

Graphing the Second Sex

Evidence for a Male-First Preference for Data Displays in Studies of Health-Related Quality of Life from 2003 to 2024

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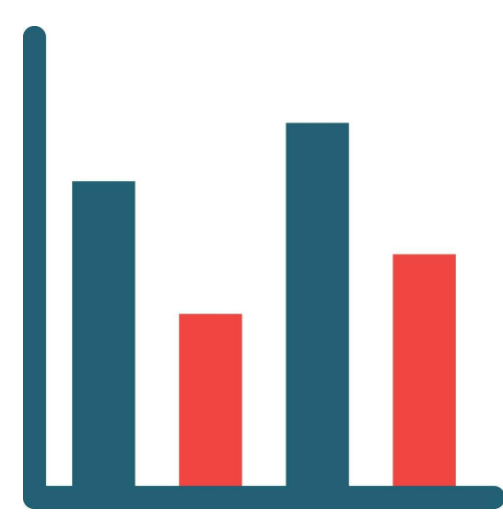
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INTRODUCTION



Data visualisations such as graphs and tables convey scientific information in the form of images to audiences in order to facilitate understanding and support decision-making¹

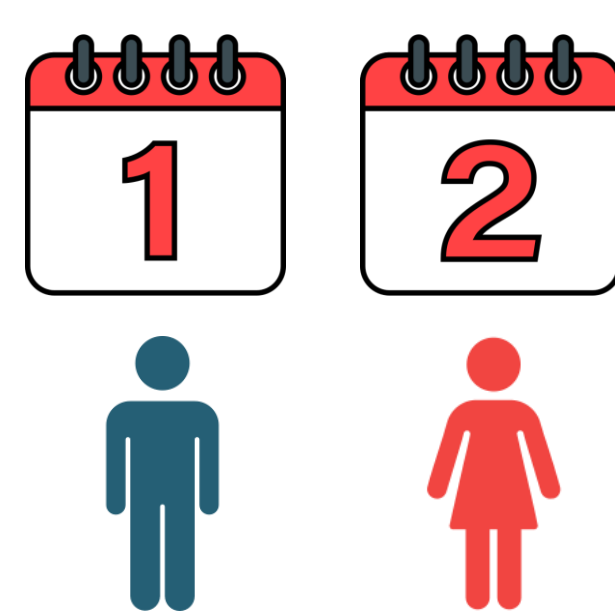
Visualisations are thus powerful *representational* tools that:

Translate summary statistics into an influential form²

Also possess the potential to mislead³

Nudge viewers to see representations as 'literally' true⁴

Content analysis of scientific articles have documented a simple but widespread implicit bias in the reporting of sex/gender differences:



Graphs and tables present data on males first, ahead of data on females^{5,6,7,8}

This arbitrary male-first order preference has been observed in:

74% tables & graphs in psychology⁵
70% tables in medicine⁶
60% graphs in medicine⁶

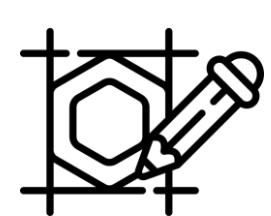
And carries an underlying implication: **Androcentric bias**

- Men = default human category ('the norm')
- Women = literally the second sex ('the effect to be explained')

STUDY AIMS

We sought to document whether, and to what extent, a male-first display preference might be present in the literature on health-related quality of life (HRQoL)

METHOD



Study design
Targeted review & content analysis



Data sources
233 articles from *Health & Quality of Life Outcomes* (IF: 3.6) from 2003-2024 that report on sex differences



Coding of order preference
Horizontal axis (L-R): ⇔
Vertical axis (T-B): ↓

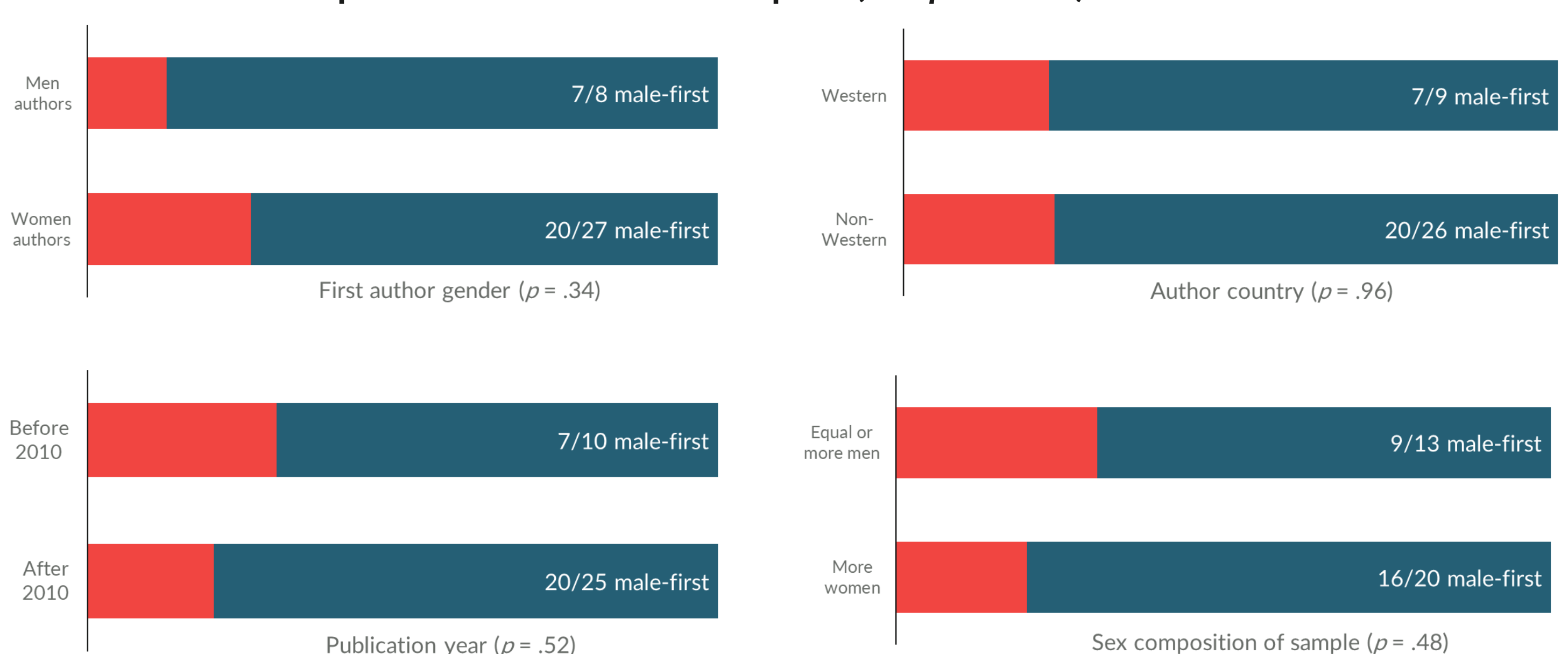
*placement of sex/gender categories in graph legends were also extracted

RESULTS: Male-first graphical displays

- We analysed 65 graphs of sex/gender differences.
- Majority (50/65) arrayed information on males first, indicative of a male-first preference, $p < .0001$



- This asymmetric pattern held true regardless of factors such as: first author gender, author country, publication year, or sex composition of the sample (all p 's $> .3$)



RESULTS: Male-first tabular displays

- We analysed 503 tables featuring sex/gender information.
- The same asymmetric pattern was observed across three types of tabular displays.



RESULTS: Male-first regression models

- 44/74 regression models (60%) arbitrarily set men as the reference category, suggestive of a male-first preference ($p = .06$)
- This pattern was observed both in studies with more men as well as in studies with more women in the sample ($p = .80$)

DISCUSSION

- Data visualisation practices in HRQoL implicitly prioritise male before female – suggesting a hitherto **undocumented instance of androcentric bias** in the field
- We also found evidence suggestive of a male-first bias in analysis: **Males were more often set as the reference category** in regression, even when there were fewer men in the study
- Authors, analysts, and editors in HRQoL need to **be aware of perpetuating implicit gender bias** in seemingly 'objective' visualisations of data^{5,6,7,8}

REFERENCES Available in supplement