Self-reported Demographics and Discourse Dynamics in a Persuasive Online Forum

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Explicit identity in interactive discourse

- **Impression management**: we strategically present ourselves to others to achieve socially and rhetorically desirable goals

  (Goffman, 1959)

- **Demographic parameters**: intentionally communicated to create/manage our own social identities, impacting

  (Gumperz, 1982)

  - role of the speaker
  - expectations and standards of the audience
  - subsequent discourse dynamics

Argumentation and persuasive discourse

Argumentative success is contingent upon the way arguers manage and project their identities (Kline, 1987)

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- ▶ **Research Gap:**
  - ▶ Lack of relevant datasets on the effects of gender and demographic properties explicitly noted by author/community
  - ▶ Limited analysis on how inclusion of explicit demographics in online argument forums impacts discourse
  - ▶ Current author gender annotations rely on induced methods (e.g. first names or profile pictures), neglecting the social nature of gender and overlooking the impact of self-disclosures

Explicit Gender Disclosures in Persuasive Discourse

Investigate self-disclosures of **author gender** and their
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RQ1 When do people disclose their gender?

- ▶ distribution of gender self-disclosures across automatically extracted topics

RQ2 How does the forum community react to gender disclosures?

RQ3 What are the stylistic features of posts with self-disclosures, and how do they impact the forum community?

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RQ1 When do people disclose their gender?

RQ2 How does the forum community react to gender disclosures?

  ▶ analysis of the modulation of forum activity (votes, replies,
    community distribution) triggered by the self-disclosures

RQ3 What are the stylistic features of posts with self-disclosures, and
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RQ1 When do people disclose their gender?

RQ2 How does the forum community react to gender disclosures?

RQ3 What are the stylistic features of posts with self-disclosures, and how do they impact the forum community?

- ▶ integrate linguistic (i.e., readability metrics, relative frequency of POS tags) and pragmatic (i.e., toxicity, sentiment) features

CMV: I am a 16 year old who wants to start smoking.

I am 16, female, and I think I should be allowed to smoke. I know about lung cancer and what it can do to you, and I've seen all those adverts about bad breath and rotting gums. (...)

author: llosa, score: 16, comments: 151

/r/ChangeMyView

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I'm 26 and would very much like to go back in time and shout at my 16 year old self for starting smoking. (...)

author: andthecircus, score: 92, 1Δ

I shall dissect your post line by line. For reference I am an 19 year old male. (...)

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- ▶ Starting Point: CMV_T (Tan et al., 2016)
  - ▶ ~20k posts and 1M replies

Data: CMVGENDER

► Filter CMV$_T$ for explicit gender mentions


```
me as a          tall           woman
I am      →      rich    →      nonbinary
I identify as    white          male
(...)            (...)          (...)
```

► multiple online heuristics, e.g. `gender.fandom.com` & `www.gendergp.com`

► 83 gender-identity expressions, 48 context markers

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Explicit Gender Disclosures

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    www.gendergp.com
  ► 83 gender-identity expressions, 48 context markers

► Two human annotators
  ► quoted speech: *They don't want to hear 'I'm nonbinary'*
  ► hypothetical situations: *If I am female*

Data: CMVGENDER

Distribution

	Posts	Comments	Discussions	Authors
male				
female				
trans female				
transgender				
trans male				
genderqueer				
non-binary				
Total	396	3,235	1,812	2,456

Data: CMVGENDER

Distribution

	Posts	Comments	Discussions	Authors
male	299	1,953	1,357	1,640
female	89	961	693	674
trans female	4	152	97	76
transgender	2	73	60	58
trans male	1	47	32	27
genderqueer	1	30	24	22
non-binary	0	19	16	16
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> author: llosa, score: 16, comments: 151
> CMVGENDER: F, EXTCMVGENDER: F,

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	Posts
male	2,253
female	396

Data: Annotate Additional Features

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	Posts	Comments
male	2,253	227,261
female	396	53,042

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CMVGENDER: F, EXTCMVGENDER: F, comment features,

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avg comment score
% CMVGENDER in comments [m|f]
% EXTCMVGENDER in comments [m|f]

author: andtheci...

re: 8, 2Δ

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CMVGENDER: F, extCMVGENDER: F, comment features, ~80 text features,

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syntactic features
surface-level features
lexical diversity & sophistication
sentiment features
toxicity classifier

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I'm 26 and would [...] like to [...] back in time and [...] self for starting s[...]

BERTopic (Grootendorst, 2022)
264 topics total

[...] discuss [...] post line by line. For [...] 9 year old **male**. (...)

author: andtheci[...]   XI, score: 8, 2Δ

RQ1: When Do People Explicitly Mention their Gender?

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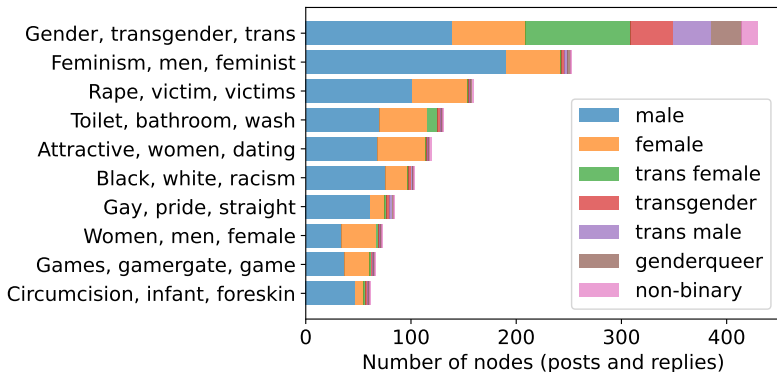
▶ Topics relate to gender or situations in which the set of experiencers is unbalanced

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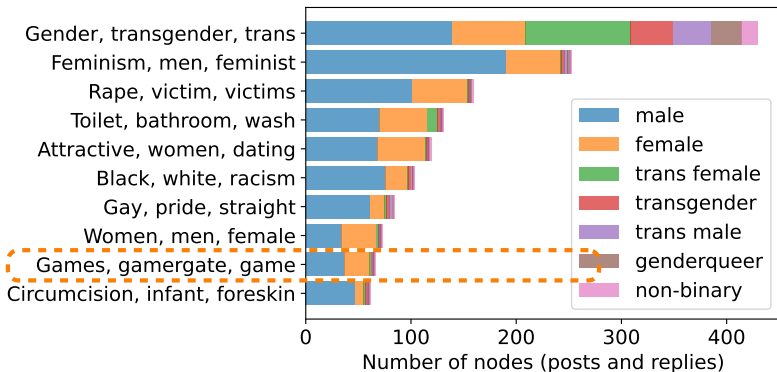
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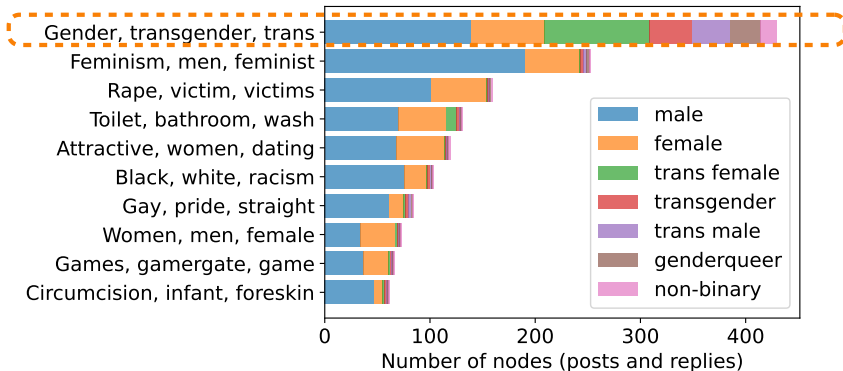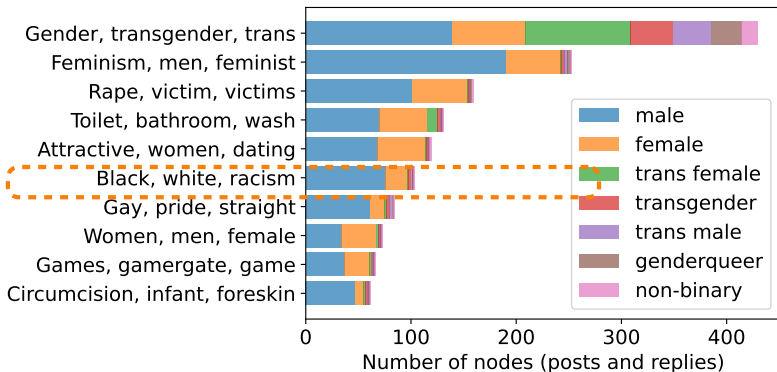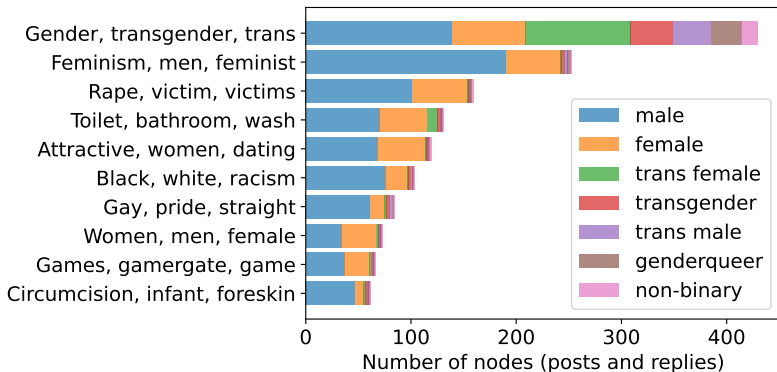- ▶ Topics relate to gender or situations in which the set of experiencers is unbalanced
- ▶ Race-related topic: co-occurrence pattern with gender report, e.g. *"as an Asian woman"*, *"I am a white man"*.
- ▶ All topics addressed by males and females

RQ1: When Do People Explicitly Mention their Gender?

▶ Establishing the speaker's credibility (Falk and Lapesa, 2022)

> **CMV: If I was raped or sexually assaulted I probably wouldn't report it.**
>
> Preface: I'm a 23 year old **woman**. I believe that my life would be far worse off (...)

▶ An implicit rebuttal (Habernal and Gurevych, 2017)

> **I think that feminism currently uses hate speech as a way to advance its goals. In fact, this attitude hurts the advancement of women. CMV**
>
> I'll start by saying I'm 26 **male**. (...)

▶ A combination of a credibility with a concession (Musi, 2018)

> **CMV: I think the feminist movement was detrimental to society.**
>
> Firstly I'd just like to point out that I am **female**. Secondly I'd like to clarify that I'm all for equality between all people. However, (...)

RQ2: How do these mentions influence the community?

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- ▶ Regression models:
  - ▶ Consider CMVGENDER and SCORE as dependent variables
  - ▶ Independent variables:
    - ▶ type of interaction (i.e. quantity and degree of post appreciation)
    - ▶ community composition (i.e. amount of males and/or females in the comment community)

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- ▶ Step-wise model selection via AIC
  - ▶ CMVGENDER Pseudo $R^2 = 52\%$; SCORE $R^2 = 64\%$
  - ▶ Report standardized beta values for significant ($Pr(|z|) < 0.05$) terms

RQ2: Who Answers to Whom?
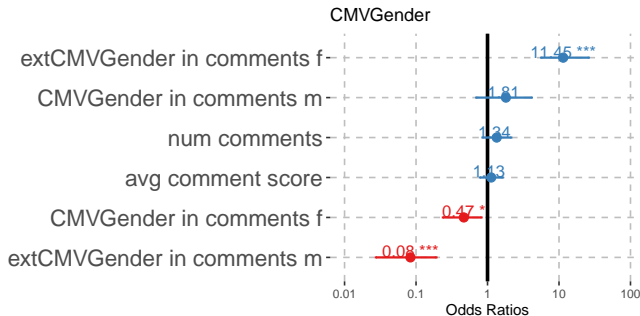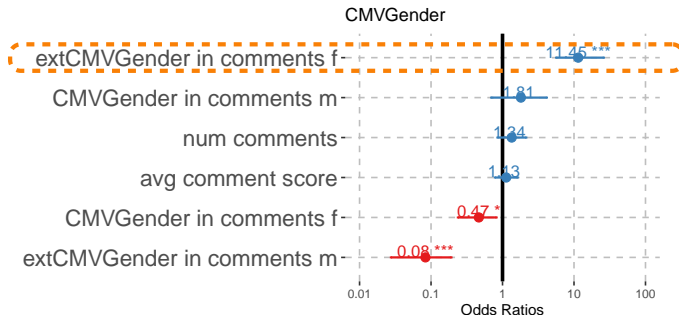
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► Explicit mentions strongly define the commenting population
  ► Note: this is not a feature of the model for EXTCMVGENDER

RQ2: Who Answers to Whom?

CMVGender

Variable	Odds Ratio
extCMVGender in comments f	11.45 ***
CMVGender in comments m	1.81
num comments	1.34
avg comment score	1.13
CMVGender in comments f	0.47 *
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Odds Ratios

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RQ2: Who Answers to Whom?

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- ▶ Argument-counterargument discourse

RQ2: Who Answers to Whom?

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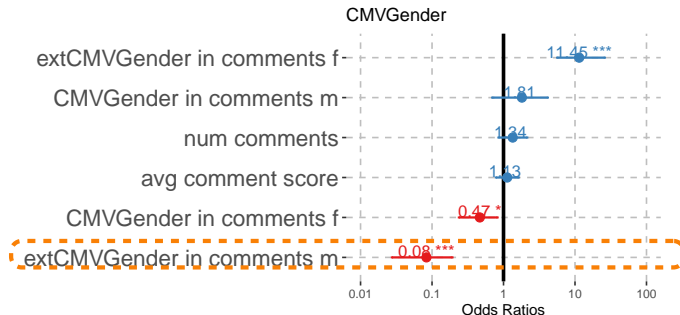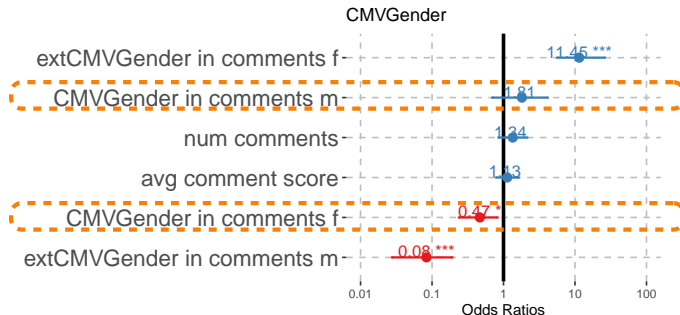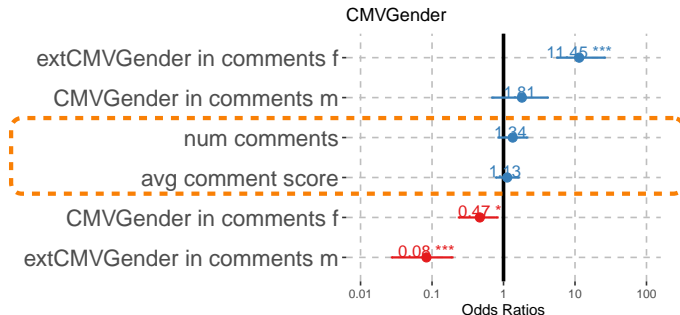|	Odds Ratios
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- ▶ Argument-counterargument discourse
- ▶ Quantity and quality of interaction higher for female posts

RQ2: How does the Forum Community React?
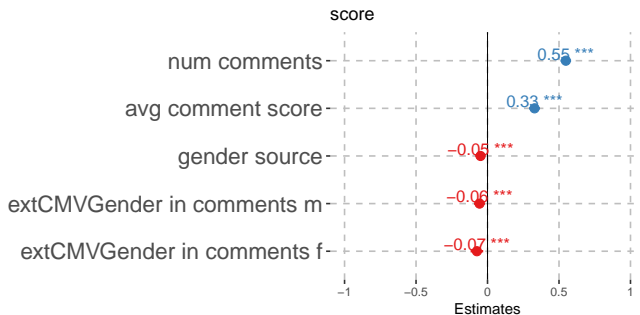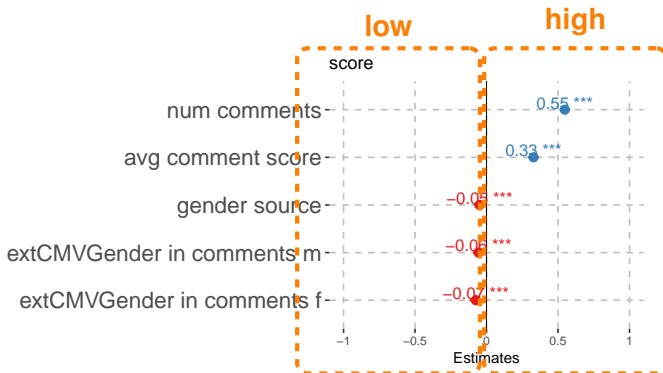
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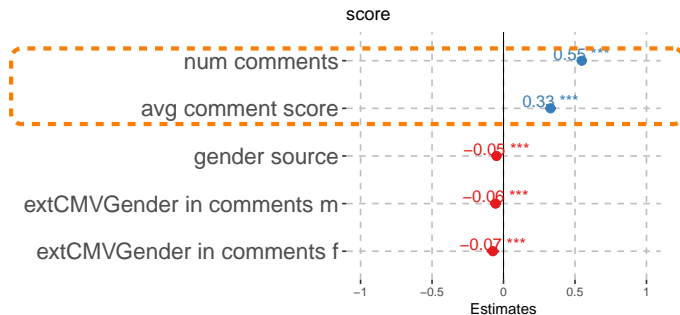
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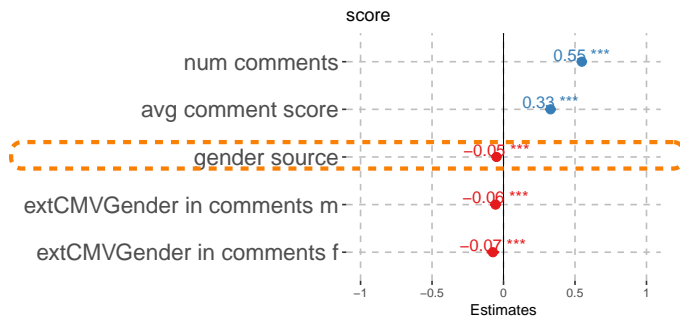
- comments scores are strong predictors for post score
- explicit gender mentions linked to *decreased* post appreciation

RQ3: The role of stylistic and pragmatic features

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- ▶ Logistic regression model
    - ▶ EXTCMVGENDER as dependent variable
    - ▶ include style features in independent variables

- ▶ Step-wise model selection via AIC
    - ▶ EXTCMVGENDER Pseudo $R^2 = 61\%$
    - ▶ Report standardized beta values for significant ($Pr(|z|) < 0.05$) terms

RQ3: The role of stylistic and pragmatic features

extCMVGender

	Odds Ratios
extCMVGender in comments f	7.91 ***
trust verbs component	1.40 ***
num comments	1.39 *
score	1.34 *
Lex Decision Accuracy	1.29 *
economy component	1.24 *
gender source	1.18 *
num comments × score	0.82 *
failure component	0.81 *
num question	0.75 *
hypernomy verb noun	0.73 *
certainty component	0.70 ***
toxicity toxic	0.69 *
extCMVGender in comments m	0.16 ***

RQ3: The role of stylistic and pragmatic features

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extCMVGender

Feature	Odds Ratio
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trust verbs component	1.40 ***
num comments	30 *
score	34 *
Lex Decision Accuracy	1.30 *
economy component	1.24 *
gender source	1.18 *
num comments × score	0.8 *
failure component	0.81 *
num question	0.75
hypernomy verb noun	0.72 *
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Odds Ratios

▶ gender-dependent engagement stays, but not in explicit mentions

RQ3: The role of stylistic and pragmatic features

extCMVGender

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extCMVGender in comments f	7.91 ***
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num comments	1.30 *
score	1.34 *
Lex Decision Accuracy	1.28 *
economy component	1.24 *
gender source	1.48 *
num comments × score	0.85 *
failure component	0.81 *
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- ▶ gender-dependent engagement stays, but not in explicit mentions
- ▶ style-related differences   (Morales Sánchez et al., 2022)

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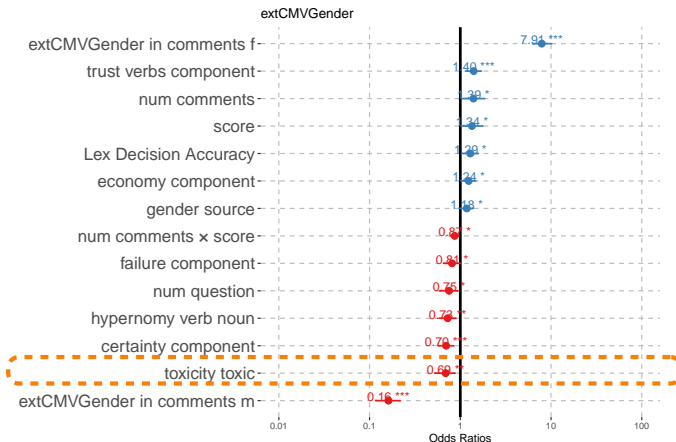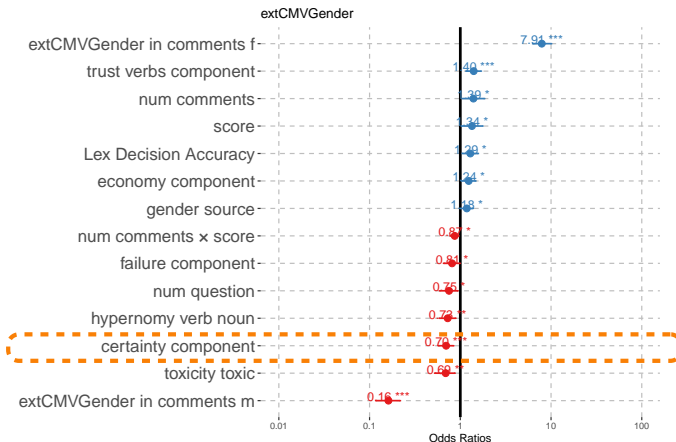- ▶ style-related differences (Morales Sánchez et al., 2022)

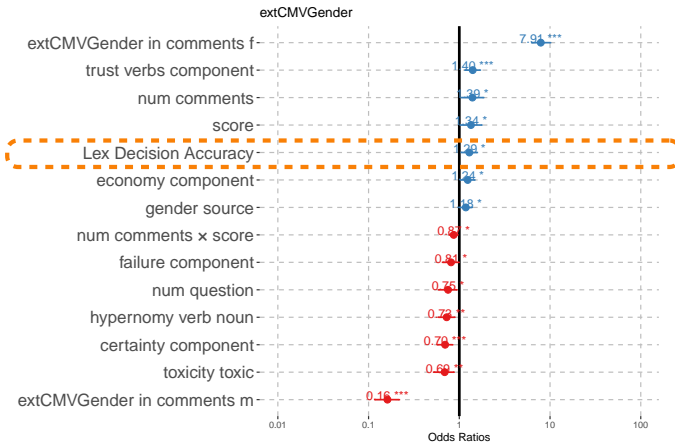# RQ3: The role of stylistic and pragmatic features

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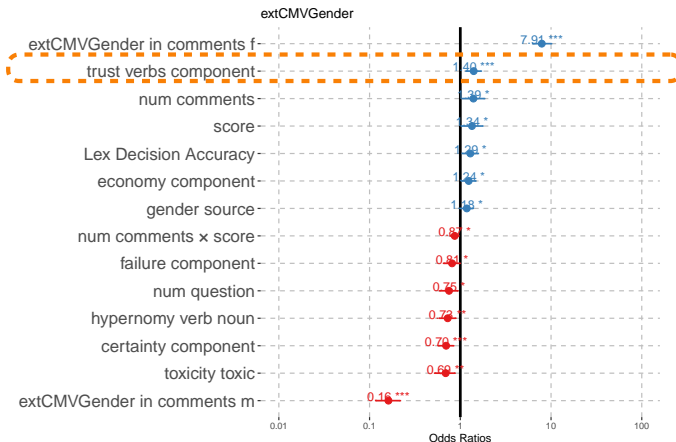
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Takeaways

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  ► increasing their credibility or weakening possible related counter-arguments

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- ► Reaction imbalances
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Takeaways

- ▶ Explicitly mentioning gender has a persuasive function
  - ▶ increasing their credibility or weakening possible related counter-arguments
  - ▶ Reddit is male-skewed

- ▶ Reaction imbalances
  - ▶ comments from users of the same gender
  - ▶ explicit gender mentions from users of the opposite gender
  - ▶ revealing gender identity in argument *lowers* the rating of the post

Takeaways

- ► Explicitly mentioning gender has a persuasive function
  - ► increasing their credibility or weakening possible related counter-arguments
  - ► Reddit is male-skewed

- ► Reaction imbalances
  - ► comments from users of the same gender
  - ► explicit gender mentions from users of the opposite gender
  - ► revealing gender identity in argument *lowers* the rating of the post

- ► Gender-related style differences
  - ► a style that is more frequent for one gender, such as overt expressions of personal or empathetic qualities, has a similar community impact as explicit mentions of gender

Contributions and Next Steps

- New layers of features for CMV_T
  - allowing for evaluating demographic, stylistic, and interactive properties in an online setting
  - serve to better understand biases in AM (Spliethöver and Wachsmuth, 2020) and assessing Argument Quality

- Extended use of CMVGENDER annotations
  - support collecting terms and attributes for explicit bias identification and removal (Barikeri et al., 2021; Holtermann et al., 2022)
  - provides a ground-truth to anchor studies on moral foundations (Alshomary et al., 2022) and human values (Kiesel et al., 2022)

Thank you for your attention!

Any questions?