 ('female vs. male')	−.034	.190	−.179	.85827	
Continuation.main effect: stereotypicality 1 ('female vs. neutral')	0.111	.365	.304	.76126	
Continuation.main effect :stereotypicality 2 ('female vs. male')	−.522	.372	−1.403	.16051	
Feminism score (z-value): continuation: stereotypicality 1 ('female vs. neutral')	**−.948**	**.367**	**−2.585**	**.00975**	**
Feminism score (z-value): continuation:stereotypicality 2 ('female vs. male')	**125.945**	**.383**	**3.285**	**.00102**	**

Note: Mixed-effects logistic regression model for answers to comprehension questions linked to the feminist attitudes of participants.
Formula: ansyes ~ feminism score * continuation * stereotypicality + (1 | id) + (1 | item)

As can be seen in Table 4.9, there was a statistically significant main effect of continuation ($p < .001$), as well as two statistically significant three-way interactions between feminist score, continuation and stereotype condition (i.e., feminism score: continuation: stereotypicality 'female vs. male': $p = .0010$; feminism score: continuation: stereotypicality 'female vs. neutral': $p = .0098$).

The significant main effect of continuation ($p < .001$) confirms the general pattern I observed in all my analyses (i.e., more *yes* responses for *hommes* continuations), as well as in the descriptives of the more or less feminist sub-groups of my sample. In this vein, across all stereotype conditions, both more and less feminist participants[36] give significantly more *yes* answers to *hommes* continuations than to *femmes* continuations.

Moreover, based on the inspection of the graphs concerning the descriptive statistics, I can interpret the three-way interactions. If we compare the size of the continuation effect in the three stereotype conditions among feminist versus less feminist participants, we see that participants with high scores show effects of similar sizes across all stereotype conditions (male 26%, neutral 26%, female 32%). Participants with low scores, in contrast, show greater differences between the stereotype conditions (male 38%, neutral 16%, female 13%). This contrast results in the statistically significant three-way interaction between *feminist score*, *continuation* and *female vs. male stereotype* ($p = .0010$). My data thus suggest that it is even more difficult for participants with a low feminism score to map women onto stereotypically male role nouns in the masculine plural form. Correspondingly, participants with lower feminism scores might be influenced more by social assumptions (e.g., *women cannot be engineers*) than more feminist participants. Note that a similar boosting effect could already be perceived in the main analysis, including all participants, when analyzing the response times of positive responses (i.e., the statistically significant two-way interaction of *continuation* and *male stereotype vs. female stereotype*).

The three-way interaction of *feminism score*, *continuation* and *female* vs. *neutral stereotypicality* ($p = .0098$) can also be interpreted when looking on the graphs (see Figs. 4.1 and 4.2): if we compare the female and neutral stereotype condition of both sub-groups, we see that less feminist participants show a slightly weaker effect of continuation in the female than in the neutral condition. More feminist participants, in contrast, show a stronger effect in the female condition than in the neutral one.

[36] Contrary to my descriptive statistics, my inferential analysis is not based on two subgroups (more feminist vs. less feminist participants), but on a continuous scale of feminism score. However, for the sake of consistency, I also use the terms *more* and *less feminist participants* in the present section. My wording hence implies the following: the more or less feminist participants judge themselves, the more or less probable it is that they show a certain effect.

Thus, according to the feminism score of participants, the effects of continuation in the female and neutral conditions go in different directions. A possible explanation for this interaction could be that participants with less feminist scores are possibly more influenced by stereotypes. Correspondingly, participants with less feminist scores show a weaker effect of continuation for female stereotypes as this confirms their quite stereotypical worldview (e.g., *nurses are female*).

Stahlberg & Sczesny (2001: 137) found for German that participants in favor of gender-fair language showed a male bias, while opponents did not show any effect.[37] My data also show an effect of modification, although not as strong as the one found by Stahlberg & Sczesny (2001: 137). More precisely, I found that the male bias that we ascribe to masculine role nouns is present among all participants, but that it is modified according to the feminist attitudes of the participant and to the stereotypicality of the role noun. At the same time, the effect of different reactions to masculine role nouns might be even stronger or more complex if a stratified sample (i.e., chauvinists vs. feminists) had been investigated. Hence, it is possible that feminist attitudes moderate the interpretation of masculine role nouns more or in a different way than my data could reveal (Körner et al. 2024: 173).

4.4.5 Discussion

In the grammatical gender language French, it is common to refer to groups consisting of both men and women with a masculine role noun (e.g., *voisins* 'neighbors$_{M.PL}$'), while the same form is used for an entirely male group (Gygax et al. 2008: 479). Feminist Linguistics assumes that masculine role nouns generate a male bias and thus judges the generic use of masculine role nouns as discriminatory against women (see Sect. 3.2.1.1; Gygax et al. 2008: 480; Schwarze 2008: 211). Others (e.g., Eisenberg 2018), on the contrary, do not blame language itself, but extra-linguistic information, such as stereotypes. In order to examine this issue, closely replicating Gygax et al.'s (2008) French sample, Experiment 1 examined whether the morphosyntactic factor *masculine form* (of a role noun in the plural form), the extra-linguistic factor *stereotypicality* (i.e., stereotypically male/neutral/female role nouns) or an interaction of both factors influences the interpretation of role nouns (see RQs 1, 2, 4 in Sect. 4.4.1) in a SEV WSP

[37] On the opposite effect for Spanish-speaking participants, see Anaya-Ramírez et al. (2022: 1260, 1268, 1270). For more recent investigations on the influence of speakers' attitudes towards gender-fair language, see Stetie & Zunino (2022b: 171) on Spanish; see Körner et al. (2022: 560, 565); Körner et al. (2024: 166, 171, 173) and Schunack & Binanzer (2022: 331) on German; see also Sect. 3.2.4.

paradigm. In this vein, Experiment 1 aimed to verify whether the claims made by Gygax et al. in 2008 hold true a decade later and following important social changes, including debates on the gender-fair use of French and criticism of the generic use of masculine role nouns (see RQ 6 in Sect. 4.4.1). The results of Experiment 1 were mostly similar to those of the initial study by Gygax et al. (2008), although there were some additional findings.

We now turn to the discussion of Experiment 1 on a general level and compare my findings to those of Gygax et al. (2008) (see Sect. 4.4.5.1). Afterwards, I discuss how my findings relate to other previous research (see Sect. 4.4.5.2). In Sect. 4.4.5.3, I examine which implications my findings may have for gender-fair language policies. I discuss the limitations of Experiment 1 and directions for future research, including Experiment 2, in Sect. 4.4.5.4.

4.4.5.1 Comparison of Experiment 1 and Gygax et al. (2008)

First, corroborating previous findings by Gygax et al. (2008), the data from 2019 suggest that the morphosyntactic factor *masculine form* influences how masculine role nouns are interpreted. More precisely, participants' (i.e., university students) reactions to my experimental items indicate that they tend to interpret the masculine role nouns specifically regardless of the stereotypicality of the role noun, at least if we only look at the proportion of *yes* answers.

In this vein, Experiment 1 revealed that *yes* responses to *femmes* continuations are statistically significantly slower than those to *hommes*. This effect appeared as a numerical trend in Gygax et al.'s (2008) data,[38] but reached statistical significance in Experiment 1. This indicates that it requires more effort to link *femmes* to masculine role nouns than *hommes*. Note that the more subtle statistical analysis (i.e., mixed-effects models with random effects for items and subjects) used to evaluate the data in the replication study might have helped to reveal this pattern.

Secondly, concerning the positive response times, Experiment 1 goes beyond the initial study in that it provides evidence of an interaction of a linguistic factor (i.e., the masculine form) and an extra-linguistic factor (i.e., a role noun's (male) stereotypicality) in the interpretation of masculine role nouns in French. This confirms a trend that could already be observed in the descriptive statistics of Gygax et al. (2008), but which had not reached statistical significance in 2008 (see RQ 5 in Sect. 4.4.1): Experiment 1 found a reinforced male bias in the male stereotype condition. Moreover, this data pattern had also been found concerning

[38] They found a marginally significant effect of *continuation* when participants were considered as random effect in the ANOVA (Gygax et al. 2008: 478). This trend was supported by Gygax et al.'s (2008) German sample in which a significant main effect of continuation for the positive response times was found (Gygax et al. 2008: 479).

the proportion of positive judgements in a previous replication of Gygax et al. (2008) (Garnham et al. 2012: 493, 498).

Given that less than half of the empirical studies in psychology 'manage' to replicate originally reported results (Open Science Collaboration 2015: aac4716–7), it is particularly noteworthy that the effect indicating a specific interpretation of masculine role nouns, which are commonly used generically, has been replicated. The male bias can thus be perceived as a reliable result. Crucially, we can assume that the point in time at which the study was run has not contributed to the observed effect. The replication in 2019 of the claims put forward in 2008 further corroborates the findings from previous replications of Gygax et al.'s (2008) experiment (e.g., Garnham et al. 2012; Sato et al. 2013). Note that these replication studies were run before the generic use of masculine role nouns in French had been more broadly discouraged. This renders the findings of my replication study even more meaningful: even after the introduction of various measures to foster gender equality, including the more diverse participation of women in the labor market and guidelines on the gender-fair use of the French language, masculine role nouns are still interpreted specifically in 2019. At the same time, as indicated before, further replication studies are needed in order to access the actual reliability of previous and current claims (Hedges & Schauer 2019a: 550 f., 563, 567).[39]

My findings concerning the (possible) interaction of morphosyntactic and stereotype information partially corroborate H3: both types of information interact and influence the interpretation of masculine role nouns (see Sect. 4.4.1; see also Sect. 4.1.1). Nonetheless, H3 assumed that both factors would come into play in all conditions. Yet the situation presented by my data is more complex than previously hypothesized: stereotypically male role nouns seem to reinforce the male bias of masculine role nouns, while female and neutral stereotypes do not seem to influence the interpretation of masculine role nouns (Gabriel & Gygax 2008: 453, 455 f.).[40]

Of course, just like Gygax et al. (2008: 481), I cannot exclude the possibility of a stronger influence of stereotype information on the interpretation of masculine role nouns when more contextual information is provided than is the case within

[39] See also Hedges & Schauer (2019b: 557 f.); Schauer & Hedges (2021: 136 f.). See Sect. 4.2 and footnote 18 on replications of Gygax et al. (2008) other than mine.

[40] It could be argued that male stereotypes are 'stronger' than female and neutral stereotypes. This possibility is worthy of further study. For the time being, it can be stated that Gygax et al. (2008) had chosen role nouns, which were more or less equally stereotypical in each condition.

Experiment 1's research paradigm.[41] For instance, the experiments run by Braun et al. (1998: 272 f., 281), based on longer texts in German, which might resemble natural communication more closely, revealed an attenuating influence of female stereotypicality and a reinforced male bias of male stereotypicality.[42] At the same time, these experiments also accessed the biological/social gender ratio of the referents more explicitly, which may have reinforced the influence of gender stereotypicality (Gygax et al. 2008: 481).

Moreover, my additional analysis of the *yes*/*no* answers, indicating a strengthened male bias concerning stereotypically male role nouns for less feminist French-speaking students, suggests that the feminist attitude of a person also moderates the interpretation of masculine role nouns. Hence, it is not only the morphosyntactic factor *masculine form* and the extra-linguistic factor *stereotypicality* that seem to influence the interpretation of a role noun, but also the pragmatic factor *individual beliefs* and their interaction with a role noun's stereotypicality. This complex interaction was not addressed by the initial study.

As indicated by Gygax et al. (2008: 483), Experiment 1's SEV WSP does not permit us to differentiate between automatic and strategic cognitive processes. Yet, automatic mental processes have been judged more suitable than strategic processes for explaining how gender representations are constructed. At the same time, it is not an unlikely scenario for people, when interpreting role nouns in the masculine plural (e.g., *voisins*), to ask themselves whom they could imagine doing this kind of activity. So, even if I had investigated strategic processes, my findings are still noteworthy concerning the discussion of the interpretation of masculine role nouns (Gygax et al. 2008: 483).

Gygax et al. (2008) summarized their findings with the following title: *Generically intended, but specifically interpreted: When beauticians, musicians and mechanics are all men.* To conclude the comparison of my findings to Gygax et al.'s (2008) results, I want to comment on Gygax et al.'s (2008) conclusions. First, looking at my results regarding the *yes*/*no* questions, I want to point out, first, *that beauticians, musicians* and *mechanics* are not *all* men, but that in approximately 59% of the cases, these role nouns were associated with women in Experiment 1 (in about 58% of the cases in Gygax et al. 2008). Thus, while women have indeed fewer chances to be represented by masculine role nouns, they can still be linked to them in some way (Gygax et al. 2021a: 5 f.; Kotthoff &

[41] Stereotype information was linked to the role nouns only. Indications like *walking through a station* were balanced across all role nouns to avoid any plausibility effect (Gygax et al. 2008: 472, 475).

[42] See Rothmund & Scheele (2004), who also investigate the interaction of *stereotypicality* and *masculine form* in longer text passages in German.

Nübling 2018: 115–117; see Redl 2021: 120–122 on masculine pronouns). Secondly, as my analysis of the positive response times has shown that participants take even longer to respond *yes* to *femmes* continuations in the male stereotype condition, I want to modify Gygax et al.'s (2008) title as follows: beauticians, musicians and mechanics are *mostly* men, but mechanics are even *more* male. Finally, my additional analysis indicates that less feminist participants have more difficulties in linking stereotypically male role nouns in the masculine form to women. Thus, mechanics are even *more* male to less feminist students.

In order to judge the outcome of Experiment 1 in relation to previous studies that also investigated the stability of the effects generated by masculine role nouns, I come back to the replication studies I already mentioned in Sect. 4.2 in the following section.

4.4.5.2 Comparison of Experiment 1 With Other Work

My findings, which demonstrate the stability of a male bias generated by masculine role nouns in French across time, are at odds with Nissen (2013), who found that in a ten year period (1995–2005), masculine role nouns in Spanish nearly lost their male bias. Nissen concludes that the interpretations of certain linguistic forms "do not seem to be stable at all, but, instead, are subject to change over time" (Nissen 2013: 114). In opposition to him, Garnham et al. (2012) and Sato et al. (2013) also claimed Gygax et al.'s findings on the interpretation of role nouns in the masculine plural form in French to be stable.[43] My finding concerning the stability of the male bias is also in accordance with the replication study by Miller & James (2009), which showed that the generic *he* in English continues to be interpreted specifically (see Sect. 4.2). Taking into account these opposing results, we see, once again, that further replication research is needed in order to judge findings on the interpretation of masculine role nouns.

Due to an increased use of gender-fair alternatives to masculine role nouns, Stahlberg & Sczesny (2001: 138) predicted that masculine role nouns might become more specific over time.[44] This hypothesis is supported by a study from Gygax & Gabriel (2008: 149), which showed that exposing speakers to both feminine and masculine role nouns decreases the generic interpretation of masculine role nouns. Based on Experiment 1's findings, I cannot confirm

[43] See footnote 26 on replications of Gygax et al. (2008) that were run after 2019 and which indicate that the findings from 2008 can still be considered to be stable across time.

[44] See also De Backer & De Cuypere (2012: 261, 267); Elmiger (2000: 213); Gabriel et al. (2017: 806); Gygax & Gabriel (2008: 149).

Stahlberg & Sczesny's (2001: 138) assumptions: comparing the result of my replication to Gygax et al.'s (2008) study, we can state that the male bias remained the same[45]—despite the more common use of alternative forms to the generic use of masculine forms about ten years after the initial study.

Thus, the male bias may simply be quite stable over time and across linguistic change. Still, it is also possible that speakers have to commit themselves to actively using gender-fair language to show different reactions to masculine role nouns. As most of my participants did not know what the *langage inclusif* 'gender-fair language' is, we can assume that they were not that interested in it, although their own university avoids the generic use of masculine role nouns by using alternative forms (see Sects. 4.3.1 and 4.4.4). Given that my additional analysis of the feminist attitudes of my participants showed that an involvement with feminism may moderate the interpretation of masculine role nouns, it is not improbable that a real involvement with gender-fair language may also moderate the interpretation of masculine role nouns (see Sects. 4.4.4 and 3.2.4). In this regard, my findings may have implications for gender-fair language policies.

4.4.5.3 Implications for Gender-Fair Language Policies

If we follow Eisenberg (2018), societal changes will solve the problem of men being better representatives of masculine role nouns.[46] Extra-linguistic transformation would thus render the avoidance of role nouns in the masculine form and the use of alternatives a negligible or even a useless action in working towards a more gender-fair society. French society has indeed evolved in terms of work-related gender equality in the past years (INSEE 2018: 39; EIGE 2005–2019). Accordingly, it would seem plausible that *femmes* continuations following masculine role nouns should trigger more positive responses in 2019 than in 2008 (unless, of course, double forms have become the status quo). However, as Experiment 1 reveals more or less the same male bias as in 2008, the assumption that extra-linguistic change makes linguistic change unnecessary is not supported by my data.

At the same time, external reality (e.g., work-related gender equality, *more women have become engineers*) does not equate to social assumptions (e.g., *engineers are male*), which have remained mostly the same in the past years (see

[45] See also De Backer & De Cuypere (2012: 261, 267); Stahlberg & Sczesny (2001). The sample of 2019 presented a higher acceptance of *hommes* continuations and hence generated bigger effect sizes. Nonetheless, if masculine role nouns would have significantly become more male-specific, the acceptance of *femmes* continuations should have decreased essentially from 2008 to 2019.

[46] See also Hagège (2017: 1 f.).

the norming studies from Gabriel et al. 2008 and Misersky et al. 2014).[47] Thus, we do not know how strong the male bias of masculine role nouns would be if stereotypes had changed since 2008.

When discussing the usefulness and urgency of a gender-fair use of langue, one has to decide whether the overall 26% difference between *hommes* and *femmes* continuations in the mean proportion of the *yes* answers (see Sect. 4.4.3.1) is 'enough' to consider it as being "discriminatory to women" (Gygax et al. 2008: 480). Yet, whether this 26% is a relevant difference is not a linguistic question, but one which society has to discuss. Nonetheless, if the aim of French-speaking communities was to equally represent both men and women, it would seem fair to revisit the still common generic use of masculine role nouns. In this vein, the consideration of the usage of alternatives to masculine role nouns seems to be particularly important where role nouns perceived as 'male' are concerned (e.g., in an information brochure on job descriptions) (Vervecken et al. 2015: 8 f.).[48] Accordingly, future research might further investigate whether gender-fair alternatives to masculine role nouns, like double forms, help to increase the cognitive availability of women. Previous findings (e.g., Braun et al. 2005; Nissen 2013) point in that direction.[49]

As we have seen in this section, some studies on the interpretation of masculine role nouns confirm my findings while others do not. Correspondingly, it is now time to discuss the limitations of Experiment 1. I first point out the implications that arise from my sample. I then present the constraints of my experimental and filler items. In doing so, I present directions for future research in general and for Experiment 2 specifically.

[47] See Sebastián-Tirado et al.'s (2023: 1) recent findings indicating that stereotypes about occupations are not declining.

[48] See also Gygax et al. (2008: 480); Heap (2024: 226); Pozniak et al. (2023: 18); Rothermund & Strack (2024: 482); Sebastián-Tirado et al. (2023: 326, 341 f.); Vervecken & Hannover (2015: 87); Zapf (2024: 408). For a discussion far beyond the interpretation of masculine role nouns, see Moyano et al. (2023); Vervecken et al. (2015); Vervecken & Hannover (2015) whose studies investigate whether the generic use of masculine role nouns influences a woman's self-efficacy.

[49] See Tibblin et al. (2023a & b) and Xiao et al. (2023) for comparable and more recent findings on French. But see Pozniak et al. (2023) for diverging findings on gender-fair forms in French. See Safina (2024), who does not find an effect of form manipulation when analyzing epicene nouns in Italian.

4.4.5.4 Limitations and Future Directions

4.4.5.4.1 Participants

Factor Birth Cohort and Factor Profession

Based on my results, I argued that masculine role nouns are still more easily interpreted specifically. However, we have to keep in mind that both the initial and the replication study investigated students, that is, young adults. Consequently, we cannot be sure whether the findings hold true across birth cohorts or different professions (Rothermund & Strack 2024: 482).[50] As, for instance, senior citizens are less accustomed to gender-fair language and the discussion of masculine role nouns and their alternatives, they might have more reactions supporting the generic interpretation of masculine role nouns than those I found among my participants.

Yet, as previously indicated, the linguistic and societal changes that have occurred in the past few years do not seem to have influenced the interpretation of masculine role nouns significantly within student populations. This could suggest that the interpretation of masculine role nouns in the plural form might be the same for French native speakers in general, irrespective of the epoch they have grown up in (see Brauer & Landry's (2008) findings).

At the same time, my additional analyses of the individual behavior of participants, as well as participants' reactions to the stimuli according to their feminist attitudes, indicate that the extent of the male bias of masculine role nouns in combination with stereotyped role nouns may differ across different persons. For the moment, as empirical evidence on a possible influence of the participants' age, professional background and/or individual beliefs on the interpretation of masculine role nouns is scarce and studies on these issues have generated inconsistent data, it remains an empirical question whether these variables mediate the interpretation of masculine role nouns (Gabriel & Gygax 2008: 456; Körner et al. 2024: 173).

Factor Region

While the initial study was run in French-speaking Switzerland, the data of Experiment 1 were collected in France. France has been defined as being more gender-equal than Switzerland (see the UN's Gender Development Index 2018 (= GDI); Human Development Index 2019 (= HDI)).[51] This might have affected the outcome of Experiment 1. For instance, a higher acceptance of masculine plural role nouns +

[50] See also Glim et al. (2024: 1366); Zacharski & Ferstl (2023: 312). See Spinelli et al. (2023: 10) on gender-fair French.

[51] Despite being one of the wealthiest countries in the world (HDI rank 2 in 2019), Switzerland scores poorly when it comes to gender equality (GDI rank 82; value 0.963/1). France, in comparison, ranked 26 on the HDI in 2019, but 42nd on the GDI in 2018 (value 0.984/1) (GDI 2018; HDI 2019).

femmes by my French participants compared to the Swiss French students would have been imaginable, reflecting a higher acceptance of working women in France. At the same time, the use of alternative forms instead of masculine role nouns are implemented more in Swiss French than they are in France (Gygax et al. 2019a: 5), which might have resulted in an easier linking of a masculine role noun with *femmes* for French than for Swiss French participants. Nonetheless, the Swiss data from 2008 and the French data from 2019 show the same tendencies. Consequently, we may assume that the change in location, which corresponds to different societal backgrounds of the participants, has not influenced the interpretation of masculine role nouns considerably. This is in line with Kim et al.'s (2023a: 1, 23) findings that Swiss French and Quebec French speakers' interpretations of masculine role nouns were equally male-biased.[52]

To conclude, the interpretation of masculine role nouns does not seem to have been affected by the participants' home region or dialect (i.e., France/Hexagonal French- vs. Switzerland/Swiss French-speaking participants). However, it would be important to further investigate whether the pattern shown by my data (i.e., a detectable male bias even though there has been a change in country) is replicated when the factor *region/dialect* is systematically varied when *time* is not a factor. A repetition of my replication in a French-speaking country other than France as soon as possible is thus needed to determine the stability of my findings more fully.

4.4.5.4.2 Experimental Items

In this section, I discuss whether the experimental items in Experiment 1 are informative (or not) concerning the question of whether masculine role nouns are interpreted generically or specifically and consider how potential issues could be tackled in Experiment 2.

Male-as-Norm Principle

Concerning the interpretation of the experimental items, the following question arises: I cannot entirely exclude the possibility of the male-as-norm principle being

[52] Conversely, Diehl (1992: 384) used an acceptability judgement task to show, for Germany, that the acceptance of masculine role nouns is relative to the region. While masculine role nouns are less approved in Western Germany, they are more common and more accepted in Eastern Germany. In the latter, the GDR's official definition of masculine role nouns as gender-neutral still (that is, in 1992) seems to influence speakers (Kotthoff & Nübling 2018: 117; Schröter et al. 2012: 374 f.). See also Schröter et al. (2012) on German in Switzerland and Germany; Arnold (2024: 623–625) on laypersons' attitudes towards gender-fair language in different French-speaking countries.

the cause of the positive and quick reactions to masculine role nouns in the plural form in combination with *hommes* continuations. Correspondingly, my results would not provide any information on the impact of the masculine form on the interpretation of role nouns, but would show that men are prototypically judged as more suitable for linking to role nouns (or, in general, more representative of the category *human being*) (Kotthoff & Nübling 2018: 104, 93, 96; Schwarze: 2008: 261; 214 f., 236). In line with this, my data would indicate the influence of extra-linguistic influence (i.e., prototypes) on the interpretation of masculine role nouns (Eisenberg 2018; Michel 2017: 76).

Taking into account the results from Gygax et al.'s English experiment, in which role nouns had no marking of grammatical gender and in which the stereotypicality of the role nouns influenced participants' reaction to *hommes* and *femmes* continuations, we may assume that it was not only the male-as-norm principle that generated more *yes* answers for *hommes* than for *femmes* in my experiment on French (Gygax et al. 2008: 470).[53] Obviously, we cannot transfer the results from English, a natural gender language, directly to the grammatical gender language French. Nonetheless, if the influence of stereotypes had an important impact on the interpretation of masculine role nouns, my French data should resemble the data of Gygax et al.'s (2008) English sample more closely.

Role Noun Type

In Experiment 1, as in the initial study, I investigated role nouns which had formerly been judged as stereotypically male, neutral or female. These include occupational nouns (e.g., *ingénieurs* 'engineers$_{M.PL}$') and non-occupational nouns (e.g., *voisins*). The differences in the semantics of the role nouns need to be discussed critically.

According to Becker (2008: 66; De Backer & De Cuypere 2012: 257, 261 f., 266 f.), the referents' biological/social gender is generally not relevant for non-occupational nouns like *voisins*, as an equal distribution of both biological/social genders in the extra-linguistic world is expected within these social groups. Correspondingly, these masculine role nouns would be interpreted generically. For

[53] Nonetheless, when looking at the response times of Gygax et al.'s English sample, we can see that sentences with *femmes* continuations took more time to be interpreted than those with *hommes* continuations. There might thus be a slight influence of the male-as-norm principle here; however, the differences are very small and did not reach statistical significance (Gygax et al. 2008: 478). See also the English L1 sample in Sato et al. (2013: 9 f.), which shows a higher rate of positive responses to *men* continuations in the neutral and male stereotype condition and lower SDs for *men* continuations in general, possibly hinting at an easier processing of *men*.

occupational nouns like *ingénieurs* 'engineers$_{M.PL}$', in contrast, the referent's biological/social gender is relevant as fewer women are expected to be engineers. Consequently, masculine role nouns referring to occupational nouns are more readily interpreted specifically (Becker 2008: 66; De Backer & De Cuypere 2012 : 257, 261 f., 266 f.).[54] It could thus be that some of the role nouns I investigated in Experiment 1 are interpreted more often specifically than others (e.g., *ingénieurs* 'engineers$_{M.PL}$' vs. *voisins*). However, based on my dataset, I cannot distinguish between isolated cases and a general tendency. Thus, in order to discard the possibility that the male bias found in Experiment 1 was mainly generated by occupational nouns, in Experiment 2, I present a study design which permits a reliable analysis of role noun types (i.e., occupational vs. non-occupational nouns).

Interpretation of the Experimental Items

Coreference

Following the initial study by Gygax et al. (2008), I inferred that the higher rate of *no* responses to *femmes* continuations indicates that the masculine role nouns were interpreted specifically (Gygax et al. 2008: 482). There is, however, an issue already discussed by Gygax et al. (2008: 482) that deserves attention: the possibly very different interpretation of the stimuli by the participants. We come back to the already cited example of an experimental item featuring *voisins* in the first sentence and *femmes* in the second to illustrate the problem:

(15a) *Les voisins sortaient de la cafétéria./*
'The neighbors$_{M.PL}$ were coming out of the cafeteria./'

(15b1) *A cause du temps nuageux, une des femmes avait un parapluie.*
'Because of the cloudy weather, one of the women had an umbrella.'

I thus inferred that *une des femmes* was to be interpreted as a subset of a group of male and female neighbors (i.e., a (sub-)subset—of the female neighbors in a group of male and female neighbors, one has an umbrella). Yet, as mentioned by Gygax et al. (2008: 482), the participants might have interpreted *voisins* when reading *une des femmes* in a way that *une des femmes* are not interpreted as a subset of the neighbors, but that they are actually coreferential with the neighbors (i.e., one female neighbor in an exclusively female group has an umbrella) (Anaya-Ramírez et al. 2022: 1260).[55] The broader rejection of *femmes* continuations might therefore

[54] See also Kotthoff & Nübling (2018: 117).

[55] A subset (e.g., *one of the women*) cannot be identical with its main set (e.g., *all the women*). Put differently, a subset cannot be coreferential with its main set. Accordingly, the above

simply be due to a grammatical problem: when reference is made to a female group only, one would expect a feminine role noun (e.g., *voisines* 'neighbors$_{F.PL}$') in the first sentence.[56] Thus, a *femmes* continuation would be judged a poor continuation of the first sentence because a feminine role noun would have been expected in the first sentence, but not because of a specific interpretation of the masculine role noun (Gygax et al. 2008: 482).[57]

Moreover, participants who might have imagined a mixed group having read the first sentence might be confused when reading *la majorité des femmes* and reinterpret it as an entirely female group. Thus, the experimental items might even bring participants to change their interpretation in a way that was not intended. A struggle with the interpretation might thus make participants reflect on the items, which would result in higher response times. Yet I counted higher response times for positive judgments as an indication of the effort involved in combining *femmes* and a role noun in the masculine plural form. So, if the higher response times refer to a different type of confusion than I thought, my whole analysis would be incorrect.

It is also possible that participants react differently to different test items. That is, their interpretation might sometimes opt for the same set, sometimes for the subset possibility. With my experimental design, these heterogeneous reactions (e.g., subset or same set) would still be interpreted in a homogeneous way (i.e., subset). As a consequence, this renders my assumption concerning the specific interpretations of the masculine plural role nouns less reliable. The experimental items also offer a third possible interpretation of the featured referents; we turn to this possibility in the next paragraph.

---

usage of *coreferential* in the sense of 'a part of the (female) group—the entire (female) group' (e.g., one female neighbor in an exclusively female group) might be misleading. However, *coreferential* has been established in this sense in the field of language and gender (e.g., Anaya-Ramírez et al. 2022: 1260; Gygax et al. 2008: 482), which is why I also use it in this way.

[56] However, although, in French, it is not common usage, theoretically, it is not impossible to refer to a female group only with a masculine role noun. When no feminine equivalent has been established, this is, on the contrary, common usage. For instance, *les professeurs* 'the professors$_{M.PL}$' for a group of female professors (see Sect. 2.2.2).

[57] Actually, the English and German stimuli, as well as their translations, present several problems too. For instance, in German and English the interpretation of *women* as a subset depends on the accentuation of *women*, otherwise speakers would more readily opt for a coreferential interpretation and stress *one of the women* (Kotthoff & Nübling 2018: 109). As accentuation is a parameter that written stimuli cannot represent, we cannot know in which way the participants interpreted it. See Körner et al. (2024), who replicated Gygax et al. (2008) with oral stimuli in German, but who do not indicate which way the second sentences were pronounced. However, as I opted for a replication of the French sample, I do not concentrate on these issues here.

Different Set

Some of the experimental items in Experiment 1 are better suited to trigger a generic interpretation of the masculine role nouns than others. Although the below discussion applies to all experimental items featured in Experiment 1, let us have a look at the following example, which makes my point more clearly than the above-cited example featuring *voisins* (as in (15a)–(15b1)):

(35a) *Les infirmiers marchaient dans la gare./*
'The nurses$_{M.PL}$ were walking through the station./'

(35b) *Du beau temps étant prévu, la majorité des femmes n'avait pas de veste.*
'Since sunny weather was forecast, the majority of the women weren't wearing a coat.'

Here, the items could be interpreted such that *la majorité des femmes* are completely independent from the nurses (i.e., nurses are walking in a station where some women do not wear a coat). In this case, my results would show whether the participants judged it plausible for nurses to be walking in a station where there were some other women, too. I would thus get an answer to a question I did not ask.

However, and importantly, due to the parallel subject placement of the two noun phrases in question (e.g., *les infirmiers* 'nurses$_{M.PL}$', *la majorité des femmes*), it seems more plausible to interpret the second sentence's subject noun phrase 2 (e.g., *la majorité des femmes*) as a subset of the first sentence's subject noun phrase 1 through topic continuity (e.g., *infirmiers* 'nurses$_{M.PL}$'). Although a topic change and thereby a change of reference of noun phrase 2 to a different entity than noun phrase 1 cannot be entirely excluded, this would be the more difficult interpretation (Givón 1983a: 11 f.).

To sum up, at least for some of Experiment 1's experimental items, the participants' answers risk being vague verdicts about group membership. Future research examining the interpretation of masculine role nouns would therefore be well-advised to design less ambiguous experimental items, which permit a more accurate interpretation by the participants. This would in turn lead to and facilitate a more reliable interpretation of participants' reactions. I come back to this issue in Experiment 2, for which I adapted the experimental items accordingly (see Sect. 5.1.4.1).

4.4.5.4.3 Filler Items

Despite the fact that more fillers were featured in Experiment 1 (i.e., a 1:1 vs. 1:2 ratio of experimental and filler items in Gygax et al. (2008) and Experiment 1; see Sect. 4.3.2.3), the effects stated by Gygax et al. (2008) remained practically the same in 2019. This indicates that the adaption of the filler items has

not considerably influenced the interpretation of masculine role nouns. Actually, my participants do not seem to have been entirely distracted from the experiment's aim: the vast majority of my participants had at least considered that gender stereotypes might be under investigation when they were asked during the debriefing whether they had any idea regarding the research aim of the study.[58]

Importantly, during the debrief, some of the participants explicitly cited filler type 2, in which the role nouns presented in the first sentence did not match the biological/social gender of the referents presented in the second sentence (e.g., *monks—women* in (26a)–(26b)) when explaining why they thought that the experiment was investigating gender issues. These fillers thus may even have reinforced participants' attention concerning the referents' biological/social gender and may have contributed either to a higher acceptance of masculine role nouns + *femmes* (i.e., no semantic mismatch between the role noun and a *femmes* continuation) or to a weaker acceptance of masculine role nouns + *femmes* (i.e., an increased attempt to match grammatical gender and biological/social gender). Either way, the accentuation of the referents' biological/social gender by filler type 2 does not seem to be the best way of distracting the participants' attention from gender issues such as the gender-fair use of language. Accordingly, for Experiment 2, more fillers, and more distractive ones had to be integrated in order to properly conceal the experiment's research aim.

4.5 Summary

Investigating the influence of the morphosyntactic factor *masculine form* and the extra-linguistic factor *stereotypicality* on the interpretation of role nouns in French, Experiment 1 presents a close replication of the French sample of Gygax et al. (2008). It shows that the finding that masculine role nouns tend to be interpreted specifically can be considered to be stable across time. Crucially, changes in the linguistic usages (e.g., alternatives to masculine role nouns) and extra-linguistic reality (e.g., an increase in gender equality in the workspace) do not seem to have influenced the interpretation of masculine role nouns. Yet Experiment 1 goes beyond the initial study by revealing that stereotype information (i.e., male stereotypicality), as well as participant-specific factors (i.e., feminist attitudes), can influence the interpretation of masculine role nouns. This indicates that the repetition of previous research is important to gain a better understanding

[58] I do not have any information on the perceptions of the participants from 2008 on the initial study.

of the interpretation of masculine role nouns. At the same time, the discussion of the limitations of Experiment 1 shows that a more detailed examination of the interpretation of masculine role nouns is worthy of further study. Amongst other issues, the analysis of whether different types of masculine role nouns are interpreted differently (e.g., occupational vs. non-occupational noun) is still needed. Another research desideratum is the examination of whether a better indication of the female referent's membership of the main group designated by a masculine role noun generates different results. In this vein, it also became clear that it is important to better conceal the experiment's research aim with the filler items. These issues are addressed when setting up Experiment 2.

Experiment 2

5

This chapter describes Experiment 2, which examines the influence of the lexico-semantic factor *role noun type* (i.e., occupational vs. non-occupational nouns) on whether a masculine role noun is interpreted generically or specifically. Section 5.1 sets out the rationale behind Experiment 2 and points out the differences between Experiments 1 and 2. Experiment 2's research aims and hypotheses, its methodology, procedure and materials are presented in Sects. 5.1.1, 5.1.2, 5.1.3 and 5.1.4 respectively. Section 5.2 focuses on method. Section 5.2.1 introduces the norming study, which was run prior to the actual experiment in order to investigate whether role nouns are considered as occupational or non-occupational. Section 5.2.2 further delineates Experiment 2's methodology and materials. The results are presented in Sect. 5.3 and discussed in Sect. 5.4. Section 5.5 provides a summary of the chapter.

5.1 From Experiment 1 to Experiment 2

In the following, I explain how Experiment 2 draws inspiration from Experiment 1 (see Chap. 4), while presenting the different experimental setup of Experiment 2, including the different research questions and innovative experimental materials.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/978-3-662-71663-2_5.

C. Stumm, *When Voisins Can Be Women and When They Cannot – Masculine Generics in French*, Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics, https://doi.org/10.1007/978-3-662-71663-2_5

5.1.1 Research Aims

Research Aim 1: Analysis of the Influence of Role Noun Type
Experiment 1 investigated whether the morphosyntactic factor *masculine form* and/or the extra-linguistic factor *stereotypicality* (i.e., male/female/neutral) influences the interpretation of role nouns. The results showed a general male bias in the interpretation of the role nouns. Nonetheless, the male bias was found to be stronger for stereotypically male role nouns (compared to stereotypically neutral and female role nouns). However, Experiment 1 did not systematically distinguish between different types of role nouns, such as occupational (e.g., *ingénieurs* 'engineers$_{M.PL}$') and non-occupational nouns (e.g., *voisins*). Instead, the three stereotype conditions in Experiment 1 contained a mixture of occupational and non-occupational nouns, which were not evenly distributed (see Sect. 4.4.5.4.2).

Yet, it can be assumed that non-occupational nouns are interpreted differently than occupational nouns. For instance, on the one hand, with regard to a non-occupational noun in the masculine plural form such as *voisins*, we can assume that as many men as women are neighbors. On the other hand, the assumptions concerning occupational nouns in the masculine plural form, even if they are stereotypically neutral (e.g., *pharmaciens* 'pharmacists$_{M.PL}$'), might be interpreted specifically more easily: based on experiences in the extra-linguistic world and/or assumptions concerning men and women's professional lives, women might be less readily associated with an occupational role than men. This might result in a stronger male bias for occupational over non-occupational nouns (Becker 2008: 66; De Backer & De Cuypere 2012: 257, 262).[1] Given the uncontrolled mixture of occupational and non-occupational nouns in Experiment 1, Experiment 1 was not able to detect whether there was a more pronounced male bias for occupational or non-occupational nouns. Based on the above assumptions, in Experiment 2, I thus decided to examine whether masculine non-occupational and occupational nouns in the plural form are interpreted differently. In doing so, I decided not to focus on stereotypicality and tested only stereotypically neutral role nouns. The norms for the gender stereotypicality of the role nouns in Experiment 2 are based on the norming study by Misersky et al. (2014).

Firstly, the systematic examination of whether non-occupational and occupational nouns in the masculine plural form are interpreted differently has been neglected so far: previous research mostly does not differentiate between different types of masculine role nouns, probably assuming that they all behave in

[1] Kotthoff & Nübling (2018: 92–95) also discuss this issue concerning masculine role nouns in German.

the same way. However, the one study that examines whether occupational and non-occupational role nouns in the Germanic languages Dutch and German are interpreted differently shows that there are indeed some differences, with plural occupational nouns being interpreted specifically more often than plural non-occupational nouns (De Backer & De Cuypere 2012: 260–262, 266 f.).[2] To my best knowledge, there is no such study on French. Importantly, De Backer & De Cuypere's (2012) research paradigm is based on explicit questions and answers and thus does not investigate online language processing, which is what I am aiming for by not only recording the *yes*/*no* responses, but also by analyzing the reading/response times (see Research Aim 2 below). Secondly, if it turns out that one of the role noun types induces a more pronounced male bias, this would be of practical relevance for the use of gender-fair language as it might be more helpful to promote gender-fair alternatives for occupational than for non-occupational nouns (Heap 2024: 226; Zapf 2024: 408).

To sum up, while I still aim to analyze whether the morphosyntactic factor *masculine form* influences the reader's interpretation of role nouns in French, in Experiment 2, I abandon the question regarding the influence of the extra-linguistic factor *stereotypicality* on the interpretation of masculine plural role nouns; instead I include the systematic analysis of the lexico-semantic factor *role noun type*. More precisely, I examine whether non-occupational and occupational nouns in the masculine plural form that are stereotypically neutral are interpreted differently from each other (e.g., with a stronger male bias for occupational nouns).

Research Aim 2: Definition of the Crucial Region(s)

In Experiment 1, the reading times of the entire second sentences, which included the decision-making concerning the final question (i.e., *Continuation possible?*), were collected and called *response times* (i.e., the SPR WSP paradigm; see Sect. 4.4.3.2). However, the reading time of an entire sentence, which, besides including the response time to the final question, is quite noisy and does not permit us to analyze which sentence region(s) cause(s) processing difficulties (if any). In Experiment 2, I therefore decided to rely on a more fine-grained experimental method, which allows me to analyze reading times for particular regions in the sentence by presenting the second sentences bit by bit: the self-paced reading paradigm with moving window presentation (= SPR MvW) (Nikolayeva 2015; Jegerski 2014: 21–23). Reading time differences between the *hommes* and *femmes* conditions should be specific to the

[2] In German, masculine singular occupational nouns were also interpreted more often specifically than non-occupational nouns (De Backer & De Cuypere 2012: 260 f., 267).

regions of the sentence in which the sentence is disambiguated (if so).[3] Moreover, the separate presentation of the final question (for details, see Sect. 5.1.3), permits me to examine precisely whether responses to *femmes* items are slower than those to *hommes* items. Thus, in opposition to Experiment 1, Experiment 2 is able to indicate in which specific region(s) of the sentence a processing difficulty arises (if any). It is also able to indicate whether a processing difficulty arises when the participants respond to the final question.

5.1.2 Research Questions and Hypotheses

Research Questions
My main research question remains the same as in Experiment 1 (see Sect. 1.1): I want to examine whether the morphosyntactic factor *masculine form* generates a specific interpretation of a masculine role noun; in other words:

RQ 1: Do masculine role nouns in French trigger a male-specific interpretation?

Moreover, Experiment 2 aims to examine the lexico-semantic factor *role noun type* and to answer the following research question; note that research questions 2, 4, 5 and 6 are tackled by Experiment 1 (see Sect. 4.1.1), which is why I address RQ 3 and RQ 7 here (De Backer & De Cuypere's 2012: 257):

RQ 3: Does the role noun type (i.e., occupational nouns vs. non-occupational nouns) influence the interpretation of masculine role nouns?

As I only tested masculine role nouns, Experiment 2 aims to examine the interaction of the morphosyntactic factor *masculine form* and the lexico-semantic factor *role noun type* (De Backer & De Cuypere's 2012: 253, 255–257, 267). This results in the following additional research question:

[3] In Experiment 2, the second sentences are thus segmented. While it would seem straightforward to speak of *segments* (i.e., spillover segment), in the field, the term *regions* (e.g., spillover region) has been established, which hints more at the viewing direction than at the viewing of specific words of a sentence (Redl 2021: 112–114; Szuba et al. 2022: 830–834). For the sake of comparability, I also speak of *regions* (see Jegerski (2014: 30 f.) on phrase-by-phrase vs. word-by-word presentation).

RQ 7: Do the masculine form and the role noun type (i.e., occupational nouns vs. non-occupational nouns) interact when a masculine role noun is interpreted?

Furthermore, based on my findings in Experiment 1, which did not permit me to analyze in which sentence region(s) the reading times were slowed down—when reading *femmes* or when answering the final question—in Experiment 2, I ask the following additional research question:

RQ 8: Do reading times increase when the continuation region and/or spillover region and/or the final question are processed?

Hypotheses

In relation to my research questions, I hypothesize the following and assume that the below-listed outcomes of Experiment 2 are possible (Gygax et al. 2008: 470 f.; De Backer & De Cuypere 2012: 253, 257, 260–262, 266 f.):[4]

H1: The masculine form (i.e., a morphosyntactic factor) may influence the interpretation of the role nouns.

- In this case, irrespective of role noun type, I expect items featuring *femmes* to get fewer *yes* responses than items featuring *hommes.*
- In this case, irrespective of role noun type, I also assume that reading/response times of items featuring *femmes* should be longer than those of items featuring *hommes*. More precisely, reading times of the continuation region (i.e., *hommes/femmes*) and/or the spillover region (i.e., the region directly after *hommes/femmes*)[5] and/or the response time to the final question (i.e., *Continuation possible?*) should be slower when the second sentence contains *femmes* than when it contains *hommes*.[6] These longer reading and decision latencies would reflect processing difficulties.

[4] See also Kotthoff & Nübling (2018: 215–217).

[5] This is in accordance with the analysis of SPR MvW tasks (Nikolayeva 2015). See Redl (2021: 113 f.), who investigated the generic *he* in Dutch with a SPR MvW paradigm and who also analyzed the continuation and the spillover region; see also Szuba et al. (2022) and Sect. 6.1.

[6] As the only difference in the two conditions was the mention of *hommes* or *femmes*, a difference induced by the continuation type obviously could not arise before *hommes/femmes*.

H2: The role noun type (i.e., a lexico-semantic factor) may influence the interpretation of the role nouns.

- In this case, I expect occupational nouns to generate a male bias, while non-occupational nouns are interpreted generically (i.e., fewer *yes* responses and heightened corresponding reading/response times for occupational nouns, but a similar number of *yes* responses and similar length of the corresponding reading/response times for non-occupational nouns).

H3: An interaction of the two factors may influence the interpretation of the role nouns.

- In this case, I expect occupational nouns to generate a stronger male bias than non-occupational nouns (i.e., fewer *yes* responses and heightened corresponding reading/response times for masculine occupational nouns than for masculine non-occupational nouns).

Finally, as no previous study has analyzed whether the response times for the final question differ when preceded by a male or a female referent, I do not put forward any hypothesis in this regard.

5.1.3 Methodology and Procedure

Methodology: Self-Paced Reading Moving Window
The first sentences were presented as a whole, just as in Experiment 1. The participants were free to spend as much time as they needed reading the first sentence before switching to the second sentence.[7] Yet, in accordance with my research aim of exploring in which region of the sentence exactly processing difficulties arise (if any), Experiment 2 makes use of the SPR MvW paradigm for the second sentences of the experimental pairs. The different presentation mode of the first and second sentences simplified the task for my participants (i.e., less clicking). It is also justified by the fact that the first sentences' reading times were not of interest for my research aim: as the only difference in the experimental pairs was the mentioning of *hommes/femmes* in the second sentences, a possible processing difficulty induced

[7] For more details on the procedure linked to the SPR WSP paradigm used in Experiment 1, see Sects. 4.1.2.2, 4.3.2.4 and 4.4.2.

by the continuation type could not arise earlier than when *hommes/femmes* was processed.

Importantly, the second sentences were broken down into five regions of interest and presented one after the other. Thus, the second sentences were displayed in a moving window: only one region was visible at a time, while the other regions were indicated as (illegible) dashes. The participants switched from one region to the next by clicking *yes* (e.g., from *En discutant* 'while discussing' to *la majorité des*) (Nikolayeva 2015; Jegerski 2014: 21–23; Witzel et al. 2012: 113).

The segmentation of the second sentences of the experimental items into five regions is shown in Table 5.1.

Table 5.1 Segmentation scheme for the second sentences of the experimental items (SPR MvW presentation), Experiment 2

Region	(In)visible regions
Gerund region:	`En discutant, -- -------- --- ------ -------- -- --------.`
Quantifier region:	`-- ---------, la majorité des ------ -------- -- --------.`
Continuation region (*hommes/femmes*):	`-- ---------, -- -------- --- hommes -------- -- --------.`
Spillover region (verb):	`-- ---------, -- -------- --- ------ évoquait -- --------.`
Final region: (object)	`-- ---------, -- -------- --- ------ -------- la montagne.`

Thus, when turning to the second sentences, the participants first saw the gerund region (e.g., *En discutant* 'while discussing'), then moved on to the quantifier region (e.g., *la majorité des*), the continuation region (e.g., *hommes*), the spillover region (e.g., *évoquait* 'brought up') and the final segment (e.g., *la montagne* 'the mountains') (see the presentation of the experimental items in Sect. 5.1.4.1). Note that the regions of interest are the continuation region, in which either *hommes* or *femmes* was displayed, as well as the spillover region, onto which a processing difficulty provoked by *femmes* might spill over (i.e., be tangible) (Nikolayeva 2015).[8]

[8] Note that, as sentence wrap-up effects often increase reading times at the end of sentences, I did not analyze the second sentences' last region. This is an established procedure in SPR MvW tasks (Jegerski 2014: 29, 44; Just et al. 1982: 234; Nikolayeva et al. 2015).

Moreover, reading was self-paced as the participants decided how much time they spent on each region. Accordingly, the recording of the reading times of the second sentences resulted in five reading times for five regions, as well as one response time resulting from the final question (i.e., *Continuation possible ?*). Finally, thanks to the separate collection of the regions' reading times and the response times for the final question, I can also examine whether a possible processing difficulty only arises when readers are asked to link a masculine role noun and *femmes* (and not during the reading process itself). Moreover, the separate presentation of the final question is in accordance with the presentation of a SPR MvW paradigm (Witzel et al. 2012: 113).

Procedure

The procedure of Experiment 2 was as similar as possible to that of Experiment 1. However, the alteration of the methodology (i.e., the use of SPR MvW for the second sentences of the experimental pairs) required an adaption of the procedure. In Experiment 1, I had asked my participants to respond to the question *Continuation possible ?* by pressing *yes* or *no* after reading the second sentence, but the question did not appear on the screen (see Sects. 4.4.2 and 5.2.2.2; Gygax et al. 2008: 476).

In Experiment 2, the second sentences were segmented and the *yes* button was used to switch from one region to the next. Accordingly, in order to have the same procedure for all regions, the participants also pressed *yes* in order to finish the second sentence's last region. Subsequently, the question *Continuation possible ?* appeared and the participants answered it by pressing *yes* or *no*. To sum up, in Experiment 1 the question *Continuation possible ?* was implicit, while in Experiment 2 it appeared on the screen.

Moreover, in order to make the differentiation between the different sentence types easier, different colors were used. In Experiment 1, I had only used black (sentence pairs) and red (introductory questions and further indications). In Experiment 2, the introductory question (*Prochaine paire ?* 'Next pair?') appeared in green, the stimuli in black, the final question (*Continuation possible ?*) in red and indications concerning the procedure in blue (e.g., *PAUSE (1/4). Pour continuer l'expérience, appuyez sur OUI* 'PAUSE (1/4). To continue the experiment, press YES').

5.1.4 Materials

5.1.4.1 Experimental Items

Generality vs. Plausibility

While the role nouns in Experiment 1 were chosen according to their stereotypicality (i.e., 12 stereotypically male, 12 stereotypically neutral and 12 stereotypically female role nouns), efforts were made to minimize any further effect of stereotypicality. In this vein, Gygax et al. (2008) created different contents for their gender-neutral content. In other words, these contents should neither evoke any gendered associations nor alter or reinforce those triggered by the chosen role nouns. Accordingly, the six different stereotypically neutral contents chosen for the first sentences (e.g., the mentioned group of people *came out of a place*) and the three different stereotypically neutral content types chosen for the second sentences (e.g., weather conditions) could be matched with any of the 36 chosen role nouns (Gygax et al. 2008: 272, 275; see Sect. 4.1.2.1.1). An example is the following:

(15a) *Les voisins sortaient de la cafétéria./*
'The neighbors$_{M.PL}$ were coming out of the cafeteria./'

(15b1) *A cause du temps nuageux, une des femmes avait un parapluie.*
'Because of the cloudy weather, one of the women had an umbrella.'

However, while the stimuli of Experiment 1 and Gygax et al. (2008) are as gender-neutral as possible (except the role nouns), they are also somewhat inauthentic. In that sense, a first sentence about a specific group of people (e.g., *les voisins*), which features an activity which is not related to the mentioned group, and in a random place (e.g., *to have an umbrella*, *leaving the cafeteria* as in (15a)–(15b1)), might be perceived as unlikely. Also, in Experiment 1, the first sentences were arbitrarily matched with the second sentences, which was possible thanks to the generic contents of both sentences. However, this results in semantically more or less unrelated sentence pairs. For instance, in example (15a)–(15b1), *the neighbors leaving the cafeteria* is followed by the semantically rather unrelated *cloudy weather*.

Yet, in natural language, we tend to encounter role nouns in their contexts. For instance, neighbors are featured in their neighborhood, not in a random location, and are engaged in activities related to their role as neighbors—they *walk the dogs*, instead of being engaged in less neighbor-related activities such as *being in a cafeteria*. Correspondingly, for Experiment 2, I decided to present sentences that are less general in nature, but which have the potential to be more authentic and to be perceived as more plausible and coherent.

Thus, in contrast to Experiment 1, in Experiment 2, the first sentence featured an activity that is related to the specific role noun so that a plausible scene is depicted. For instance, when talking about *neighbors* in the first sentence, the neighbors *were walking the dogs,* as I considered that *to walk the dog*s is a reasonable activity for neighbors. Crucially, the second sentence is semantically linked to the scene depicted in the first sentence by featuring a gerund construction in which the action expressed by the verb phrase is entailed by the event mentioned in the first sentence (e.g., the verb phrase *walk the dogs* and the verb *walk*). In other words, the second sentence fills a slot of the frame evoked in the first sentence (e.g., *walk the dogs—walk and watch the trees*). I hence call the gerund constructions *semantically coherent gerund constructions.* An example of an experimental pair from Experiment 2 is the following:

(36a) *Les voisins sortaient les chiens./*
'The neighbors$_{M.PL}$ were walking the dogs./'
(36b1) *En marchant,/ la majorité des/ femmes/ observait/ les arbres./*[9]
'While walking,/ the majority of the/ women/ watched/ the trees./'
(36b2) *En marchant,/ la majorité des/ hommes/ observait/ les arbres./*
'While walking,/ the majority of the/ men/ watched/ the trees./'

Thanks to the semantic relation that the first and the second sentence share, the coherence between the two sentences should be enhanced in Experiment 2. Following Kehler (2019: 450), I define *coherence* as "the underlying semantic relationships that characterize and structure the transitions between utterances". The higher degree of coherence between the first and second sentences in Experiment 2 becomes obvious when directly comparing experimental pairs from Experiment 1 (e.g., (15a)–(15b1)) with those of Experiment 2 (e.g., (36a)–(36b1)):

(15a) *Les voisins sortaient de la cafétéria./*
'The neighbors$_{M.PL}$ were coming out of the cafeteria./'
(15b1) *A cause du temps nuageux, une des femmes avait un parapluie.*
'Because of the cloudy weather, one of the women had an umbrella.'

[9] The dashes indicate the region boundaries in the self-paced reading task (MvW presentation). The dash at the end of the second sentence indicates that the participants pressed the *yes* button in order to move on to the final question (see Sect. 5.1.3). I henceforth use this presentation for the stimuli featured in Experiment 2.

vs.

(36a) *Les voisins sortaient les chiens./*
'The neighbors$_{M.PL}$ were walking the dogs./'
(36b1) *En marchant,/ la majorité des/ femmes/ observait/ les arbres./*
'While walking,/ the majority of the/ women/ watched/ the trees./'

Obviously, the *degree of coherence* of a sentence pair has to be considered in relation to another sentence pair. While *coherent* and *incoherent* stand at the opposite ends of the coherence continuum, a (relatively) less coherent sentence pair can still be fairly coherent. Thus, the experimental items of Experiment 1 can still be considered as rather coherent although they are less coherent than those of Experiment 2.

Finally, while choosing plausibility over generality, the activities displayed in Experiment 2's experimental items were still considered to be neutral in terms of gendered associations (e.g., *both male and female neighbors walk their dogs*). Note that Experiment 2 only featured stereotypically neutral role nouns (based on the norming study by Misersky et al., 2014), which should avoid the emergence of gendered associations.[10]

Towards a More Straightforward Subset Interpretation

Before discussing how I adapted the experimental items to facilitate the interpretation of *femmes* as a subset of the group which had previously been referred to by a masculine role noun, let us first have another look at an experimental item from Experiment 1:[11]

(15a) *Les voisins sortaient de la cafétéria./*
'The neighbors$_{M.PL}$ were coming out of the cafeteria./'
(15b1) *A cause du temps nuageux, une des femmes avait un parapluie.*
'Because of the cloudy weather, one of the women had an umbrella.'

[10] If my items nevertheless evoked gendered associations, I would assume participants' reactions to the stimuli to be influenced by gender stereotypes (e.g., more *yes* answers for *neighbors walking their dogs* and *femmes* continuations if the activity was judged to be stereotypically female). However, as about 92% of the experimental items received quick *yes* answers for both *femmes* and *hommes* continuations, I assume that stereotypicality did not play an important role in the interpretation process.

[11] See footnote 8 in Chap. 4 on subset.

Although the experiment only aimed at analyzing whether the subset interpretation was accessed or not, in Experiment 1, *femmes* could be interpreted in three different ways. Firstly, *femmes* could be interpreted as coreferential[12] with the group mentioned in the first sentence (i.e., all the neighbors are female). Secondly, *femmes* could be interpreted as a completely different set than the previously mentioned group (i.e., the scene depicts neighbors *and* women). Thirdly, *femmes* could be interpreted as a subset of the group mentioned in the first sentence (e.g., one female neighbor in a mixed group of neighbors). Accordingly, it is difficult to tell exactly how the participants depicted the scene, especially as it is possible that the interpretations vary between participants with regard to different items. I have already discussed these issues in Sect. 4.4.5.4.2.

Note that, in Sect. 4.4.5.4.2, I presented an experimental item featuring *infirmiers* 'nurses$_{M.PL}$' (35a)–(35b) to illustrate an example that might potentially lead to an interpretation of *femmes* as a different set than the aforementioned masculine role noun. There is more unnecessary ambiguity in this example than in the item featuring *voisins* (15a)–(15b1). Yet, in order to better compare the experimental items of Experiment 1, which tested stereotypically male, female and neutral role nouns and Experiment 2, which only tested stereotypically neutral role nouns, in the present section, I stick to example (15a)–(15b1), featuring the stereotypically neutral *voisins*.

For Experiment 1, it was essential that the stimuli resemble the original stimuli as much as possible in order to be able to directly compare the findings of Gygax et al. from 2008 with those from 2019. However, in Experiment 2, it was time to ensure that the subset solution truly is the most likely and most generally accessed interpretation across all experimental pairs. Accordingly, I wanted the items of Experiment 2 to clearly indicate the group membership of the female referents featured in the second sentence (i.e., the female group is a subset of the aforementioned group designated by a masculine role noun) and opted for more plausible and coherent experimental items. In this vein, the semantically coherent gerund constructions help to ensure that that the interpretation of *femmes* as a subset of the group designated by the masculine role noun is the most probable interpretation, while the link between the subset in the second and the main group in the first sentence is less straightforward in Experiment 1 (see Anaya-Ramírez et al. 2022: 1260 f., 1269 and Rothermund & Strack 2024: 472, who also aimed at more clearly indicating that women are a part of the group designated by the masculine role noun).

[12] See footnote 55 in Chap. 4 on coreference.

More specifically, as the *gérondif* must necessarily have the same subject[13] as the main verb (*Le bon usage* 2016: §333, 334, 920, 926; Weinrich 1982: 480),[14] in (36a)–(36b1), *la majorité des femmes* is the subject of the main verb of the second sentence (i.e., *observait* 'was watching'), as well as the subject of the gerund construction (i.e., *en marchant* 'while walking'). As the gerund semantically links the events depicted in the first and second sentences, the inference that the subject of *marcher*, *une partie des femmes*, is a subset of the subject of *sortir* in the first sentence (i.e., *voisins*) is quite straightforward. Moreover, as the gerund is positioned at the beginning of the second sentence (a gerund at the end of the sentence would be equally correct), it functions even more as a connective element between the two sentences (*La Grande Grammaire du Français* 2021: 1345; Weinrich 1982: 481).[15] In sum, thanks to the interplay of lexico-semantic and syntactic means, the interpretation of *femmes* as a subset of the masculine role noun is more plausible than it was in Experiment 1.

At the same time, the grammatical rule according to which the gerund must have the same subject as the main verb is not always respected. Nonetheless, exceptions are generally restricted to lexicalized collocations which do not cause any confusion (e.g., *En attendant de vous voir, veuillez agréer mes salutations distinguées* 'Looking forward to seeing you, please accept my best regards', cited by *Le bon usage* 2016: §334). Alternatively they may be used with an inanimate subject (e.g., *L'idée m'est venue en lisant* 'The idea came up while I was reading') (*Le bon usage* 2016: §334; Weinrich 1982: 482 f.). Hence, it is nearly impossible for my participants to interpret the subject of the second sentence, *la majorité des femmes* who are watching the trees, as a different set from those who are walking in the first sentence. If they nonetheless did so, the interpretation would be based on a grammatical violation. Importantly, as the second sentence is part of a sentence pair in which *en marchant* 'while walking' and *sortir les chiens* 'walk the dogs' are two related events within a semantic frame, it is very unlikely that the subject of *en marchant* (i.e., *la majorité des femmes*) will be considered as a completely different set than

[13] Since the gerund construction features a non-finite verb, it would be better to speak of the *agent/logical subject* of the verb phrase. However, in alignment with the literature on the topic (e.g., *La Grande Grammaire du Français* 2021: 1334, 1337, 1345; Weinrich 1982: 481), I speak of the *subject* of the gerund consruction. Note that *La Grande Grammaire du Français* (2021: 1334, 1337) defines the so-called gerund as *present participle with 'en'*.

[14] See also *La Grande Grammaire du Français* (2021: 1344–1347); see Givón (1983a: 23 f.).

[15] See also Dethloff & Wagner (2002: 278).

the subject of *sortir les chiens* (i.e., *les voisins*). Accordingly, the inference should be that *la majorité des femmes* is indeed a subset of *voisins.*

Also, just as in Experiment 1, *la majorité des femmes* could have been interpreted as corefererential with *voisins.* If the two subjects were interpreted as the same set, instead of the masculine form *voisins*, the feminine form *voisines* would have been expected. In this case, *femmes* items should receive *no* responses (see Sect. 4.4.5.4.2). Yet the majority of the items featuring *femmes* received (quick) *yes* responses (see Sect. 5.3). I can thus assume that the participants of Experiment 2 did not tend to interpret *la majorité des femmes* as coreferential with *voisins.*

As plausible scenes were featured in Experiment 2, coherence is also established thanks to the information given after the (female) subset, such as *watch the trees (while walking the dogs)* in example (36a)–(36b1). Moreover, while the coherence between the first and second sentences is especially increased thanks to the gerund construction in all of Experiment 2's experimental pairs, several of the experimental items would also show a high degree of coherence without the gerund construction. For instance, the following example does not necessarily need the semantically coherent gerund construction *En jouant* 'While playing' in order to feature a coherent and plausible scene:

(37a) *Les musiciens répétaient à l'opéra./*
'The musicians$_{M.PL}$ were rehearsing in the opera.'
(37b) *En jouant,/ une partie des/ femmes/ scrutait/ la partition. /*
'While playing,/ some of the/ women/ were scanning/ the sheet music./'

To sum up, when analyzing my data, thanks to experimental items with the above defined properties, I hope to be able to draw conclusions concerning the interpretation of masculine role nouns which are more representative of natural language than might be those from Experiment 1. All experimental items featured in Experiment 2 can be found in Sect. 2.1 of Appendix 2 in the electronic supplementary material.

5.1.4.2 Filler Items

In order to balance the participants' potential *yes* answers to the experimental items, Gygax et al.'s (2008) intention was to trigger clear *no* responses with their

three different filler types. Like the experimental items, it is a central feature of these fillers that all of them use role nouns in the plural form to introduce a group of people in the first sentence and that they feature a part of the aforementioned group/a different group in the second sentence. Moreover, the subset in the second sentence is referred to by indicating its biological/social gender (i.e., *hommes*/*femmes*) (see Sect. 4.1.2.1.2).

In Experiment 1, while slightly adapting and increasing Gygax et al.'s (2008) original filler items, I stuck to the original fillers as much as possible. I also replicated the frequent use of role nouns and the frequent reference to biological/social gender (Sect. 4.3.2.3). Therefore, Experiment 1 comprised more than 108 role nouns. The debrief after Experiment 1 showed that the majority of my participants had had a good guess at the experiment's aim, while often citing sentences of the filler type in which the biological/social gender of the two groups mentioned in the first and second sentences did not match (e.g., *monks—women*; i.e., Experiment's 1 filler type 2). In this sense, when discussing Experiment 1, I have argued that it would be beneficial not to attract further attention to the group of people featured and not to accentuate biological/social gender through the fillers (see Sect. 4.4.5.4.3).

Moreover, after Experiment 1 and prior to Experiment 2, gender-fair language was widely discussed again in French society: while advocates of gender-fair language continue to encourage the use of the *point median* 'interpunct', its use was officially banned from schools in May 2021 (Bulletin Blanquer 2021). This was fervently supported by the Académie française (Académie française 2021). Furthermore, the integration of the non-binary pronoun *iel* (a contraction of *il* 'he' and *elle* 'she') into the *Robert en ligne* dictionary in October 2021 has heated the debate on gender-fair language again, especially in the media. At the same time, the use of double forms continues to be recommended by the French government and is even more common than before (Bulletin Blanquer 2021; Xiao et al. 2023: 84).

Accordingly, when setting up Experiment 2, given that the experiment's research aim was both widely discussed and easy to guess, I wanted the filler items, above all, to conceal my study's research aim and decrease the salience of biological/social gender (for a similar approach, see Pozniak et al. 2023: 8).[16] In order to achieve this, I introduced four different filler types featuring collective nouns (filler type 1), animals (filler type 2), inanimate objects (filler type 3) and role nouns (filler type 4)[17] in the first sentences and fewer mentions of *hommes/femmes* in the second sentences. When referring to humans (i.e., filler types 1 and 4), the filler items of Experiment 2 feature *personnes, groupe* and *gens* 'persons$_{F.PL}$, group$_{M.SG}$ and people$_{M.PL}$'. Nonetheless, for the sake of similarity with the experimental items, some of the fillers of type 1 and 4 feature *hommes* or *femmes* in their second sentences.[18] In order not to further attract the attention to the interpretation of the masculine role nouns in the experimental items (i.e., masculine role noun—male/female subset), the fillers' *no* answers were intended to be elicited by a semantic mismatch between the first and second sentences that does not result from a mismatch between the featured groups, as it was often the case in Experiment 1 (e.g., *monks—women*). See Table 5.2 for an example of each filler type.

[16] See also Kim et al. (2023a: 22); Zacharski & Ferstl (2023: 302). See Samuel et al. (2019: 1769 f., 1779 f.) for a similar approach with a focus on inanimate and non-human animate nouns.

[17] As fillers, while distracting from the research aim, should also resemble the experimental items (Nikolayeva et al. 2015; see Sect. 6.2), I also included fillers featuring role nouns in the plural form as subjects in the first sentences (i.e., filler type 4). Like the experimental items, half of these fillers consist of occupational nouns and half non-occupational nouns. Furthermore, they mirror the 24 experimental items by matching them as much as possible in terms of their genderwise stereotypical neutrality (based on the norming study by Misersky et al. 2014).

[18] When referring to animals (i.e., filler type 2), I tried to stick to *groupe* 'group$_{M.SG}$', but, for the sake of coherence, sometimes opted for the equivalents corresponding to the animals (e.g., *troupe de lions* 'pride$_{M.SG}$ of lions $_{M.PL}$' instead of **groupe de lions* 'group$_{M.SG}$ of lions'). Moreover, when referring to inanimate objects (i.e., filler type 3), it was opportune to directly name a part of the formerly introduced subject (e.g., *la voiture*—(*ses*) *boutons* 'the car$_{F.SG}$—(its) buttons$_{M.PL}$'); see Table 5.2.

Table 5.2 Filler types, Experiment 2

Filler type	Subject first sentence	Example for a *no* response *(dashes indicate SPR MvW regions)*
1	Collective nouns	*Le comité patientait au soleil./* 'The committee$_{M.SG}$ was waiting patiently in the sun./' *En s'énervant,/ plusieurs/ personnes/ maudissaient/ l'orage./* 'While getting angry,/ several/ people/ cursed/ the storm./'
2	Animals	*Les lions observaient la proie./* 'The lions$_{M.PL}$ were observing the prey./' *En scrutant,/ la majorité de la/ troupe/ se mordait/ les sabots./* 'While glaring,/ the majority of the/ pride/ bit/ their hooves./'
3	Inanimate objects	*La voiture marchait impeccablement./* 'The car$_{F.SG}$ was running smoothly./' *En s'avançant,/ une partie des/ boutons/ sonnait/ l'alarme./* 'While moving forward,/ some of the/ buttons/ rang/ the alarm./'
4	Role nouns	*Les électeurs fêtaient la victoire./* 'The voters$_{M.PL}$ were celebrating the victory./' *En s'amusant,/ la majorité du/ groupe/ déprimait/ à cause de la défaite./* 'While having fun,/ the majority of the/ group/ got depressed/ about the defeat./'

The syntax of the filler items was comparable to that of the experimental pairs. The first sentences were presented one at a time and introduced an entity doing something. The second sentences gave further information on what the subset[19] of the previously mentioned entity was doing and were presented region-by-region (see Table 5.2).[20] The filler items featured the same quantifiers as the experimental items (i.e., *quelques*, *plusieurs, une partie de, la majorité de* 'some/ several, one part of, the majority of') (see Table 5.2).[21]

[19] Naturally, concerning inanimate objects (filler type 3), the subset was an inanimate object, too.

[20] Just as the experimental pairs, the fillers' second sentences consisted of five regions. Obviously, the filler items do not have a target region and thus no spillover region. Nonetheless, for instance, the fillers' 'continuation' regions also featured a subset and are thus comparable to the experimental items (see Table 5.2). See Table 5.1 concerning the defined regions for the experimental pairs.

[21] For practical reasons, filler type 4 (i.e., inanimate objects) exceptionally features the quantifier *un/e des* 'one$_{M./F.SG}$ of the' once.

Furthermore, in order not to trigger any biological/social gender-bias through grammatical features of the subjects of the fillers' first sentences, half of the items of filler type 1, 2 and 3 (i.e., collective nouns, animals and inanimate objects) consisted of masculine nouns, the other half of feminine nouns.[22] Finally, in order to resemble the experimental items, the role nouns used in the first sentences of filler type 4 were masculine.[23] I will henceforth refer to the above-described characteristics of Experiment 2's fillers as *the fillers' properties.* All filler items featured in Experiment 2 can be found in Sect. 2.2 of Appendix 2 in the electronic supplementary material.

Crucially, in order to better conceal my research aim compared to Experiment 1, I increased the amount of fillers to a ratio of experimental and filler items of 1:3. See Table 5.3 for a summary of the ratio between experimental and filler items in Gygax et al. (2008) and my Experiments 1 and 2.

Table 5.3 Ratio of experimental items and filler items, Gygax et al. (2008), Experiment 1 and Experiment 2

Study	Experimental items	Filler items	Total items (experimental and filler items)	Ratio of experimental items: filler items
Gygax et al. (2008)	36	36	72	**1:1**
Experiment 1	36	72	108	**1:2**
Experiment 2	24	72	96	**1:3**

Finally, the fillers featuring role nouns (filler type 4) were supposed to trigger *no* answers in order to balance out the experimental items, which were expected to trigger *yes* answers. Half of filler types 1, 2 and 3 were supposed to elicit *yes* answers, the other half to generate *no* answers. Including the 24 experimental items, this resulted in 48 items out of the 96 stimuli that were intended to elicit a *yes* response and 48 items intended to elicit a *no* response. See Table 5.4 for a detailed description of the item types.

[22] The 12 fillers featuring inanimate objects consisted of seven masculine and five feminine nouns.

[23] However, for practical reasons, filler type 4 (i.e., role nouns) also included six epicene nouns out of 24 (e.g., *les archivistes* 'the$_{M./F.PL}$ archivists$_{M./F.PL}$'). Each sub-group (i.e., occupational vs. non-occupational term) featured three epicene nouns and nine masculine role nouns.

Table 5.4 Item types, Experiment 2

Item type	Filler type	Subject first sentence	Total	Second sentence featuring		Intended response
				hommes/ femmes	*groupe* etc.	
Filler item	1	Collective nouns	28	4	24	14 Yes, 14 No
Filler item	2	Animals	8	0	8	4 Yes, 4 No
Filler item	3	Inanimate objects	12	0	12	6 Yes, 6 No
Filler item	4	Role nouns	24	4	20	24 No
Experimental item	–	Role nouns	24	24	0	24 Yes

5.2 Method

5.2.1 Method: Norming Study

I now present the norming study, which was run prior to the actual experiment, and then turn to the design of Experiment 2. As Experiment 2 investigates whether the interpretation of occupational masculine nouns is different from that of non-occupational masculine nouns, I had to evaluate whether a role noun is considered as a reference to a person engaged in a professional activity (e.g., *pharmaciens* 'pharmacists$_{M.PL}$') or to a person assuming a non-occupational role (e.g., *voisins*).

Participants

37 participants from the University of Fribourg (i.e., the French-speaking part of Switzerland) took part in the online survey. Six participants had to be excluded as French was not their native language. The final sample was composed of 31 students (one male) aged from 19 to 25 ($M = 21.5$; $SD = 1.39$). Students received course credits for their participation (Misersky et al. 2014: 843).

Materials and Design

Firstly, role nouns that had been judged as stereotypically neutral were extracted from Misersky et al.'s (2014) previous norming study on French role nouns. In the latter study, participants had to judge to what extent the role nouns investigated consisted of men or women by indicating a proportion on an 11-point rating scale (i.e., 0–100%) (Misersky et al. 2014: 841–845). Accordingly, based on Misersky et al.'s (2014) 0–100 rating scale, I selected only role nouns that received a female score between 30 and 70.[24]

Moreover, for my research purposes, I chose masculine nouns in the plural form which are orthographically different from the feminine form (e.g., *les boulangers*/*les boulangères* 'the bakers$_{M.PL}$/the bakers$_{F.PL}$'). I thus excluded all role nouns that did not meet this requirement. For instance, I excluded epicene role nouns, as their grammatical gender information is neutralized in the plural form (e.g., *les violonistes* 'the$_{M./F.PL}$ violinist$_{M./F.PL}$'; see Sect. 2.2). I also excluded masculine role nouns that have no widely accepted feminine form according to the *Robert en ligne* dictionary (e.g., *auteurs* 'authors$_{M.PL}$'/*autrices* 'authors$_{F.PL}$'; see <dictionnaire.lerobert.com/definition/auteur> [1.10.2021]). This resulted in a list of 126 stereotypically more or less neutral role nouns in the masculine plural form, which were rated in the norming study on their occupational aspect.

Procedure

The procedure of the norming study on the occupational aspect of role nouns was as similar as possible to Misersky et al.'s norming study (2014) on the stereotypicality of the role nouns. The questionnaire was administered online via Qualtrics (<www.qualtrics.com>).

[24] Naturally, I aimed for role nouns with a female score of 50. However, in order to have some margin, I chose to have role nouns evaluated with a female score between 30 and 70 and to further reduce the selection after the norming study. Note that Misersky et al.'s (2014) study was also conducted in French-speaking Switzerland. Importantly, Misersky et al.'s (2014) data indicate that participants of all the European languages investigated showed a high consensus when judging the role nouns (Misersky et al. 2014: 847; Xiao et al. 2023: 88). Correspondingly, I have no reason to think that the role nouns would yield different results when evaluated in France. Moreover, the reliability of Misersky et al.'s (2014) norming study has been demonstrated for Hexagonal French for epicene nouns by Richy & Burnett (2021: 10–12). See Sebastián-Tirado et al.'s (2023: 1) recent findings indicating that stereotypes about occupations are not declining.

The participants first gave information about their native language, age and profession. After reading the instructions, the participants gave their consent by clicking *Enter*. The participants were then asked to estimate whether the role noun presented referred to an occupation or not. The participants were informed that there was no wrong answer and were asked to respond as quickly as possible. The participants expressed their judgement by placing the curser somewhere between 100%—*Oui, c'est clairement un métier* 'Yes, it is clearly a job' and *0%—Non, ce n'est clairement pas un métier* 'No, it is clearly not a job'. Role nouns were presented in sets of a maximum of six role nouns per page and in a fully randomized order (Misersky et al. 2014: 844).

Results

For each role noun (by-items analysis), the mean proportions and standard deviations of its occupational character were calculated. A higher proportion indicates that the participants globally judged a role noun as being occupational rather than non-occupational or vice versa (Misersky et al. 2014: 844, 862). I now explain how I treated the data in order to use them in Experiment 2.

For Experiment 2, considering the mean scores of the role nouns as occupations as well as their stereotypicality scores from Misersky et al (2014), I divided the role nouns into two groups. While both final groups of role nouns were to be stereotypically equally neutral, they were to differ considerably concerning their mean scores indicating whether they had been judged as occupational or not.

Firstly, role nouns that were considered as *referring to occupations* scored 90% (SD = 8.3%) in the norming study. Put differently, the role noun was considered to refer to a person engaged in an occupational activity by 90%. Secondly, role nouns that were considered as *referring to non-professionals* scored 7% (SD = 8.6%) in the norming study. In other words, the corresponding role noun was considered to refer to a person engaged in an occupational activity by 7%. Moreover, occupational and non-occupational nouns were both estimated to refer to women by 52%. The final groups of all role nouns that were used for the experimental items in Experiment 2 are shown in Table 5.5.

Table 5.5 Role nouns chosen for Experiment 2

Role noun	*English translation*	*Evaluated as occupation* %	*Evaluated proportion of women in* %
Occupational nouns (*i.e., participants indicated a high score when responding to the question* yes, it is a job*)*			
Pharmaciens	*pharmacists*	99.5	58
Comédiens	*comedians*	85.3	50
Techniciens dentaires	*dental technicians*	98.2	57
Boulangers	*bakers*	97.7	41
Bijoutiers	*jewelers*	97.2	51
Greffiers	*law clerks*	83.3	49
Conseillers professionnels	*counsellors*	96.3	52
Assistants de vente	*sales assistants*	96.0	55
Romanciers	*novelists*	81.8	52
Employés	*clerks*	84.9	51
Musiciens	*musicians*	74.4	47
Présentateurs des informations	*news readers*	89.5	56
Mean (SD in brackets)		90.3 (8.3)	51.6 (4.7)
Non-occupational nouns (*i.e., participants indicated a low score when responding to the question* yes, it is a job)			
Étudiants	*students*	30.9	58
Clients	*clients*	11.2	56
Chanteurs de karaoké	*karaoke singers*	10.5	57
Joueurs de bingo	*bingo players*	10.1	54
Spectateurs	*spectators*	7.7	51
Manifestants	*protestors*	4.9	47
Campeurs	*campers*	4.0	42
Retraités	*pensioners*	1.4	55
Adolescents	*teenagers*	1.2	52

(continued)

Table 5.5 (continued)

Patients	*patients*	1.2	50
Piétons	*pedestrians*	.5	52
Voisins	*neighbors*	.4	51
Mean (SD in brackets)		7.0 (8.6)	52.1 (4.5)

Note: Indications as to whether a role noun was judged as an occupational or non-occupational noun are based on my norming study. Indications on the stereotypicality of the role nouns are based on Misersky et al.'s (2014) norming study.
The data from Misersky et al. (2014) are reproduced with permission from Springer Nature. Misersky et al. (2014). Norms on the Gender Perception of Role Nouns in Czech, English, French, German, Italian, Norwegian, and Slovak. *Behavior Research Methods*, 46(3), 848–851, 854–860, 862–864, 866–870, Springer Nature, https://link.springer.com/journal/13428.

5.2.2 Method: Experiment 2

Participants

46 students (39 females) from AMU participated in this experiment; 39 participants received course credits and seven participants received 10€ for their participation. The sample included participants aged between 17 and 23 years (M = 19, SD = 1.3). All participants were French native monolinguals (native bilinguals could not take part in the experiment).

All participants provided written informed consent. The study was approved by the ethics committee of the University of Bonn (*Ethikkommission an der Medizinischen Fakultät der Rheinischen Friedrich-Wilhelms-Universität Bonn*), my home university; AMU did not require any further ethical approval for the running of the experiment.

5.2.2.1 Materials and Design

5.2.2.1.1 Experimental Items

24 experimental sentence pairs were constructed. The first sentence of each pair introduced a group of people using a masculine role noun in the plural form (e.g., *voisins*). The second sentence featured either some men or some women and indicated that these men or women were part of the group mentioned in the first sentence (e.g., *la majorité des hommes/femmes*) (Gygax et al. 2008: 471). An example of an experimental sentence pair with a second sentence featuring *femmes* is the following:

(36a) *Les voisins sortaient les chiens./*
'The neighbors$_{M.PL}$ were walking the dogs./'
(36b1) *En marchant,/ la majorité des/ femmes/ observait/ les arbres./*
'While walking,/ the majority of the/ women/ watched/ the trees./'

Firstly, 24 stereotypically neutral role nouns were chosen based on Misersky et al.'s (2014) norming study. The role nouns used in Experiment 2 thus do not evoke any gender-related stereotypes. 12 of the 24 role nouns were occupational nouns and 12 were non-occupational nouns. The role nouns were chosen from a previously conducted norming study in which the participants had to indicate whether they referred to persons engaged in occupational activities or not (see Sect. 5.2.1). The chosen role nouns are shown in Table 5.5 (Gygax et al. 2008: 272 f.). In the previous example (36a)–(36b1), the first sentence features a non-occupational noun and is followed by *femmes* in the second sentence. An example of a first sentence with an occupational noun and a second sentence featuring *femmes* is illustrated in (38a)–(38b). The factor *role noun type* varied between items, but within participants.

(38a) *Les pharamciens vérifaient l'ordonnance./*
'The pharmacists$_{M.PL}$ checked the prescription./'
(38b) *En contrôlant,/ plusieurs/ femmes/ apercevaient une erreur./*
'While checking,/ several/ women/ noticed/ an error./'

Secondly, and importantly, the second sentence featured either men or women (i.e., *hommes* vs. *femmes*). 12 of the 24 second sentences mentioned *femmes*, 12 mentioned *hommes*. The factor *continuation* varied within both items and participants (Gygax et al. 2008: 474 f.).[25] The *hommes* counterpart of example (36a)–(36b1), which features *femmes*, would thus be:

(36a) *Les voisins sortaient les chiens./*
'The neighbors$_{M.PL}$ were walking the dogs./'
(36b2) *En marchant,/ la majorité des/ hommes/ observait/ les arbres./*
'While walking,/ the majority of the/ men/ watched/ the trees./'

Across the experiment I created two lists in order to ensure that each role noun was followed by *hommes* as often as by *femmes*. Accordingly, each participant saw 12 second sentences featuring *femmes* and 12 second sentences featuring

[25] See also Gabriel & Gygax (2008: 454).

hommes; these were preceded by six first sentences with occupational nouns and six first sentences with non-occupational nouns respectively. See Table 5.6 for the illustration of my model (i.e., 2 role noun types × 2 continuations) (Gygax et al. 2008: 472, 475):

Table 5.6 2×2 Design, Experiment 2

		Continuation	
		hommes	***femmes***
Role noun type	**Non-occupational noun**	*Les **voisins** sortaient les chiens./* 'The neighbors$_{M.PL}$ were walking the dogs./'	
		*En marchant,/ la majorité des/ **hommes**/ observait/ les arbres./* 'While walking,/ the majority of the/ men/ watched/ the trees./'	*En marchant,/ la majorité des/ **femmes**/ observait/ les arbres./* 'While walking,/ the majority of the/ women/ watched/ the trees./'
	Occupational noun	*Les **pharmaciens** vérifiaient l'ordonnance./* 'The pharmacists$_{M.PL}$ checked the prescription./'	
		*En contrôlant,/ plusieurs/ **hommes**/ apercevaient/ une erreur./* 'While checking,/ several/ men/ noticed/ an error./'	*En contrôlant,/ plusieurs/ **femmes**/ apercevaient/ une erreur./* 'While checking,/ several/ women/ noticed/ an error./'

To sum up, exactly the same first sentences featuring either occupational or non-occupational nouns were presented to all participants (e.g., *Les voisins sortaient les chiens.* 'The neighbors$_{M.PL}$ were walking the dogs.'). The second sentences, however, differed in one single feature: the mention of *hommes* or *femmes* (Gygax et al. 2008: 472). Correspondingly, while one participant saw one particular second sentence with a *hommes* continuation, another participant saw the same sentence featuring *femmes* (e.g., *En marchant,/ la majorité des/ hommes [femmes]/ observait/ les arbres./ 'While walking,/ the majority of the/ men [women]/ watched/ the trees./').* Ergo, the experiment is based on two important experimental manipulations: firstly, the role noun type of the masculine role noun (i.e., occupational vs. non-occupational nouns), and secondly, the subset presented in the second sentence (i.e., *hommes* vs. *femmes*).

Moreover, the experimental pairs featured activities and/or locations that are related to the role noun so that plausible scenes were depicted (e.g., example (36a)–(36b1)). The second sentences started with a gerund construction (e.g., *en marchant* 'while walking'), which was semantically closely linked to the first sentence's main verb (e.g., *sortir les chiens* 'to walk the dogs').

Finally, the second sentences qualified *hommes* or *femmes* with *la majorité des*, *quelques*, *une partie des* or *plusieurs* 'the majority of the, few of the, some of the or several of the') (Gygax et al. 2008: 472, 475).[26]

5.2.2.1.2 Filler Items

In order to conceal the research aim, a significant number of filler items were integrated into the stimuli (i.e., 72 fillers were interspersed with 24 experimental items). The fillers were of four different types, which resembled the experimental items as much as possible, while diminishing the references to biological/social gender. Filler type 1 featured collective nouns in the first sentences (e.g., *le comité* 'the committee$_{M.SG}$'), while filler types 2 and 3 featured animals (e.g., *les lions* 'the lions$_{M.PL}$') and inanimate objects (e.g., *la voiture* 'the car$_{F.SG}$') respectively. Filler type 4 featured role nouns in the first sentences (e.g., *les électeurs* 'the voters$_{M.PL}$'), just like the experimental items (see Sect. 5.1.4.2; Table 5.2).

In order to have a balanced number of stimuli intended to generate *yes* and *no* answers, 48 of the filler items were intended to elicit a *no* response and 24 filler items were intended to elicit a *yes* response. Fillers should hence balance out the 24 experimental items, which were intended to elicit a *yes* response. Across the experiment, this results in 48 items intended to generate a positive response and 48 items a negative one. The 72 filler items were pseudo-randomly interspersed with the 24 experimental items (see Sect. 5.1.4.2; Table 5.4).

[26] In Experiment 1, and based on Gygax et al. (2008), I had also used the quantifier *un/e des* 'one$_{M./F.SG}$ of the'. However, within Experiment 2's SPR MvW paradigm, the segmented indication *un/e des* 'one$_{M./F.SG}$ of the' would have indicated that either a masculine (e.g., *hommes*) or a feminine continuation would follow (e.g., *femmes*). As this might have affected the reading times of the continuation region (i.e., *hommes* vs. *femmes*), I discarded *un/e des* 'one$_{M./F.SG}$ of the'. I also eliminated *la plupart des* 'most of the' as it had generated less inclusive readings (i.e., 61%) than the other quantifiers (i.e., 65–94%), as stated in Garnham et al. (2012: 491).

5.2.2.2 Apparatus and Procedure

Apparatus

Sentence pairs were presented on a Lenovo ThinkPad L480 laptop using DMDX Software (Forster & Forster 2003). Responses were collected using a gamepad attached to the laptop permitting millisecond accuracy (Gygax et al. 2008: 475).

Procedure

The participants were tested one by one in a small quiet room (Gygax et al. 2008: 475). Before the beginning of the experiment, they received oral and written information concerning the procedure and filled in a sociodemographic questionnaire. After the experiment, the participants filled in a questionnaire on their knowledge and usage of gender-fair language and feminist attitudes and were questioned about their hobbies and professional experiences (see the questionnaires in Sect. 2.4 of Appendix 2 in the electronic supplementary material). Afterwards, the participants were debriefed.

The participants' task was to decide whether the second sentence was a *continuation possible* 'sensible continuation' of the first sentence. The *yes* button was on the right, the *no* button on the left side of the gamepad. The participants were asked to keep their fingers on the gamepad during the session (Gygax et al. 2008: 475 f.).

Furthermore, the participants were asked to read the stimuli at a normal reading pace and to make prompt decisions when answering the final question (*Continuation possible ?*). Before each passage, *Prochaine paire ?* 'Next pair?' appeared in green on the screen. All stimuli were presented in black and the final question *Continuation possible ?* was presented in red. Indications concerning the procedure of the experiment appeared in blue (e.g., *PAUSE (1/4). Pour continuer l'expérience, appuyez sur OUI* 'PAUSE (1/4). To continue the experiment, press YES'). To minimize fatigue, there was a break after each fifth of the experiment; the participants were free to choose the length of each break (Gygax et al. 2008: 475 f.).

The first sentence was displayed as a whole. After reading *Prochaine paire ?* 'Next pair?', the participants pressed *yes* to make the first sentence appear; they pressed *yes* again to make it disappear and to switch to the second sentence (Gygax et al. 2008: 476). The second sentence was displayed in five regions, with one region being presented at a time. Each region was presented at its normal position in the sentence. The words outside the region window were displayed as dashes. In other words, while the structure of the whole second sentence was apparent (as indicated by the dashes), only the words in the region window could be read. The presentation duration of each region was self-paced as each participant determined how long they spent on each region. Correspondingly, the participants pressed the *yes* button to make the first region of the second sentence appear (e.g., *En marchant*

'while walking'); they pressed it again to make it disappear and to reveal the second region (e.g., *la majorité des*), and so on and so forth (Jegerski 2014: 21–23; Witzel et al. 2012: 113; see also Table 5.1 in Sect. 5.1.3, which exemplifies the scheme according to which all second sentences were segmented and presented).

When the participants had read the final region of the second sentence, they pressed the *yes* button to make it disappear. Subsequently, the final question *Continuation possible ?* appeared. The participants answered it by clicking *yes* or *no*. Afterwards, the whole procedure started all over again.

Before the start of the experiment, the participants were familiarized with the procedure of the experiment through six practice trials.

5.3 Results

In the present experiment, I recorded the *yes*/*no* answers to the final question (i.e., *Continuation possible ?*), the reading times of the second sentences per region and the response times to the final question. This resulted in five reading times (i.e., five regions) as well as one response time resulting from the final question. I refer to this as *response time* for the final question; it includes the time it took participants to read and answer the final question.

In order to verify whether there is more difficulty linking a masculine role noun with *femmes* than with *hommes*, the critical reading times are the following. Firstly, the *continuation* region (i.e., *hommes* vs. *femmes*) is of interest as it is the only element that differs when stimuli are presented to the participants, while the rest of the regions are exactly the same. Hence, a processing difficulty might arise as soon as *femmes* (or *hommes*) has to be included in the group mentioned in the first sentence (e.g., *voisins*). Secondly, as processing difficulties induced by one region often spill over to the next, it was crucial to also analyze the spillover region (Nikolayeva et al. 2015).[27] The latter directly follows the continuation region and always presented a verb in the *imparfait* (see Table 5.1 in Sect. 5.1.3).[28] Finally, the response time to the question *Continuation possible ?* was of interest as it is conceivable that the association of masculine role nouns and *femmes* might only be perceived as problematic when participants are explicitly asked to combine them (but not when only reading them).

[27] On the analysis of SPR MvW tasks, see footnote 5.

[28] On sentence wrap-up effects, see footnote 8.

5.3.1 Mean Percentage of *Yes* Responses

Descriptive Statistics

As Table 5.7 indicates, occupational nouns generate 92% positive responses for both *hommes* and *femmes* continuations (SD = 27% and 28% respectively). Non-occupational nouns present the following pattern: when followed by *hommes*, they achieve 93% positive responses (SD = 26%); when followed by *femmes*, they achieve 92% positive responses (SD = 28%). Ergo, numerically the difference between the two role noun types (i.e., occupational vs. non-occupational) and the continuations (*hommes* vs. *femmes*) is quite small. This means that items featuring *hommes* and *femmes* were judged in much the same way across both role noun types (see Table 5.7).

Table 5.7 Mean percentage of yes responses, Experiment 2

Role noun type	Continuation	Mean	N	SD
occupational	*hommes*	92%	276	27%
	femmes	92%	276	28%
non-occupational	*hommes*	93%	276	26%
	femmes	92%	276	28%

Inferential Statistics

A mixed-effects logistic regression was used to model participants' *yes*/*no* responses. All analyses were performed using R; p-values were obtained using the lmerTest package. The final linear mixed-effects model (1104 data points) contained *continuation*, *role noun type* and their interaction as fixed effects, random intercepts for subjects and items, and a random slope by items for the factor *continuation* (Barr et al. 2013: 255).

As shown in Table 5.8, there was neither a statistically significant main effect of continuation (*hommes* vs. *femmes*) nor a statistically significant main effect of role noun type (occupational vs. non-occupational noun) nor an interaction of both factors (all ps > .05).

To conclude, the data of Experiment 2 indicate that readers judged most of the second sentences as sensible continuations of the first sentences. This was the case irrespective of whether the masculine role noun in the plural form of the first sentence was followed by *hommes* or by *femmes* in the second sentence. Hence, unlike in Experiment 1, readers were not biased towards the specific interpretation,

but towards the generic interpretation of the masculine role nouns. Moreover, in contrast to previous findings on German (De Backer & De Cuypere 2012: 260 f.), the different role noun types (occupational vs. non-occupational) do not seem to influence the choices readers make when interpreting masculine role nouns.

Table 5.8 Yes responses to the final question—inferential statistics, Experiment 2

	Estimate	Std. Error	z value	p	
(Intercept)	3.318	.364	9.123	< .001	***
Continuation (*hommes* vs. *femmes*)	.090	.371	.243	.808	
Role noun type (occupational vs. non-occupational noun)	.163	.604	.270	.787	
Continuation x Role noun type	−.008	.515	−.016	.987	

Note: Mixed-effects logistic regression model for answers to comprehension questions. Formula: answer ~ continuation * role noun type + (1 | ID) + (1 + continuation | itemno)

5.3.2 Reading and Response Times for *Yes* Responses

For the analyses in the present section only positive judgements were taken into account (i.e., the second sentence was considered a *sensible continuation* of the first sentence). Accordingly, *Reading and Response Times for yes responses* means that I analyze data which preceded or resulted in positive responses to the question *Continuation possible ?*[29]

This process resulted in the analysis of 1017 *yes* responses out of 1104 responses in total. Response times were log-transformed in order to achieve normal distribution of the data (Szuba et al. 2022: 829). Individual reading and response times that were more than 2.5 standard deviations away from the mean of the individual participant were excluded from the analyses. This affected 27

[29] For the continuation and spillover region, reading times comprise the time it takes to read the corresponding region (and to press a button to continue). However, for the response times, they comprise the reading of the question (i.e., *Continuation possible ?*) and the decision making, as well as the pressing of a button in order to indicate the answer (i.e., *yes* or *no*). Note that, in Experiment 1, *response times* subsumes the time it took participants to read the second sentences (i.e., the reading time) and to answer the final question (i.e., the response time).

data points for the continuation region (i.e., 2.7% of reading times for sentences with *yes* responses). Regarding the *yes* responses and their corresponding reading times for the spillover-region, this affected 31 data points (i.e., 3% of reading times of *yes* responses). Finally, for the response times for *yes* responses to the question *Continuation possible ?*, this affected 21 data points (i.e., 2% of response times for *yes* responses).

Continuation Region—Reading Times for Yes Responses

Descriptive Statistics

Reading times for the continuation region for sentences with *yes* responses are numerically slightly shorter (i.e., 24 ms) for occupational nouns with *femmes* continuations than occupational nouns with *hommes* continuations (i.e., 448 ms, SD = 225 vs. 472 ms, SD = 282). Non-occupational nouns, however, are marginally slower (i.e., 10 ms) in combination with *femmes* than with *hommes* (i.e., 461 ms, SD = 221 vs. 451 ms, SD = 256) (see Table 5.9).

Table 5.9 Mean reading times for yes responses for continuation region (in milliseconds), Experiment 2

Role noun type	Continuation	Mean	N	SD
occupational	*hommes*	472.1	249	281.5
	femmes	447.7	245	224.7
non-occupational	*hommes*	451.3	247	255.6
	femmes	460.8	249	221.4

Inferential Statistics

Linear mixed-effects regression was used to analyze reading times for *yes* responses. All analyses were performed using R (*glmer*); p-values were obtained using the lmerTest package. The final model (990 data points) contained random intercepts by subject and by item and random slope per continuation by participant (Barr et al. 2013: 255).

As shown in Table 5.10, there was neither a statistically significant main effect of continuation (*hommes* vs. *femmes*) nor a statistically significant main effect of role noun type (occupational vs. non-occupational noun) (all ps > .05). The interaction of both factors was marginally significant ($p = 0.057$). The means shown in Table 5.9 suggest that this trend towards an interaction is based on the fact that, for occupational nouns, reading times for the *hommes* continuation are very slightly

longer than for the *femmes* continuations, while this is the other way around for non-occupational nouns.

Table 5.10 Reading times for yes responses for continuation region—inferential statistics, Experiment 2

	Estimate	Std. Error	df	t value	p	
(Intercept)	6.030e+00	5.345e-02	6.073e+01	112.822	< .001	***
Continuation (*hommes* vs. *femmes*)	−7.380e-03	1.681e-02	4.491e+01	−.439	.663	
Role noun type (occupational vs. non-occupational noun)	9.111^{e}-05	5.019^{e}-02	2.198e+01	.002	.999	
Continuation x role noun type	5.931^{e}-02	3.115^{e}-02	8.839e+02	1.904	.057	.

Note: Linear mixed-effects model for log-transformed reading times for continuation region. Only yes answers were analyzed; no answers were excluded.
Formula: log_RT_continuation ~ continuation * role noun type + (1 + continuation | ID) + (1 | itemno)

Spillover Region—Reading Times for Yes Responses

Descriptive Statistics

Reading times for *yes* responses for the spillover region are numerically very slightly slower for occupational nouns with *femmes* continuations (i.e., 8 ms) than with *hommes*-continuations (i.e., 504 ms, SD = 242 vs. 496 ms, SD = 210). Non-occupational nouns, too, are marginally slower (i.e., 19 ms) in combination with *femmes* than with *hommes* (i.e., 502, SD = 236 ms vs. 483 ms, SD = 210) (see Table 5.11).

Table 5.11 Reading times for yes responses for spillover region (in milliseconds), Experiment 2

Role noun type	Continuation	Mean	N	SD
occupational	*hommes*	496.1	243	209.5
	femmes	504.0	241	241.5
non-occupational	*hommes*	482.5	251	209.7
	femmes	501.9	251	235.7

Inferential Statistics

Linear mixed-effects regression was used to analyze participants' reading times for *yes* responses. All analyses were performed using R; p-values were obtained using the lmerTest package. The final model (986 data points) contained fixed effects for the factors *continuation*, *role noun type*, and their interaction, random intercepts by subject and by item, and random slopes by continuation for subjects and items (Barr et al. 2013: 255).

As shown in Table 5.12, there was neither a statistically significant main effect of continuation (*hommes* vs. *femmes*) nor a statistically significant main effect of role noun type (occupational vs. non-occupational noun) nor an interaction of both factors (all ps > .05).

Table 5.12 Reading times for yes responses for spillover region—inferential statistics, Experiment 2

	Estimate	Std. Error	df	t value	p	
(Intercept)	6.123	.045	54.307	134.232	< .001	***
Continuation (*hommes* vs. *femmes*)	.018	.019	2.359	.959	.349	
Role noun type (occupational vs. non-occupational noun)	−.027	.035	21.771	−.778	.445	
Continuation x role noun type	.012	.034	22.487	.355	.726	

Note: The table shows a linear mixed-effects regression model for log-transformed reading times for the spillover region. Only *yes* answers were analyzed; *no* answers were excluded. Formula: log_RT_spillover ~ continuation * role noun type + (1 + continuation | ID) + (1 + continuation | itemno)

Response Times for Yes Responses to the Final Question

Descriptive Statistics

Response times for the final question for *yes* responses are slightly quicker (i.e., 53 ms) for occupational nouns with *hommes* continuations than occupational nouns with *femmes* continuations (i.e., 586 ms, SD = 543 vs. 639 ms, SD = 716). Non-occupational nouns, on the contrary, are very slightly slower (i.e., 5 ms) in combination with *hommes* than with *femmes* (i.e., 626 ms, SD = 598 vs. 621 ms, SD = 550) (see Table 5.13).

Table 5.13 Response times for yes responses to the final question (in milliseconds), Experiment 2

Role noun type	Continuation	Mean	N	SD
occupational	*hommes*	585.5	254	543.1
	femmes	638.8	248	715.9
non-occupational	*hommes*	625.5	250	598.2
	femmes	621.2	244	550.0

Inferential Statistics

Linear mixed-effects regression was used to analyze participants' response times for *yes* responses to the final question. All analyses were performed using R; p-values were obtained using the lmerTest package. The final linear mixed-effects model (996 data points) contained *continuation*, *role noun type* and their interaction as fixed effects, random intercepts for subjects and items, and random slopes by subjects for the factors *continuation*, *role noun type* and their interaction (Barr et al. 2013: 255).

As shown in Table 5.14, there was neither a statistically significant main effect of continuation (*hommes* vs. *femmes*) nor a statistically significant main effect of role noun type (occupational vs. non-occupational noun) nor an interaction of both factors (all ps > .05).

Table 5.14 Response times for yes responses to the final question—inferential statistics, Experiment 2

	Estimate	Std. Error	df	t value	p	
(Intercept)	6.161	.058	53.804	106.516	< .001	***
Continuation (*hommes* vs. *femmes*)	.017	.042	48.047	0.399	0.691	
Role noun type (occupational vs. non-occupational noun)	.057	.063	21.713	0.910	0.373	
Continuation x role noun type	.015	.078	89.010	0.194	0.847	

Note: The table shows a linear mixed-effects regression model for log-transformed reading times for the final question. Only *yes* answers were analyzed; *no* answers were excluded. Formula: log_RT_question ~ continuation * role noun type + (1 + continuation * role noun typel ID) + (1 | itemno)

To conclude, the results of the reading times for *yes* responses (i.e., continuation and spillover regions) suggest that it is not more difficult to link *femmes* with a masculine plural form than it is for *hommes*. Moreover, the data on the response times for *yes* responses to the final question indicate that it does not take significantly more time to decide whether a *femmes* continuation is a sensible continuation of the first sentence than it does for a *hommes* continuation. Further, the different role noun types (occupational vs. non-occupational) do not seem to influence readers' interpretation of the role nouns. As I did not find a male bias in Experiment 2, no additional analyses as they had been run for Experiment 1 could be run for Experiment 2. I thus move on directly to the discussion of Experiment 2's results in the following section.

5.4 Discussion

Experiment 2 examined, with a SEV SPR MvW paradigm, whether masculine French role nouns trigger a male-specific interpretation (see RQ 1). Role nouns were presented in the plural form and were stereotypically neutral. By presenting role nouns that were either occupational or non-occupational, Experiment 2 explored whether occupational nouns lead to a stronger male bias than

non-occupational nouns. Thus, Experiment 2 examined the interaction of the morphosyntactic factor *masculine form* with the lexico-semantic factor *role noun type* when masculine role nouns are interpreted (see RQ 3, 7; De Backer & De Cuypere 2012: 257, 267). Finally, Experiment 2 analyzed in which region(s) a processing difficulty might occur, and whether the male bias materializes also or exclusively when readers indicate whether the evaluated sentence pair makes sense (see RQ 8).

Contrary to my assumptions, Experiment 2 did not find any indication of a male bias. Indeed, the ratio of *yes* responses, the corresponding reading times of the continuation and spillover regions and the response times to the final question were quite similar when a stereotypically neutral masculine plural role noun was followed by *hommes* or *femmes*. Thus, the masculine role nouns seem to have been interpreted generically by my participants (i.e., university students). Moreover, response patterns for occupational and non-occupational nouns were very similar: in contrast to what I had expected, occupational nouns did not yield a more pronounced male bias than non-occupational nouns. Whether a generic or specific interpretation of a masculine role noun is accessed thus seems to go beyond the factor *masculine form* and *role noun type*. Finally, since my data did not show any processing difficulty induced by *femmes*, I could not analyze the region(s) in which this non-existent processing difficulty might arise.

In contrast to Experiment 2, an extensive body of research, including Experiment 1, demonstrates nearly without exception that masculine role nouns tend to be interpreted specifically (Gygax et al. 2021a: 4–7; Rothermund & Strack 2024: 468; see Redl et al. 2021: 24 f. on masculine pronouns; see Chap. 3). While Experiment 2 used a similar research paradigm and sample to Experiment 1 (and most of the previous psycholinguistic research on the topic), it is of course not impossible that Experiment 2 yielded an erroneous outcome (i.e., type II error). As the replication of an experiment always helps to analyze the extent to which an empirical finding proves to be true (Hedges & Schauer 2019a: 550 f., 563, 56; Marsden et al. 2018: 323, 363, 375; Porte & McManus 2019: 1, 3–5; see Sect. 4.2), I encourage the close replication of Experiment 2. However, when looked at in isolation, the results from Experiment 2 suggest that the masculine role nouns were interpreted generically. The factors potentially generating the diverging results of Experiments 1 and 2 will be discussed in depth in Chap. 6.

5.5 Summary

Experiment 2 examines whether stereotypically neutral masculine role nouns in the plural form are more easily interpreted specifically than generically. Furthermore, to gain more insights into the possibly different interpretation strategies of masculine occupational and non-occupational nouns, it systemically tests both types of masculine role nouns, assuming that occupational nouns might reveal a more pronounced male bias. In this vein, Experiment 2 examines the interaction of the morphosyntactic factor *masculine form* and the lexico-semantic factor *role noun type*. Experiment 2 was inspired by Experiment 1 (see Chap. 4), but presents subtle, yet significant changes in order to generate more precise data on the topic. Firstly, it uses a SPR MvW paradigm (vs. a SPR WSP in Experiment 1). Secondly, the experimental items were adapted to present a high degree of coherence, which more clearly indicate that the female referent is a subset of the main group introduced by a masculine role noun. Finally, the filler items were also adapted so that the research aim was better concealed than in Experiment 1 (e.g., by less frequently referring to biological/social gender). Crucially, irrespective of the role noun type (i.e., occupational and non-occupational nouns), the results of Experiment 2 indicate that the masculine role nouns were interpreted generically. This finding is in strong contrast to previous research, including Experiment 1. The potential factors generating these diverging results are thoroughly analyzed in Chap. 6.

Why a Male Bias in Experiment 1, but No Male Bias in Experiment 2?

6

This chapter opens with a brief introduction to the similarities and differences between Experiments 1 and 2. In order to examine which of these differences might have generated the diverging findings (Experiment 1 suggesting that masculine role nouns are interpreted specifically and Experiment 2 that they are interpreted generically), Sect. 6.1 provides a discussion of the methodological issues, while Sects. 6.2 and 6.3 present how the properties of the different filler items and experimental items of the two experiments might have generated the different interpretations of the masculine role nouns in the two experiments. The chapter concludes with a summary in Sect. 6.4.

In terms of experimental setup, there are both similarities and differences between Experiments 1 and 2. In Experiment 2, I asked the same main research question as in Experiment 1, namely*: Do masculine role nouns in French trigger a male-specific interpretation?* (= RQ 1). Furthermore, the experimental items in both experiments consisted of sentence pairs that featured a definite masculine role noun in subject position and as agent in the first sentence in the plural form (e.g., *les voisins* were doing something), while the second sentence featured a subset of the aforementioned group designated by the role noun (e.g., *la majorité des femmes*). The second sentence featured the subset in subject position and as agent, introduced by a quantifier (e.g., *la majorité des*). Moreover, some of the masculine role nouns used in Experiment 2 were the same as in Experiment 1, namely: *spectateurs*, *voisins* and *musiciens* 'spectators$_{M.PL}$, neighbors$_{M.PL}$ and musicians$_{M.PL}$'. Further, *étudiants*, *chanteurs de karaoke* and *joueurs de bingo*

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/978-3-662-71663-2_6.

C. Stumm, *When Voisins Can Be Women and When They Cannot – Masculine Generics in French*, Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics, https://doi.org/10.1007/978-3-662-71663-2_6

'students$_{M.PL}$, karaoke singers$_{M.PL}$ and bingo players$_{M.PL}$', which were used in Experiment 2, resemble *étudiants en psychologie/physique*, *chanteurs* and *joueurs de tennis* 'psychology/physics students$_{M.PL}$, singers$_{M.PL}$ and tennis players$_{M.PL}$', used in Experiment 1.[1] Finally, just like in Experiment 1, the participants' task was to read and evaluate the sentence pairs presented, and they were asked the same question (i.e., *Continuation possible ?*) (Gygax et al. 2008: 475). In sum, Experiments 1 and 2 share important features. It is thus surprising that they yielded such diverging outcomes. Hence, the diverging outcomes of Experiments 1 and 2 can probably be attributed to the changes I made when setting up Experiment 2.

As for the differences, let us recall the following: in Experiment 2, I wanted to know whether different role noun types of stereotypically neutral masculine role nouns (i.e., non-occupational vs. occupational nouns) are interpreted differently. More precisely, I assumed that occupational nouns would generate an even more pronounced male bias than non-occupational nouns (see Sect. 5.1.2). Conversely, Experiment 1 analyzed whether stereotypically female, neutral and male masculine role nouns are interpreted differently (see Sect. 4.4.1). Moreover, as it was my intention to gain more precise insights into the online processing of masculine role nouns, my research paradigm was different (i.e., SPR MvW vs. WSP) (see Sect. 5.1.3). The analyses of Experiment 2 were also based on a slightly different sample size than Experiment 1 (N = 46 vs. N = 44 AMU students).

In Experiment 2, I also adapted the filler items in order to divert attention from biological/social gender. In this way, I wanted to minimize interference with the language processing procedures due to frequent mention of biological/social gender. Crucially, in Experiment 2, I also increased the coherence of the experimental items in order to make it clearer that the group mentioned in the second sentence was a subset of the group designated by a masculine role noun in the first sentence (e.g., *les voisins—la majorité des femmes*).[2]

As the result of Experiment 2 not only contrasts with the findings of Experiment 1, but also with most previous research on the topic (see Chap. 3; Gygax et al. 2021a: 4–7; Redl et al. 2021: 24), it is worth examining in more detail which factors might have influenced the (non-)appearance of a male bias. Apart from the possibility of a type II error, the diverging outcomes of Experiments 1 and 2 should result from the differences between the two studies, which are the following:

[1] As I focused on stereotypically neutral occupational and non-occupational nouns in Experiment 2, I could not use more of the role nouns featured in Experiment 1.

[2] For a more detailed description of all adaptions, see Sect. 5.1.

1. The presentation mode: the presentation of whole sentences versus a segmented presentation (i.e., WSP vs. SPR MvW).
2. The filler items: the number and properties of the filler items.
3. The linguistic properties of the experimental items: the degrees of the plausibility and of coherence within an experimental sentence pair.

In the following sections, I therefore discuss the factors *Method* (6.1), *Filler Items* (6.2) and *Experimental Items* (6.3) with regard to the diverging outcomes of my two experiments.

6.1 Influence of the Method: Self-Paced Reading Moving Window vs. Whole Sentence Presentation

While Experiment 1 was based on a SPR WSP paradigm, Experiment 2 employed a SPR MvW paradigm. As a result, in Experiment 1, the second sentences of an experimental pair appeared in their entirety, while they appeared region by region, i.e., one region at a time, in Experiment 2.

In both Experiments 1 and 2, the participants' task was to decide whether the second sentence was a *sensible continuation* of the first sentence (i.e., *Continuation possible ?*) (Gygax et al. 2008: 475). However, in Experiment 1, the memorization of the sentence pair might have been easier than in Experiment 2. More precisely, in Experiment 1, the sentence's visualization was quite straightforward: participants were presented with the entire first sentence, which disappeared when participants switched to the presentation of the entire second sentence. Having read the second sentence, participants indicated *yes* or *no* in response to the final question. As the second sentence remained on the screen until participants had given their answer to the (implicit) final question, the participants of Experiment 1 had to recall the first sentence, but could reread the second sentence or some parts of it if necessary.

In contrast, the participants of Experiment 2 read the second sentences segmented into five regions, which were presented one after another (while the other regions were invisible). Moreover, in Experiment 2, the final question did not appear on the screen before the last region of the second sentence had disappeared. Although SPR MvW is an established method for research questions comparable to my own (Jegerski 2014: 23–25, 31; University of Edinburgh 1998; Witzel et al. 2012: 105, 113, 122–125; see also Sect. 6.1.3),[3] this choice of

[3] See also Ferreira & Henderson (1990: 556); Just et al. (1982: 228, 230–232, 234).

experimental setup might have engendered issues that need to be addressed (see Redl 2021: 121, who discusses the role of the method when analyzing masculine pronouns in Dutch).[4]

6.1.1 Clicking Rhythm, No Male Bias?

Given the requirements of the SPR MvW paradigm, the participants of Experiment 2 may have developed a clicking rhythm: participants might have continued clicking without finishing the processing of each region. If this was the case, the participants would not have inspected each region with the required care (Witzel et al. 2012: 105; 108; 125). Obviously, no male bias could have emerged if the participants did not properly read the sentences (Rothermund & Strack 2024: 482).

Yet, if the participants did not read all the regions of the second sentences properly, they should have had difficulties in responding to the final question (i.e., *Continuation possible ?*). As the filler items were designed to trigger a clear *yes* or *no* response, the accuracy rate of the response to the final question on these items should be informative as to whether the participants were able to respond correctly or not.[5] The measured judgement accuracy suggests that the participants read the sentence pairs well enough to be able to accurately answer the final question: 89% (SD = 32%) of the fillers were answered in the way I had intended them to be answered (i.e., 90%, SD = 30% of the *yes* fillers; 88%, SD = 33% of the *no* fillers) (see Table 1 in Appendix 2 in the electronic supplementary material).

In the literature, the asynchronous clicking/processing rhythm that can emerge in SPR MvW experiments has been related to delayed and distributed effects, for instance in the spillover region (Witzel et al. 2012: 125; see Sect. 6.1.3 below). As my data show no spillover effect, it is unlikely that the clicking process made it impossible to reveal a male bias. However, if the male bias involves semantic interpretation at a deeper level than superficial parsing (Rothermund & Strack 2024: 482), then the possibly higher cognitive workload in Experiment 2 might

[4] See also Gygax et al. (2021a: 5); Gygax et al. (2012: 405, 407) who discuss the assessment of different processing stages of masculine role nouns. See Samuel et al. (2019: 1767, 1769, 1772–1781) who focus on inanimate and non-human nouns and who claim that a study's task strongly influences its outcome.

[5] I based the accuracy judgement on the filler items because they were designed to trigger a clear *yes* or *no* response. In contrast, concerning the experimental items, my research aimed to analyze whether the participates would respond *yes* or *no*.

have prevented the participants from engaging in this level of analysis, thereby bypassing the source of the bias effect.

6.1.2 No Memorization, No Male Bias?

In Experiment 2, the participants had to memorize each region of the second sentence, as well as the first sentence of an experimental pair. Compared to Experiment 1, the memorization of the sentences thus might have been more difficult. This is significant as it was important that the participants memorize both sentences in order to respond to the final question.

If the participants of Experiment 2 had forgotten whether *hommes* or *femmes* were featured in the second sentence and/or that a masculine role noun was presented in the first sentences, obviously, no male bias could have emerged when they answered the final question. Put differently, if the possibly increased memory activity hinders a male bias from emerging, this could suggest that the male bias tends to disappear when the participants do not keep in mind each text region (e.g., *femmes*). In sum, if SPR MvW makes it harder to fully memorize the sentence pairs, this could explain why I did not find a male bias in Experiment 2.

Yet, even though the latter is a possible explanation as to why the *femmes* items, in contrast to previous research, received as many affirmative responses as *hommes* items, it does not explain why *femmes* items were read at the same pace as *hommes* items. Hence, if the memorization was indeed more difficult in Experiment 2, I should have been able to register these difficulties in the online processing of the *femmes* and *hommes* items: as the act of reading itself is not dependent on a participant's final answer, the reading times of *femmes* and *hommes* items should have revealed differences in their processing if there had been any.

In sum, the different outcomes of my experiments should not be related to the relative difficulty of the clicking task or an increase in memory activity due to the SPR MvW paradigm employed in Experiment 2. However, there are more aspects concerning the methodology used in Experiment 2 to be discussed. We now turn to the question of whether the impossibility of previewing[6] text regions or of

[6] For the sake of convenience, I use *preview* as opposed to *regression*, which are 'fixations that regress to preceding text regions' (Irmen & Schumann 2011: 1001). *Prevision* thus means that the participants start to fixate on an upcoming text element while still looking at a preceding region. Note that *preview*, in opposition to *regression*, is not a technical term for the analysis of reading strategies.

regressing to previous regions within the second sentences might have influenced the outcome of Experiment 2.

6.1.3 No Saccades, No Male Bias?

The SPR MvW paradigm I used in Experiment 2 presents the second sentences region-by-region and thus shows one region at a time. Obviously, this does not permit saccadic eye movements that jump from one word to another (Irmen & Schumann 2011: 1001). More precisely, in Experiment 2, it was neither possible to preview a subsequent region, nor was it possible to regress to a preceding region. Experiment 1, in contrast, permitted both strategies within the second sentences as the second sentence was displayed as a whole (e.g., it was possible to skip to *femmes* when the second sentence appeared on the screen and also to regress to *femmes* when answering the final question). Thus, it is possible that Experiment 1 was able to detect a male bias by means of regressions or previsions during the reading of the second sentence. Conversely, these reading strategies could not be used in Experiment 2 due to its SPR MvW paradigm.

In Experiment 1, the masculine role noun and its subset were not presented in one sentence, but in two different sentences, and relatively far from each other. Thus, it was not possible to preview *femmes* when reading the masculine role noun nor to regress from *femmes* to the masculine role noun. In that sense, Experiment 1 is comparable to Experiment 2. Of course, it is not impossible that the participants of Experiment 1 skimmed to *femmes* immediately when the second sentence was presented. However, there is no reason to believe that they did so, unless they developed a reading strategy that concentrated on the resolution of the previously mentioned masculine role noun over the course of the experiment. In short, as the direct visual linking of the masculine role noun and the female referent were not possible in Experiment 1 either, it seems that the impossibility of going back and forth in the text in Experiment 2 should not be the reason why Experiment 2 did not find a male bias, while Experiment 1 did.

However, eye-tracking studies investigating masculine forms have shown that a male bias can indeed occur in the form of saccades to the masculine form or to the female referent (as in Irmen & Schumann 2011: 1010 f.; Redl et al. 2021: 12). At the same time, the study of Irmen & Schumann (2011: 1002–1007, 1010 f.) also found a male bias in the first pass reading times in the spillover region, which is a measure that was covered by my SPR MvW. Crucially, SPR MVW is an established method in psycholinguistics to detect processing difficulties during ambiguity resolution Furthermore, the moving window paradigm, compared

to other presentation modes (e.g., cumulative window), most resembles normal reading and provides data which are comparable to eye-tracking results (Jegerski 2014: 23–25, 31; University of Edinburgh 1998; Witzel et al. 2012: 105, 113, 122–125).[7] Accordingly, we have no reason to believe that SPR MvW would not have been able to detect a processing difficulty when reading *femmes* if there had been one. Importantly, there are two SPR MvW experiments on the interpretation of generically intended masculine forms (i.e., Redl 2021: 105–116; Szuba et al., 2022).[8] We will have a closer look at their findings in order to verify whether SPR MvW is able to detect a male bias during reading.

Experiments Investigating the Interpretation of Masculine Forms Using the Self-Paced Reading Moving Window Paradigm

Redl (2021: 105–116) investigated the generic *he* in Dutch, and Szuba et al. (2022) (see Sect. 3.2.3.2) analyzed whether gender-marked past tense verbs in Polish yielded processing difficulties when the grammatical gender marking mismatches the readers' biological/social gender, using a SPR MvW paradigm. Both studies found significant effects in the target and the spillover regions, indicating that masculine forms lead to male-biased representations of biological/social gender (Redl 2021: 113 f.; Szuba et al. 2022: 830 f.).

While both Redl (2021) and Szuba et al. (2022) used SPR MvW with word-by-word presentation, in Experiment 2, I had opted for a region-by-region segmentation, which can be considered closer to normal reading (Jegerski 2014: 31; Witzel et al. 2012: 113). However, in order to obtain precise data, the target and spillover regions of Experiment 2 also presented only one word (i.e., *hommes*/*femmes* as target and a verb in the *imparfait* as spillover) and thus can be compared to those of Redl (2021) and Szuba et al. (2022).[9]

---

[7] See also Ferreira & Henderson (1990: 556); Just et al. (1982: 228, 230–232, 234).

[8] See Stetie & Zunino (2023: 695–698), who present a different experimental design, but who also use a moving window paradigm when analyzing role nouns in Spanish.

[9] Redl (2021) and Szuba et al. (2022) did not ask for evaluations of their sentences as was done in Experiment 2. It could thus be argued that the separate presentation of the final question in Experiment 2, in opposition to Redl and Szuba et al.'s studies, further increased clicking and memory activity, so that the male bias had 'worn off' before the participants answered the final question (see Sect. 6.1.1). However, as Redl (2021) and Szuba et al. (2022) found a male bias in the main region of interest and in the spillover region, I should have found one too if there had been one. Moreover, Redl (2021: 105–116) and Szuba et al. (2022) had presented separate comprehension questions with some of their stimuli (although not to all). Accordingly, the integration of a question after the presentation of the stimuli does not seem to hinder the indication of online processing difficulties related to the masculine form. Note that Redl (2021) and Szuba et al. (2022) only analyzed the main region of interest and

In sum, the clear outcomes of the cited studies indicate that SPR MvW is able to detect online processing difficulties induced by masculine forms. Hence, the surprising result of Experiment 2 is unlikely to be ascribed to SPR MvW. Correspondingly, if the male bias is not present in my data, this must be due to other factors. Apart from the change of methodology, the other main differences between Experiments 1 and 2 concern the filler items and the experimental items. Therefore, the diverging results of Experiments 1 and 2 should have been influenced by the filler items and/or the experimental items and not by the research paradigm. I thus exclude the different research paradigms used in Experiments 1 and 2 when analyzing the reasons for the experiments' diverging findings in a more general way in Chaps. 7 and 8. Before turning to the possible influence of the experimental items, I now discuss the ways in which the filler items might have generated the diverging outcomes of Experiments 1 and 2.

6.2 Influence of the Filler Items

In psycholinguistic experiments, it is considered important to conceal the key research question: if the participants had detailed knowledge of the purpose behind the experiment and the linguistic phenomenon of interest, they could potentially adjust their reading behavior. In this case, the experiment would not investigate natural language processing, but would instead reflect strategic decisions made by the participants (Nikolayeva et al. 2015).[10] While this is an important issue in psycholinguistic research in general, it is certainly particularly important for research on the interpretation of masculine role nouns, as the potential problems with masculine role nouns have been extensively discussed in the French media, which means that a lot of people might be aware of the topic. Moreover, in the media, the majority of statements presented are generally clearly either in favor of or against a gender-fair use of language (Arnold 2024: 230–250; Mots Clés & Google 2021: 29; Tibblin 2020: 36).[11] Accordingly, my

the spillover region. However, they did not analyze the response times to the comprehension questions, as was done for the final questions of Experiment 2.

[10] See also Spinelli et al. (2023: 8) on an experiment investigating gender-fair French.

[11] See also Mots-Clés (2017: 8). Actually, the post-experiment questionnaire of Experiment 2 revealed that 19 out of 46 participants (i.e., 41%) more or less correctly defined *langage inclusif* and that several more had heard of it. This is less than I had expected, but more than in Experiment 1, where about one third had heard of it prior to the experiment. Note that young and/or female populations are known to be more in favor of gender-fair language than

research interest might not only be rather present in the minds of a lot of speakers, but might be linked to strong opinions on the issue. In this vein, participants' answers may be influenced by explicit metalinguistic information about masculine role nouns, such as the assumption that masculine role nouns refer to men only (i.e., fewer *yes* responses to *femmes* items than there would be without strategic behavior). Alternatively, it is also possible that (other) participants might want to indicate that masculine role nouns can refer to men and women alike (i.e., more *yes* responses to *femmes* items than there would be without strategic behavior). In sum, blinding the participants to my research aim is both particularly important and challenging (see Sect. 5.1.4.2).

An established method for concealing the research question is the inclusion of a substantial number of filler items so that the phenomenon of interest is less salient during a test session (see Sect. 6.2.1). Yet both the number and the linguistic properties of the fillers can potentially have an influence on how the experimental items are interpreted. For instance, if an experiment contains only a small number of fillers, the research aim might not be properly concealed. As it is also possible that particular properties of the fillers bias the processor in favor of a certain interpretation of the experimental items (Kim et al. 2023a: 22; Voga et al. 2014: 346 f.),[12] in the following, I therefore discuss to what extent the quantity (Sect. 6.2.1) and the linguistic properties of the fillers (Sect. 6.2.2) included in Experiments 1 and 2 might have influenced the results of my two experiments.

other populations (Arnold 2024: 632 f.; Mots-Clés 2017: 8; Mots Clés/Google 2021: 30 f., 35; Tibblin 2020: 36). Hence, my samples certainly are not the best to represent the strong opinions which exist on gender-fair language across French society. Indeed, in Experiment 2, among those who had more or less correctly defined *langage inclusif*, 14 participants indicated that they were in favor of its use vs. seven participants who had no clear-cut opinion on it. The majority of this group thus had a high opinion on *langage inclusif*. In Experiment 1, on the other hand, seven participants said that they were in favor of its use, one person was against it and seven had no clear-cut opinion. This indicates that the attitudes of Experiment 1's participants (tested in 2019) towards gender-fair language were less favorable than those of Experiment 2 (tested in 2021). See Sauteur et al. (2023: 21), who find that the more to the right of the political spectrum people are and the less they know about gender-fair language, the more they reject it.

[12] See also Nikolayeva et al. (2015); Pozniak et al. (2023: 17 f.); Zacharski & Ferstl (2023: 302).

6.2.1 Quantity

In order to blind the participants to a research aim, it is generally recommended that an experiment should feature at least twice as many filler items as experimental items (Nikolayeva et al. 2015). Yet, in Gygax et al. (2008), which constitutes the foundation for Experiment 1, only a small number of filler items were included—it featured a 1:1 ratio of experimental vs. filler items.

In Experiment 1, my replication of Gygax et al. (2008), I increased the number of fillers to a ratio of 1:2. However, as shown in the results from my post-experiment questionnaire for Experiment 1, a majority of my participants still had at least a vague idea what the research aim of the study was (see Sect. 4.4.5.4.3). Therefore, in Experiment 2, I decided to increase the number of fillers and opted for a proportion of one experimental item to three filler items (see Table 5.3 in Sect. 5.1.4.2).[13] The experimental-filler item ratio of 1:3 used in Experiment 2 is above average for experiments on the interpretation of masculine role nouns. Most of the studies rely on a 1:1 ratio, or even less (e.g., Misersky et al. 2019; Sato et al. 2016). Moreover, the inspection of previous research shows that studies that include only a small number of fillers tend to find a male bias for the interpretation of masculine role nouns (e.g., Gygax et al. 2008; Misersky et al. 2019; Sato et al. 2016).[14]

Concerning Experiment 2, we can assume that my research aim was concealed quite well: only 2 of my 46 participants correctly guessed the purpose of my experiment (i.e., one participant guessed it completely correctly, the other one nearly did so). This is much less than in Experiment 1, where 27 out of 44 participants made a good guess as to the aim of the study (i.e., 61% of the participants

[13] Obviously, more fillers also mean more sentences to read and to process for the participants. This might render the experiment more tiring. However, the total number of items I presented in Experiment 2 (i.e., 96 sentence pairs) is a common number of items to be presented in studies on the interpretation of masculine forms (e.g., in Experiment 1, I presented 108 sentence pairs; Redl (2021) presented 96 sentences in her SPR MvW experiment that were of a similar length to the sentence pairs in Experiment 2). The lack of a male bias in my data thus should not be due to increased fatigue resulting from too many (filler) items.

[14] Redl et al.'s (2018) study also present a 1:1 ratio of experimental and filler items and did not find a male bias. However, the study examines masculine pronouns in Dutch. It is thus possible that other factors are involved (e.g., gender salience of pronouns; fewer public discussions on gender-fair language and pronouns, the Dutch grammatical gender system, neutral filler items). De Backer & De Cuypere (2012) did not find a male bias either, even though they presented more experimental than filler items. For an exception to the generally low proportion of filler items, see Experiment 1 in Trutkowski (2018), which features a ratio of four fillers to one experimental item without finding a male bias.

compared to only 4% in Experiment 2). It is particularly noteworthy that few participants correctly surmised the aim of Experiment 2 given that the integration of the non-binary pronoun *iel* 'they$_{SG}$' into the French reference dictionary *Robert en ligne* had been hotly discussed in the media only weeks before I ran my experiment. Indeed, several of my participants referred to *iel* when defining gender-fair language in the post-experiment questionnaire or mentioned it later on when they were debriefed.

In sum, the inclusion of more fillers constitutes a potential explanation for why Experiment 2 generated a null result: if the male bias in previous studies was at least partially based on explicit strategies, it might not have emerged in Experiment 2 because the research aim was more concealed (Pozniak et al. 2023: 17 f.).[15] Yet, while the number of filler items can have an impact on the interpretation of the experimental items, the linguistic properties of the filler items also might have one (Nikolayeva et al. 2015). This is the topic to which I turn in the next section.

6.2.2 Linguistic Properties

As the properties of filler items can influence participants' reactions to the experimental items, it is generally recommended that the filler items should be as similar as possible to the experimental items. However, they should not accentuate certain aspects of the experimental items in order to conceal the studies' research aim (Nikolayeva et al. 2015). Especially concerning the easy-to-guess research aim and in order to prevent participants from reacting strategically, it is important to analyze the ways in which the different linguistic properties of the filler items might have influenced the outcome of Experiments 1 and 2.

Based on the above considerations and as explained in Sect. 5.1.4.2, I wanted my fillers to reduce the references to human animacy (for a similar approach, see Pozniak et al. 2023: 8).[16] In doing so, I wanted to reduce the possibility that grammatical gender would be associated with biological/social gender.

6.2.2.1 Concealing the Research Aim

My literature review suggests that most research on the interpretation of masculine role nouns that has found a male bias has used filler items resembling the

[15] See also Kim et al. (2023a: 22); Spinelli et al. (2023: 8). See also Voga et al. (2014: 346 f.), who discuss whether a large number of filler items affects morphological priming.

[16] See also Kim et al. (2023a: 22); Voga et al. (2014: 346 f.); Zacharski & Ferstl (2023: 302).

experimental items as much as possible (e.g., Experiment 1; Gygax et al. 2008; Lévy et al. 2014). For instance, a *no* filler in an experiment from Gygax and colleagues often features a role noun in the prime and men or women in the target item (e.g., *monks—women*; see Sect. 5.1.4.2; (26a)–(26b)). In other words, the focus often is on the interpretation of the masculine role noun. Simultaneously, this kind of filler renders the research aim rather obvious: if the focus on biological/social gender is not emphasized, it is at least not attenuated by the fillers.

Given the constant discussions on gender-fair language in the media, surprisingly few studies have asked their participants whether they had guessed the research aim. The only studies which seem to have done so are my experiments, the studies by Kim et al. (2023a), Redl et al. (2018), Redl et al. (2021), Redl (2021), Szuba et al. (2022) and Pozniak et al. (2023). Crucially, the experiments which use filler items in which biological/social gender is particularly salient (see example (26a)–(26b)), and which ask their participants whether they have guessed the research aim (i.e., Experiment 1; Kim et al. 2023a), show that the majority of participants had done so.

Conversely, studies like Experiment 2 that featured filler items, which reduced the number of masculine forms and the explicit mention of men and women in their fillers, seem to have better distracted their participants from the research aim and tend to find no or a less pronounced male bias (i.e., Redl et al. 2018; Redl et al. 2021: Experiment 1; but see Szuba et al. 2022, who still find a male bias). It is thus possible that the character of the fillers in Experiment 2 (see Sect. 5.1.4.2) concealed the purpose of the experiment so well that the process of interpreting the masculine role nouns was not influenced by strategical reasoning (Spinelli et al. 2023: 8).[17] Accordingly, the generic interpretation of masculine role nouns might have been accessed.

However, it is worth noticing that empirical findings also indicate that the male bias cannot only be based on strategic behavior. For instance, Redl et al.'s (2021: Experiment 1) results show a slight male bias (i.e., in the stereotypically neutral condition for male participants only). As none of the participants had guessed the research aim of the study, it is highly improbable that the stated male bias was only due to strategic behavior. In this vein, the fact that fewer participants had guessed the research aim in Experiment 2 than in Experiment 1 might only partly explain the diverging outcomes of the two experiments.

To sum up, apart from the larger number of filler items, the less frequent reference to human animacy in Experiment 2's filler items seems to have helped to

[17] See also Kim et al. (2023a: 17); Pozniak et al. (2023: 17).

conceal the research aim. An issue related to that is the possibility that the concept *biological/social gender* might not have been further activated in Experiment 2.

6.2.2.2 Activation of the Concept *Biological/Social Gender*

In order to better understand what I mean by the influence of the fillers' linguistic properties on the interpretation of the masculine role nouns in the experimental items, let us first recall the structure of a *no* filler (type 2) in Experiment 1 by looking again at example (26a)–(26b):

(26a) *Les moines traversaient le cloître./*
'The monks$_{M.PL}$ were walking through the cloister./'

(26b) *On pouvait voir que la majorité des femmes était vraiment de bonne humeur.*
'It was obvious that the majority of the women were in a really good mood.'

In this sentence pair, the mismatch is based on the fact that *femmes* refers to the (masculine) role noun *moines* 'monks$_{M.PL}$' that can only refer to men. In Experiment 1's fillers, the featuring of role nouns and biological/social gender (e.g., *monks—women*) was frequent. Conversely, due to their lexical properties, the fillers of Experiment 2 highlighted neither biological/social gender nor its association with grammatical gender (see Table 5.2 in Sect. 5.1.4.2). Thus, in Experiment 2, the concept *biological/social gender* was less salient than in Experiment 1.

In this vein, in Experiment 1, given the frequent featuring of role nouns and men and women, the concept *biological/social gender* might have been activated (see Samuel et al. 2019: 1769 f., 1779 f. for a similar approach with a focus on inanimate and non-human animate nouns).[18] This means that the participants' language processing system might have focused on role nouns such as *moines*'monks$_{M.PL}$', *hommes/femmes*, etc., when interpreting the stimuli. This might have resulted in a reinforced association of the masculine form with the male biological/social gender, resulting in the specific interpretation of the masculine role nouns. Correspondingly, the activation of the concept *biological/social gender* in Experiment 1 could be compared to a priming effect in the sense that

[18] See Rothermund & Strack (2024: 468, 472–477, 480–482) who recently showed that contextual (stereotypical) information can foster the generic interpretation of stereotypically neutral masculine role nouns in German. See Zacharski & Ferstl (2023: 302), who rendered biological/social gender less salient through their filler items when investigating masculine role nouns in German. See Kim et al. (2023a: 22) and Pozniak et al. (2023: 8) on French. See Voga et al. (2014) on morphological priming.

the participants were exposed to gender-salient fillers, which might have mediated the interpretation of the experimental items. Rather than the participants becoming aware of the research aim during the study, this would have been a subtle, unconscious influence on the language processing system. Note that I did not test for priming. Strictly speaking, I thus cannot speak of a priming effect, which is why I simply stick to *activation of the concept biological/social gender*.

Conversely, in Experiment 2, since the salience of biological/social gender was lower than in Experiment 1 and the concept *biological/social gender* might not have been further activated. When interpreting the experimental items, the participants' language processing systems thus might not have focused on the association of grammatical gender with biological/social gender. As a result, the masculine role nouns were not interpreted specifically, but generically (see Samuel et al. 2019: 1769 f., 1779 f. for a similar approach focusing on inanimate and non-human animate nouns).

Interestingly, Redl (2021: 105–116) investigated the Dutch generic pronoun *hij* 'he' and still found a male bias, even though neither biological/social gender nor grammatical gender was highlighted by the filler items. Conversely, the fillers in Redl et al. (2021: 17–25, Experiment 2) on the Dutch possessive *zijn* 'his' are based on the interpretation of the masculine form and did not find a male bias. Yet, Redl et al. (2021: 17–25, Experiment 2) featured, amongst other types of fillers, non-human mis-matching referents (e.g., *plants—gemstone*). The latter might also have decreased the possibility that the concept *biological/social gender* would be activated.[19] Thus, the studies' outcomes (i.e., a male bias or not) do not seem to be influenced by the linguistic properties of the filler items alone. However, the influence of a less gender-salient character of the filler items on the interpretation of masculine forms could be a factor that interacts with other factors such as the number of fillers.

In previous psycholinguistic studies, filler items have indeed been found to influence the results (Nikolayeva et al. 2015; Voga et al. 2014: 346 f.). Moreover, Tibblin et al. (2023a: 28, 35, 43 f.) showed that gender-fair alternatives to the generic use of masculine role nouns increased the estimated percentage of women as forming part of a group denoted by gender-neutral forms (i.e., collective nouns, generic nouns, epicene nouns) (e.g., *the group*) compared to masculine

[19] Nonetheless, we have to bear in mind that the findings on Dutch masculine (possessive) pronouns are not necessarily transferable to French masculine role nouns: the grammatical gender system of Dutch is different from that of French as Dutch combines grammatical gender and natural gender (see Sect. 2.1). Moreover, a pronoun always refers to a linguistic referent in the text.

role nouns.[20] Thus, Experiment 2's fillers, which featured (amongst others) collective nouns, might have biased the processor to interpret the masculine role nouns featured in the experimental items generically. In that sense, in an experimental setup where biological/social gender is salient, the language processor might interpret a masculine role noun more easily in a specific way. Conversely, when references to biological/social gender are less frequent, the interpretation of masculine role nouns could be pushed towards the generic interpretation.

As indicated in Sect. 6.2, by definition and in opposition to experimental items, filler items are not designed to investigate an experiment's research aim, but to conceal it. However, as the examination of my diverging findings indicates, the filler items might influence how the experimental items are interpreted. It is thus necessary to discuss whether it should generally be acknowledged that the lines between experimental and filler items are blurred. If the frequency of the mention of biological/social gender in the filler items indeed influences the results obtained in the interpretation of the masculine role nouns featured in the experimental items, this would be an important find for the whole field of language and gender. Existing research should thus be meta-analyzed in order to reveal potential biases introduced by the filler items. At the same time, as most previous research is at least inspired by Gygax and colleagues, it utilizes very similar experimental setups and, correspondingly, similar filler items. Thus, in order to test the robustness of previous and present findings, it should be systematically tested whether the same experimental items generate different results when presented together with different sets of filler items (see Sect. 7.4).

Apart from the fillers' possible further activation or not of the concept *biological/social gender* affecting whether the masculine role nouns in the experimental items are interpreted generically or specifically, another important question is whether the featuring of semantically incoherent gerund constructions in the *no* fillers might have influenced the interpretation of the experimental pairs. We turn to this issue in the next section.

[20] Note that Safina (2024) does not find an effect of form manipulation when analyzing epicene nouns in Italian.

6.2.2.3 Focusing on the Semantically (In-)coherent Gerund Constructions

Let us first recall the structure of Experiment 2's experimental items, to which the response should be *yes* if respondents thought that both parts form a sensible pair:

(36a) *Les voisins sortaient les chiens./*
'The neighbors$_{M.PL}$ were walking the dogs./'
(36b1) *En marchant,/ la majorité des/ femmes/ observait/ les arbres./*
'While walking,/ the majority of the/ women/ watched/ the trees./'

As previously explained (see Sect. 5.1.4.1), the gerund forms of the *yes* items (i.e., experimental items and *yes* fillers) are closely semantically linked to the first sentence verb (e.g., *marchant—sortir les chiens* 'while walking—walk' as in (36a)–(36b1)). Moreover, the verb of the second sentence is linked thanks to the gerund construction: the main verb generally presents a subactivity of the preceding gerund construction (e.g., *observer—en marchant* 'to watch—while walking').

Due to the strong link between the verb in the first sentence and the gerund construction in the second, it was not always easy to construct *no* fillers that used gerund constructions in the second sentence that were closely semantically linked to the verb of the first sentence as was done for the *yes* items. In order to provoke a clear *no* response several *no* fillers therefore featured gerund constructions which were not closely semantically linked to the verb of the first sentence, so that the sentence pair could be perceived as rather incoherent, as in (39a)–(39b):

(39a) *Le comité patientait au soleil./*
'The committee$_{M.SG}$ waited in the sun./'
(39b) *En s'énervant,/ plusieurs/ personnes/ maudissaient/ l'orage./*
'Getting angry,/ several/ people/ cursed/ the storm./'

Thus, the contrast between the semantically incoherent gerund constructions in this kind of *no* filler and the *yes* items might have resulted in more *yes* responses for the experimental items.

At the same time, other *no* fillers indicated a mismatch between the two sentences presented not before the end of the second sentence and, like the *yes* items, featured gerund constructions that were relatively coherent. These *no* fillers thus kept the participants focused beyond the gerund constructions. For instance, in (40a)–(40b), the *goats* from the first sentence are in contrast with the *meowing* in

the second sentence. The verb *sautiller* 'make small successive jumps' appears in the first sentence and is closely related to the gerund construction of *sauter* 'jump' in the second sentence. The *meowing* only appears at the end of the second sentence:

(40a) *Les chèvres sautillaient dans le pré./*
'The goats$_{M.PL}$ were making small jumps in the meadow./'
(40b) *En sautant,/ une partie du/ troupeau/ miaulait/ bruyamment./*
'While jumping,/ a part of the/ herd/ meowed/ loudly./'

In terms of semantical relatedness and degree of coherence, this kind of *no* filler thus resembles the experimental items of Experiment 2. At the same time, a semantic mismatch at the end of the second sentence such as *meowing (goats)* might have been perceived as rather strong compared to an experimental item in which, theoretically, the only potentially confusing element was the masculine role noun in combination with a female subset. When contrasted with the quite sensible experimental items, this kind of *no* filler thus might also have increased participants' positive responses to the experimental items, but for different reasons than for the *no* fillers that featured semantically incoherent gerund constructions.

However, previous research also presented *no* fillers that were in contrast to the experimental items. For instance, in Experiment 1, *no* answers were, amongst others, elicited by oppositions between *monks* in the first sentence and *femmes* in the second sentence. Thus, the contrast between a masculine role noun and *femmes* in an experimental item also seems less strong. Further, other *no* fillers in Experiment 1 featured semantic oppositions such as contrary weather conditions (e.g., good weather in the first and bad weather in the second sentence). Interestingly, the latter filler type indicated the contrasting information at the beginning of the second sentence and before the mention of *hommes*/*femmes*, just like some of the *no* fillers in Experiment 2, so that the close inspection of *hommes*/*femmes* might have been skipped. In spite of this, Experiment 1 found a male bias, while Experiment 2 did not.

In short, in Experiment 2, the contrast between the rather nonsensical *no* filler items and the more sensible *yes* items might have influenced the interpretation of the experimental items such that they were interpreted more readily as making sense. However, this might also have been the case in Experiment 1 and other previous work, which did find a male bias. The issue is thus not the sole problem of Experiment 2 and, correspondingly, should not be the reason why Experiment 2 did not find a male bias induced by masculine role nouns. Importantly, even if

Experiment 2's filler properties increased the *yes* responses in general, if a male bias had been present, we would still expect it to manifest in some way.

Moreover, 90% (SD = 30%) of the *yes* fillers and 88% (SD = 33%) of the *no* fillers were answered in the way I had intended them to be answered (see Table 1 in Appendix 2 in the electronic supplementary material). This shows that the participants read the filler items carefully enough to correctly answer the final question. Importantly, some of the *no* fillers were more difficult than the *yes* items (i.e., the *yes* fillers and the experimental items) because the participants had to stay focused until the end of these filler items in order to detect the component indicating a *no* answer. Thus, if the participants were able to answer *no* in most of the cases when I had wanted them to do so, we can assume that they also stayed focused until the end of the second sentences when reading the somewhat easier items.

Nonetheless, it has to be taken into account that, in opposition to the *yes* items, which presented semantically coherent gerund constructions, the participants might have decided to respond *no* as soon as they encountered the semantically incoherent gerund construction of a *no* filler. Crucially, they thus might not have considered the end of the second sentence. Following this pattern for experimental items too, participants might have decided when they came to the semantically coherent gerund construction that they would respond *yes* and thus also would not have read *hommes/femmes* properly. In other words, the processor's focus would not have been on the interpretation of the masculine role noun (see the discussion of how the SPR MvW paradigm used in Experiment 2 might have encouraged participants to keep on clicking; see also the above discussion of the activation of the concept *biological/social gender* in Sect. 6.2.2.2; see also Rothermund & Strack 2024: 482). Thus, the inattentive reading of the regions following the semantically (in-)coherent gerund construction might explain why *hommes* and *femmes* items present the same data pattern in Experiment 2. If this was the case, the results of Experiment 2 would suggest that a male bias does not materialize when the participants' attention is not attracted to the interpretation of the masculine role noun, but to other factors such as the degree of coherence between the sentence pairs. However, note that, if the null result of Experiment 2 was indeed due to the fact that not all regions after the gerund constructions were read properly, this should be apparent in the reading times.

When having a closer look at the reading times of each region of the fillers' second sentences, I did not find any hint that the participants had just clicked through the sentences once they had read the gerund construction: if so, the reading times of the regions following the gerund construction should have become quicker over the course of the experiment. However, my inspection suggests that

the regions following the gerund construction were not read faster and faster across the experiment (apart from a general habituation process).[21] This suggests that all the fillers' second sentence regions were properly read and taken into account in answering the final question. Hence, we can assume that the participants did the same when reading and responding to the experimental items. In sum, the post hoc analyses concerning the fillers suggest that all the second sentence regions were read properly.[22] Thus, the male bias found in Experiment 1 does not seem to have vanished because of a less careful reading in Experiment 2.

Crucially, participants should have needed some time to figure out that the semantically (in-)coherent gerund constructions (i.e., the first region of the second sentence) might be sufficient in many cases to respond to the question of whether the first and second sentence formed a sensible pair. In other words, a strategic response pattern should not have been developed right at the very beginning of the experiment and it should have been visible only after that the first items of the experiment had been presented. Ergo, we would predict that there should be a pronounced male bias at the beginning of the experiment, which would subsequently rapidly decrease. To further investigate this, I examined the possible male bias of each experimental item in additional analyses for the *yes* answers, as well as the reading times of the continuation and spillover regions of the second sentences.

Instead of finding a pronounced male bias at the beginning of the experiment which quickly disappears, as can be seen in Fig. 6.1, I found a rather inconsistent picture, with some of the first experimental items of the experiment presenting a male bias and others presenting a female bias; several items present no bias at all (i.e., *femmes* items received exactly as many *yes* responses as did *hommes* items) (see Appendix 2 in the electronic supplementary material, Figs. 3 and 4 on the male bias by item in reading times for the continuation and spillover regions). Hence, the data do not suggest that the participants started to skip the regions following the gerund construction, including *hommes/femmes*, after a while. It is thus rather unlikely that the influence of the fillers' linguistic properties 'overrode'

[21] Concerning the final regions of the filler items, I observe a sentence wrap-up effect and the response times to the final question indicate that some participants respond as quickly as possible, while others prioritize giving accurate answers (i.e., a speed-accuracy trade-off). However, these findings are not specific to my experiment and present patterns generally found in this type of experimental setup.

[22] The experiment's rationale was to check whether a processing difficulty arises in the experimental items after *femmes* (compared to *hommes*). Thus, it would not make sense to run the same additional analyses for the experimental items as for the filler items.

the male bias found in Experiment 1. Of course, this argument is only convincing if the specific interpretation of the masculine role noun is the default value—as suggested by Gygax et al. (2012: 395; 406 f.; see also Lévy et al. 2014: 36 f.). Obviously, if there is no default value for masculine role nouns, or if the default value is the generic interpretation, the specific interpretation could not have been overridden. In this case, the less gender-salient filler items in Experiment 2 might have fostered the generic interpretation of the masculine role nouns instead of the specific one.

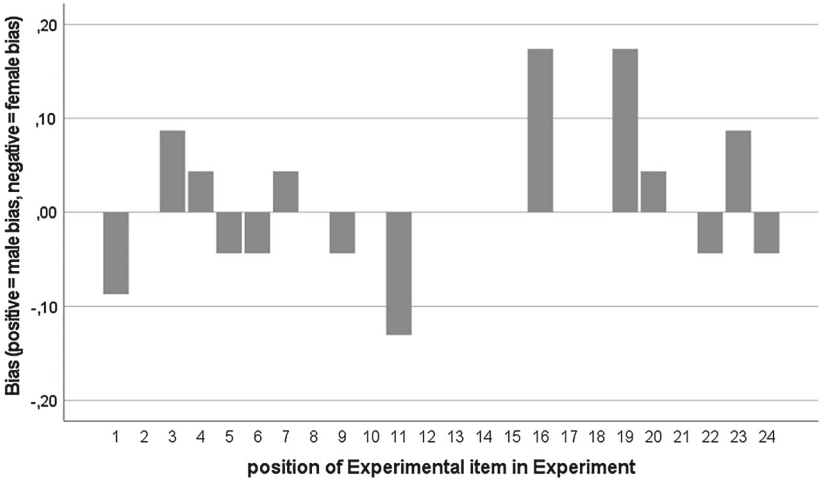


Fig. 6.1 Male bias by item—mean proportions of yes answers by item and in percentages, Experiment 2

To conclude, it appears unlikely that the concealing of the research aim (see Sect. 6.2.2.1) and/or the focusing of the semantically (in-)coherent gerund through Experiment 2's fillers (see Sect. 6.2.2.3) were the only reason why the masculine role nouns were interpreted generically in Experiment 2. One explanation as to why Experiment 2 did not find a male bias is the influence of the filler items that did not further activate the concept *biological/social gender* (see Sect. 6.2.2.2). This may have mediated the interpretation of the masculine role nouns such that masculine grammatical gender was not associated with male biological/social gender, so that a generic interpretation of the masculine role nouns was accessed. Crucially, if the fillers had indeed influenced the interpretation of

the masculine role nouns featured in the experimental items, the findings of my two experiments would be diverging, but not contradictory. Further, this would indicate that the male bias found in previous work does not persist for any given set of filler items it can be combined with. If this held true, the appearance of a male bias could be considered to be influenced by multiple factors (e.g., the masculine form, the filler items' properties). At the same time, the interpretation of the masculine role nouns might also have been affected by the linguistic properties of the experimental items themselves. I discuss this point in the next section.

6.3 Influence of the Experimental Items

In the following sections, I discuss how the properties of Experiment 2's experimental items might explain why the masculine role nouns were interpreted generically in Experiment 2—in contrast to the findings of Experiment 1 and of most previous research, which indicate that masculine role nouns are interpreted specifically (see Chap. 3; Gygax et al. 2021a: 4–7; Redl et al. 2021: 24). For a detailed description of the differences between the experimental items in Experiments 1 and 2, see Sect. 5.1.4.1.

6.3.1 No Stereotype Information, No Male Bias?

It could be argued that the use of stereotypically neutral role nouns in Experiment 2 is the reason why my *hommes* and *femmes* items show the same data patterns: participants might have interpreted the link between the masculine role noun and *hommes* or *femmes* similarly, judging that the roles presented are similarly represented among men and women. In this case, the masculine form of the role noun would not have affected the sentences' interpretation.

Interestingly, Gabriel et al. (2017: 805) showed in their study on Norwegian that stereotype information has a more important impact on oral comprehension than on reading comprehension. As, during oral comprehension, listeners cannot go back and forth in the text in order to check or complete information when interpreting it, the morphosyntactic factor *masculine form* seems to lose influence, while stereotype information becomes more important. As the SPR MvW paradigm used in Experiment 2 does not permit a close text inspection either (see the discussion of methodological aspects in Sect. 6.1), it is thus possible that the influence of the stereotype information (i.e., none, as stereotypically neutral role

nouns were chosen) was more important than the masculine grammatical gender marking of the role nouns. As a result, in Experiment 2, the masculine role nouns might have been interpreted generically. However, Anaya-Ramírez et al. (2022: 1261, 1272) find an interaction of stereotypicality and masculine form when replicating Gygax et al. (2008) with Spanish oral stimuli and argue that the interpretation of masculine role nouns presented in the oral and written codes is similar.[23]

Moreover, in Experiment 1, in which I analyzed stereotypically female, male and neutral role nouns, all stereotype conditions showed a significant male bias. This suggests that linguistic information (i.e., the masculine form) was key when the masculine role noun was interpreted, even for stereotypically neutral role nouns (Gygax et al. 2008: 479 f.). Importantly, the male bias concerning stereotypically neutral masculine role nouns has recently been replicated for French by Kim et al. (2023a), Tibblin et al. (2023a), Tibblin et al. (2023b) and Xiao et al. (2023) (see Anaya-Ramírez et al. 2022 on Spanish; Körner et al. 2022; Körner et al. 2024; Rothermund & Strack 2024 on German). Hence, even in stereotypically neutral conditions, a male bias associated with masculine role nouns has been found repeatedly.

Note, however, that the male bias in the stereotypically neutral condition in the cited studies tends to be numerically weaker than the male bias found in Experiment 1 (i.e., 23% in the stereotypically neutral condition). For instance, Kim et al. (2023a: 12), who investigated French word pairs (e.g., *musiciens* 'musicians$_{M.PL}$'—*Léa*), found a statistically significant difference of 5% between the male and female conditions (see Garnham et. al. 2012, who found a difference of 10% in the stereotypically neutral condition in their French sample in a replication of Gygax et al. 2008). As more recent studies investigating the interpretation of masculine role nouns indicate that the male bias might be weaker for stereotypically neutral role nouns, this might explain the generic interpretation of the role nouns in Experiment 2 to some extent. Yet, in contrast to the cited studies, my data do not show any indication of interpretation differences between *hommes* and *femmes* items.

It is also possible that the interpretation of the stereotypically neutral role nouns presented in Experiment 2 would have been different if they had been presented together with stereotypically male and female role nouns as in Experiment 1 (Rothermund & Strack 2024: 482; Tibblin et al. 2023a: 44 f., 48). Possibly, male and female stereotypicality activate the concept *biological/social gender* so

[23] See also Körner et al. (2024) on the interpretation of masculine role nouns in German presented orally, who also find a male bias.

that stereotypically neutral and masculine role nouns are associated with male biological/social gender (see Sect. 6.2.2.2). Nonetheless, Tibblin et al. (2023a: 40 f.), for instance, found a stronger male bias for masculine forms in French than for their alternatives (e.g., double forms), although they only presented stereotypically neutral masculine role nouns, as was done in Experiment 2.

All in all, I assume that the generic interpretation of the masculine role nouns in Experiment 2 is unlikely to be due to the fact that stereotypically neutral role nouns were presented. Hence, I assume that Experiment 2's outcome must have been generated by other features of the experimental items (if any). We now turn to an issue already mentioned when discussing the filler items: the increase of coherence between the sentences within a sentence pair. In the next section, I discuss how this could explain the diverging results of Experiments 1 and 2.

6.3.2 An Increase in Coherence Facilitates the Interpretation of Masculine Role Nouns

As previously indicated, according to Kehler, *coherence* can be defined as "the underlying semantic relationships that characterize and structure the transitions between utterances" (Kehler 2019: 450). He argues that the establishment of coherence plays an important role when connections between ideas are expressed and when a discourse is continued in a way that is felicitous (Kehler 2019: 450 f., 453, 466, 469, 476). Moreover, language processors "implicitly track expectations about how the current discourse will be continued with respect to coherence" (Kehler 2019: 466).[24] A higher degree of coherence within a text may thus influence the interpretation of a masculine role noun in a way that allows for a globally coherent representation of the depicted scene.

Concerning Experiment 2, this could mean that, thanks to the higher degree of coherence between the first and second sentences in Experiment 2 (see Sects. 5.1.4.1 and 6.2.2.3), the first and the second sentences of a pair were perceived as a sensible match for both *hommes* and *femmes* items. In fact, *hommes* items (which should not pose a problem) received more *yes* responses in Experiment 2 than in Experiment 1: about 92% of both *hommes* and *femmes* items received a *yes* response in Experiment 2, while about 85% of *hommes* and 58% of *femmes* items received a *yes* response in Experiment 1. Hence, for the experimental items in Experiment 2, the participants showed a strong tendency towards *yes* responses irrespective of the continuation.

[24] See Harley (2014: 292, 300) on parsing strategies based on expectations.

Moreover, in Experiment 2, in which the featured items possess a relatively higher degree of coherence than in Experiment 1, the processor may assume that the information in the second sentence relates to the information given in the first sentence. Accordingly, the processor may be biased in favor of an interpretation of the masculine role noun: *femmes* would be considered a subset of the group designated by the masculine role noun. Put differently, in Experiment 2, the generic interpretation allows for a globally coherent representation of the scene and thus seems to be preferred.

In Experiment 1, in contrast, the information given at the beginning of the second sentence is less coherent with the first sentence than in Experiment 2. Thus, in Experiment 1, the processor may assume that the second sentence refers to different entities and events than the first sentence (Kehler 2019: 450 f., 453, 469).[25] In this vein, *femmes* might not have been pushed as much in Experiment 1 as in Experiment 2 to be associated with the masculine role noun. Accordingly, the masculine role nouns were interpreted specifically. In the words of Kehler: "coherence-driven constraints play a role in determining the contexts in which various discourse-sensitive linguistic phenomena can be felicitously employed" (Kehler 2019: 476).

Noteworthily, a high degree of coherence between the sentences can have the opposite effect than discussed with regard to the sentence pairs featured in Experiment 2. For instance, in a sentence pair that presents a high degree of coherence, such as the following (see (41a)–(41b)), the masculine role noun should be interpreted specifically. In fact, in (41a)–(41b), the sentences fit really well together only if *voisins* is interpreted as 'male neighbors', in opposition to the *female neighbors* mentioned in the second sentence:

(41a) *Les voisins sortaient les chiens./*
'The (male) neighbors$_{M.PL}$ were walking the dogs.'/
(41b) *Cela réjouissait les voisines.*
'This made the female neighbors$_{F.PL}$ happy.'

In (41a)–(41b), *cela* connects the first and second sentence and the high degree of coherence between the sentence pair facilitates a specific interpretation of the masculine role noun. Set in contrast with my discussion of *coherence* concerning the diverging findings of my experimental study, this indicates that there are several types of coherence that may influence the interpretation of masculine role nouns. Accordingly, a relatively high (or low) degree of coherence does

[25] See also Givón (1983a: 11 f.).

not always generate a generic (or specific) interpretation of a masculine role noun. The different types of coherence and their influence on the interpretation process (if any) therefore have to be more closely examined when discussing how masculine role nouns are interpreted.

Also, in contrast to Experiment 2's experimental pairs, between (41a)–(41b), there is both a topic shift (i.e., *voisins* (male) neighbors$_{M.PL}$'—*voisines* 'female neighbors$_{F.PL}$') and an event shift (i.e., *walk the dogs—be happy*). Crucially, this indicates the need for further analysis of whether the factor/one of the factors that influence(s) whether a generic or specific interpretation of a masculine role noun is accessed is indeed coherence or whether it might be other discourse structuring devices such as topic and/or event continuity (cf. Experiment 1's items such as (15a)–(15b1) in which *coming out of the cafeteria* in the first sentence switches to *having an umbrella (because of the cloudy weather)* in the second sentence) (Chiriacescu & von Heusinger 2010: 306–310; Givón 1983a: 3, 7–17, 19–27, 30–35).[26]

Note that my assumption that the higher degree of coherence within the sentence pairs in Experiment 2 may account for the lack of a male bias in the offline measures for Experiment 2, while the lack of a male bias in the reading/response times is more difficult to account for. The fact that the generic interpretation offers a globally coherent representation of the scene becomes clear only after the *femmes* region has been read. As a result, if a high degree of coherence causes a bias in favor of a globally coherent interpretation, the reading and/or response times for this region(s) should still show a male bias, with longer reading times for *femmes* than for *hommes* (see Gygax et al. 2012, who found such a data pattern; see Rothermund & Strack 2024: 471, 476, 480–482 on priming vs. (mis)understanding a masculine role noun's meaning).[27] In this respect, coherence alone constitutes only a partial explanation for the data pattern.

Finally, it is also possible that the higher degree of coherence between the first and second sentences in Experiment 2 may have affected participants' strategic behavior during the experiment: the gerund construction at the beginning of the second sentence may have created the impression that the sentences fit well together. As a result, participants might have already decided on a *yes* response at the gerund construction, without even reading the remaining part of the second sentence. If the continuation region is not read properly at all, it is obviously

[26] See also Givón (1983a: 1–41); Musan (2010: 37–39, 41); Roberts (2019: 381–392).

[27] See also Anaya-Ramírez et al. (2022: 1272); Gygax et al. (2021a: 4–7); Lévy et al. (2014: 27, 36 f.). See Pozniak et al. (2023: 1, 11–14, 16–18) on contextual dilution effects in gender-fair French.

impossible for a male bias to emerge (Rothermund & Strack 2024: 482). However, I consider this possibility unlikely: the post hoc analyses for the fillers' reading times do not indicate that the regions in the last half of the second sentence were not read properly (see Sect. 6.2.2.3).[28] Moreover, the participants could only develop such a reading strategy after having encountered at least a couple of experimental items. Thus, if the lack of a male bias in Experiment 2 was really based on participants adopting such a strategy, at least the items shown at the beginning of the experiment should still have shown a trend for a male bias. The data, however, show no signs of such a trend for these items (see Fig. 6.1 in Sect. 6.2.2.3 and Figs. 3 and 4 in Appendix 2 in the electronic supplementary material).

To conclude, if the different character of the experimental items featured in Experiments 1 and 2 indeed influenced the interpretation of the masculine role nouns, the diverging outcomes of Experiments 1 and 2 would not be contrary to each other, but complementary: while the experimental sentence pairs presenting a relatively high degree of coherence might have biased the participants towards a generic interpretation of the masculine role noun, the experimental sentence pairs presenting a lower degree of coherence might have biased the participants towards a specific interpretation. This would suggest that the male bias induced by masculine role nouns that has previously been shown to be robust across time and different experiments is not persistent in all types of sentences (see Rothermund & Strack 2024: 468, 472–477, 480–482 on recent findings suggesting that contextual cues mediate whether a male bias arises or not). Crucially, if the properties of the sentences into which masculine role nouns are embedded influence the role nouns' interpretation, factors other than the masculine form itself would (also) contribute to its interpretation. One of these could be the *degree of coherence* within the sentence pair featuring a masculine role noun and its female subset. In that sense and in parallel with my point concerning the filler items (see Sect. 6.2.2.2), we can consider the appearance of a male bias as being influenced by the presence or absence of different factors.

In the next section, I examine the properties of the experimental items used in previous psycholinguistic experiments investigating the interpretation of masculine role nouns. This helps me to further analyze whether Experiment 2's outcome might be different from that of Experiment 1 because of the differences in the experimental items.

[28] See also footnotes 21 and 22.

6.3.3 The Sensitivity of the Male Bias in Relation to the Specific Experimental Items in Previous Work

While it has been shown that the influence of stereotypes on language processing is sensitive to the specific stimuli (Esaulova et al. 2014: 799),[29] it has not been analyzed in depth whether the properties of an experimental item modify the interpretation of masculine role nouns. On the contrary, the literature criticizing the use of masculine role nouns tends to assume that all masculine role nouns are (equally) discriminatory to women (e.g., Feminist Linguistics). While De Backer & De Cuypere (2012: 260 f.), Kotthoff & Nübling (2018: 91, 115) and Redl (2021: 120–122) conclude that several factors have an impact on whether a masculine form is interpreted generically or not (see Sects 3.2.3 and 3.3),[30] the question of whether a masculine role noun's embedding into a specific type of experimental item influences its interpretation deserves further attention (see Rothermund & Strack 2024, who have addressed the question quite recently).

The scarce previous examination of the question of whether a masculine role noun's integration into different types of sentences influences its interpretation might be due to the fact that most stimuli in previous psycholinguistic research present quite similar features. In fact, most research on masculine role nouns in French has been run by Gygax and colleagues or has been inspired by their work. This entails that the experimental items in which the masculine role nouns were embedded is very similar across various experiments. More precisely, in Gygax et al.'s SEV SPR WSP experiments, masculine role nouns in the plural form appear at the beginning of the first sentence in subject position, while men or women are explicitly featured as subjects towards the end of the second sentence (e.g., *voisins—hommes/femmes*).[31] Importantly, the two sentences are not clearly semantically linked to each other, as was also the case in Experiment 1.

Yet, based on the diverging findings of Experiments 1 and 2, it does not seem unlikely that the male bias triggered by the above-described experimental item type has been replicated repeatedly and that a masculine role noun's integration into different types of sentences might yield different outcomes (see Rothermund & Strack's (2024: 468, 472–477, 480–482) recent findings, which go in the same direction). Together with the discussion of the possible influence

[29] See also Kim et al. (2023a: 21); Irmen & Schumann (2011: 1007).

[30] See also Diewald & Nübling (2022a: 10).

[31] In Gygax and colleagues' other studies, the rationale for their stimuli is comparable. For instance, Lévy et al.'s (2014) word pair study uses a kinship term as prime and a masculine role noun as the target item (e.g., *tante* 'aunt' — *musiciens* 'musicians$_{M.PL}$').

of the method and filler items used on the interpretation of masculine role nouns (see Sects. 6.1 and 6.2), this suggests that it is not only important to closely replicate previous studies (see Chap. 4), but also to meta-methodologically and linguistically question and expand previous experimental set-ups in order to gain more diversified insights into the interpretation of masculine role nouns.

Interestingly, Kim et al. (2023a) conceptually replicated Lévy et al. (2014), in which the latter presented kinship nouns together with masculine role nouns (e.g., *sœur/frère* 'sister/brother'—*musiciens* 'musicians$_{M.PL}$'). However, Kim et al.'s (2023a) study presented male and female first names together with masculine role nouns (e.g., *Léa/Thomas—musiciens* 'musicians$_{M.PL}$'). While the male bias was still present in 2023, it was less pronounced than in 2014 (i.e., for the *yes* responses in the stereotypically neutral condition, the difference between male and female referents was about 19% in 2014 and about 5% in 2023) (Kim et al. 2023a: 12; Lévy et al. 2014: 32 f.). This difference in effect sizes could be due to the different experimental designs (i.e., varying exposure to female referents in the 2014 study and stable exposure to female referents in 2023), but it could also be due to the properties of the stimuli: namely, kinship nouns in 2014 versus first names in 2023.[32]

Further, Tibblin et al. (2023a: 28, 39 f.; 43; 45) found a male bias for masculine role nouns in their study, in which participants had to estimate the percentage of women in a group (e.g., *voisins*—50%). They found a more pronounced male bias when female referents were named on the left and male referents on the right side of the screen, rather than in the opposite case—that is, when women were named before men—in the reading direction from left to right.[33]

In this vein, Esaulova et al.'s eye-tracking experiment (2014: 781, 798) also found a male bias induced by masculine role nouns, but demonstrated that it can affect language processing at an earlier or later stage depending on whether a pronoun or a noun phrase is presented after the masculine role noun (e.g., Ger. *der Elektriker—sie/diese Frau*—'the electrician$_{M.PL}$—she/this woman'). Körner et al. (2022: 560, 565) conceptually replicated the German part of Gygax et al.'s (2008) study and also found a significant male bias induced by masculine role nouns. Interestingly, the authors found that items which introduced the masculine role noun with the quantifier Ger. *die* 'the' instead of Ger. *alle* 'all' (e.g., Ger. *Die/Alle Apotheker* 'The/All pharmacists$_{M.PL}$') received fewer *yes* responses. At

[32] This finding challenges Kotthoff & Nübling's (2018: 92, 191) assumption that hardly any other linguistic category is as closely associated with biological/social gender as personal names.

[33] See also Misersky et al. (2014: 846).

the same time, the reading times of sentences introduced by *alle* were longer than those with *die* (i.e., possibly a speed-accuracy trade-off). Importantly, these findings are irrespective of whether the quantifiers were followed by *men* or *women.* Nonetheless, they demonstrate that subtle lexical changes within the experimental items can have an impact on the general processing of sentences featuring masculine role nouns.

Note that the male bias found in studies which feature sentences into which a masculine role noun is embedded (e.g., sentence pairs) seems to be more important than in studies which present the masculine form separately from any other context, as in word pair studies in which a prime and target consist of one word each. For instance, Experiment 1 used a SEV SPR WSP paradigm for sentence pairs and found a 23% difference in the *yes* responses between *hommes* and *femmes* items in the stereotypically neutral condition (see also Gygax et al. 2008; Xiao et al. 2023). However, the study by Kim et al. (2023a) (see also Tibblin et al. 2023a), which presented both the masculine form and its prime without any further filler items (e.g., *Léa/Thomas—musiciens* 'musicians$_{M.PL}$'), found a male bias of only approximately 5% in the stereotypically neutral condition. This could be due to the fact that the group membership of the referents in a sentence pair might be less clear than when participants are explicitly asked whether a separately presented masculine role noun can represent a female referent.[34] At the same time, the sentence(s) into which masculine role nouns are embedded can also clarify the link between a masculine role noun and a female referent: in contrast to Experiment 1, in Experiment 2, the experimental items' properties did indeed seem to have fostered the generic interpretation of the masculine role nouns.

Interestingly, Anaya-Ramírez et al. (2022) replicated Gygax et al. (2008) for the grammatical gender language Spanish with oral stimuli and, just as I did in Experiment 2, aimed to eliminate the same set interpretation that might have been triggered by Gygax et al.'s (2008) original stimuli (i.e., in the female condition, the designated group consists of women only). Anaya-Ramírez et al.'s (2022: 1260 f., 1269) adaptions of the original stimuli are thus driven by the same goal as the one I pursued in Experiment 2: the clear indication that the female subset is part of the group designated by the masculine role noun (see Rothermund &

[34] Contrary to the above assumptions, Lévy et al. (2014: 35) found a male bias in the second part of their experiment, which is similarly important as that of the studies presenting a masculine role noun in a sentence although having presented the masculine form without any context (i.e., about 20% of the *yes* answers as in Experiment 1). However, this outcome might be influenced by the first part of the experiment in which participants already had been exposed to masculine role nouns and male and female referents.

Strack 2024 for a similar approach). Unlike Experiment 2, Anaya-Ramírez et al. (2022) found a male bias. However, it was less significant than that of Gygax et al. (2008) and Experiment 1. In the next section, we therefore have a closer look at the properties of Anaya-Ramírez et al.'s (2022) experimental items and their results.

Experiment 2 Compared to Anaya-Ramírez et al. (2022)

Anaya-Ramírez et al. (2022: 1260–1263) suggest that Gygax et al.'s (2008) experimental items might have been interpreted such that the referents of the second sentences (e.g., *some of the women*) were interpreted so that the aforementioned group (e.g., *the neighbors*) consisted of women exclusively. Hence, the second sentences featuring women would be rejected because they were not introduced by a feminine role noun, but not because they cannot be part of the group designated by the masculine role noun. In order to eliminate this and to encourage the accessing of the subset interpretation of the masculine role noun (i.e., there are some women in a mixed group), Anaya-Ramírez et al. (2022: 1260–1263) replaced the subset of sentence pairs used by Gygax et al. (2008) and Experiment 1 which featured a quantifier and men or women. For instance, instead of using *some of the women*, viz., 'some of the women in the group consisting of men and women', they featured *uno/una* 'one$_{M./F.SG}$ [of the aforementioned group]' as in the following example:

(42a) *Los ingenieros se tomaron el resto de la tarde libre./*
'The engineers$_{M.PL}$ took the rest of the afternoon off./'

(42b) *Una/Uno estaba cansada/o y se fue directo a su casa.*
'One$_{M./F.SG}$ was tired$_{M./F.SG}$ and went straight to their house.'

Anaya-Ramírez et al. (2022) found a male bias in their data for both *yes* responses and response times. Yet, the authors found a less pronounced male bias than Gygax et al. (2008), with an 8% difference between the *yes* responses for items featuring men and women in the stereotypically neutral condition compared to the 17% difference found by Gygax et al. (2008). Anaya-Ramírez et al. (2022) assume that the weakened male bias found in their study is due to a frequent subset interpretation of the female referent, whereas in Gygax et al. (2008), the same set interpretation would have been accessed (Anaya-Ramírez et al. 2022: 1260, 1263, 1265–1270). Thus, Anaya-Ramírez et al.'s (2022) results, indicating a weaker male bias than that found by Gygax et al. (2008) and Experiment 1, and an influence of male stereotypicality, can be classified as being between those of Gygax et al. (2008) and Experiments 1 and 2, while their approach is comparable to that of Experiment 2.

An issue that has not been discussed by Anaya-Ramírez et al. (2022) is that they not only manipulated the quantifier referring to the subset of the group formerly introduced by a masculine role noun. In fact, just as in Experiment 2, in Anaya-Ramírez et al.'s (2022) experiment, the first sentences presented the specific group in a frame in which the said group is likely to play a role (e.g., *engineers in a work-related context*). Moreover, the second sentence fills a slot of the frame evoked in the first sentence (e.g., *being tired and go home*). Hence, the sentence pairs are more coherent than those of Gygax et al. (2008) and Experiment 1. In this vein, compared to Gygax et al. (2008) and Experiment 1, the weaker male bias found by Anaya-Ramírez et al. (2022) could result from adaptions to the experimental items other than—or not exclusively from—the modification of the quantifier referring to the subset of the main group. It is possible that, in Anaya-Ramírez et al.'s (2022) study, the established coherence relation between the two sentences rendered the linking of the masculine role noun with the female subset much easier than in Gygax et al. (2008) and Experiment 1. The weaker male bias in Anaya-Ramírez et al.'s (2022) study could hence be due to the same factor as in Experiment 2—an increase in coherence within the experimental pairs—and might not (exclusively) be due to the use of *una* 'one$_{F.SG}$' instead of the quantifiers introduced by Gygax et al. (2008).

It is noteworthy that Experiment 2 yielded a null result while being based on the same quantifiers[35] when referring to the subset of the main group denoted by a masculine role noun as Gygax et al. (2008) (e.g., *voisins—la majority des femmes*). This suggests that the results from Anaya-Ramírez et al. (2022) should indeed not only differ from those of Gygax et al. (2008) because of the omission of the initial quantifier (e.g., *most of the women* vs. *una una* 'one$_{F.SG}$'). Moreover, recall that, first, in examples like (36a)–(36b1) featured in Experiment 2, the coherence is also established thanks to *watch the trees (while walking the dogs)*, which is placed after the female subset. Secondly, while the coherence is increased especially thanks to the gerund construction in all of Experiment 2's experimental pairs, several of them would also show a high degree of coherence without the gerund construction (see (37a)–(37b) and Sect. 5.1.4.1)—just like the experimental pairs of Anaya-Ramírez et al. (2022).

At the same time, the empirical findings are diverging: Redl et al. (2018) did not find a male bias in their study on the masculine possessive pronoun *zijn* 'his' in Dutch, which rather clearly indicates the group membership of the female referent. Surprisingly, having adapted the stimuli so that the link between the masculine pronoun and the female referent was even more clear, they found a slight male bias. Thus, while both Anaya-Ramírez et al. (2022) and Redl et al. (2021), who

[35] See Sect. 5.2.2.1.1.

also explicitly indicate the group membership of the women, find a (slight) male bias, Experiment 2 does not. This suggests that it is not only one factor in isolation, for instance, *coherence*, that may influence the way in which masculine forms are interpreted.

Finally, given that the degree of coherence of the sentence pairs used in Anaya-Ramírez et al. (2022) and Experiment 2 seems to be comparable, it is worth analyzing where the difference in results (i.e., male bias vs. null result) might come from. I therefore now analyze the order of mention of the female subset in the second sentence, which differed between Anaya-Ramírez et al.'s (2022) study and Experiment 2.

Positioning of the Female Referent

In Anaya-Ramírez et al.'s (2022) study, the subject of the second sentence, the subset of the group designated by a masculine role noun, is right at the beginning of the sentence (see example (42b)). Thus, biological/social gender might have been more influential than in Experiment 2 in which the second sentence did not start with the sentence's subject, but with the semantically coherent gerund construction. Moreover, in their study, Anaya-Ramírez et al. (2022) featured few fillers (i.e., a 1:1 ratio) and the same filler types as Gygax et al. (2008) and Experiment 1, which frequently refer to biological/social gender. Thus, in contrast to Experiment 2, the association of grammatical gender and biological/social gender might have been activated so that the masculine role nouns were associated with the male biological/social gender. This might have resulted in a male bias (see Sect. 6.2.2.2).

Moreover, in Anaya-Ramírez et al.'s (2022) study, the emergence of a male bias might be due to the fact that the information in the second sentence that semantically continues the frame of the first sentence is positioned after *uno*/*una* 'one$_{M./F.SG}$'. As a result, the processor might not have been influenced early enough by the factor *coherence* to accommodate the upcoming information. Correspondingly, the female referent of the second sentence might not have been immediately interpreted as a subset of the referent of the first sentence. Thus, the positioning of the more semantic link only after the female referent might have rendered the subset interpretation less straightforward than was intended by Anaya-Ramírez et al. (2022). In contrast with Anaya-Ramírez et al.'s (2022) study, concerning Experiment 2's experimental items, the expectation that the second sentence is coherent with the first sentence is immediately confirmed (at least partly) by the semantically coherent gerund construction right at the beginning of the second sentence. Based on this confirmation,

the following information (e.g., *femmes*) might have been accommodated more easily so that the generic reading of the masculine role noun was accessed.[36]

In this regard, Kehler et al. (2008: 28–32) and Wolf et al. (2004: 673) have shown that the order of mention of the coherence-establishing information has an important influence on pronoun resolution. Moreover, Ferreira & Henderson (1991: 739, 742–744) have shown that temporarily ambiguous sentences (see Sect. 6.3.4) are more difficult to process the greater the distance between the ambiguous and disambiguating information.[37] Taken together, this suggests that a sentence is harder to process, the more assumptions have to be made over a longer time (Harley 2014: 300).[38] Probably, in Experiment 2, there were less assumptions to be made and challenged, which rendered the generic interpretation of the masculine role nouns more accessible.

Speaking of Experiment 2's experimental items, note that, from a grammatical point of view, placing the gerund construction at the end of the second sentence would have the same effect: the syntactic linking of the verb form's subjects in the second sentence would be identical. Yet, from a processing point of view, I assume that it would not: if language users constantly keep track of how a discourse could be continued coherently (Kehler 2019: 463–466), then the position of specific information within a sentence should not be irrelevant. In that sense, the findings of Experiment 2 might result from an interaction of an increase in coherence and the positioning of the semantically coherent gerund construction as the introductory element of the second sentence. Correspondingly, we could also speak of an interaction of syntactic and pragmatic factors.

At the same time, it is worth noting that other recent studies than Anaya-Ramírez et al. (2022) that investigate masculine role nouns with a SEV paradigm have found a less pronounced male bias in the stereotypically neutral condition too, compared to Gygax et al. (2008) and Experiment 1 (i.e., 17% and 23% respectively) (see Sect. 6.3.1). For instance, Körner et al. (2024: 168, Experiment 2), who conceptually replicated Gygax et al.'s (2008) German sample, found a 9% difference between items featuring men and items featuring women in the stereotypically neutral condition. It is thus also possible that the 8% difference found by Anaya-Ramírez et al.

[36] Of course, it is also possible to feature incoherent information after the semantically coherent gerund construction in order to trigger a *no* response. Actually, the high accuracy rates for the fillers suggest that the participants were able to handle this kind of mismatch correctly, although the contradictory information followed sensible information in the form of a semantically coherent gerund construction (see Sect. 6.2.2.3).

[37] See also Crain & Steedman (1985).

[38] See Kehler et al. (2008: 2) on the importance of pragmatic factors on pronoun resolution; see Givón (1983a) on topic continuity in discourse.

(2022: 1265–1267) is generated by other factors than the modification of the reference to the subset and/or by other factors than the more coherent experimental sentence pairs.

Note that, compared to Gygax et al.'s (2008) French sample and Experiment 1, Anaya-Ramírez et al. (2022: 1270) not only find a weaker male bias in the stereotypically neutral condition, but also in the stereotypically female condition (i.e., an 18% difference in Gygax et al.'s (2008) French sample vs. a 3% difference between the male and female condition in Anaya-Ramírez et al. (2022)). Also, the male bias in the stereotypically male condition is much more pronounced than in Gygax et al.'s (2008) French sample and Experiment 1 (i.e., 36% vs. 25 % in Gygax et al. 2008 and 30% in Experiment 1). This suggests that the influence of stereotype information can be much stronger than previously suggested in similar work (e.g., as in Gygax et al. 2008 and Experiment 1). This could be in relation to the more coherent sentence pairs in Anaya-Ramírez et al.'s (2022) study: as the chosen role nouns were presented in a plausible scene such as we tend to find in everyday language, the stereotype information seems to have unfolded, which it could not in Gygax et al. (2008) or Experiment 1, as generic activities and places were randomly combined with the chosen groups (e.g., *engineers at a fountain* vs. *engineers in a work-related context*) (Rothermund & Strack 2024: 482; Tibblin et al. 2023a: 44 f., 48).

It thus seems that (male) stereotypicality can have a more or less important influence on the interpretation of masculine role nouns depending on the sentence(s) into which they are embedded (see Sects. 4.4.5.1 and 6.3.1). Crucially, the embedding of role nouns in a more authentic sentence pair apparently renders the sentence pairs not only generally more sensible, but also more sensitive to stereotype information. Hence, the experimental items of Experiment 1 might be less informative concerning the interpretation of masculine role nouns in natural language than expected, while those of Experiment 2 might be more representative of the processing of natural language.

From the comparison of Anaya-Ramírez et al.'s (2022) study with Experiments 1 and 2 and with Gygax et al. (2008), we can conclude that (1) the experimental items' properties do potentially influence a masculine role noun's interpretation (Rothermund & Strack 2024: 468, 472–477, 480–482); (2) a clearer link between the masculine role noun and the female subset seems to render a generic interpretation more accessible, whereas a specific interpretation is accessed less frequently; and (3) it seems that the order of mention of the coherence-increasing information and/or that of the female subset influences whether the processor is pushed towards the generic or the specific interpretation of the masculine role noun. Moreover, (4) when masculine role nouns are integrated into sentences featuring activities that are

semantically related to the role noun (e.g., *engineers in a work-related context*), the influence of (male) stereotypicality is more important than previously assumed. Accordingly, (5) research on masculine role nouns that uses such sentences might be more representative of natural language processing than research that does not (e.g., Experiment 2 vs. Experiment 1).

In sum, we have seen that seemingly minor differences within the experimental items featuring masculine forms might have an impact on their interpretation. Crucially, if we assume the experimental item's properties to influence the masculine role noun's interpretation in an experimental item, the findings of my two experiments can be considered, once again, as diverging, yet complementary: the experimental sentence pairs of Experiment 1 might have biased the processor towards the specific interpretation of a masculine role noun, while the experimental sentence pairs of Experiment 2 might have biased the processor towards the generic interpretation of a masculine role noun.

Interestingly, within a more general framework of ambiguity resolution, the interpretation of temporally ambiguous sentences has repeatedly been found to be sensitive to the sentences framing them. In the next section, we will see how the findings on ambiguity resolution in general and on so-called *garden-path sentences* specifically can be helpful in order to explain the diverging findings of Experiments 1 and 2.

6.3.4 The Interpretation of Masculine Role Nouns as a Garden-Path Effect

From a psycholinguistic point of view, we can compare the accessing of the generic or the specific interpretation of a masculine role noun to ambiguity resolution in general. Yet, surprisingly, this comparison is nearly missing in the literature on the interpretation of masculine role nouns. Gygax et al. (2021a: 5) have compared the interpretation of masculine role nouns to that of ambiguous words and, correspondingly, argue that the activation of their meaning is "dependent on context". In this vein, Gygax et al. (2021a: 5) assume that, in the absence of a particular context, the activation of one of the meanings depends on "how much one is exposed to it" and suggest that the more frequent and thus dominant meaning of a masculine role noun is its specific meaning (Gygax et al. 2021a: 6).[39] Yet, quite in contrast to the assumption that the specific meaning is

[39] See Samuel et al. (2019: 1767, 1769, 1778, 1784) who, while focusing on inanimate and non-human animate nouns, conclude that a possible influence of grammatical gender on mental representation is context-dependent. On frequency/exposure effects on the interpretation

more frequent than the generic meaning, I would like to argue that generically intended masculine role nouns are far more frequent than those used specifically. Obviously, in order to shed light on the actual frequencies of the generic and specific meanings in language production, a corpus analysis is needed. However, as it is not always clear whether a masculine role noun is generically or specifically intended, a corpus-based study would also have challenges (Kotthoff & Nübling 2018: 113).

Moreover, the frequency of a masculine role noun's generic or specific meaning can be considered as forming part of the context in which it occurs and thus might influence its interpretation not only when it is encountered as a single word, but also when it is embedded into a whole sentence. Interestingly, Rodd et al. (2013: 180, 190–192, 194) suggest that the lexical representation of an ambiguous word is fluid and continually updated: they show that a single encounter with an ambiguous word in a context that requires the subordinate meaning is sufficient to deactivate the dominant meaning even for subsequent interpretations of this word. In this vein, future research might be able to determine whether the frequent initial interpretation of a masculine role noun (e.g., as generic) influences subsequent interpretations of other masculine role nouns (e.g., so that they are interpreted generically, too).

While Gygax et al. (2021a: 5 f.) base their comparison of masculine role nouns with ambiguous words on findings from (single) word-association tasks, it is also interesting to compare the interpretation of masculine role nouns to ambiguity resolution in sentence processing. In fact, we can compare the interpretation of masculine role nouns in combination with female referents to sentences featuring temporal ambiguities (i.e., the ambiguity is disambiguated later on), such as garden-path sentences (Fujita 2021: 1234; Prasad & Linzen 2019: 1156). Accordingly, the findings on the processing of garden-path sentences could be helpful in explaining the interpretation of masculine role nouns. Moreover, approaching the interpretation of masculine role nouns from a more general framework on the interpretation of ambiguous sentences helps to get some distance from the heated debate on their usage.

A garden-path sentence is a temporarily ambiguous sentence which causes reading disruption. This disruption is reflected in slower reading times compared

---

of masculine role nouns, see also Claus & Willy (2022: 235); Corbett (1991: 221); Gabriel & Gygax (2016: 186); Gygax et al. (2021a: 5 f.); Kotthoff & Nübling (2018: 104). See Pozniak et al. (2023: 18) on frequency effects with regard to gender-fair forms in French. On the activation of one of the meanings of a masculine role noun, see Anaya-Ramírez et al. (2022: 1272); Gygax et al. (2021a: 4–7); Lévy et al. (2014: 27, 36 f.); Rothermund & Strack (2024: 471, 476, 480–482).

to its unambiguous counterpart. The slowdown of reading times is in turn ascribed to a revision process. During the revision process, readers tend to revise the initial interpretation, which turned out to be incorrect, into an interpretation that makes sense (Fujita 2021: 1234; Prasad & Linzen 2019: 1156). Consider the following example from Sturt (2007: 479):

(43) *The explorers found the South Pole was actually right at their feet.*

Most readers get confused when encountering *was actually* towards the end of the sentence. In other words: they have been led up the garden path due to the analysis of *found* as a main verb with a direct object in the sense of 'The explorers found the South Pole'. However, this interpretation turns out to be wrong if the combination with *was actually* is going to make sense. *Found* thus has to be reanalyzed in order to accept a tensed clause as its complement, such as '*The explorers found [that] the South Pole was actually right at their feet*'. In sum, the initial interpretation of the ambiguous *found* at the beginning of the sentence conflicts with the disambiguating information in the form of *was actually* at the end of the sentence. In order to bring the two together, *found* has to be reinterpreted (Choe et al. 2022: 7; Sturt 2007: 479).[40]

Let us now (re)consider an example of an experimental pair of Experiment 1, in which *voisins* can be considered as temporarily ambiguous:

(15a) *Les voisins sortaient de la cafétéria./*
'The neighbors$_{M.PL}$ were coming out of the cafeteria./'
(15b1) *A cause du temps nuageux, une des femmes avait un parapluie.*
'Because of the cloudy weather, one of the women had an umbrella.'

Applied to the discussions concerning the interpretation of masculine role nouns, a garden-path effect would be the following: the ambiguous *voisins* at the beginning of the first sentence would be interpreted specifically, yet this would conflict with the upcoming (disambiguating) information *femmes* in the second sentence. As *femmes* cannot be integrated into the specific interpretation of *voisins*, its integration with a masculine role noun is only possible if the generic interpretation is adopted later on during a revision process. Thus, if the initial interpretation of *voisins* was its specific meaning, it would have to be revised to a generic interpretation. This revision process would take time and would result in slower reading times for *femmes*. Conversely, no revision should be needed when *voisins*

[40] See also Clifton & Staub (2008: 246); Harley (2014: 289 f.).

is followed by *hommes*. The reading times for *hommes* should thus be quicker than for *femmes*.

As for Experiment 1, it provided clear evidence of a male bias, suggesting that a garden-path effect was created. Conversely, the results of Experiment 2 showed no differences between the *hommes* and *femmes* conditions, which suggests that the combination of a female referent with a masculine role noun did not induce additional processing costs. In other words, no hints of a garden-path effect were found in Experiment 2.

Interestingly, garden-path sentences have been found to be sensitive to the sentences framing them. Consider the following examples from Altmann et al. (1992: 686–688) on relative/complement ambiguity:

(44) *The fireman told the woman that he had risked his life for to install a smoke detector.*

(45) *The fireman told the woman that he had risked his life for many people in similar fires.*

As the preferred resolution is the simple noun phrase, no processing difficulty should arise in (45), featuring *many people*. Conversely, in (44), which presents a complex noun phrase, a garden path should occur on *to install*. Yet, the reading of (44) framed by the following introductory sentences changes the game: the contextualization of *to install*, thanks to the introduction of *two women among which one was rescued*, in (46) hinders a garden path from occurring (Altmann et al. 1992: 687–689):

(46) *An off-duty fireman was talking to two women.*
He was telling them how serious the situation had been when their house caught fire.
The fireman had risked his life to rescue one of the women while the other had waited outside.
The fireman told the woman that he had risked his life for to install a smoke detector.

Thus, the sentences surrounding an ambiguous sentence can activate an interpretation preference for the ambiguous sentence. Although it is critically discussed when and in what way the surrounding sentences influence the resolution of temporary ambiguities such as garden-path sentences, it has been shown repeatedly that they influence how ambiguity is processed in some way (Altmann et al.

1992: 685–687, 705; Pan & Felser 2011: 221–223, 230).[41] The findings on temporary ambiguities could thus be helpful in order to explain the diverging results of Experiments 1 and 2 (Pozniak et al. 2023: 2 f., 6, 17).

Admittedly, in my experiments, the ambiguous and the disambiguating information (i.e., masculine role noun—*femmes*) go beyond the boundary of one sentence. Moreover, I did not test the properties of the experimental or filler items. Importantly, contrary to the studies on garden-path sentences that test for the activation of one or another interpretation of an ambiguous sentence, the filler items of Experiment 2 were independent from the experimental items. Hence, the influence of the fillers on the interpretation of the experimental pairs should have been more subtle. Nonetheless, the filler items were designed to cover the research aim and the fact that they referred much less to biological/social gender than those of Experiment 1 could still have had an impact on the interpretation of the masculine role nouns featured in the experimental items (see Sect. 6.2). Crucially, as the experimental items of Experiment 2 were intended to clearly indicate the subset membership, the embedding of the masculine role noun in this type of sentence pairs might indeed have activated a different interpretation of the masculine role nouns than in Experiment 1 (see Sect. 6.3.2).

In sum, the interpretation of masculine role nouns shares similarities (at least in Experiment 1) with the ambiguity resolution of garden-path sentences in the sense that the language processor tries to reanalyze information that turns out to conflict with upcoming information. Correspondingly, if we consider the specific interpretation of a masculine role noun in combination with a female subset to potentially yield a garden path, there is no reason to think that the sentences surrounding the masculine role noun do not influence the interpretation of masculine role nouns (Pozniak et al. 2023: 2 f., 6, 17).

Interestingly, the findings from Lévy et al. (2014), who investigated the interpretation of masculine role nouns in French, showed that the increase of the exposure to female referents in combination with masculine role nouns seems to "be sufficient to activate a more generic interpretation of the masculine form" (Lévy et al. 2014: 36; see also 27, 37). There is also some recent evidence suggesting that the interpretation of masculine role nouns might be influenced by the wider linguistic context in which a masculine role noun is featured: Pozniak et al. (2023: 1, 11–14, 16–18), while focusing on gender-fair forms, did not find a difference between a masculine role noun featured in a detailed context (i.e., a

[41] See also Crain & Steedmann (1985); Trueswell et al. (1994); Trueswell & Tanenhaus (1994); Spivey-Knowlton et al. (1993). See Kambe et al. (2001) on lexically ambiguous words.

university brochure) versus the interpunct (i.e., *étudiants* 'students$_{M.PL}$' vs. *étudiant·e·s* 'students$_{M·F·PL}$'). Yet a male bias for the masculine form has previously been found in shorter texts. The possible influence of contextual information is corroborated by Rothermund & Strack (2024: 468, 472–477, 480–482), who have recently shown that information indicating that a group consists of both men and women leads to the generic interpretation of stereotypically neutral masculine role nouns in German, while non-disambiguating information leads to a specific interpretation (e.g., *The newscasters*$_{M.PL}$ *wore fancy suits and dresses* vs. *The newscasters*$_{M.PL}$ *wore fancy clothes*).[42]

In a similar vein, and as mentioned before, De Backer & De Cuypere (2012: 260 f.), Kotthoff & Nübling (2018: 91, 115) and Redl (2021: 120–122) suggest that various factors (e.g., the degree of referentiality) influence whether a masculine form is interpreted generically or specifically (see Sect. 3.3).[43] Crucially, these findings go in the same direction as my explanation of the diverging findings of Experiment 1 and 2 as being based on the different properties of the fillers and/or experimental items: if we consider the male bias to be influenced by multiple factors (e.g., a high degree of coherence; the activation of the concept *biological/social gender*), the outcomes of Experiments 1 and 2 might diverge, but they might also complement each other—masculine role nouns might be interpreted generically when certain factors come into play, but specifically with other factors. Hence, to gain more diversified insights into the interpretation of masculine role nouns, it seems that not only replication is needed (see Experiment 1), but also meta-methodological and linguistic reflections on previous experimental set-ups in order to explore the potential factors that may influence the interpretation of masculine role nouns (see Experiment 2). In the same vein, the systematic variation of experimental setups, including the filler and experimental items used, should be encouraged (see Sect. 7.4).

To conclude, it is not only classic garden-path sentences that seem to be influenced by the properties of the sentence(s) framing them, but the interpretation of masculine role nouns, too. In this vein, models explaining the processing of temporarily ambiguous sentences (e.g., Jacob 2009; van Gompel et al. 2006) could

[42] Note that, while these novel and important empirical findings align with the assumption that multiple factors influence how masculine role nouns are interpreted, they are only integrated as a side note into Chaps. 7 and 8 are not included in my preliminary approach in Sect. 7.3. Ergo, they are not summarized in Fig. 7.1 and Table 7.1.

[43] See also Samuel et al. (2019: 1767, 1769, 1778, 1784) who, while focusing on inanimate and non-human animate nouns, conclude that a possible influence of grammatical gender on mental representation is context-dependent. See Zapf (2024: 405–407) on masculine forms and their alternatives in Spanish.

be used as a basis to analyze the interpretation of masculine role nouns. Accordingly, I present a preliminary approach that conceives of the interpretation of masculine role nouns as a multifactorial phenomenon in Chap. 7.

6.4 Summary

The findings of Experiment 2, which suggest a generic interpretation of masculine role nouns, are in contrast to those of Experiment 1, as well as to the majority of previous studies based on a similar methodological approach, which have consistently reported that masculine role nouns are interpreted specifically. These diverging findings indicate that the presentation mode (e.g., moving widow presentation), the filler items (e.g., the frequent reference to biological/social gender) and the properties of the experimental items (e.g., the degree of coherence between the sentences featuring a masculine role noun and its subset) might influence the interpretation of masculine role nouns. Accordingly, not only is the close replication of previous experiments important in order to gain diverse insights into the interpretation of masculine role nouns (see Experiment 1), but also meta-methodological and linguistic reflections that expand on previous experimental setups (see Experiment 2). Thus, although the male bias triggered by masculine role nouns has previously been shown to be robust across multiple experiments, it might in fact be sensitive to the specific filler and/or experimental sentences and the corresponding factors that are at play (e.g., activation of the concept *biological/social gender* and a high degree of coherence). Amongst others, this assumption is supported by findings on temporarily ambiguous sentences (i.e., garden-path sentences), whose interpretation has been found to be influenced by the sentences framing them and with which the experimental sentence pairs featuring a masculine role noun and a female subset potentially share similarities. Taking into account these findings, the results of Experiments 1 and 2 can be considered as diverging, but complementary at the same time: it seems that masculine role nouns are interpreted specifically when certain factors come into play, but are interpreted generically with others. In this vein, Chap. 7 presents a preliminary multifactorial approach to the interpretation of masculine role nouns.

General Discussion

7

The present chapter summarizes the main findings from my experimental study and takes on a big-picture perspective. To this end, in Sect. 7.1, I address my research questions; I come back to previous theoretical findings in Sect. 7.2. Based on this, Sect. 7.3, sketches a multifactorial approach illustrating the interpretation of masculine role nouns. Derived from these considerations, further research questions are put forward in Sect. 7.4.

7.1 Summary of Key Findings

In order to summarize the results of my experimental study, consisting of two experiments, I now come back to the research questions put forward in Sect. 1.1. For the sake of convenience, I repeat them below and address them one after another. Recall that the findings of my self-paced reading experiments apply to French masculine role nouns in the plural form and concern the interpretations of university students whose native language is French.

RQ 1: Do masculine role nouns in French trigger a male-specific interpretation?

RQ 2: Does stereotypicality (i.e., stereotypically male/neutral/female role nouns) influence the interpretation of masculine role nouns?

RQ 3: Does the role noun type (i.e., occupational vs. non-occupational nouns) influence the interpretation of masculine role nouns?

As for **RQ 1**, Experiment 1 finds a male bias, while Experiment 2 does not. These diverging results thus indicate that the morphosyntactic factor *masculine*

C. Stumm, *When Voisins Can Be Women and When They Cannot – Masculine Generics in French*, Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics, https://doi.org/10.1007/978-3-662-71663-2_7

form may influence the interpretation of a role noun and generate a male bias, but does not always do so. In this sense, the interpretation of a masculine role noun seems to depend on the influence of multiple factors that determine whether it is interpreted generically or specifically. Crucially, my answer to RQ 1 challenges most of the previous empirical research on masculine role nouns, which has answered the same question by suggesting that the interpretation of a masculine role noun is biased towards a specific interpretation (e.g., Gygax et al. 2008: 480, 483; Rothermund & Strack 2024: 468; see Chap. 3). The assumption that masculine role nouns can be interpreted either generically or specifically seems to be especially true if we consider that, even in Experiment 1, in about 60% of the cases, sentences featuring a female subset were judged to be sensible continuations of sentences featuring a group designated by a masculine role noun (Gabriel & Gygax 2016: 187; Gygax et al. 2021a: 5 f.; Kotthoff & Nübling 2018: 115–117). The interpretation of masculine role nouns thus seems to be more complex than previously assumed (Kotthoff & Nübling 2018: 115–117; see Redl 2021: 120–122 on masculine pronouns).[1]

As for **RQ 2**, in Experiment 1 (see Chap. 4), when closely replicating Gygax et al.'s (2008) French sample, I examined whether the extra-linguistic factor *stereotypicality* influences the interpretation of masculine role nouns. I found stereotypically male role nouns in the masculine form to show a stronger male bias than stereotypically neutral or female role nouns in the masculine form. Thus, the interpretation of stereotypically male role nouns seems to have been influenced by both the masculine form and (male) stereotypicality. At the same time, the interpretation of stereotypically neutral and female role nouns did not equal out or diminish the overall male bias found in Experiment 1: in the stereotypically neutral and female conditions, the participants tended to interpret the role nouns specifically, too. In other words, the role nouns' neutral or female stereotypicality did not influence the interpretation of the masculine role nouns. Taken together, this shows that stereotypicality influences a masculine role noun's interpretation to some extent, at least in the specific setup of Experiment 1. This finding goes beyond that of the study initial to Experiment 1, which did not find (male) stereotypicality to significantly influence the interpretation of the masculine role nouns in French. Interestingly, the replication of Gygax et al. (2008) by Garnham et al. (2012: 493, 498) also showed that the male bias was stronger for

[1] See also De Backer & De Cuypere (2012: 260–262, 267); for recent findings in this sense, see Strack & Rothermund (2024: 468, 472–477, 480–482). See Pozniak et al. (2023: 1, 11–14, 16–18) on contextual dilution effects in gender-fair French.

stereotypically male role nouns than for stereotypically neutral and female role nouns.

Moreover, Experiment 1 finds the stated male bias also to be influenced by participant-specific factors: for instance, less feminist participants show a stronger male-specific interpretation than more feminist participants. It thus seems that the interpretation of a masculine role noun is not only driven by the morphosyntactic factor *masculine form*, but that it is influenced by multiple factors (De Backer & De Cuypere 2012: 260–262, 267; Kotthoff & Nübling 2018: 115–119; see Redl 2021: 120–122 on masculine pronouns).[2] Accordingly, the verification of previous claims in Experiment 1 helped me to gain a more nuanced understanding (Porte & McManus 2019: 4 f., 9) of the interaction of linguistic and extra-linguistic information in the interpretation of masculine role nouns.

As for **RQ 3**, in Experiment 2 (see Chap. 5), I focused on the lexico-semantic factor *role noun type* in order to verify whether stereotypically neutral occupational nouns are interpreted specifically more often than stereotypically neutral non-occupational nouns. In contrast to Experiment 1, Experiment 2 did not find any evidence of a male bias—neither for occupational nouns nor for non-occupational nouns. In other words, the masculine role nouns were as easily associated with women as with men, while the interpretation of occupational and non-occupational nouns was identical. This is in contrast to the findings of De Backer & De Cuypere (2012: 260 f.) on masculine role nouns in German, which suggest that occupational nouns generate a more pronounced male bias. The diverging findings of Experiments 1 and 2 thus suggest that the specific conditions under which the morphosyntactic factor *masculine form* and the lexico-semantic factor *role noun type* interact so that a generic or specific interpretation is accessed go beyond these two factors. I have argued that the specific interpretation of the masculine role nouns in Experiment 1 and the generic interpretation of the masculine role nouns in Experiment 2 might result from increased attention to biological/social gender by the language processor, caused by the different filler items in Experiments 1 and 2 (see Sect. 6.2). Alternatively or additionally, the specific interpretation of the masculine role nouns in Experiment 1 and their generic interpretation in Experiment 2 might be due to the lower or higher degree

[2] See also Gabriel & Gygax (2016: 187); Gygax et al. (2021a: 5 f.); Rothermund & Strack (2024: 481 f.). See Pozniak et al. (2023: 1, 11–14, 16–18) on gender-fair French; Zapf (2024: 405–407) on Spanish; Samuel et al. (2019: 1767, 1769, 1778, 1784) on inanimate and non-human animate nouns.

of coherence within an experimental sentence pair: in Experiment 1, the membership of the female subset in the aforementioned group designated by a masculine role noun was less clear (see Sect. 6.3).[3]

In sum, my experimental study confirms some of the previous findings on the interpretation of masculine role nouns: a specific interpretation of masculine role nouns in Experiment 1, as well as the influence of role nouns' (male) stereotypicality on their interpretation. However, the present experimental study also revealed that masculine role nouns can be interpreted generically and suggests that a masculine role noun's type does not always influence its interpretation. In this vein, my experimental study indicates that not only is close replication needed to verify the stability of previous claims (e.g., Experiment 1), but that the meta-methodological and linguistic questioning of previous experimental set-ups is also needed to gain a more comprehensive understanding of the interpretation of masculine role nouns (e.g., Experiment 2). Importantly, although this has so far received little attention in the field (but see De Backer & De Cuypere 2012: 260–262, 267; Kotthoff & Nübling 2018: 115–119; Redl 2021: 120–122 on masculine pronouns), the diverging findings of Experiments 1 and 2 open the discussion of the importance of the influence of multiple factors on the interpretation of masculine role nouns. I deal with the influence of multiple factors on the interpretation of masculine role nouns in Sect. 7.3, but first turn to the explanation of their interpretation put forward in previous research in order to discuss whether it can explain the diverging findings from Experiments 1 and 2.

7.2 Previous Claims on the Interpretation of Masculine Role Nouns

In Chap. 6, I compared Experiments 1 and 2 in detail in order to analyze which factors might have caused their diverging results; I also compared them to previous empirical findings. In order to take in the bigger picture, I now come back to the claims from theoretical work on the interpretation of masculine role nouns and examine them in contrast to my findings.

The structuralist approach assumes that masculine role nouns can function as generics without any problem, basing its explanation on the concept of markedness/ the (effective) neutralization of inclusive oppositions (l'Académie française

[3] See Sect. 6.1 on why I exclude methodological issues as the cause of my diverging findings.

2004; Schwarze 2008: 216–218; see Sect. 3.1.1). Yet, even if we take into consideration Lyons' (1977: 308) assumption that markedness is a "matter of degree",[4] the structuralist approach is not able to account for the diverging results of Experiments 1 and 2: the gradual character of markedness explains why some masculine role nouns within one language are 'more' unmarked/generic than others, but it does not explain why the masculine role nouns functioned as the unmarked terms in Experiment 2, but not in Experiment 1. Furthermore, Coseriu's (1992: 224) explanation that the situation or context indicates whether the generic or specific meaning of a masculine role noun is accessed does not permit us to understand how this interpretation process works (Schwarze 2008: 228). In this vein, the structuralist approach does not provide any testable hypotheses. To conclude, the structuralist approach to masculine role nouns is not detailed enough to explain the diverging results of Experiments 1 and 2.

Feminist Linguistics is not fine-grained enough to account for the diverging results of Experiment 1 and 2 either: it stipulates that masculine role nouns are generally interpreted specifically and refers the male-specific interpretation of masculine role nouns to the morphosyntactic factor *masculine form* (see Sect. 3.2.1.1).

Experiment 1's finding that the male bias is reinforced when the masculine role nouns are stereotypically male can be related to Eisenberg's (2018) claim that stereotype information influences the interpretation of masculine role nouns (see Sect. 3.2.2).[5] However, as Experiment 1 found a male bias in all stereotype conditions (i.e., for stereotypically male/neutral/female masculine role nouns), this suggests that the masculine form itself also played a role. Correspondingly, the generic interpretation of the masculine role nouns in Experiment 2, which only featured stereotypically neutral role nouns, should not exclusively build on the absence of (male) stereotypicality. Thus, my experiments present a more complex data pattern than predicted by Eisenberg (2018).[6] As the pragmatic approach to masculine role nouns takes into account the broader context in which masculine role nouns are integrated, it might be better equipped to explain the diverging results of Experiments 1 and 2.

The pragmatic approach to masculine role nouns stresses that the relative frequency of a feminine role noun (i.e., the ratio in frequency between the masculine

[4] See also Coseriu (1992: 225 f.); Lyons (1977: 209–311).

[5] See also Hagège (2017: 1 f.).

[6] Eisenberg's (2018) assumption that a masculine role noun's literal meaning is gender-open, i.e., generic in the narrower sense (e.g., *professeur* 'teacher$_{M.SG}$' in the sense of 'someone who teaches') (see Sect. 3.2.2.1), can neither be confirmed nor denied by my experiments as I investigated male and female subsets following the masculine role noun.

and feminine forms of a role noun) is decisive regarding whether a masculine role noun is interpreted generically or specifically (i.e., when a feminine role noun is frequent, the masculine role noun is more easily interpreted specifically and vice versa), but it does not analyze in depth whether the sentence(s) in which a masculine role noun is featured may influence its interpretation (Becker 1997, 2008; Klein 2001; see Sect. 3.2.3.1). As I did not control for *relative frequency* in my experimental study, I cannot say whether the relative frequencies of the masculine role nouns tested would be able to account for my results. Nonetheless, by presenting an approach that can be empirically tested (e.g., by means of a cancellability test), the pragmatic approach presents the possibility of empirically testing its hypotheses (see Sect. 7.4; see Becker 1997: 64; 2002: 105; 2008: 65, 73 and Klein 2001: 62–64 on masculine role nouns and autohyponymy).

Moreover, the thinking-for-speaking hypothesis put forward by Slobin (1996, 2003) would suggest that a French native speaker's attention when 'speaking' French is always attracted to biological/social gender (see Sect. 3.2.1.1). Correspondingly, the masculine form should always be associated with the male biological/social gender. Strictly speaking, the thinking-for-speaking hypothesis is thus not able to account for the generic interpretation of the masculine role nouns in Experiment 2. At the same time, one could interpret Slobin's hypothesis as supporting my suggestion that the language processor can prioritize a certain type of information, such that a generic or specific interpretation of the masculine role noun is accessed: in Experiment 1, the fillers featuring frequent mentions of biological/social gender might have activated the concept *biological/social gender* so that the masculine form was associated with the male biological/social gender, resulting in the specific interpretation of the masculine role nouns (see Sect. 6.2.2.2). Conversely, in Experiment 2, as the fillers featured men, women and role nouns far less frequently, I suggested that the concept *biological/social gender* was not processed as a priority, resulting in the generic interpretation of the masculine role nouns. In this sense, the pragmatic approach could also be assumed to conceive of the fillers' properties as a context that influences whether a conversational implicature generating a specific interpretation of the masculine role noun arises. However, given their lack of precision on the issue, both the thinking-for-speaking hypothesis (Slobin 1996, 2003) and the pragmatic approach to masculine role nouns (Becker 1997, 2008; Klein 2001) do not permit me to meaningfully interpret my data.

Kotthoff & Nübling (2018) stipulate that several factors influence the interpretation of masculine role nouns and have highlighted the *importance of referentiality* (see Sect. 3.2.3.3)**.** *Referentiality* is tied to multiple factors, namely *definiteness*, *specificity* and *syntactic function.* Accordingly, the more referential a

masculine role noun is, the more important it is to linguistically indicate its referents' biological/social gender. Put differently, a definite, specific masculine role noun in subject position should be interpreted specifically as it presents a high degree of referentiality, while an indefinite, non-specific masculine role noun in object position should be interpreted generically as it presents a low degree of referentiality. The degree of referentiality of the masculine role nouns featured in my two experiments was kept constant: both experiments featured specific, definite masculine role nouns in subject position and thus presented a high degree of referentiality. Following Kotthoff & Nübling (2018), the masculine role nouns in both experiments thus should have been interpreted specifically, yet in Experiment 2, they were interpreted generically. This suggests that a high degree of referentiality does not always generate a specific interpretation of a masculine role noun. In fact, Experiment 2's findings can be interpreted as suggesting that a masculine role noun can be interpreted generically even when the degree of referentiality is high, when the main group and the subset are clearly linked (see Sect. 6.3.2). Interestingly, this would suggest that, at least in regard to the *yes/no* answers, the pragmatic factor *coherence* prevails over the semantic factor *referentiality* and, crucially, also over the morphosyntactic factor *masculine form.*

In sum, none of the claims put forward by previous theoretical research provides a convincing explanation of my findings, at least not without substantial revision. In all of the theoretical approaches, more factors would have to be integrated in order to account for the diverging findings of Experiments 1 and 2. At the same time, previous empirical research on the interpretation of masculine role nouns also cannot fully explain why Experiment 1 yielded a male bias, while Experiment 2 did not (see Chap. 6). In other words, the view of masculine role nouns as either generally resulting in a generic interpretation or as generally resulting in a specific interpretation is too rigid (Kotthoff & Nübling 2018: 115–122; see Redl 2021: 120–122 on masculine pronouns)[7] to account for the diverging findings of Experiments 1 and 2.

To date, the multiple factors that may influence whether a specific or a generic interpretation of a masculine form is accessed have rarely been discussed (but see e.g., De Backer & De Cuypere 2012: 260–262, 267; Kotthoff & Nübling

[7] See also De Backer & De Cuypere (2012: 260–262, 267).

2018: 115–119; Redl 2021: 120–122; and Sect. 3.3).[8] This is especially surprising as the use of masculine role nouns when reference is made to both men and women is heatedly debated in scientific discussions, as well as in the media and society in general. It is noteworthy that the comparison of my experimental items featuring masculine role nouns and *femmes* to temporarily ambiguous sentences (i.e., garden-path sentences) and the examination of previous empirical research that indicates that a masculine role noun's interpretation is sensitive to the context in which it occurs (e.g., Lévy et al. 2014; Rothermund & Strack 2024; see Sect. 6.3.4) suggest that whether a masculine role noun is interpreted specifically or not seems to be influenced by several factors. Put differently, my diverging findings support the notion that the interpretation of a masculine role noun is not influenced by one factor only and that it seems to be a complex phenomenon. Correspondingly, the interpretation of masculine role nouns can be conceived as a multifactorial phenomenon in the sense that multiple factors mediate whether the generic or the specific interpretation is accessed (see the discussions in Sects. 6.2 and 6.3). Accordingly, we need an approach that represents the multifactorial phenomenon that seems to be a masculine role noun's interpretation. Based on previous and present findings and as a step towards a more comprehensive approach to the interpretation of masculine role nouns, I therefore suggest a preliminary multifactorial approach to the interpretation of masculine role nouns.

7.3 The Interpretation of Masculine Role Nouns—A Preliminary Multifactorial Approach

Given the diverging findings of Experiment 1 and 2 and the difficulty of using previous research to explain why the masculine role nouns were interpreted specifically in Experiment 1, while they were interpreted generically in Experiment 2, we have to approach the interpretation of masculine role nouns by going

[8] See Rothermund & Strack (2024: 468, 472–477, 480–482) on the recent finding concerning the influence of conversational context on the interpretation of masculine role nouns in German. See Pozniak et al. (2023: 1, 11–14, 16–18) on contextual dilution effects in gender-fair French. See Zapf (2024: 405–407) on Spanish, who also takes into account how factors such as stereotypicality and participant-specific factors come into play. See Samuel et al. (2019: 1767, 1769, 1778, 1784) who, based on their literature review focusing on inanimate and non-human animate nouns, conclude that a possible influence of grammatical gender on mental representation is context-dependent (e.g., dependent on the factor *age of the participant*).

beyond the binary conception of either a generic or specific interpretation of a specific masculine role noun no matter what factors are at play (De Backer & De Cuypere 2012: 260–262, 267; Kotthoff & Nübling 2018: 115; see Redl 2021: 120–122 on masculine pronouns).[9] Accordingly, in order to explain my findings, we need an approach to the interpretation of masculine role nouns that accounts for a male bias emerging when certain factors are at play, but that is also able to explain why no male bias is generated when different factors are at play (see the similar approach to the syntactic processing of L2 speakers by Jacob 2009: 179). In the following, I therefore propose a preliminary multifactorial approach to the interpretation of masculine role nouns, which takes into account how the presence of multiple factors can affect a role noun's interpretation.

By illustrating which factors influence whether masculine role nouns are interpreted generically or specifically, my approach below builds on constraint-based models that have been proposed for the processing of temporarily ambiguous sentences (e.g., Jacob 2009: 182; van Gompel et al. 2006: 335 f., 359 f.). Accordingly, during the interpretation of the sentence(s) in which a masculine role noun is featured, certain factors are evaluated, and either the generic or the specific interpretation is chosen. In this sense, for the time being, my approach assumes that there is no default interpretation of a masculine role noun that is accessed in all conditions no matter what factors come into play. Nonetheless, my approach is compatible with the assumption that the specific interpretation is the default interpretation—as suggested, for instance, by Gygax et al. (2021a: 5 f.; see also Sauteur et al. 2023: 2). There might be a tendency towards the specific interpretation, which, however, can be 'overridden'.[10]

My preliminary multifactorial approach to the interpretation of masculine role nouns is based on previous and present findings and is shown in Fig. 7.1. I first provide a visualization of the approach and then define the factors and explain the functioning of the approach. I then turn to an explanation of my experimental study's diverging findings in the light of my multifactorial approach.

[9] See also footnote 8.

[10] See Zapf (2024: 405–407), who, based on her recent findings on Spanish, defines the non-generic interpretation of masculine forms as a continuum at the end of which is located the male-specific interpretation.

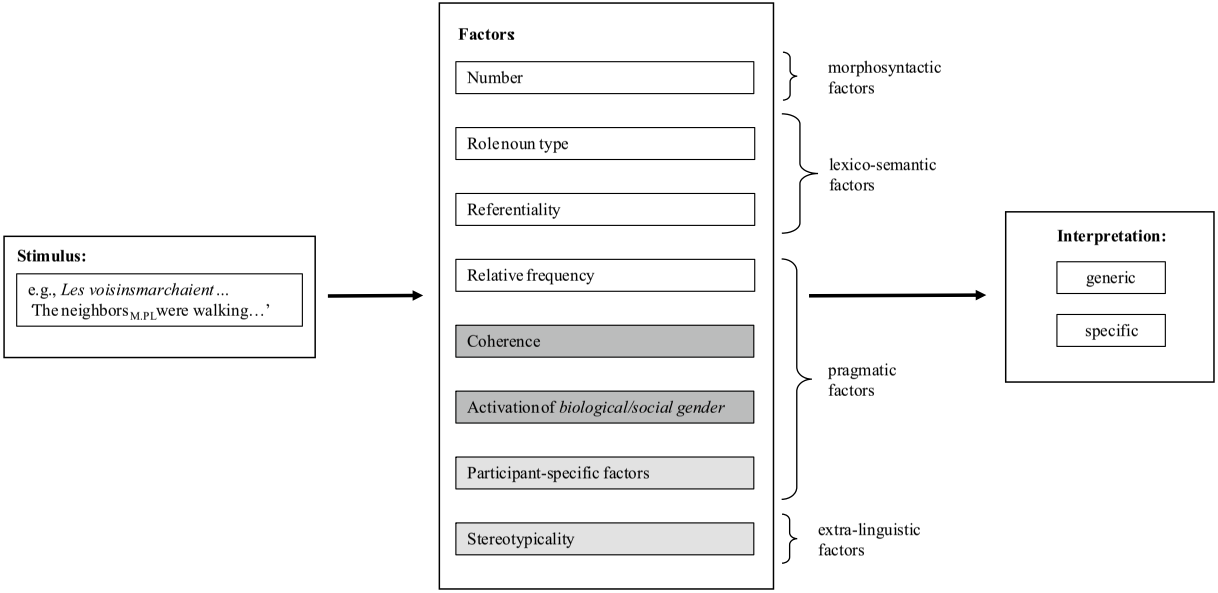


Fig. 7.1 The interpretation of masculine role nouns: A preliminary multifactorial approach based on previous and present findings. Note: The factors, which are shaded in gray, refer directly to the findings observed in Experiments 1 and 2. Within this group, the two factors shaded in dark gray are new factors that have been introduced as a result of the present research.[11]

[11] Note that recent findings on the influence of context on the interpretation of masculine forms (e.g., Rothermund & Strack 2024: 468, 472–477, 480–482 on masculine role nouns in German; Pozniak et al. 2023: 1, 11–14, 16–18 on gender-fair French) could not be included in detail in the present research and thus are not integrated into my preliminary approach.

As you can see in Fig. 7.1, the vertical arrangement of the factors belongs to the following three domains of language: the morphosyntactic (including the factor *number)*, the lexico-semantic (including *role noun type* and *referentiality*) and the pragmatic domain (including *relative frequency*, *coherence*, *activation of the concept* biological/social gender, *participant-specific factors*).[12] Finally, it also contains extra-linguistic factors that can influence the interpretation of masculine role nouns (i.e., *stereotypicality*). Note that the vertical presentation of the factors, starting at the top with *number* and ending at the bottom with *stereotypicality*, does not imply any hierarchy among the factors in terms of their influence on the interpretation of a masculine role noun, but simply represents the three domains of language mentioned, plus extra-linguistic factors. While the influence of the factors listed on the interpretation of masculine role nouns may not be equally important, for the time being, we do not know whether one factor is more important than another (see my suggestions for future research in Sect. 7.4).

It is worth noting that the clustering of the factors that have been found to influence a masculine role nouns' interpretation in terms of the three domains of language plus extra-linguistic factors permits us to synthesize previous and present findings. Certainly, the membership of the various factors in these four domains can be approached from different angles (e.g., *referentiality* could be defined as a pragmatic factor rather than as a semantic factor).[13] However, this would not alter the main claim put forward by my approach, which suggests conceiving of the interpretation of masculine role nouns as a multifactorial phenomenon.

In this vein, my approach illustrates that the specific interpretation of masculine role nouns is not only influenced by the morphosyntactic factor *masculine form* (as, amongst others, suggested by Feminist Linguistics), nor, conversely, only influenced by extra-linguistic factors (as suggested, amongst others, by Eisenberg 2018). Thus, even if the list of factors and/or their belonging to the different domains of language or extra-linguistic factors was adapted, we can still see that it is not one factor in isolation, but several factors that contribute to whether a masculine role noun is interpreted generically or specifically (De Backer & De Cuypere 2012: 267; Kotthoff & Nübling 2018: 115; see Redl 2021: 120–122 on masculine pronouns).

[12] Note that I use *pragmatic factors* as a broad cover term: it comprises factors that relate to textual discourse (e.g., coherence), as well as factors that relate to the broader context in which a masculine role noun is featured (e.g., activation of the concept *biological/social gender*).

[13] In this vein, recall the discussion of the assignment of *stereotypicality* to extra-linguistic information instead of to linguistic (i.e., pragmatic) information in Sect. 2.1; see also footnote 11 in Chap. 2.

Note that the list of factors that mediate a masculine form's interpretation put forward by previous research overlaps with those listed in my approach (see De Backer & De Cuypere 2012: 260–262, 267; Kotthoff & Nübling 2018: 115–119; Redl 2021: 120–122; see Sect. 3.3 and Table 3.2). However, previous research does not group the factors according to their attributed domain of language, nor into extra-linguistic factors. Obviously, previous research also does not discuss the factors that have been introduced as a result of the present research (i.e., *coherence* and *activation of the concept* biological/social gender).[14] Also, while De Backer & De Cuypere (2012: 267) speak of *several variables*, Kotthoff & Nübling (2018: 115) of a *range of factors* and Redl (2021: 120, 122) of a *multitude of factors* that influence whether masculine forms are interpreted generically or specifically, the interpretation of masculine role nouns has previously not literally been defined as a multifactorial phenomenon. Crucially, although it is not able to predict a masculine role noun's final interpretation, the above-sketched approach highlights the impact of multiple linguistic and extra-linguistic factors that influence whether a masculine role noun is interpreted generically or specifically.

Moreover, it is important to note that the list of factors in my approach is preliminary and not exhaustive. Put differently, it is possible that other, so far unidentified, factors also influence the interpretation of masculine role nouns. My approach also assumes that the factors interact with one another. For instance, *participant-specific factors*, a pragmatic factor, might interact with the extra-linguistic factor *stereotypicality*: in Experiment 1, we have seen that less feminist participants showed a stronger male bias when interpreting stereotypically male masculine role nouns than participants who defined themselves as more feminist. However, the approach cannot say which interactions exactly come into play when masculine role nouns are interpreted. Moreover, the defined factors are not thought to influence the interpretation of masculine role nouns in every case. For instance, when a masculine role noun is encountered without any context the factor coherence does not come into play.[15] Finally, note that, in an experimental

[14] On the salience of the concept *biological/social gender*, see Samuel et al. (2019: 1769 f., 1779 f.), who focus on inanimate and non-human animate nouns. See also Rothermund & Strack (2024: 476, 481 f.) on role nouns in German. See Kim et al. (2023a: 22); Pozniak et al. (2023: 8); Zacharski & Ferstl (2023: 302), who discuss the issue concerning their filler items. The factor *coherence* can be related to the discussion of contextual cues as discussed by Rothermund & Strack (2024: 471, 476, 480–482) and by Pozniak et al. (2023: 1, 11–14, 16–18).

[15] Nevertheless, it could be argued that there is no such thing as a context-free interpretation, so that language users always accommodate the corresponding information (Mihatsch 2018: 117).

setup, it is nearly impossible to systemically manipulate all the factors figuring in the multifactorial approach at the same time.[16]

Before turning to the descriptions of the defined factors in more detail, it is important to note that, like any approach, my approach is a simplified illustration of the phenomenon depicted. Moreover, my multifactorial approach is preliminary and thus hypothetical in nature and combines factors that have been highlighted by theoretical research (e.g., referentiality) and empirical research (e.g., participant-specific factors). Put differently, while all factors were assumed to influence the interpretation of masculine role nouns in previous and present research, they have not all been systematically tested. This also applies to the factors *coherence* and *activation of the concept biological/social gender*, which have been introduced based on the discussion concerning the diverging findings of Experiments 1 and 2. In other words, I did not compare a set of experimental pairs presenting a low degree of coherence (which would have rendered the inference that the female referents are a subset of the group designated by the masculine role noun less straightforward) to a set of experimental pairs presenting a high degree of coherence (which would have rendered the inference that the female referents are a subset of the group designated by the masculine role noun more straightforward) while all other conditions were kept constant. Instead, when trying to account for my diverging results, I hypothesized that this could be due to the higher degree of coherence in Experiment 2's experimental items than in those in Experiment 1. As I had, for instance, simultaneously changed the quantity and the properties of the filler items, I cannot know whether the diverging findings are due to the different experimental items, the filler items or an interaction of both (if any).

In a similar vein, I did not compare one identical set of experimental items (e.g., those of Experiment 1) presented together with filler items that are supposed to activate the *concept biological/social gender* (as in Experiment 1) to the same set of experimental items (e.g., those of Experiment 1) presented together with fillers that are supposed to not further activate the *concept biological/social gender* (like those of Experiment 2). Thus, in order to be able to put forward definite predictions on the final interpretation of a masculine role noun, the factors presented by my approach and the corresponding interactions would have to be further investigated. Accordingly, my multifactorial approach will have to

[16] For instance, in Experiment 2, I first wanted to test for *role noun type*, *neutral stereotypicality* and *relative frequency*. However, as the frequencies of the stereotypically neutral non-occupational nouns were three times higher than those of the occupational ones (based on New et al. 2004), I had to abandon the factor *relative frequency*. As I did not find any statistically significant effect in Experiment 2, we may exclude the possibility that an effect might ultimately stem from the different relative frequencies of occupational and non-occupational nouns. For Experiment 1, I cannot entirely exclude this possibility; the same applies to *role noun type*.

be further specified based on the findings of future research. It could then be extended to a model that predicts a masculine role noun's final interpretation. In other words, my multifactorial approach can be used to set up future experiments investigating the suggested factors, as well as their interactions and the hierarchy between them (see Sect. 7.4).

The factors included in my preliminary multifactorial approach are further described below. In the following, only findings supporting the influence of the defined factors are presented. Correspondingly, research claiming the opposite is not discussed. For instance, when presenting the factor *stereotypicality*, I do not present Gygax et al. (2008), who did not find stereotypicality to influence the interpretation of masculine role nouns.

Number: Masculine role nouns in the plural form refer to a group of people, which renders the identification of each individual more difficult than when a masculine role noun in the singular form refers to only one person. Masculine role nouns in the singular form have thus been found to be more readily associated with male biological/social gender than masculine role nouns in the plural form (De Backer & De Cuypere 2012: 260).[17] At the same time, masculine role nouns in the plural form have been repeatedly found to be interpreted specifically (e.g., in Experiment 1). In sum, while it has been found that a male bias exists for singular and plural forms alike, it is assumed that the effect is stronger for singular forms.

Role noun type: Masculine occupational nouns have previously been found to be more likely to be associated with men than non-occupational nouns (De Backer & De Cuypere 2012: 260–262).

Relative frequency: The relative frequency of a masculine role noun can be defined "as the ratio between the absolute frequency of the masculine nouns and the absolute frequency of their feminine counterparts" (De Backer & De Cuypere 2012: 258) (e.g., *voisins* 'neighbors$_{M.PL}$'—*voisines* 'neighbors$_{F.PL}$'). Thus, a masculine role noun is more likely to be interpreted generically when the feminine equivalent is rarely used (i.e., a high relative frequency of the masculine role noun) than when the feminine equivalent is rather frequent (i.e., a low relative frequency of the masculine role noun) (Becker 1997: 64 f.; 68, Becker 2008: 66 f., 71–73; De Backer & De Cuypere 2012: 258).[18]

Referentiality: A high degree of referentiality means that the referent is identifiable, which implies a heightened relevance of biological/social gender and a heightened importance of indicating the referents' biological/social gender with

[17] See also Coseriu (1992: 224, 229); Kotthoff & Nübling (2018: 94).

[18] In their survey study on German, De Backer & De Cuypere (2012) find only singular masculine role nouns to be influenced by *relative frequency* (De Backer & De Cuypere 2012: 260, 262). However, *relative frequency* has also been discussed in theoretical approaches to the

the corresponding grammatical gender marking. This has been linked to the factors *definiteness*, *specificity* and *syntactic function* by Kotthoff & Nübling (2018: 92–95). For instance, the biological/social gender of the referent of a specific and definite masculine role noun in subject position is more relevant than the biological/social gender of the referent of a non-specific, indefinite masculine role noun in object position. Accordingly, the higher the degree of referentiality of a masculine role noun, the more likely it is that its masculine grammatical gender marking is associated with the male biological/social gender. In other words, it is interpreted specifically. Conversely, when the degree of referentiality of a masculine role noun is low, the relevance of its referent's biological/social gender is low. Accordingly, it is more likely that the generic meaning of a masculine role noun is accessed (Kotthoff & Nübling 2018: 92–95).

Coherence: Coherence can be defined as "the underlying semantic relationships that characterize and structure the transitions between utterances" (Kehler 2019: 450). As, based on a discourse's coherence, the processor shapes expectations on how the discourse will be continued (Kehler 2019: 466),[19] a higher degree of coherence within a text may influence the interpretation of a masculine role noun in a way that allows for a globally coherent representation of the depicted scene. Accordingly, when a sentence pair featuring a masculine role noun and its female subset presents a relatively high degree of coherence, the generic interpretation of a masculine role noun may be accessed. Conversely, a lower degree of coherence between the sentence featuring a group designated by a masculine role noun and the sentence featuring its female subset seems to trigger a specific interpretation of the masculine role noun. This seems to be the case at least in the context of Experiments 1 and 2.

As we have seen in Sect. 6.3.2 (see (41a)-(41b)), a relatively high degree of coherence within a sentence pair can also bias the processor towards a specific interpretation as it can also help to clarify that two different sets are referred to. In sum, it is difficult to formulate a binary hypothesis concerning the factor *coherence*—in the sense of *a high degree of coherence equals a generic interpretation* and *a low degree of coherence equals a specific interpretation.* In this vein, it has to be stressed that the further analysis of different types of coherence and the influence of discourse structuring devices such as topic and/or event continuity seems crucial to better understanding the interpretation of masculine role nouns. For the time being and based on the discussion of the diverging findings of Experiments 1 and 2, I nonetheless cautiously integrate a *low vs. high degree*

interpretation of masculine role nouns (e.g., Becker 1997, 2008). I thus do not further concentrate on the interaction between *relative frequency* and *number*. However, future research might want to clarify this issue.

[19] See Harley (2014: 292, 300) on parsing strategies based on expectations.

of coherence as favoring a specific vs. generic interpretation of masculine role nouns into my multifactorial approach (see Table 7.1).

Activation of the concept *biological/social gender*: Whether the context in which a masculine role noun is featured activates the concept *biological/social gender* or not seems to influence the interpretation of a masculine role noun (see Samuel et al. 2019: 1769 f., 1779 f., who focus on inanimate and non-human animate nouns).[20] For instance, within an experimental setup, the fillers' properties and/or the number of fillers may activate the concept *biological/social gender* by frequently featuring mentions of biological/social gender. As a result, the language processor's attention may be drawn to biological/social gender, which increases the possibility that the masculine form is associated with the male biological/social gender. Accordingly, the masculine role noun is interpreted specifically. Conversely, when the concept *biological/social gender* is not further activated, the processor may be biased towards the generic interpretation of the masculine role noun (see Experiments 1 and 2).[21]

Participant-specific factors: It has been shown that characteristics and attitudes of the person interpreting a masculine role noun can influence whether the generic or specific interpretation is accessed. For instance, male participants have been found to present a more pronounced male bias than female participants (Brauer & Landry 2008: 268).

Stereotypicality: Stereotype information can affect the interpretation of masculine role nouns in such a way that the male bias is more or less pronounced. For instance, Experiment 1 has shown that the male bias induced by a masculine role noun is reinforced when the noun is stereotypically male, while other studies have found stereotypically female masculine role nouns to generate a less pronounced male bias (e.g., Gygax et al. 2012: 406).

The assumptions sketched by my multifactorial approach are summarized in Table 7.1.

---

[20] See also Rothermund & Strack (2024: 476, 481 f.) on the activation of gender-relevant associations.

[21] The factor *activation of the concept biological/social gender* can also be tied to the extra-linguistic factor *stereotypicality* described below. See Kotthoff & Nübling (2018: 115), who list *(stereotypical) context* as a factor that influences a masculine role noun's interpretation. See Gygax et al. (2021a: 5–7), who briefly refer to sentential context (e.g., stereotype information) when explaining how the specific interpretation of a masculine role noun is its default interpretation. This is also related to the discussion of the influence of the factor *coherence* on the interpretation on masculine role nouns. See Rothermund & Strack (2024: 471, 476, 480–482) on semantic priming with regard to the interpretation of masculine role nouns, as well as on the influence of conversational context. See Pozniak et al. (2023) on gender-fair French.

Table 7.1 Preliminary list of factors that contribute to a generic or specific interpretation of a masculine role noun based on previous and present findings

Factor	**Generic**	**Specific**
Morphosyntactic Factors		
Number	plural	singular
Lexico-semantic Factors		
Role Noun Type	non-occupational	occupational
Referentiality	low	high
Pragmatic Factors		
Relative Frequency	high	low
Coherence[a]	high	low
Activation of the Concept *Biological/Social Gender*	weak	strong
Biological/Social Gender of Participant[b]	female	male
Extra-linguistic Factors		
Stereotypicality	female	male

[a] See my discussion above on why it is difficult to formulate a binary hypothesis for the factor *coherence* (see also Sect. 6.3.2).
[b] For the sake of simplicity, *participants' biological/social gender* serves as an example of *participant-specific factors*.
Note: Future research should further analyze the defined factors, the hierarchy of the factors and the interactions between them, as well as whether other factors come into play when masculine role nouns are interpreted.[22]

[22] Note that recent findings on the influence of context on the interpretation of masculine forms (e.g., Rothermund & Strack 2024; Pozniak et al. 2023) could not be included in detail in the present research and thus are not integrated into Table 7.1.

We now turn to the question of how my approach would explain the diverging findings of Experiments 1 and 2.

How Would My Multifactorial Preliminary Approach Explain the Diverging Results of Experiments 1 and 2?

Based on my multifactorial approach sketched in Fig. 7.1 and Table 7.1, it is possible to formulate hypotheses regarding the way in which each of the factors listed may have influenced the interpretation of the masculine role nouns in Experiments 1 and 2:

Number: In both my experiments I featured plural nouns, which should evoke maleness less than singular role nouns. At the same time, based on previous findings, we can assume that masculine plural nouns nonetheless tend to be interpreted specifically. As *number* was kept constant in both experiments, it should not have caused the diverging results of Experiments 1 and 2.

Role noun type: Experiment 1 contained a mixture of occupational and non-occupational nouns, which had not been evenly distributed; there are thus no reliable data and associated suggestions available. For Experiment 2, my approach would assume that the interpretation of occupational nouns is pushed more towards a specific interpretation than that of non-occupational nouns.

Relative frequency: In my experimental study, I did not examine the factor *relative frequency*. Accordingly, my approach cannot make any suggestions regarding this factor in my experiments.[23]

Referentiality: I featured specific, definite masculine role nouns in subject position as agents in both experiments. Thus, the degree of referentiality was high and the referent's biological/social gender should have been relevant (Kotthoff & Nübling 2018: 92–95). Accordingly, my approach suggests that the factor *referentiality* biases the language processor towards a specific interpretation. As *referentiality* was kept constant in both experiments, this factor alone cannot account for the diverging results of Experiments 1 and 2.

Coherence: Concerning Experiment 1, my approach proposes that the low degree of coherence between the sentences featuring masculine role nouns and those featuring their female subsets biases the processor towards a specific interpretation of the masculine role nouns. Conversely, Experiment 2 featured a high degree of coherence: thanks to the semantic link between the first and the second sentences, which supports the inference that *femmes* is a subset of the group designated by the masculine role noun, their interpretation should be biased towards the generic one.

[23] See footnote 16.

Activation of the concept *biological/social gender*: In Experiment 1, the fillers featured frequent mentions of social/biological gender (e.g., by featuring *monks—women*). In other words, the concept *biological/social gender* should have been activated. According to my multifactorial approach, this should result in the association of the masculine role nouns with the male biological/social gender. Correspondingly, the role nouns' interpretation should be drawn to the specific meaning. Conversely, in Experiment 2, the fillers featured fewer references to biological/social gender, for instance by featuring collective nouns. Accordingly, the concept *biological/social gender* should not have been further activated, which should favor the generic interpretation of the masculine role nouns.[24]

Participant-specific factors: While I did not test for *participant biological/social gender*, the AMU students who participated in my two experiments were mainly female. It can thus be argued that most of these female participants would be more inclined towards a generic interpretation of the masculine role nouns than the male participants. Also, as my samples should be comparable, the male bias found in Experiment 1 should not stem from a different interpretation of masculine role nouns among different populations. However, in Experiment 1, I found that participants' feminist attitudes influence whether masculine role nouns tend to be interpreted generically or specifically. For instance, less feminist participants showed an even stronger male bias in the male stereotype condition. Yet, I did not sample my participants according to their feminist attitudes, which is why these findings have to be interpreted with caution. As I did not find any effect in Experiment 2, I could not analyze whether the feminist attitudes of Experiment 2's participants influence this non-existent effect.

Stereotypicality: For Experiment 1, my approach would assume that the stereotypically male role nouns in the masculine form generate a stronger male bias than the stereotypically neutral and female role nouns in the masculine form. The male bias could also be weaker in the stereotypically female condition. Conversely, for Experiment 2, which featured only stereotypically neutral role nouns, my approach would assume the emergence of a less pronounced male bias than in the male condition in Experiment 1. As the male bias in the stereotypically neutral condition found in Experiment 1 was not replicated in Experiment 2, the factor *stereotypicality* does not seem to be able to explain why Experiment 2 does not find a male bias—if so, the stereotypically neutral role nouns in Experiment 2 should have generated a male bias comparable to that of the stereotypically neutral role nouns in Experiment 1.

[24] As previously indicated, neither Experiment 1 nor Experiment 2 systematically tested for *coherence* and *activation of the concept biological/social gender*. I thus cannot know for sure whether these factors impacted the experiments' diverging outcomes.

In sum, the factors defined by my approach do not all point to the same interpretation of the masculine role nouns even within one of the experiments: for Experiment 1 (excluding the factors for which no reliable data are available: *role noun type* and *relative frequency*), we can state that most factors point towards a specific interpretation—(*a high degree of) referentiality*, *(a low degree of) coherence*, *(a strong) activation of the concept biological/social gender* and *male stereotypicality*—while *(plural) number* and the female *biological/social gender* of most of the participants and *female stereotypicality* instead push towards a generic interpretation. Conversely, for Experiment 2, most factors point towards a generic interpretation (still excluding the factors for which no data are available: *(plural) number*, non-occupational nouns, *(a high degree of) coherence* and *(no further) activation of the concept biological/social gender*, as well the female *biological/social gender* of most of the participants. In this vein, *(neutral) stereotypicality* should generate a weaker male bias than stereotypically male role nouns in the masculine form. Finally, occupational nouns *and (a high degree of) referentiality* should point towards a specific interpretation of the masculine role noun. At the same time, my multifactorial approach also proposes that other factors than those indicated by my approach, as well as interactions between the factors, may have influenced the interpretation of the masculine role nouns in both experiments.

To conclude, my approach is not able to give a conclusive answer to the question of why Experiment 1 yielded a male bias, while Experiment 2 did not. However, it illustrates that seemingly subtle differences concerning the factors defined may bias a role noun's interpretation towards a generic or a specific interpretation. In doing so, it lends support to the notion that multiple factors and interactions can come into play when masculine role nouns are interpreted (De Backer & De Cuypere 2012: 260–262, 267; Kotthoff & Nübling 2018: 115–119; see Redl 2021: 120–122 on masculine pronouns). In other words, the final interpretation of a masculine role noun does not seem to be triggered by one factor in isolation and appears to be a complex phenomenon.[25] Thus, in the light of the diverging findings of Experiment 1 and 2, my multifactorial approach seems to be the most appropriate approach that is available so far. Crucially, to date, pragmatic factors such as *coherence* have not been analyzed in depth when the interpretation of masculine role nouns was examined. However, my findings suggest that they play an important role. Correspondingly, in

[25] For more recent findings on the issue, see Rothermund & Strack (2024); Pozniak et al. (2023); Zapf (2024). See Samuel et al. (2019: 1767, 1769, 1778, 1784) on inanimate and non-human animate nouns.

order to gain a better insight into the process of interpreting masculine role nouns, the factors at play themselves, the hierarchy between the factors and their interactions should be closely examined in a step-by-step process through various follow-up studies. I provide some suggestions for such research in the next section.

7.4 Future Directions

As previously indicated, my above-presented multifactorial approach is not a fully developed model that can predict the final interpretation of a masculine role noun. Thus, as most of the approach's factors have not empirically been investigated sufficiently, my approach remains speculative until further empirical investigations can be conducted. At the same time, my approach can be used as a tool to derive informed hypotheses based on previous research and which can be tested empirically in future research. In this sense, research investigating the factors put forward by my approach in a step-by-step fashion could establish a hierarchy of the factors and their interactions. Furthermore, future research might be able not only to investigate the possible interactions between the stated factors, but also to identify further factors that might influence the interpretation of masculine role nouns. In doing so, it would be able to shed more light on the multiple factors and interactions that increase or decrease the probability that masculine role nouns are interpreted generically or specifically. Correspondingly, a model that is capable of predicting the final interpretation of a masculine role noun could be developed.

Importantly, if a masculine role noun's interpretation was indeed influenced by the presence or absence of specific factors, this would be of practical relevance for an effective use of gender-fair language. For instance, if it turned out that *(male) stereotypicality* (pushing towards a specific interpretation) has a more important impact on the interpretation of masculine role nouns than a *low degree of referentiality* (pushing towards a generic interpretation) and that *(male) stereotypicality* interacts with *role noun type*, in a brochure presenting stereotypically male professions (e.g., *an engineer needs to be creative in thinking…*), the use of generically intended masculine role nouns could be especially discouraged if it is the writers' intention to unambiguously refer to men and women alike. Conversely, in sentences in which the interpretation is pushed towards a generic interpretation of the masculine role noun anyway (e.g., when a *high degree of coherence* clearly links a female subset with a masculine role noun), a generic use of masculine

role nouns could be maintained (Pozniak et al. 2023: 18; Rothermund & Strack 2024: 482).[26]

Investigating the Hierarchy of the Factors and the Interactions between the Factors

In order to further refine my multifactorial approach, I would like to encourage future research to systematically examine the question of what happens when (at least) two factors 'contradict' each other. For instance, based on the findings of De Backer & De Cuypere (2012: 260 f.) on German masculine role nouns, we could assume that the factor *number*, which is a morphosyntactic factor, interacts with the lexico-semantic factor *role noun type.* In De Backer & De Cuypere's (2012) data, plural and singular masculine role nouns were frequently interpreted generically, but were less often interpreted generically when the masculine role noun was an occupational noun. However, given the fact that the masculine role nouns in Experiment 2 were interpreted generically, it could be assumed that the pragmatic factor *(a high degree of) coherence* had more impact on the interpretation of the masculine role nouns than had the morphosyntactic factor *number* or the lexico-semantic factor *role noun type.*

Moreover, it would also be fruitful to examine whether the generic interpretation is accessed when the pragmatic factor *coherence* generates a clear link between the masculine role noun and the female subset, while all other factors point to the specific interpretation. In this vein, it would be useful to examine which kind of 'cancellations' between the factors never occur or only occur under specific conditions. For instance, it might not be possible to override *a high degree of coherence* pushing towards the generic interpretation, or it might only be overridden by the activation of the concept *biological/social gender*. Thus, based on the findings of future research, a hierarchal structure of the factors and the interactions between them that influence the interpretation of masculine role nouns could be integrated into my above-suggested approach.

Importantly, when discussing whether the interpretation of masculine role nouns can be considered a multifactorial phenomenon, I argued that the properties of the filler items surrounding the experimental items might influence how the masculine role nouns are interpreted. The systematic variation of the filler items is therefore a research gap which should be addressed. I present some ideas for such a follow-up study in the next paragraphs.

[26] See also Gygax et al. (2008: 480); Heap (2024: 226); Sebastián-Tirado et al. (2023: 326, 341 f.); Vervecken et al. 2015: 8 f.); Vervecken & Hannover (2015: 87); Zapf (2024: 408).

Experimental Manipulation of the Filler Items

The discussion of the diverging findings of Experiments 1 and 2 suggests that the filler items might influence the interpretation of the masculine role nouns featured in the experimental items (see Sect. 6.2). Crucially, if the interpretation of masculine role nouns turned out to be influenced by the frequency of mentions of biological/social gender among the filler items, this would be of immense importance when examining the robustness of previous empirical findings suggesting that masculine role nouns tend to be interpreted specifically. In this vein, the systematic testing of the filler items' influence on the interpretation of masculine role nouns seems to be a major methodological issue that should be tackled by future research. It would therefore be illuminating to further investigate this kind of 'priming effect' by systematically manipulating it. This could be done by using the same experimental items with one set of filler items in one experiment and by using exactly the same experimental items with a different set of filler items in another experiment.

Concerning my experiments, a follow-up study could involve the blending of the experimental items from Experiment 1 (i.e., experimental items presenting *a low degree of coherence*) with the type of fillers from Experiment 2 (i.e., filler items that do not further activate the concept *biological/social gender*) and comparing the findings to Experiment 1, in which I assume the fillers to have activated the concept *biological/social gender* (see Sect. 6.2.2.2). In such a follow-up study, the *low degree of coherence* featured in the experimental items should bias the interpretation of the masculine role nouns towards a specific interpretation. At the same time, the fillers from Experiment 2 should not further activate the concept *biological/social gender* and should bias the interpretation of the masculine role nouns towards the generic interpretation. In order to check to what extent the filler items may have influenced the interpretation of the experimental items, the results of this follow-up study could be compared to those of Experiment 1. For instance, it is conceivable that no male bias emerges—as in Experiment 2. This would indicate that filler items (pushing towards a generic interpretation) surrounding the experimental items featuring masculine role nouns play an important role when masculine role nouns are interpreted. Moreover, this would indicate that the factor *(no further) activation of the concept biological/social gender* has a more important influence than the *(low degree of) coherence* featured in the experimental items.

Conversely, if a male bias comparable to that found in Experiment 1 emerged, this would indicate that the properties of the experimental items in which the masculine role nouns are featured are key to whether the masculine role nouns are interpreted generically or specifically. Put differently, this would suggest that the factor *(low degree of) coherence* affects a masculine role noun's interpretation more than *(no further) activation of the concept biological/social* gender. Alternatively, if this

follow-up study found a weaker male bias than Experiment 1, this could mean that the factors *(low degree of) coherence* featured in the experimental items and *(no further) activation of the concept biological/social gender* featured in the filler items interact with each other.

Furthermore, significant insights into the interpretation of masculine role nouns could be gained by systemically manipulating the experimental items in which the masculine role nouns are featured.

Experimental Manipulation of the Experimental Items

Based on the diverging findings of my experimental study, it would be interesting to further examine the impact of the pragmatic factor *coherence* on the interpretation of masculine role nouns by replicating Experiment 2 with adapted experimental items. As discussed in Sect. 6.3.3, the findings of the study by Anaya-Ramírez et al. (2022) suggest that experimental items featuring a *high degree of coherence* that clearly link the female subset with the aforementioned group designated by the masculine role noun alone do not seem to hamper a male bias from emerging.[27] I therefore suggest that future research should focus on this issue in French by featuring experimental items without gerund constructions, but which are otherwise as coherent as the experimental items of Experiment 2. This would reveal whether the generic interpretation of the masculine role nouns in Experiment 2 was due to the semantically coherent gerund constructions. An experimental pair could be the following example in which the dogs' leashes indicate a strong semantic relationship to the first sentence, in which the dogs are taken for a walk (see also example (37) in Sect. 5.1.4.1):

(47a) *Les voisins sortaient les chiens./*
'The neighbors$_{M.PL}$ were walking the dogs./'

(47b) *Une partie des femmes vérifiait les laisses.*
'Some of the women were checking the leashes.'

If a male bias emerged, this would suggest that the semantically coherent gerund constructions used in Experiment 2 helped to strengthen the inference that *femmes* are a subset of the group mentioned by the masculine role noun in the first sentence. Conversely, if no male bias emerged, this would indicate that a clear indication that *femmes* are a subset of the aforementioned group can be generated by sentence pairs

[27] I momentarily exclude the possibility of an interaction between the experimental items and the filler items used by Anaya-Ramírez et al. (2022), which I assume to activate the concept *biological/social gender*.

that present a *high degree of coherence* without featuring the semantically coherent gerund construction.

In (47a)-(47b), an experimental item from Experiment 2 is adapted and featured without the gerund construction, which entails that the coherence-establishing information is placed after the (female) subset (e.g., *neighbors*, *dogs—(some of the) women*, *leash*). This was the case in Anaya-Ramírez et al.'s (2022: 1263) study, as can be seen in the following example:

(42a) *Los ingenieros se tomaron el resto de la tarde libre./*
'The engineers$_{M.PL}$ took the rest of the afternoon off./'
(42b) *Una/Uno estaba cansada/o y se fue directo a su casa.*
'One$_{M./F.SG}$ was tired$_{M./F.SG}$ and went straight to their house.'

However, in Experiment 2, the coherence-establishing information, in the form of the gerund constructions, was placed before the female subset (e.g., *neighbors*, *walk the dogs—walk*, *women*):

(36a) *Les voisins sortaient les chiens./*
'The neighbors$_{M.PL}$ were walking the dogs./'
(36b1) *En marchant,/ la majorité des/ femmes/ observait/ les arbres./*
'While walking,/ the majority of the/ women/ watched/ the trees./'

As Anaya-Ramírez et al. (2022: 1271 f.) found a male bias, while Experiment 2 did not, it is possible that the placement of the coherence-establishing information after the female subset in Anaya-Ramírez et al. (2022) came 'too late' to hinder a male bias from emerging. Accordingly, in Experiment 2, the positioning of the coherence-establishing information before the mention of *femmes* might have inhibited the generation of a male bias (see Kehler et al. 2008: 2 on coherence-driven pronoun interpretation; see also Sect. 6.3.2).

However, recall that, in the experimental items of Experiment 2, as in example (36a)-(36b1), coherence is also established thanks to the information which is placed after the (female) subset, like *watch the trees (while walking the dogs)* (see Sect. 5.1.4.1). It would thus also be informative to examine whether the placement of the coherence-establishing information before the (female) subset and without a gerund construction would result in a generic or specific interpretation of the masculine role noun. Such an experimental sentence pair could be the following:

(48a) *Les voisins sortaient les chiens./*
'The neighbors$_{M.PL}$ were walking the dogs./'

(48b) *Les laisses étaient vérifiées par une partie des femmes.*
'The leashes were checked by some of the women.'

If the featuring of the coherence relation indicating a clear link between the female subset and the aforementioned group designated by the masculine role noun before the mention of *femmes* generated no male bias—as in Experiment 2—this would suggest that the order in which coherence is established is influential when masculine role nouns are interpreted. Furthermore, this would indicate that the placement of the coherence-establishing information before the female subset should bias the language processor towards a generic interpretation of a masculine role noun, while the inverse order might generate a bias towards a specific interpretation.

Note that a second sentence featuring a passive voice as suggested in example (48a)-(48b), instead of an active voice as in Experiment 2, would entail a topic shift from *voisins* to *laisses* (i.e., *les laisses* 'the leashes' becoming the subject of the second sentence instead of *femmes*), which might create unwanted noise. Furthermore, in the passive voice, the past participle would have to agree with the grammatical gender of the agent, which could activate the concept *biological/social* gender more than in the active voice, as featured in Experiment 2. However, the gender agreement in Anaya-Ramírez et al. (2022) does not seem to have impacted the outcome of the study in the sense that they found a male bias even though they featured feminine forms in the female condition (e.g., *Una estaba cansada* 'One$_{F.SG}$ was tired$_{F.SG}$'). Importantly, as the degree of coherence might not be the decisive factor per se, it seems crucial to investigate the influence of discourse-structuring devices such as topic and/or event continuity to better understand the interpretation of masculine role nouns (see the discussion of the factor *coherence* in Sects. 6.3.2 and 7.3).

Finally, as my findings suggest that the presence of specific factors influences how a masculine role noun is interpreted, this could indicate that the specific meaning is indeed derived from the generic meaning by means of a conversational implicature (see the pragmatic approach in Sect. 3.2.3.1). At the same time, these considerations have to be taken with caution. Firstly, I did not systematically manipulate the experimental and filler items' properties. Accordingly, I have no quantifiable evidence that a factor such as *coherence* or *activation of the concept biological/social gender* influenced the interpretation of the masculine role nouns. Secondly, I did not test for the cancellation of a conversational implicature. However, future research could test whether the conversational implicature +> *men only* that (potentially) arises from the masculine role noun featured in (49a) is accepted as being cancelled by (49b) (Becker 1997: 65; Klein 2001: 63):

(49a) *Nous cherchons un instituteur pour cette tâche./*
'We are looking for an elementary school teacher$_{M.SG}$ for this task./'
(49b) *Nous cherchons une femme.*
'We are looking for a woman.'

In this vein, it would be fruitful to analyze whether masculine generic nouns like *individu* 'individual$_{M.SG}$' are also associated with the biological/social male gender (Kotthoff & Nübling 2018: 117). Storme & Saillen (2024: 298) argue that the non-existence of a feminine counterpart excludes competition effects that could confound the interpretation of a noun's grammatical gender such that generic nouns are more informative concerning the question of whether masculine grammatical gender is associated with male biological/social gender. At the same time, the grammatical gender of generic nouns might be less associated with biological/social gender compared to the grammatical gender of role nouns as, obviously, no feminine and masculine counterparts exist. Therefore, Gygax et al. (2019a: 3 f.) classify them as exceptions. Nonetheless, Storme & Saillen (2024: 297, 303, 306) find masculine generic nouns to be associated more with men than with women.[28]

Noteworthily, De Backer & De Cuypere (2012: 253, 262 f., 266 f.) showed that masculine role nouns are more often interpreted specifically in the grammatical gender language German than in Dutch, a language that has a combination of grammatical gender and natural gender and that presents fewer possibilities for distinguishing morphologically between the masculine and feminine forms of role nouns (see Sect. 2.1). My above-sketched multifactorial approach is based on findings on masculine role nouns in grammatical gender languages such as French. However, based on further research, the superordinate factor *grammatical gender system* might be integrated into it.

A further insight that might help to explain the diverging findings of my experimental study and to analyze whether the interpretation of masculine role nouns can indeed be considered a multifactorial phenomenon could be gained by replicating my experimental study while tracking eye movements during reading. I examine this research desideratum in the next paragraph.

[28] See also Brauer & Landry (2008: 261) and Mihatsch (2018: 111) for similar findings on *individu* 'individual$_{M.SG}$' in French (but see Mihatsch (2018: 111) on *personne* 'person$_{F.SG}$'; see also Storme & Saillen 2024: 303 f., 306). See Motschenbacher (2010: 45), who found *Mensch* 'human$_{M.SG}$' and *Person* 'person$_{F.SG}$' in German to have been judged as neither particularly male nor female; see also Mihatsch (2018: 111) on Ger. *Person* 'person$_{F.SG}$', which was found to be more easily accepted for female referents. See also Trutkowski (2018: 91 f.), who finds Ger. *Gast* 'visitor$_{M.SG}$' to function more or less as a generic depending on whether it is the target or controller gender of the sentence.

Gaining Additional Insights With Eye-Tracking

While my SPR WSP (Experiment 1) and SPR MvW (Experiment 2) paradigms are appropriate to investigate whether a generic or specific interpretation of a masculine role noun is accessed, they cannot give information on the time course of the interpretation process (Rothermund & Strack 2024: 482). As Experiment 1 generated reading times for the whole sentence plus the answer to the final question and as Experiment 2 did not permit the participants to preview or to regress between the words within the sentences displayed, the replication of my experimental study with an eye-tracker would give helpful insights into the process of interpreting masculine role nouns. By presenting both sentences at the same time, such an eye-tracking study would permit us to analyze whether previsions[29] and/or regressions between the masculine role noun in the first sentence and the female subset in the second one occur.[30] Moreover, the replication of my experiments while tracking readers' eye movements would permit us to analyze whether the male bias found in Experiment 1 is, for instance, realized when *femmes* is read or when the participants answer the final question. It could also complement the present work by indicating whether the participants regress and/or preview text regions of the sentence pairs in Experiment 1, but not in Experiment 2.

Finally, while previous research has predominantly focused on the interpretation of masculine role nouns during reading, it would be interesting to extend this kind of research question to the comprehension of oral speech. In the following section, I present some ideas on how future research could close this research gap.

Investigating Oral Speech Comprehension

The scarce previous research investigating oral stimuli has presented variable findings concerning the question of whether the use of masculine role nouns in oral speech comprehension results in different interpretation patterns than in reading comprehension.[31] Gabriel et al. (2017: 795, 806) have investigated role nouns in

[29] On my use of *prevision*, see footnote 6 in Chap. 6.

[30] So far, a comparable study has only been run by Redl et al. (2018, 2021) on masculine pronouns in Dutch.

[31] For experiments using oral stimuli, see Gabriel et al. (2017) on role nouns in Norwegian; Anaya-Ramírez et al. (2022) on role nouns in Spanish; Körner et al. (2024) on German. See Gygax et al. (2019b) and Lévy et al. (2016) on French role nouns presented to young children. On the activation of stereotypes during oral speech processing in the genderless language Finnish, see Pyykkönen et al. (2010).

Norwegian and assume that stereotype information has a more important influence during oral speech comprehension than during reading comprehension, in which the former masculine form[32] seems to bias the readers more towards a specific interpretation of the role noun, irrespective of its stereotypicality. Conversely, Anaya-Ramírez et al. (2022: 1261, 1272 f.) analyzed oral speech comprehension of masculine role nouns in Spanish and suggest that there is no such difference.[33] It would be interesting to further investigate the issue, especially as oral speech comprehension concerns all parts of daily life (Gabriel & Gygax 2017: 295). If there was a difference, my multifactorial approach could be expanded with the factor *(oral vs. written) code*.

Moreover, as indicated in Sect. 2.2, the difference between masculine and feminine grammatical gender is more often neutralized in the French oral code than in the written code. Accordingly, it would be interesting to investigate whether masculine role nouns such as *apprentis* [apʀɑ̃ti] 'trainees$_{M.PL}$', whose feminine counterpart *apprenties* [apʀɑ̃ti] 'trainees$_{F.PL}$' is pronounced in the same way, are processed differently than masculine role nouns whose feminine form is also different in the oral code—such as my *voisins* [vwazɛ̃] 'neigbors$_{M.PL}$' vs. its feminine counterpart *voisines* [vwazin] 'neigbors$_{F.PL}$'. It is imaginable that masculine role nouns whose masculine and feminine forms are pronounced the same way more often trigger a generic interpretation, in comparison to role nouns for which masculine and feminine forms differ in the oral code. If this turned out to be the case concerning the oral speech comprehension of masculine role nouns in French, the *neutralization of grammatical gender information* (Richy & Burnett 2021: 20 f.) could also be considered a factor that influences the interpretation of masculine role nouns.

It would also be interesting to investigate whether the interpretation of masculine role nouns is affected when they are used in different communicative situations (Heap 2024: 226). For instance, in a conversation with friends, a masculine role noun like *amis* 'friends$_{M.PL}$' might be interpreted generically. Conversely, in an official speech in which the use of gender-fair alternatives would be expected (Arnold 2024: 561–567) a masculine role noun like *(les) Français* '(the) French$_{M.PL}$' might

[32] In Norwegian, while it is possible to mark role nouns for (masculine and feminine) grammatical gender, due to language amendments for a gender-fair use of the Norwegian language, the feminine form has been abandoned. Accordingly, the former masculine form is now also used to refer to women (Gabriel & Gygax 2008: 453, 456).

[33] Note that Anaya-Ramírez et al. (2022) did not directly compare oral and written stimuli as did Gabriel et al. (2017). Anaya-Ramírez et al. (2022) thus base their assumption that there is no difference between the two conditions on the fact that they find similar effects in oral speech comprehension to those found by Gygax et al. (2008), who investigated the reading comprehension of masculine role nouns in French and German.

be interpreted specifically (Gygax & Gabriel 2008: 149; Stahlberg & Sczesny 2001: 138).[34] Likewise, it would be important to verify whether previous findings on the interpretation of masculine role nouns hold true for populations other than student/young adult populations (Heap 2024: 226; Rothermund & Strack 2024: 482; see also Sect. 4.4.5.4.1).

To conclude, we need not only more but also more diverse data based on different methods and stimuli in order to obtain a fuller understanding of the interpretation of masculine role nouns (Rothermund & Strack 2024: 482). In this vein, general concluding remarks on my findings are presented in the next chapter.

[34] See also Lévy et al. (2014: 36 f.). See Pozniak et al. (2023: 18) concerning gender-fair forms in French and Zapf (2024: 408) on Spanish. Consider Macron, who uses double forms in his speeches (see my discussion of the quote from *En Marche* in Chap. 1).

Conclusion

8

With this chapter, I close this book by briefly summarizing the main findings and general conclusions that can be drawn from my experimental study, consisting of two self-paced reading experiments. Based on the sentence evaluation of university students whose native language is French, my experimental study investigated whether masculine plural role nouns in French trigger a male-specific interpretation.

By closely replicating the French sample of an experiment run by Gygax et al. in 2008, Experiment 1 investigated the interaction of the morphosyntactic factor *masculine form* with the extra-linguistic factor *stereotypicality* (i.e., stereotypically male/neutral/female role nouns). The results indicate that the previous claim that masculine role nouns tend to be interpreted specifically can be considered to be stable across time. Furthermore, it went beyond the initial study by showing that stereotype information (i.e., male stereotypicality of the role noun), as well as participant-specific factors (i.e., feminist attitudes), can influence how masculine role nouns are interpreted (see Chap. 4).

Experiment 2 built on Experiment 1 and thus shares significant similarities with it. However, in Experiment 2, the method, the fillers and the experimental items were adapted. Moreover, Experiment 2 focused on the role noun type (i.e., occupational vs. non-occupational nouns) of stereotypically neutral role nouns. In contrast to Experiment 1, Experiment 2 suggests that the masculine role nouns were interpreted generically. Also, Experiment 2 did not find any differences between the role noun types (see Chap. 5).

While the findings of Experiment 1 align with an extensive body of previous empirical research (see Chap. 3), the results of Experiment 2 challenge most previous findings and suggest that the interpretation of masculine role nouns is

C. Stumm, *When Voisins Can Be Women and When They Cannot – Masculine Generics in French*, Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics, https://doi.org/10.1007/978-3-662-71663-2_8

a complex phenomenon (see Chaps. 6 and 7). Against this background, I analyzed where the diverging findings of Experiment 1 and 2 might come from. In doing so, the present book dives into the discussion of a major methodological issue, namely, the possible influence of the filler and experimental items' properties on whether a generic or specific interpretation of the masculine role nouns tested is accessed (Chap. 6).[1] Thus, my diverging findings indicate that not only does replication matter (as in Experiment 1), but that meta-methodological and linguistic reflections on previous experimental set-ups are needed to gain a more comprehensive understanding of the interpretation of masculine role nouns (Experiment 2).

When discussing my diverging findings (Chap. 6), I suggested that they stem from the different properties of the filler items and/or experimental items used in Experiments 1 and 2: Experiment 1's fillers, which featured frequent mentions of *biological/social gender*, might have activated the concept *biological/social gender* so that the masculine grammatical gender was associated with the biological/social male gender, resulting in the specific interpretation of the masculine role nouns featured in the experimental items. Conversely, in Experiment 2, in which the fillers did not feature frequent mentions of biological/social gender, the concept *biological/social gender* might not have been further activated, so that the masculine role nouns were interpreted generically. Alternatively or additionally, in opposition to Experiment 1, in Experiment 2, the high degree of coherence within an experimental sentence pair clearly linked the masculine role noun and the female subset, which seems to have facilitated a generic interpretation of the masculine role noun. Thus, whether the generic or the specific interpretation of a masculine role noun is accessed seems to be dependent on the presence—or absence—of multiple factors (see Chaps. 6 and 7).

Conversely, previous research either suggests that masculine role nouns function as generics (e.g., structuralism; see Chap. 3), or it suggests that masculine role nouns tend to be interpreted specifically (e.g., Feminist Linguistics; see Chap. 3). So far, the influence of multiple factors on the interpretation of masculine forms has received little attention (but see De Backer & De Cuypere 2012: 260–262, 267; Kotthoff & Nübling 2018: 115–119; Redl 2021: 120–122).[2] As previous research on masculine role nouns cannot account for the diverging results of Experiments 1 and 2, I have related the interpretation of masculine role

[1] See Sect. 6.1 for my explanation as to why I assume that methodological differences do not account for my diverging findings.

[2] On recent findings in this regard, see Rothermund & Strack (2024: 468, 472–477, 480–482) and Pozniak et al. (2023: 1, 11–14, 16–18). On inanimate and non-human animate nouns, see Samuel et al. (2019: 1767, 1769, 1778, 1784).

nouns to the more general question of how temporarily ambiguous sentences (i.e., garden-path sentences) are interpreted (see Sect. 6.3.4). The fact that preceding sentences have been found to influence the interpretation of subsequent temporarily ambiguous sentences allows for the assumption that the specific properties of the filler and/or experimental items also affect the interpretation of masculine role nouns. To put it in the sense of the title of this book: when certain factors come into play, *voisins* can be women. However, when other factors come into play, *voisins* cannot be women.

Drawing on previous and present findings, I have sketched a preliminary multifactorial approach to the interpretation of masculine role nouns (see Sect. 7.3). My approach suggests that multiple factors influence whether a masculine role noun is interpreted generically or specifically. It proposes that morphosyntactic (i.e., number), lexico-semantic (i.e., role noun type, referentiality) and pragmatic factors (i.e., relative frequency, coherence, activation of the concept *biological/social gender*), as well as extra-linguistic factors (i.e., stereotypicality) contribute to whether a generic or a specific interpretation of a masculine role noun is accessed. While the interpretation of masculine role nouns is not literally defined as a multifactorial phenomenon in previous research, the multifactorial nature of a masculine role noun's interpretation is appropriately illustrated in the approach presented in this book.

Importantly, as I have assumed the diverging findings of Experiments 1 and 2 to be influenced by the *activation of the concept biological/social gender* and/or the degree of *coherence*, these two pragmatic factors have been newly introduced as being relevant to the interpretation of masculine role nouns (see Sects. 6.2.2.2, 6.3.2 and 7.3). Crucially, while pragmatic factors have not received close attention in previous research, they seem to play an important role when masculine role nouns are interpreted.

At the same time, my preliminary multifactorial approach suggests that the multiple factors that influence whether a masculine role noun is interpreted generically or specifically may not be equally important. My multifactorial approach also assumes that interactions between the factors influence whether a masculine role noun is interpreted generically or specifically. In this vein, it would be interesting to analyze whether the language processor is biased towards a generic interpretation of a masculine role noun when the factor *coherence* generates a clear link between a masculine role noun and the female subset, while all other factors push the processor towards a specific interpretation of the masculine role noun (see Sect. 7.4).

Importantly, the list of factors defined in my approach is neither fixed nor exhaustive and remains hypothetical pending further systematic investigation.

Therefore, I would like to encourage future research to use my multifactorial approach as the basis for further experiments. For instance, it would be interesting to investigate whether the interpretation of masculine role nouns differs when they are presented in the oral or in the written code. Corresponding findings would be of practical relevance for a well-grounded and efficient gender-fair use of language (e.g., the avoidance of generically intended masculine role nouns in some contexts more than in others) (see Sect. 7.4).

In a nutshell, the present book cannot give a conclusive answer to the question of whether masculine role nouns trigger a male-specific interpretation. In fact, based on the discussion of previous and present findings, the perception that the interpretation of masculine role nouns will generate a result that is rigorously fixed should be discouraged. In other words, the interpretation of masculine role nouns seems to be influenced by multiple factors and appears to be a complex phenomenon. Hence, my findings support the notion that the question of whether a masculine role noun's interpretation triggers a male-specific interpretation deserves a differentiated answer and is worthy of further research (see Chap. 7). In this vein, the approach sketched in this book is a step towards understanding the interpretation of masculine role nouns as a multifactorial phenomenon.

References

Abbou, J. (2011). Double Gender Marking in French: A Linguistic Practice of Antisexism. *Current Issues in Language Planning*, *12*(1), 55–75.

Abbou, J. (2023). Inclusive Writing: Tracing the Transnational History of a French Controversy. *Gender and Language*, *17*(2), 148–173.

Abdesslem, L. M. et al. (2017). *Nous n'enseignerons plus que 'le masculin l'emporte sur le féminin'*. https://www.slate.fr/story/153492/manifeste-professeurs-professeures-enseignerons-plus-masculin-emporte-sur-le-feminin. Accessed 01.03.2023.

Académie française. (2004). *La féminisation des noms de métiers, fonctions, grades ou titres – Mise au point de l'Académie française.* https://www.academie-francaise.fr/actualites/la-feminisation-des-noms-de-metiers-fonctions-grades-ou-titres-mise-au-point-de-lacademie. Accessed 15.06.2021.

Académie française. (2017). *Déclaration de l'Académie française sur l'écriture dite 'inclusive'*. https://www.academie-francaise.fr/actualites/declaration-de-lacademie-francaise-sur-lecriture-dite-inclusive. Accessed 15.06.2021.

Académie française. (2019). *La féminisation des noms de métiers et de fonctions.* https://www.academie-francaise.fr/actualites/la-feminisation-des-noms-de-metiers-et-de-fonctions. Accessed 15.06.2021.

Académie française. (2021). *Lettre ouverte sur l'écriture inclusive.* https://www.academie-francaise.fr/actualites/lettre-ouverte-sur-lecriture-inclusive. Accessed 22.06.2021.

Adebayo, K., Nanda, R., Verma, K., & Davis, B. (Eds.). (2022). *Proceedings of the First Workshop on Language Technology and Resources for a Fair, Inclusive, and Safe Society Within the 13th Language Resources and Evaluation Conference.* European Language Resources Association.

Aebischer, V., & Forel, C. (Eds.). (1992). *Parlers masculins, parlers féminins?* Delachaux et Niestlé.

Aikhenvald, A. Y. (2016). *How Gender Shapes the World*. Oxford University Press.

C. Stumm, *When Voisins Can Be Women and When They Cannot – Masculine Generics in French*, Linguistik in Empirie und Theorie/Empirical and Theoretical Linguistics, https://doi.org/10.1007/978-3-662-71663-2

Aix-Marseille Université. (2019). *Espace Etudiant*. https://www.univ-amu.fr/fr/public/etudiant. Accessed 12.09.2022.

Albert, S. C. (1997). Gebrauch und Funktion der femininen Nomina agentis im Lateinischen. In W. Dahmen, G. Holtus, J. Kramer, M. Metzeltin, W. Schweickard, & O. Winkelmann (Eds.), *Sprache und Geschlecht in der Romania: Romanistisches Kolloquium X* (pp. 1–13). Narr.

Alpheratz, M. (2018). *Grammaire du français inclusif*. Vent solars.

Altmann, G. T., Garnham, A., & Dennis, Y. (1992). Avoiding the Garden Path: Eye Movements in Context. *Journal of Memory and Language*, *31*(5), 685–712.

Anaya-Ramírez, A., Grinstead, J., Nieves Rivera, M., Melamed, D., & Reig-Alamillo, A. (2022). The Interpretation of Spanish Masculine Plural NPs: Are They Perceived as Uniformly Masculine or as a Mixture of Masculine and Feminine? *Applied Psycholinguistics*, *43*(6), 1257–1274.

APA = American Psychological Association. (2022). *Gender Versus Sex*. https://apastyle.apa.org/style-grammar-guidelines/bias-free-language/gender. Accessed 09.12.2022.

Arnold, L. R. (2024). *Die Kontroverse um die geschlechtsindifferente Referenz in der Frankophonie: Eine soziolinguistische Untersuchung zu laienlinguistischen Einstellungen*. Peter Lang.

Baayen, R. H. (2008). *Analyzing Linguistic Data: A Practical Introduction to Statistics Using R*. Cambridge University Press.

Baayen, R. H., & Milin, P. (2010). Analyzing Reaction Times. *International Journal of Psychological Research*, *3*(2), 12–28.

Baider, F. (2002). Métaphores animales ou l'imparité dans l'insulte. In V. Perry (Ed.), *Désexisation & parité linguistique: le cas de la langue française* (pp. 85–106). Proceedings of the 3ème Colloque international des recherches féministes francophones (Ateliers 3 et 30). Université Toulouse II – Le Mirail.

Barr, D. J., Levy, R., Scheepers, C., & Tily, H. J. (2013). Random Effects Structure for Confirmatory Hypothesis Testing: Keep it Maximal. *Journal of Memory and Language*, *68*(3), 255–278.

Becker, T. (1997). Was wir von Aristoteles über die Bedeutung deutscher Wörter lernen können: Über konversationelle Implikaturen und Wortsemantik. In E. Rolf (Ed.), *Pragmatik: Implikaturen und Sprechakte* (pp. 51–71). VS Verlag für Sozialwissenschaften.

Becker, T. (2002). Autohyponymy: Implicature in Lexical Semantics, Word Formation, and Grammar. *Journal of Germanic Linguistics*, *14*(2), 105–136.

Becker, T. (2008). Zum generischen Maskulinum: Bedeutung und Gebrauch der nichtmovierten Personenbezeichnungen im Deutschen. *Linguistische Berichte*, *213*, 65–75.

Becquer, A. (1999). *Femme, j'écris ton nom: Guide d'aide à la féminisation des noms de métiers, titres, grades et fonctions*. La Documentation française.

Bierbach, C., & Ellrich, B. (1990). Französisch: Sprache und Geschlechter. Langue et sexes. In G. Holtus, M. Metzeltin, & C. Schmitt (Eds.), *Lexikon der Romanistischen Linguistik* (pp. 248–266). Max Niemeyer.

Bieswanger, M., & Motschenbacher, H. (Eds.). (2010). *Language in Its Socio-Cultural Context: New Explorations in Gendered, Global and Media Uses*. Peter Lang.

Bloomfield, L. (1950 (1933)). *Language*. 2nd edition. Allen & Unwin.

Boileau, É. (2012). *Les métiers et corporations de Paris: XIIIe siècle: Le livre des métiers d'Étienne Boileau (1879)*. Hachette.

Boroditsky, L. (2003). Linguistic Relativity. In L. Nadel (Ed.), *Encyclopedia of Cognitive Science* (pp. 917–921). Wiley.

Brauer, M., & 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.

Braun, F. (Ed.). (1997). *Kommunikation von Geschlecht: Communication of Gender*. Centaurus.

Braun, F. (2001). Turkish. The Communication of Gender in Turkish. In M. Hellinger & H. Bußmann (Eds.), *Gender Across Languages: The Linguistic Representation of Women and Men. Vol. 1* (pp. 283–310). Benjamins.

Braun, F., Gottburgsen, A., Sczesny, S., & Stahlberg, D. (1998). Können Geophysiker Frauen sein? Generische Personenbezeichnungen im Deutschen. *Zeitschrift für Germanistische Linguistik*, *26*(3), 265–283.

Braun, F., Sczesny, S., & Stahlberg, D. (2005). Cognitive Effects of Masculine Generics in German: An Overview of Empirical Findings. *Communications*, *30*(1), 1–21.

Britton, B. K., & Graesser, A. C. (Eds.). (1996). *Models of Understanding Text*. Psychology Press.

Bross, F., & Kurz, L.-S. (2023). Zur Wahrnehmung des generischen Maskulinums in Erstgliedern von Komposita und maskuliner Epizöna. *Zeitschrift für Germanistische Linguistik*, *51*(3), 397–423.

Brown, K. (Ed.). (2006). *Encyclopedia of Language & Linguistics*. Elsevier.

Bulletin Blanquer = Blanquer, J.-M. (2021). *Règles de féminisation dans les actes administratifs du ministère de l'éducation nationale, de la Jeunesse et des Sports et les pratiques d'enseignement*. Le Bulletin officiel de l'éducation nationale, de la jeunesse et des sports n° 18 du 6 Mai 2021.

Burnett, H., & Pozniak, C. (2021). Political Dimensions of Gender Inclusive Writing in Parisian Universities. *Journal of Sociolinguistics*, *25*(5), 808–831.

Burr, E. (1999). 'Comme on est mal dans sa peau, on peut se sentir mal dans ses mots': Das Selbstverständnis der Frauen und die französische Sprachpolitik. *Linguistik Online*, *2*(1). https://bop.unibe.ch/linguistik-online/article/view/1044/1708.

Burr, E. (2000). Beschreibung und Normierung des Genus in frühen Grammatiken des Französischen, Italienischen, Portugiesischen und Spanischen. In G. Haßler & H.-J. Niederehe (Eds.). *Geschichte des Sprachbewußtseins in romanischen Ländern* (pp. 17–32). Nodus.

Burr, E. (2003). Gender and Language Politics in France. In M. Hellinger & H. Bußmann (Eds.), *Gender Across Languages: The Linguistic Representation of Women and Men, Vol. 3* (pp. 119–139). Benjamins.

Carreiras, M., Garnham, A., Oakhill, J., & Cain, K. (1996). The Use of Stereotypical Gender Information in Constructing a Mental Model: Evidence From English and Spanish. *The Quarterly Journal of Experimental Psychology. Section A*, *49*(3), 639–663.

Cerquiglini, B. (2018). *Le ministre est enceinte: Ou la grande querelle de la féminisation des noms*. Seuil.

Chiriacescu, S., & von Heusinger, K. (2010). Discourse Prominence and 'Pe'-Marking in Romanian. *International Review of Pragmatics*, *2*(2), 298–332.

Choe, J., Yoshida, M., & Cole, J. (2022). The Role of Prosodic Focus in the Reanalysis of Garden Path Sentences: Depth of Semantic Processing Impedes the Revision of an Erroneous Local Analysis. *Glossa Psycholinguistics*, *1*(1), 1–34.

Circulaire du 21 novembre 2017 relative aux règles de féminisation et de rédaction des textes publiés au Journal officiel de la République française = Journal officiel de la République française. (2017). *Circulaire du 21 novembre 2017 relative aux règles de féminisation et de rédaction des textes publiés au Journal officiel de la République française*. https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000036068906. Accessed 12.09.2022.

Claus, B., & Willy, A. (2022). Inkongruenz von Genus und Geschlecht in Nominalellipsen: Akzeptabilität und Asymmetrie. In G. Diewald & D. Nübling (Eds.), *Genus – Sexus – Gender* (pp. 219–240). De Gruyter.

Clifton, C., Frazier, L., & Rayner, K. (Eds.). (1994). *Perspectives on Sentence Processing*. Psychology Press.

Clifton, C., & Staub, A. (2008). Parallelism and Competition in Syntactic Ambiguity Resolution. *Language and Linguistics Compass*, *2*(2), 234–250.

Cole, P., & Morgan, J. L. (Eds.). (1975). *Syntax and Semantics, Vol. 3: Speech Acts*. Academic Press.

Cook, A. E., & O'Brien, E. J. (2023). Cognitive Processes Involved in Text Comprehension: Walking the Fine Line Between Passive and Strategic Validating Processes in Reading. In S. Zufferey & P. Gygax (Eds.), *The Routledge Handbook of Experimental Linguistics* (pp. 235–249). Routledge.

Corbett, G. G. (1991). *Gender*. Cambridge University Press.

Corbett, G. G. (2001). Grammatical Gender. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of the Social & Behavioral Sciences* (pp. 6335–6340). Elsevier.

Corbett, G. G. (2006a). Gender, Grammatical. In K. Brown (Ed.), *Encyclopedia of Language & Linguistics* (pp. 749–756). Elsevier.

Corbett, G. G. (2006b). *Agreement*. Cambridge University Press.

Coseriu, E. (1992 (1988)). *Einführung in die allgemeine Sprachwissenschaft*. 2nd edition. Francke.

Crain, S., & Steedman, M. (1985). On Not Being Led up the Garden Path: The Use of Context by the Psychological Syntax Processor. In D. R. Dowty, L. Karttunen, & A. M. Zwicky (Eds.), *Natural Language Parsing: Psychological, Computational and Theoretical Perspectives* (pp. 320–358). Cambridge University Press.

Criado-Perez, C. (2019). *Invisible Women: Exposing Data Bias in a World Designed for Men*. Chatto & Windus.

Da Cunha, Y., & Abeillé, A. (2022). Objectifying Women? A Syntactic Bias in French and English Corpora. In K. Adebayo, R. Nanda, K. Verma, & B. Davis (Eds.), *Proceedings of the First Workshop on Language Technology and Resources for a Fair, Inclusive, and Safe Society Within the 13th Language Resources and Evaluation Conference* (pp. 8–16). European Language Resources Association.

Dahmen, W., Holtus, G., Kramer, J., Metzeltin, M., Schweickard, W., & Winkelmann, O. (Eds.). (1997). *Sprache und Geschlecht in der Romania: Romanistisches Kolloquium X*. Narr.

De Backer, M. (2009). The Concept of Neutralization Outside the Field of Phonology. *Indogermanische Forschungen*, *114*, 1–59.

De Backer, M., & De Cuypere, L. (2012). The Interpretation of Masculine Personal Nouns in German and Dutch: A Comparative Experimental Study. *Language Sciences*, *34*(3), 253–268.

De Lemus, S., & Estevan-Reina, L. (2021). Influence of Sexist Language on Motivation and Feelings of Ostracism. *International Journal of Social Psychology*, *36*(1), 61–97.

Dethloff, U., & Wagner, H. (2002). *Die französische Grammatik: Regeln, Anwendung, Training*. Francke.

Diebowski, J. (2021). *Gender Acquisition in Spanish: Effects of Language and Age.* De Gruyter.

Diehl, E. (1992). Ich bin Student: Zur Feminisierung weiblicher Personen- und Berufsbezeichnungen in der früheren DDR. *Deutschland Archiv*, *25*(4), 384–392.

Diewald, G. (2018). Zur Diskussion: Geschlechtergerechte Sprache als Thema der germanistischen Linguistik – exemplarisch exerziert am Streit um das sogenannte generische Maskulinum. *Zeitschrift für Germanistische Linguistik*, *46*(2), 283–299.

Diewald, G. (2023). *Zur Unterscheidung von Referenz und Bedeutung(en) bei Personenbezeichnungen.* Talk at the Annual Conference of the Gesellschaft für deutsche Sprachwissenschaft, AG 10: Geschlechterbewusste Sprache: Routinisierter Gebrauch und kreative Neuformen. University of Cologne, 08.03.2023.

Diewald, G., & Nübling, D. (2022a). 'Genus – Sexus – Gender': – ein spannungs- und ertragreiches Themenfeld der Linguistik. In G. Diewald & D. Nübling (Eds.), *Genus – Sexus – Gender* (pp. 3–31). De Gruyter.

Diewald, G., & Nübling, D. (Eds.). (2022b). *Genus – Sexus – Gender.* De Gruyter.

Diewald, G., & Steinhauer, A. (2022). *Handbuch geschlechtergerechte Sprache: Wie Sie angemessen und verständlich gendern.* Dudenverlag.

Dixon, R. M. W. (1982). *Where Have All the Adjectives Gone? And Other Essays in Semantics and Syntax*. De Gruyter.

Doleschal, U. (2002). Das generische Maskulinum im Deutschen. Ein historischer Spaziergang durch die deutsche Grammatikschreibung von der Renaissance bis zur Postmoderne. *Linguistik Online*, *11*(2), 39–70. https://www.semanticscholar.org/paper/Das-generische-Maskulinum-im-Deutschen.-Ein-durch-Doleschal/6053ab13a4fa65d44ab7ca3fe107f715b4f95741.

Dowty, D. R., Karttunen, L., & Zwicky, A. M. (Eds.). (1985). *Natural Language Parsing: Psychological, Computational and Theoretical Perspectives.* Cambridge University Press.

EIGE = European Institute for Gender Equality. (2019). *Gender Equality Index for France: 2005–2019 Edition.* https://eige.europa.eu/gender-equality-index/2019/FR. Accessed 12.09.2022.

Eisenberg, P. (2018). Debatte um den Gender-Stern: Finger weg vom generischen Maskulinum! *Tagesspiegel*, 08.08.2018.

Elmiger, D. (2000). Les guides de féminisation allemands et français: la Suisse au carrefour d'influences différentes. *Bulletin suisse de linguistique appliquée*, *72*, 205–219.

Elmiger, D. (2008). *La féminisation de la langue en français et en allemand: Querelle entre spécialistes et réception par le grand public*. Champion.

Elmiger, D. (2017). Binarité du genre grammatical – binarité des écritures? *Mots. Les langages du politique*, *113*, 37–52.

Elmiger, D. (2021a). Y a-t-il un guide dans la rédaction? *GLAD! Revue sur le langage, le genre, les sexualités*, *10*, 1–6. https://journals.openedition.org/glad/2800.

Elmiger, D. (2021b). Toutes pour une, une pour toustes? Ou: que faire du masculin à valeur générique? *GLAD! Revue sur le langage, le genre, les sexualités*, *11*, 1–7. https://journals.openedition.org/glad/3619.

Elmiger, D. (2022a). *Geschlechtergerechte Sprache im Französischen: nichtsexistische, geschlechtsneutrale oder inklusive Sprache?* https://www.sprache-und-gendern.de/beitraege/geschlechtergerechte-sprache-im-franzoesischen. Accessed 13.04.2023.

Elmiger, D. (2022b). Les guides de langue non sexiste / inclusive dans les langues romanes: un genre textuel évolutif. In B. Fagard & G. Le Tallec (Eds.), *Entre masculin et féminin: Français et langues romanes* (pp. 119–136). Presses Sorbonne Nouvelle.

Elmiger, D. (2022c). Quel est mon/ton/son pronom? Invariabilité, autodétermination et le pronom 'iel'. *GLAD! Revue sur le langage, le genre, les sexualités*, *12*, 1–8. https://journals.openedition.org/glad/4215.

Elsen, H. (2020). *Gender – Sprache – Stereotype: Geschlechtersensibilität in Alltag und Unterricht*. utb.

Esaulova, Y., Reali, C., & von Stockhausen, L. (2014). Influences of Grammatical and Stereotypical Gender During Reading: Eye Movements in Pronominal and Noun Phrase Anaphor Resolution. *Language, Cognition and Neuroscience*, *29*(7), 781–803.

Ewels, A.-E., & Nübling, D. (Eds.). (2024). *Geschlechterbewusste Sprache: Argumente, Positionen, Perspektiven*. Georg Olms.

Fagard, B., & Le Tallec, G. (Eds.). (2022). *Entre masculin et féminin: Français et langues romanes*. Presses Sorbonne Nouvelle.

Ferreira, F., & Henderson, J. M. (1990). Use of Verb Information in Syntactic Parsing: Evidence From Eye Movements and Word-By-Word Self-Paced Reading. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *16*(4), 555–568.

Ferreira, F., & Henderson, J. M. (1991). Recovery From Misanalyses of Garden-Path Sentences. *Journal of Memory and Language*, *30*(6), 725–745.

Fiedler, K. (Ed.). (2007). *Social Communication*. Psychology Press.

Formanowicz, M., & Hansen, K. (2022). Subtle Linguistic Cues Affecting Gender In(Equality). *Journal of Language and Social Psychology*, *41*(2), 127–147.

Forster, K. I., & Forster, J. C. (2003). DMDX: A Windows Display Program With Millisecond Accuracy. *Behavior Research Methods, Instruments, & Computers*, *35*(1), 116–124.

Fujita, H. (2021). On the Parsing of Garden-Path Sentences. *Language, Cognition and Neuroscience*, *36*(10), 1234–1245.

Gabriel, U., Behne, D. M., & Gygax, P. M. (2017). Speech vs. Reading Comprehension: An Explorative Study of Gender Representations in Norwegian. *Journal of Cognitive Psychology*, *29*(7), 795–808.

Gabriel, U., & Gygax, P. M. (2008). Can Societal Language Amendments Change Gender Representation? The Case of Norway. *Scandinavian Journal of Psychology*, *49*(5), 451–457.

Gabriel, U., & Gygax, P. M. (2016). Gender and Linguistic Sexism. In H. Giles & A. Maass (Eds.), *Advances in Intergroup Communication* (pp. 177–192). Peter Lang.

Gabriel, U., Gygax, P. M., Sarrasin, O., Garnham, A., & 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. M., & 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.

Garnham, A., & Oakhill, J. (1996). The Mental Models Theory of Language Comprehension. In B. K. Britton & A. C. Graesser (Eds.), *Models of Understanding Text* (pp. 313–339). Psychology Press.

Garrod, S. (2001). Anaphora Resolution. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of The Social & Behavioral Sciences* (pp. 490–494). Elsevier.

GDI = United Nations Development Programme. (2018). *Gender Development Index*. http://hdr.undp.org/en/indicators/137906. Accessed 08.05.2020.

Gentner, D., & Goldin-Meadow, S. (Eds.). (2003). *Language in Mind: Advances in the Study of Language and Thought*. MIT Press.

Giles, H., & Maass, A. (Eds.). (2016). *Advances in Intergroup Communication*. Peter Lang.

Givón, T. (1983a). Topic Continuity in Discourse: An Introduction. In T. Givón (Ed.), *Topic Continuity in Discourse: A Quantitative Cross-Language Study* (pp. 1–41). Benjamins.

Givón, T. (Ed.). (1983b). *Topic Continuity in Discourse: A Quantitative Cross-Language Study*. Benjamins.

Glim, S., Körner, A., Härtl, H., & Rummer, R. (2023). Early ERP Indices of Gender-Biased Processing Elicited by Generic Masculine Role Nouns and the Feminine-Masculine Pair Form. *Brain and Language*, *242*, 105290, 1–7.

Glim, S., Körner, A., & Rummer, R. (2024). Generic masculine role nouns interfere with the neural processing of female referents: evidence from the P600. *Language, Cognition and Neuroscience*, *39*(10), 1366–1375.

Gosselin, L. (2018). Quand nommer, c'est juger: Les jugements de valeur internes aux noms d'humains. In C. Schnedecker & W. Mihatsch (Eds.), *Les Noms d'Humains – Théorie, Méthodologie, Classification: Nouvelles Approches en Sémantique Lexicale* (pp. 44–101). De Gruyter.

Grice, H. P. (1975). Logic and Conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and Semantics, Vol. 3: Speech Acts* (pp. 41–58). Academic Press.

Groult, B. (1984). 'Je suis une écrivaine…': Entretien avec Benoîte Groult par Alain Fantapie. *Médias et Langage*, *19–20*, 20–25.

Gumperz, J. J., & Levinson, S. C (Eds.). (1996). *Rethinking Linguistic Relativity*. Cambridge University Press.

Günthner, S., Hüpper, D., & Spieß, C. (Eds.). (2012). *Genderlinguistik: Sprachliche Konstruktionen von Geschlechtsidentität*. De Gruyter.

Gygax, P. M., Elmiger, D., Zufferey, S., Garnham, A., Sczesny, S., Von Stockhausen, L., Braun, F., & Oakhill, J. (2019a). A Language Index of Grammatical Gender Dimensions to Study the Impact of Grammatical Gender on the Way We Perceive Women and Men. *Frontiers in Psychology*, *10*, 1604 (1–6).

Gygax, P. M., & Gabriel, U. (2008). Can a Group of Musicians Be Composed of Women? Generic Interpretation of French Masculine Role Names in the Absence and Presence of Feminine Forms. *Swiss Journal of Psychology*, *67*(3), 143–151.

Gygax, P. M., Gabriel, U., Lévy, A., Pool, E., Grivel, M., & 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. M., Gabriel, U., Sarrasin, O., Oakhill, J., & 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. M., Garnham, A., & Doehren, S. (2016). What Do True Gender Ratios and Stereotype Norms Really Tell Us? *Frontiers in Psychology*, *7*, 1036 (1–6).

Gygax, P. M., Sato, S., Öttl, A., & Gabriel, U. (2021a). The Masculine Form in Grammatically Gendered Languages and Its Multiple Interpretations: A Challenge for Our Cognitive System. *Language Sciences*, *83*, 1–9.

Gygax, P. M., Schoenhals, L., Lévy, A., Luethold, P., & Gabriel, U. (2019b). Exploring the Onset of a Male-Biased Interpretation of Masculine Generics Among French Speaking Kindergarten Children. *Frontiers in Psychology*, *10*, 1225 (1–10).

Gygax, P. M., Tapiero, I., & Carruzzo, E. (2007). Emotion Inferences During Reading Comprehension: What Evidence Can the Self-Pace Reading Paradigm Provide? *Discourse Processes*, *44*(1), 33–50.

Gygax, P. M., Thomas, C., Didierjean, A., & Kuhn, G. (2019c). Are Women Perceived as Worse Magicians Than Men? Gender Bias When Evaluating Magic Tricks. *Social Psychological Bulletin*, *14*(3), 1–19.

Gygax, P., Zufferey, S., & Gabriel, U. (2021b). *Le cerveau pense-t-il au masculin? Cerveau, langage et représentations sexistes.* Le Robert.

Hagège, C. (2017). Ce n'est pas la langue qui est sexiste, mais les comportements sociaux. *Le Monde*, 26.12.2017.

Harley, T. A. (2014). *The Psychology of Language: From Data to Theory*. Psychology Press.

Härmä, J. (2000). Gender in French: A Diachronic Perspective. In T. Nevalainen, M. Rissanen, M. Saari, & B. Unterbeck (Eds.). *Gender in Grammar and Cognition. Part 1* (pp. 609–619). De Gruyter.

Haspelmath, M. (2006). Against Markedness (And What to Replace It With). *Journal of Linguistics*, *42*(1), 25–70.

Haßler, G., & Niederehe, H.-J. (Eds.). (2000). *Geschichte des Sprachbewußtseins in romanischen Ländern.* Nodus.

Haut Conseil à l'Égalité entre les femmes et les hommes. (2016 (2015)). *Pour une communication publique sans stéréotype de sexe: Guide pratique*. 2nd edition. La Documentation française.

Haut Conseil à l'Égalité entre les femmes et les hommes. (2022 (2015)). *Pour une communication publique sans stéréotypes de sexe.* 3rd edition. La Documentation française.

Haynie, H. J. (2023). Is There a Gender/Noun Class System Where Sex Is a Factor in Class Assignment? In H. Skirgård, H. J. Haynie, D. E. Blasi, H. Hammarström, J. Collins, J. J. Latarche, J. Lesage, T. Weber, A. Witzlack-Makarevich, S. Passmore, A. Chira, L. Maurits, R. Dinnage, M. Dunn, G. Reesink, R. Singer, C. Bowern, P. Epps, J. Hill et al. (Eds.), *Grambank v1.0.* Zenodo.

HDI = United Nations Development Programme. (2019). *Human Development Index*. http://hdr.undp.org/en/content/2019-human-development-index-ranking. Accessed 08.05.2020.

Heap, D. (2024). Los masculinos no tan 'genéricos': estudios empíricos sobre interpretaciones en español y en francés. *Círculo de Lingüística Aplicada a la Comunicación*, *97*, 217–230.

Hedges, L. V., & Schauer, J. M. (2019a). More Than One Replication Study Is Needed for Unambiguous Tests of Replication. *Journal of Educational and Behavioral Statistics*, *44*(5), 543–570.

Hedges, L. V., & Schauer, J. M. (2019b). Statistical Analyses for Studying Replication: Meta-Analytic Perspectives. *Psychological Methods*, *24*(5), 557–570.

Hegarty, P. J., Mollin, S., & Foels, R. (2016). Binomial Word Order and Social Status. In H. Giles & A. Maass (Eds.), *Advances in Intergroup Communication* (pp. 119–135). Peter Lang.

Heise, E. (2000). Sind Frauen mitgemeint? Eine empirische Untersuchung zum Verständnis des generischen Maskulinums und seiner Alternativen. *Sprache & Kognition*, *19*(1–2), 3–13.

Hellinger, M., & Bußmann, H. (Eds.). (2001). *Gender Across Languages: The Linguistic Representation of Women and Men, Vol. 1*. Benjamins.

Hellinger, M., & Bußmann, H. (Eds.). (2003). *Gender Across Languages: The Linguistic Representation of Women and Men, Vol. 3*. Benjamins.

von Heusinger, K. (2008). Verbal Semantics and the Diachronic Development of DOM in Spanish. *Probus*, *20*(1), 1–31.

von Heusinger, K. (2011). Specificity. In K. von Heusinger, C. Maienborn, & P. Portner (Eds.), *Semantics. An International Handbook of Natural Language Meaning, Vol 2*. (pp. 1025–1058). De Gruyter Mouton.

von Heusinger, K., Maienborn, C., & Portner, P. (Eds.). (2011). *Semantics. An International Handbook of Natural Language Meaning, Vol 2*. De Gruyter Mouton.

Hockett, C. F. (1958). *A Course in Modern Linguistics*. Macmillan.

Holtus, G., Metzeltin, M., & Schmitt, C. (Eds.). (1990). *Lexikon der Romanistischen Linguistik*. Max Niemeyer.

Houdebine, A.-M. (1987). Le français au féminin. *La Linguistique*, *23*(1), 13–34.

Houdebine-Gravaud, A.-M. (1995). Des femmes dans la langue et les discours. *Cahier des Annales de Normandie*, *26*, 385–398.

INSEE = Institut national de la statistique et des études économiques. (2018). *Tableaux de l'économie française: Édition 2018*. Insee Références.

Irmen, L., & Köncke, A. (1996). Zur Psychologie des 'generischen' Maskulinums. *Sprache & Kognition*, *15*(3), 152–166.

Irmen, L., & Roßberg, N. (2004). Gender Markedness of Language. *Journal of Language and Social Psychology*, *23*(3), 272–307.

Irmen, L., & Schumann, E. (2011). Processing Grammatical Gender of Role Nouns: Further Evidence From Eye Movements. *Journal of Cognitive Psychology*, *23*(8), 998–1014.

Jacob, G. (2009). *The Role of the Native Language in Second-Language Syntactic Processing*. PhD Thesis, University of Dundee.

Jäggi, T., Sato, S., Gillioz, C., & Gygax, P. M. (2020). An Interdisciplinary Approach to Understanding the Psychological Impact of Different Grammaticalizations of the Future. *Journal of Cognition*, *3*(1), 1–13.

Jegerski, J., & VanPatten, B. (Eds.). (2014). *Research Methods in Second Language Psycholinguistics*. Routledge.

Jegerski, J. (2014). Self-Paced Reading. In J. Jegerski & B. VanPatten (Eds.), *Research Methods in Second Language Psycholinguistics* (pp. 20–49). Routledge.

Just, M. A., Carpenter, P. A., & Woolley, J. D. (1982). Paradigms and Processes in Reading Comprehension. *Journal of Experimental Psychology. General*, *111*(2), 228–238.

Kalverkämper, H. (1979). Die Frauen und die Sprache. *Linguistische Berichte*, 62, 55–71.

Kambe, G., Rayner, K., & Duffy, S. A. (2001). Global Context Effects on Processing Lexically Ambiguous Words: Evidence From Eye Fixations. *Memory & Cognition*, *29*(2), 363–372.

Kaufmann, C., & Bohner, G. (2014). Masculine Generics and Gender-Aware Alternatives in Spanish. *IZGOnZeit. Onlinezeitschrift des Interdisziplinären Zentrums für Geschlechterforschung (IZG)*, *3*, 8–17.

Kehler, A. (2019). Cohesion and Coherence. In C. Maienborn, K. von Heusinger, & P. Portner (Eds.), *Sentence and Information Structure* (pp. 450–480). De Gruyter Mouton.

Kehler, A., Kertz, L., Rohde, H., & Elman, J. L. (2008). Coherence and Coreference Revisited. *Journal of Semantics*, *25*(1), 1–44.

Keith, N., Hartwig, K., & Richter, T. (2022). Ladies First or Ladies Last: Do Masculine Generics Evoke a Reduced and Later Retrieval of Female Exemplars? *Collabra: Psychology*, *8*(1), 32964 (1–16).

Khaznadar, E. (1993). Pour une première: Le dénomination de la femme dans l'actualité. Dichotomie, affixation et alternance. *Cahiers de lexicologie*, *63*(2), 143–169.

Khaznadar, E. (2002). Le masculin dit générique: mythe et langue. In V. Perry (Ed.), *Désexisation & parité linguistique: le cas de la langue française* (pp. 66–86). Proceedings of the 3ème Colloque international des recherches féministes francophones (Ateliers 3 et 30). Université Toulouse II – Le Mirail.

Khaznadar, E. (2012). Heurs et malheurs de la suffixation '-eur/euse'. *Le français moderne. Revue de linguistique française*, *2*, 220–245.

Kim, J., Angst, S., Gygax, P. M., Gabriel, U., & Zufferey, S. (2023a). The Masculine Bias in Fully Gendered Languages and Ways to Avoid It: A Study on Gender Neutral Forms in Québec and Swiss French. *Journal of French Language Studies*, *33*(1), 1–26.

Kim, J. D., Öttl, A., Gygax, P., Behne, D. M., Hyönä, J., & Gabriel, U. (2023b). 'The Authors' Make Me Think Equally of Women and Men: Exploring Mixed-Gender Representations in a Visual Categorisation Task. *Open Psychology*, *5*(1), 20220136 (1–24).

Klein, K. (2001). *Autohyponymie. Doppeldeutigkeit als Resultat pragmatischer Informativitätsverstärkung.* Master's Thesis, University of Cologne.

Köpcke, K.-M., & Zubin, D. (1996). Prinzipien für die Genuszuweisung im Deutschen. In E. Lang & G. Zifonun (Eds.), *Deutsch – typologisch* (pp. 473–491). De Gruyter.

Körner, A., Abraham, B., Rummer, R., & Strack, F. (2022). Gender Representations Elicited by the Gender Star Form. *Journal of Language and Social Psychology*, *41*(5), 553–571.

Körner, A., Glim, S., & Rummer, R. (2024). Examining the glottal stop as a mark of gender-inclusive language in German. *Applied Psycholinguistics*, *45*(1), 156–179.

Koster, D. (2016). *Understanding the World Through L1 and L2 German and Spanish: The Case of Placement Events.* PhD Thesis, University of Southern Denmark.

Koster, D., Cadierno, T., & Chiarandini, M. (2018). Mental Simulation of Object Orientation and Size: A Conceptual Replication With Second Language Learners. *Journal of the European Second Language Association*, *2*(1), 38–48.

Kotthoff, H., & Nübling, D. (2018). *Genderlinguistik: Eine Einführung in Sprache, Gespräch und Geschlecht*. Narr Francke Attempto.

Kotthoff, H., & Nübling, D. (2024 (2018)). *Genderlinguistik: Eine Einführung in Sprache, Gespräch und Geschlecht*. 2nd edition. Narr Francke Attempto.

Kramer, E. (2016). Feminist Linguistics and Linguistic Feminisms. In E. Lewin & L. M. Silverstein (Eds.), *Mapping Feminist Anthropology in the Twenty-First Century* (pp. 65–83). Rutgers University Press.

Kramer, R. (2020). Grammatical Gender: A Close Look at Gender Assignment Across Languages. *Annual Review of Linguistics*, *6*(1), 45–66.

Kubczak, H. (1991). Beobachtungen zur Sexusopposition im Wortschatz. *Sprachwissenschaft*, *16*, 398–416.

Kusterle, K. (2011). *Die Macht von Sprachformen: Der Zusammenhang von Sprache, Denken und Genderwahrnehmung*. Brandes & Apsel.

La Grande Grammaire du Français = Abeillé, A., & Godard, D. (Eds.). (2021). *La Grande Grammaire du Français*. Actes sud.

Labrosse, C. (1996). *Pour une grammaire non sexiste*. Remue-ménage.

Lang, E., & Zifonun, G. (Eds.). (1996). *Deutsch – typologisch*. De Gruyter.

Le bon usage 2011 = Grevisse, M., & Goosse, A. (2011 (1936)). *Le bon usage: Grevisse langue française*. 15th edition. De Boeck Supérieur.

Le bon usage 2016 = Grevisse, M., & Goosse, A. (2016 (1936)). *Le bon usage: Grevisse langue française*. 16th edition. De Boeck Supérieur.

Le Callennec, S. (2017). *Questionner le monde: Questionner le temps: questionner l'espace, explorer les organisations du monde: questionner le monde du vivant, de la matière et des objets*. Hatier.

Le Grand Robert = Robert, P., Rey, A., & Morvan, D. (Eds.). (2017). *Le Grand Robert de la langue française*. Dictionnaires Le Robert.

Ledgeway, A., & Maiden, M. (Eds.). (2016). *The Oxford Guide to the Romance Languages*. Oxford University Press.

Lenz, S. (2021). Linguist Peter Eisenberg: 'Die Genderfraktion verachtet die deutsche Sprache'. *Berliner Zeitung*, 12.05.2021.

Levinson, S. C. (2000). *Presumptive Meanings: The Theory of Generalized Conversational Implicature*. MIT Press.

Lévy, A., Gygax, P. M., & Gabriel, U. (2014). Fostering the Generic Interpretation of Grammatically Masculine Forms: When My Aunt Could Be One of the Mechanics. *Journal of Cognitive Psychology*, *26*(1), 27–38.

Lévy, A., Gygax, P. M., Gabriel, U., & Zesiger, P. (2016). Stereotype or Grammar? The Representation of Gender When Two-Year-Old and Three-Year-Old French-Speaking Toddlers Listen to Role Nouns. *Journal of Child Language*, *43*(6), 1292–1309.

Lewin, E., & Silverstein, L. M. (Eds.). (2016). *Mapping Feminist Anthropology in the Twenty-First Century*. Rutgers University Press.

Lindqvist, A., Renström, E. A., & Gustafsson Sendén, M. (2019). Reducing a Male Bias in Language? Establishing the Efficiency of Three Different Gender-Fair Language Strategies. *Sex Roles*, *81*(1–2), 109–117.

Lobin, H., & Nübling, D. (2018). Tief in der Sprache lebt die alte Geschlechterordnung fort: Genderdebatte. *Süddeutsche Zeitung*, 07.06.2018.

Loporcaro, M. (2016). Gender. In A. Ledgeway & M. Maiden (Eds.). *The Oxford Guide to the Romance Languages* (pp. 924–936). Oxford University Press.

Loporcaro, M. (2018). *Gender From Latin to Romance: History, Geography, Typology*. Oxford University Press.

Lucy, J. A. (1997). Linguistic Relativity. *Annual Review of Anthropology*, *26*(1), 291–312.

Lyons, J. (1977). *Semantics, Vol. 1*. Cambridge University Press.

Lyster, R. (2006). Predictability in French Gender Attribution: A Corpus Analysis. *Journal of French Language Studies*, *16*(1), 69–92.

Maienborn, C., von Heusinger, K., & Portner, P. (Eds.). (2019). *Sentence and Information Structure*. De Gruyter Mouton.

Marchello-Nizia, C., Combettes, B., Prévost, S., & Scheer, T. (Eds.). (2020). *Grande Grammaire Historique du Français (GGHF)*. De Gruyter.

Marsden, E., Morgan-Short, K., Thompson, S., & Abugaber, D. (2018). Replication in Second Language Research: Narrative and Systematic Reviews and Recommendations for the Field. *Language Learning*, *68*(2), 321–391.

Marsolier, M.-C., Touraille, P., & Allassonnière-Tang, M. (2024). Vowel Alternation With Final 'i' Offers an Easy-To-Learn Morphological Option for a Sex-Blind Grammatical Gender in French. *Frontiers in Psychology*, *15*, 1310475 (1–12).

Martinet, A. (1999). Genre et sexe. *La Linguistique*, *35*(2), 5–9.

Martyna, W. (1983). Beyond the 'He/Man' Approach: The Case for Nonsexist Language. In B. Thorne, C. Kramarae, & N. Henley (Eds.), *Language, Gender, and Society* (pp. 25–37). Newbury House.

Melka, F., & Zwanenburg, W. (1993). Femme et féminin en ancien français. *Cahiers de lexicologie*, *62*(1), 67–92.

Meuleneers, P., Zacharski, L., Ferstl, E. C., & Nübling, D. (Eds.). (2024). *Genderbezogene Personenreferenzen: Routinen und Innovationen*. Helmut Buske.

Michard, C. (1999). *Genre et sexe en linguistique: Sémantique ou zoologie?* Harmattan.

Michard, C. (2002). La notion de sexe dans le langage: attribut naturel ou marque de la classe appropriée? L'exemple du genre en linguistique. In V. Perry (Ed.), *Désexisation & parité linguistique: le cas de la langue française* (pp. 128–140). Proceedings of the 3ème Colloque international des recherches féministes francophones (Ateliers 3 et 30). Université Toulouse II – Le Mirail.

Michard, C. (2019). *Humain/Femelle de l'humain: Effet idéologique du rapport de sexage et notion de sexe en française*. Sans fin.

Michel, L. (2017). Le 'masculin culturel', un pied de nez au 'masculin générique'? In M. Vadot, F. Roche, & C. Dahou (Eds.), *Genre et sciences du langage: enjeux et perspectives* (pp. 59–77). Presses universitaires de la Méditerranée.

Mickan, A., Schiefke, M., & Stefanowitsch, A. (2014). Key Is a Llave Is a Schlüssel: A Failure to Replicate an Experiment From Boroditsky et al. 2003. *Yearbook of the German Cognitive Linguistics Association*, *2*(1), 39–50.

Mihatsch, W. (2018). Les jugements d'acceptabilité au service de la sémantique lexicale: tester les noms d'humains généraux. In C. Schnedecker & W. Mihatsch (Eds.), *Les Noms d'Humains – Théorie, Méthodologie, Classification: Nouvelles Approches en Sémantique Lexicale* (pp. 102–121). De Gruyter.

Miller, M. M., & James, L. E. (2009). Is the Generic Pronoun 'He' Still Comprehended as Excluding Women? *American Journal of Psychology*, *122*(4), 483–496.

Ministère chargé de l'Égalité entre les femmes et les hommes, de la Diversité et de l'Égalité des chances. (2017). *Égalité femmes-hommes: grande cause du quinquennat*. https://www.egalite-femmes-hommes.gouv.fr/25948-2/. Accessed 12.09.2022.

Misersky, J., Gygax, P. M., Canal, P., Gabriel, U., Garnham, A., Braun, F., Chiarini, T., Englund, K., Hanulikova, A., Öttl, A., Valdrova, J., Von Stockhausen, L., & Sczesny, S. (2014). Norms on the Gender Perception of Role Nouns in Czech, English, French, German, Italian, Norwegian, and Slovak. *Behavior Research Methods*, *46*(3), 841–871.

Misersky, J., Majid, A., & Snijders, T. M. (2019). Grammatical Gender in German Influences How Role-Nouns Are Interpreted: Evidence from ERPs. *Discourse Processes*, *56*(8), 643–654.

Motschenbacher, H. (2010). Female-As-Norm (FAN): A Typology of Female and Feminine Generics. In M. Bieswanger & H. Motschenbacher (Eds.), *Language in Its Socio-Cultural Context: New Explorations in Gendered, Global and Media Uses* (pp. 35–67). Peter Lang.

Mots-Clés. (2017). *L'écriture inclusive: La population française connaît-elle l'écriture inclusive? Quelle opinion en a-t-elle?* https://harris-interactive.fr/opinion_polls/lecriture-inclusive. Accessed 12.08.2022.

Mots-Clés & Google. (2021). *L'écriture inclusive en France en 2021*. https://www.motscles.net/etude-ecriture-inclusive. Accessed 12.08.2022.

Moyano, S., De Lemus, S., Kerleaux, V., Krawietz, O., & Dasgupta, N. (2023). *More Than Words: Gender Inclusive Language Creates Identity Safety and Protection Against Stereotype Threat for Women in a Mathematics Context* Manuscript, University of Granada. https://doi.org/10.31234/osf.io/wzc9u

Musan, R. (2010). *Informationsstruktur*. Universitätsverlag Winter.

Nadel, L. (Ed.). (2003). *Encyclopedia of Cognitive Science*. Wiley.

Neumann-Holzschuh, I. (Ed.). (2001). *Gender, Genre, Geschlecht: Sprach- und literaturwissenschaftliche Beiträge zur Gender-Forschung*. Stauffenburg.

Nevalainen, T., Rissanen, M., Saari, M., & Unterbeck, B. (Eds.). (2000). *Gender in Grammar and Cognition, Part 1*. De Gruyter.

New, B., Pallier, C., Brysbaert, M., & Ferrand, L. (2004). Lexique 2: A New French Lexical Database. *Behavior Research Methods, Instruments, & Computers*, *36*(3), 516–524.

Nikolayeva, O., Buz, E., Liu, L., Watts, A., & Jaeger, T. F. (2015). *Web Based Tutorial on Experimental Design*. https://www.hlp.rochester.edu/resources/BCS152-Tutorial. Accessed 13.09.2022.

Nissen, U. K. (1997). Do Sex-Neutral and Sex-Specific Nouns Exist: The Way to Non-sexist Spanish? In F. Braun (Ed.), *Kommunikation von Geschlecht: Communication of Gender* (pp. 222–241). Centaurus.

Nissen, U. K. (2013). Is Spanish Becoming more Gender Fair? A Historical Perspective on the Interpretation of Gender-Specific and Gender-Neutral Expressions. *Linguistik Online*, *58*(1), 99–107. https://bop.unibe.ch/linguistik-online/article/view/241.

Nübling, D. (Ed.). (2018). *Namen und Geschlechter: Studien Zum Onymischen Un/doing Gender*. De Gruyter Inc.

Open Science Collaboration (2015). Psychology. Estimating the Reproducibility of Psychological Science. *Science*, *349*(6251), aac4716 (1–9).

Pan, H.-Y., & Felser, C. (2011). Referential Context Effects in L2 Ambiguity Resolution: Evidence From Self-Paced Reading. *Lingua*, *121*(2), 221–236.

Perry, V. (Ed.) (2002). *Désexisation & parité linguistique: le cas de la langue française.* Proceedings of the 3ème Colloque international des recherches féministes francophones (Ateliers 3 et 30). Université Toulouse II – Le Mirail.

Perry, V. (2002). Bicatégorisation et colonialisme linguistique: les enjeux du 'Queer'. In V. Perry (Ed.), *Désexisation & parité linguistique: le cas de la langue française* (pp. 116–125). Proceedings of the 3ème Colloque international des recherches féministes francophones (Ateliers 3 et 30). Université Toulouse II – Le Mirail.

Perry, V. (2011). *Aspects du genre dans la didactique de l'anglais.* PhD Thesis, University of Toulouse, Toulouse 3.

Pettersson, M. (2011). *Geschlechtsübergreifende Personenbezeichnungen: Eine Referenz- und Relevanzanalyse an Texten.* Narr.

Polzin-Haumann, C., & Schweickard, W. (Eds.). (2015). *Manuel de linguistique française.* De Gruyter.

Porte, G. K., & McManus, K. (2019). *Doing Replication Research in Applied Linguistics.* Routledge.

Pozniak, C., & 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), 1–13.

Pozniak, C., Corbeau, E., & Burnett, H. (2023). Contextual Dilution in French Gender Inclusive Writing: An Experimental Investigation. *Journal of French Language Studies*, 1–20.

Prasad, G., & Linzen, T. (2019). Rapid Syntactic Adaptation in Self-Paced Reading: Detectable, but Only With Many Participants. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *47*(7), 1156–1172.

Proposition de loi contre l'écriture inclusive = Roger Chudeau et al. (2023). *Proposition de loi n°777 portant interdiction de l'écriture dite « inclusive » dans les éditions, productions et publications scolaires et universitaires ainsi que dans les actes civils, administratifs et commerciaux*. https://www.assemblee-nationale.fr/dyn/16/textes/l16b0777_proposition-loi. Accessed 31.05.2023.

Putnam, H. (Ed.). (1975). *Mind, Language and Reality*. Cambridge University Press.

Pyykkönen, P., Hyönä, J., & van Gompel, R. P. G. (2010). Activating Gender Stereotypes During Online Spoken Language Processing: Evidence From Visual World Eye Tracking. *Experimental Psychology*, *57*(2), 126–133.

Qualtrics. (2021). *Qualtrics Software*. https://www.qualtrics.com. Accessed 19.10.2021.

Redl, T. (2021). *Masculine Generic Pronouns: Investigating the Processing of an Unintended Gender Cue.* PhD Thesis, Radboud University.

Redl, T., Eerland, A., & Sanders, T. J. M. (2018). The Processing of the Dutch Masculine Generic 'Zijn' 'His' Across Stereotype Contexts: An Eye-Tracking Study. *PLOS One*, *13*(10), e0205903 (1–22).

Redl, T., Frank, S. L., De Swart, P., & De Hoop, H. (2021). The Male Bias of a Generically-Intended Masculine Pronoun: Evidence From Eye-Tracking and Sentence Evaluation. *PLOS One*, *16*(4), e0249309 (1–30).

Redl, T., Szuba, A., De Swart, P., Frank, S. L., & De Hoop, H. (2022). Masculine Generic Pronouns as a Gender Cue in Generic Statements. *Discourse Processes*, *59*(10), 828–845.

Rey-Debove, J. (1998). Madame 'la' ministre. *Le Monde*, 14.01.1998.

Richy, C., & Burnett, H. (2020). Jean Does the Dishes While Marie Fixes the Car: A Qualitative and Quantitative Study of Social Gender in French Syntax Articles. *Journal of French Language Studies*, *30*(1), 47–72.

Richy, C., & 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*, 1–31. https://journals.openedition.org/glad/2839.

Robert en ligne = Éditions Le Robert. (2022). *Le Robert: Dico en ligne*. https://dictionnaire.lerobert.com/definition. Accessed 13.09.2022.

Roberts, C. (2019). Topics. In C. Maienborn, K. von Heusinger, & P. Portner (Eds.), *Sentence and Information Structure* (pp. 381–412). De Gruyter Mouton.

Rodd, J. M., Lopez Cutrin, B., Kirsch, H., Millar, A., & Davis, M. H. (2013). Long-Term Priming of the Meanings of Ambiguous Words. *Journal of Memory and Language*, *68*(2), 180–198.

Rolf, E. (Ed.). (1997). *Pragmatik: Implikaturen und Sprechakte*. VS Verlag für Sozialwissenschaften.

Rothermund, K. (1998). Automatische geschlechtsspezifische Assoziationen beim Lesen von Texten mit geschlechtseindeutigen und generisch maskulinen Text-Subjekten. *Sprache & Kognition*, *17*(4), 183–198.

Rothermund, P., & Strack, F. (2024). Reminding May Not Be Enough: Overcoming the Male Dominance of the Generic Masculine. *Journal of Language and Social Psychology*, *43*(4), 468–485.

Rothmund, J., & Scheele, B. (2004). Personenbezeichnungsmodelle auf dem Prüfstand: Lösungsmöglichkeiten für das Genus-Sexus-Problem auf Textebene. *Zeitschrift für Psychologie*, *212*(1), 40–54.

Safina, E. S. (2024). Effects of Grammatical Gender on Gender Inferences: Experimental Evidence From Italian Common Gender Nouns. *International Journal of Linguistics*, *16*(3), 60–82.

Samel, I. (2008 (1997)). *Einführung in die feministische Sprachwissenschaft*. 2nd edition. Schmidt.

Samuel, S., Cole, G., & Eacott, M. J. (2019). Grammatical Gender and Linguistic Relativity: A Systematic Review. *Psychonomic Bulletin & Review*, *26*(6), 1767–1786.

Sarrasin, O., Gabriel, U., & Gygax, P. M. (2012). Sexism and Attitudes Toward Gender-Neutral Language. *Swiss Journal of Psychology*, *71*(3), 113–124.

Sato, S., Gygax, P. M., & Gabriel, U. (2013). Gender Inferences: Grammatical Features and Their Impact on the Representation of Gender in Bilinguals. *Bilingualism: Language and Cognition*, *16*(4), 1–16.

Sato, S., Gygax, P. M., & Gabriel, U. (2016). Gauging the Impact of Gender Grammaticization in Different Languages: Application of a Linguistic-Visual Paradigm. *Frontiers in Psychology*, *7*, 140 (1–13).

Sato, S., Öttl, A., Gabriel, U., & Gygax, P. M. (2017). Assessing the Impact of Gender Grammaticization on Thought: A Psychological and Psycholinguistic Perspective. *Osnabrücker Beiträge zur Sprachtheorie (OBST)*, *90*, 117–136.

Sato, S., & Vanek, N. (2023). Contrasting Online and Offline Measures: Examples From Experimental Research on Linguistic Relativity. In S. Zufferey & P. Gygax (Eds.), *The Routledge Handbook of Experimental Linguistics* (pp. 217–234). Routledge.

Sauteur, T., Gygax, P., Tibblin, J., Escasain, L., & Sato, S. (2023). 'L'écriture inclusive, je ne connais pas très bien… mais je déteste !'. *GLAD! Revue sur le langage, le genre, les sexualités*, *14*, 1–22.

Schafroth, E. (1998). *Die Feminisierung von Berufsbezeichnungen im französischen Sprachraum: Mit einem vergleichenden Blick auf das Deutsche und andere Sprachen.* Habilitation Thesis, University of Augsburg.

Schafroth, E. (2001). Zwischen Tradition und political correctness: Zum Problem der femininen Berufsbezeichnungen in französischsprachigen Ländern. In I. Neumann-Holzschuh (Ed.), *Gender, Genre, Geschlecht: Sprach- und literaturwissenschaftliche Beiträge zur Gender-Forschung* (pp. 125–150). Stauffenburg.

Schafroth, E. (2003). French. Gender in French: Structural Properties, Incongruences and Asymmetries. In M. Hellinger & H. Bußmann (Eds.), *Gender Across Languages: The Linguistic Representation of Women and Men, Vol. 3* (pp. 87–117). Benjamins.

Schafroth, E. (2004). Genuskongruenz im Deutschen, Französischen und Italienischen. *Muttersprache*, *114*(4), 333–347.

Schafroth, E. (2015). Sexe et genre. In C. Polzin-Haumann & W. Schweickard (Eds.), *Manuel de linguistique française* (pp. 335–364). De Gruyter.

Schauer, J. M., & Hedges, L. V. (2021). Reconsidering Statistical Methods For Assessing Replication. *Psychological Methods*, *26*(1), 127–139.

Schmitz, D., Schneider, V., & Esser, J. (2023). No Genericity in Sight: An Exploration of the Semantics of Masculine Generics in German. *Glossa Psycholinguistics*, *2*(1), 1–33.

Schnedecker, C., & Mihatsch, W. (Eds.). (2018). *Les Noms d'Humains – Théorie, Méthodologie, Classification: Nouvelles Approches en Sémantique Lexicale*. De Gruyter.

Schøsler, L. (2020). Les catégories nominales: noms, adjectifs et participes. In C. Marchello-Nizia, B. Combettes, S. Prévost, & T. Scheer (Eds.), *Grande Grammaire Historique du Français (GGHF)* (pp. 632–664). De Gruyter.

Schröter, J., Linke, A., & Bubenhofer, N. (2012). 'Ich als Linguist' – Eine empirische Studie zur Einschätzung und Verwendung des generischen Maskulinums. In S. Günthner, D. Hüpper, & C. Spieß (Eds.), *Genderlinguistik: Sprachliche Konstruktionen von Geschlechtsidentität* (pp. 359–380). De Gruyter.

Schunack, S., & Binanzer, A. (2022). Revisiting Gender-Fair Language and Stereotypes – A Comparison of Word Pairs, Capital I Forms and the Asterisk. *Zeitschrift für Sprachwissenschaft*, *41*(2), 309–337.

Schwarze, B. (2008). *Genus im Sprachvergleich: Klassifikation und Kongruenz im Spanischen, Französischen und Deutschen.* Narr.

Sebastián-Tirado, A., Félix-Esbrí, S., Forn, C., & Sanchis-Segura, C. (2023). Gender Stereotypes Selectively Affect the Remembering of Highly Valued Professions. *Sex Roles*, *88*, 326–347.

Skirgård, H., Haynie, H. J., Blasi, D. E., Hammarström, H., Collins, J., Latarche, J. J., Lesage, J., Weber, T., Witzlack-Makarevich, A., Passmore, S., Chira, A., Maurits, L., Dinnage, R., Dunn, M., Reesink, G., Singer, R., Bowern, C., Epps, P., Hill, J. et al. (Eds.). (2023). *Grambank v1.0*. Zenodo. https://grambank.clld.org/. Accessed 07.07.2023.

Slobin, D. I. (1996). From 'Thought and Language' to 'Thinking for Speaking'. In J. J. Gumperz & S. C. Levinson (Eds.), *Rethinking Linguistic Relativity* (pp. 70–96). Cambridge University Press.

Slobin, D. I. (2003). Language and Thought Online: Cognitive Consequences of Linguistic Relativity. In D. Gentner & S. Goldin-Meadow (Eds.), *Language in Mind: Advances in the Study of Language and Thought* (pp. 157–192). MIT Press.

Smelser, N. J., & Baltes, P. B. (Eds.). (2001). *International Encyclopedia of the Social & Behavioral Sciences*. Elsevier.

Spaak, M. (2019). *Sea, Sexisme and Sun: Chroniques du sexisme ordinaire*. First.

Spinelli, E., Chevrot, J.-P., & Varnet, L. (2023). Neutral Is Not Fair Enough: Testing the Efficiency of Different Language Gender-Fair Strategies. *Frontiers in Psychology*, *14*, 1256779 (1–10).

Spivey-Knowlton, M. J., Trueswell, J. C., & Tanenhaus, M. K. (1993). Context Effects in Syntactic Ambiguity Resolution: Discourse and Semantic Influences in Parsing Reduced Relative Clauses. *Canadian Journal of Experimental Psychology = Revue canadienne de psychologie experimentale*, *47*(2), 276–309.

Stahlberg, D., Braun, F., Irmen, L., & Sczesny, S. (2007). Representation of the Sexes in Language. In K. Fiedler (Ed.), *Social Communication* (pp. 163–187). Psychology Press.

Stahlberg, D., & Sczesny, S. (2001). Effekte des generischen Maskulinums und alternativer Sprachformen auf den gedanklichen Einbezug von Frauen. *Psychologische Rundschau*, *52*(3), 131–140.

Stahlberg, D., Sczesny, S., & Braun, F. (2001). Name Your Favorite Musician. *Journal of Language and Social Psychology*, *20*(4), 464–469.

Stetie, N. A., & Zunino, G. M. (2022a). Non-binary Language in Spanish? Comprehension of Non-binary Morphological Forms: A Psycholinguistic Study. *Glossa: A Journal of General Linguistics*, *7*(1), 1–38.

Stetie, N. A., & Zunino, G. M. (2022b). Non-Binary Language Forms in Spanish: Consciously Using it Facilitates Processing During Comprehension? *University of Pennsylvania Working Papers in Linguistics*, *28*(1), 166–175.

Stetie, N. A., & Zunino, G. M. (2023). Estereotipos y morfología de género en nombres de rol: un estudio psicolingüístico. *Lexis*, *47*(2), 678–716.

Stevanović, T. (2023). *Das sog. generische Maskulinum – eine schon immer dagewesene sprachliche Routine?* Talk at the Annual Conference of the Gesellschaft für deutsche Sprachwissenschaft, AG 10: Geschlechterbewusste Sprache: Routinisierter Gebrauch und kreative Neuformen. University of Cologne, 09.03.2023.

Storme, B., & Delaloye Saillen, L. (2024). Effects of Grammatical Gender on Gender Inferences: Evidence From French Hybrid Nouns. *Linguistics Vanguard*, *10*(1), 297–308.

Sturt, P. (2007). Semantic Re-Interpretation and Garden Path Recovery. *Cognition*, *105*(2), 477–488.

Szuba, A., Redl, T., & De Hoop, H. (2022). Are Second Person Masculine Generics Easier to Process for Men Than for Women? Evidence from Polish. *Journal of Psycholinguistic Research*, *51*, 819–845.

Thorne, B., Kramarae, C., & Henley, N. (Eds.). (1983). *Language, Gender, and Society*. Newbury House.

Tibblin, J. (2020). Les attitudes envers le langage inclusif des francophones et leur effet sur l'évaluation d'un texte. *SHS Web of Conferences*, *78*, 13006 (1–14).

Tibblin, J., Granfelt, J., van de Weijer, J., & Gygax, P. M. (2023b). The Male Bias Can Be Attenuated in Reading: On the Resolution of Anaphoric Expressions Following Gender-Fair Forms. *Glossa Psycholinguistics*, *2*(1), 1–33.

Tibblin, J., van de Weijer, J., Granfeldt, J., & Gygax, P. M. (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.

Trésor de la langue française informatisé = Analyse et Traitement informatique de la langue française. (2002). *Trésor de la langue française informatisé*. http://atilf.atilf.fr/tlfv3.htm. Accessed 12.09.2022.

Trueswell, J. C., & Tanenhaus, M. K. (1994). Toward a Lexicalist Approach of Constraint-Based Syntactic Ambiguity Resolution. In C. Clifton, L. Frazier, & K. Rayner (Eds.), *Perspectives on Sentence Processing* (pp. 155–179). Psychology Press.

Trueswell, J. C., Tanenhaus, M. K., & Garnsey, S. M. (1994). Semantic Influences On Parsing: Use of Thematic Role Information in Syntactic Ambiguity Resolution. *Journal of Memory and Language*, *33*(3), 285–318.

Trutkowski, E. (2018). Wie generisch ist das generische Maskulinum? Über Genus und Sexus im Deutschen. *ZAS Papers in Linguistics*, *59*, 83–96.

Trutkowski, E., & Weiß, H. (2023). Zeugen gesucht! Zur Geschichte des generischen Maskulinums im Deutschen. *Linguistische Berichte*, *273*, 5–40.

Tucker, G. R., Rigault, A. A., & Lambert, W. E. (1977). *The French Speaker's Skill With Grammatical Gender: An Example of Rule-Governed Behavior*. Mouton.

Ulrich, M. (1988). 'Neutrale' Männer – 'markierte' Frauen: Feminismus und Sprachwissenschaft. *Sprachwissenschaft*, *13*, 383–399.

University of Edinburgh. (1998). *WebExp Demonstrations*. https://www.lingexp.uni-tuebingen.de/webexp2_1.3_alpha/release/demos/self-paced-reading-info.html. Accessed 13.09.2022.

Vadot, M., Roche, F., & Dahou, C. (Eds.). (2017). *Genre et sciences du langage: enjeux et perspectives*. Presses universitaires de la Méditerranée.

van Gompel, R. P. G., Pickering, M. J., Pearson, J., & Jacob, G. (2006). The Activation of Inappropriate Analyses in Garden-Path sentences: Evidence from Structural Priming. *Journal of Memory and Language*, *55*(3), 335–362.

Vervecken, D., Gygax, P. M., Gabriel, U., Guillod, M., & Hannover, B. (2015). Warm-Hearted Businessmen, Competitive Housewives? Effects of Gender-Fair Language on Adolescents' Perceptions of Occupations. *Frontiers in Psychology*, *6*, 1437.

Vervecken, D., & Hannover, B. (2015). Yes I Can! Effects of Gender Fair Job Descriptions on Children's Perceptions of Job Status, Job Difficulty, and Vocational Self-Efficacy. *Social Psychology*, *46*(2), 76–92.

Viennot, É. (2014). *Non, le masculin ne l'emporte pas sur le féminin! Petite histoire des résistances de la langue française*. iXe.

Viennot, É. (2018). *Le langage inclusif: Pourquoi, comment*. iXe.

Voga, M., Anastassiadis-Symeonidis, A., & Giraudo, H. (2014). Does Morphology Play a Role in L2 Processing? *Lingvisticæ Investigationes*, *37*(2), 338–352.

Weinrich, H. (1982). *Textgrammatik der französischen Sprache*. Klett.

Whorf, B. L., & Carroll, J. B. (Eds.). (1956). *Language, Thought, and Reality: Selected Writings*. MIT Press.

Witzel, N., Witzel, J., & Forster, K. I. (2012). Comparisons of Online Reading Paradigms: Eye Tracking, Moving-Window, and Maze. *Journal of Psycholinguistic Research*, *41*(2), 105–128.

Wolf, F., Gibson, E., & Desmet, T. (2004). Discourse Coherence and Pronoun Resolution. *Language and Cognitive Processes*, *19*(6), 665–675.

Xiao, H., Strickland, B., & 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. (1978). *Les mots et les femmes: Essai d'approche socio-linguistique de la condition féminine*. Payot.

Yeari, M., & van den Broek, P. (2011). A Cognitive Account of Discourse Understanding and Discourse Interpretation: The Landscape Model of Reading. *Discourse Studies*, *13*(5), 635–643.

Yeaton, J., Muelas-Gil, M., & Scontras, G. (2023). Gender-Inclusive Language as a Rational Speech Act in Spanish. *Proceedings of the Linguistic Society of America*, *8*(1), 5529 (1–15).

Zacharski, L., & Ferstl, E. C. (2023). Gendered Representations of Person Referents Activated by the Nonbinary Gender Star in German: A Word-Picture Matching Task. *Discourse Processes*, *60*(4–5), 294–319.

Zapf, M. (2024). *Gender, Sprache, Kognition: Eine linguistische Untersuchung zu genderinklusivem Sprachgebrauch im Spanischen*. J. B. Metzler.

Zufferey, S., & Gygax, P. (Eds.). (2023). *The Routledge Handbook of Experimental Linguistics*. Routledge.

Zwaan, R. A. (2016). Situation Models, Mental Simulations, and Abstract Concepts in Discourse Comprehension. *Psychonomic Bulletin & Review*, *23*(4), 1028–1034.