

News Release

Monday 22 May 2023

Largest study of video games reveals men say twice as much as women

Researchers have found a stark gender imbalance after carrying out the largest-ever study of video game dialogue, published today (Wednesday 24 May 2023).

The research, published in the journal *Royal Society Open Science*, analysed more than 13,000 video-game characters and found that men speak twice as much as women.

The study, led by Dr Stephanie Rennick at the University of Glasgow and Dr Seán G. Roberts at Cardiff University, performed the first large-scale test of gender imbalance in the dialogue of 50 role-playing video games (RPGs).

It discovered that games include twice as much male dialogue as female dialogue on average. 94% of games studied had more male dialogue than female dialogue, including games with multiple female protagonists like *Final Fantasy X-2* or *King's Quest VII*.

However, the bias isn't just with protagonists – the same imbalances were found in minor characters and persists even when taking into account player choices about protagonist gender and optional dialogue. The study also found the proportion of female dialogue is slowly increasing. If this trend were to continue, it would still take more than a decade to reach parity. Furthermore, there were few characters in non-binary gender categories: only 30 out of 13,000, or about half as much as in real life.

Dr Rennick, Research Associate in Philosophy, School of Humanities | Sgoil nan Daonnachdan at the University of Glasgow, said: "While we expected to find a larger proportion of male dialogue overall, we were surprised to discover how few games – just three of 50 - had more than 50% female dialogue. Players seem to share our surprise: when surveyed, they anticipated the general pattern of more male dialogue, but overestimated the number of games where women spoke the majority of the time."

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The study also found imbalances in who characters speak to. Male characters tend to talk to other male characters, but women talk to other women less than expected by chance, even factoring in the number of lines and female characters. This is similar to the pattern seen in many films that fail to pass the Bechdel test.

The study suggests that the imbalance in dialogue is partly caused by the imbalance in the number of characters. Researchers suggest that the simplest way for game-makers to address the imbalance is to add more major and minor female characters. However, the researchers warn that more dialogue doesn't guarantee better gender representation. There can also be bias in the content of dialogue, not just who speaks it. For example, female characters are more likely to apologise, hesitate or be polite, perpetuating stereotypes about gendered behaviour.

“Around half of gamers are female, but they experience a lot of abuse and exclusion” said Dr Roberts, Lecturer at the School of English, Communication and Philosophy at Cardiff University. “More diverse representation is being called for by players and developers. So we hope that developers will consider addressing the imbalances we found in order to create more inclusive games”.

The study's resources are open-source, and the team hopes to work with programmers and gamers to expand the study to discover ways of making games more inclusive.

ENDS

Notes to Editors

For more information or to interview Dr Rennick or Dr Roberts please contact Ross Barker, University of Glasgow Communications Team on ross.barker@glasgow.ac.uk

“Gender bias in video game dialogue” (<https://royalsocietypublishing.org/doi/10.1098/rsos.221095>) is published in Royal Society Open Science by Stephanie Rennick, Melanie Clinton, Elena Ioannidou, Liana Oh, Charlotte Clooney, E. T., Edward Healy & Seán G. Roberts.

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Gender bias in video game dialogue - Main findings

- The study looked at 6.2 million words of dialogue from 13,000 characters in 50 video games.
- 35.16% of words were spoken by female characters.
- The proportion of female dialogue ranged from 6% (King's Quest VI) to 80% (King's Quest IV: The Perils of Rosella).
- 29.37% of characters were female, which suggests the imbalance is driven by a lack of female characters, rather than them not being given enough dialogue each.
- 94% of games had more male dialogue than female dialogue. The exceptions were two King's Quest games from the 1980s, and Final Fantasy XIII which has a female protagonist but still manages only 55% female dialogue.
- A survey of players showed that they are aware of the overall imbalance, but were surprised by how few games have more than 50% female dialogue.
- One game (Monkey Island) did not pass the Bechdel test, which requires two named female characters to talk to each other about something other than a man.
- There are imbalances in who talks to who. A male line is followed by another male line 66% of the time (10 percentage points higher than what would be expected if the lines of dialogue were in a random order). But a female is only followed by a female 32% of the time (11 percentage points lower than chance).
- In Elder Scrolls: Oblivion, female characters are more likely to be given "neutral" dialogue compared to men who are more likely to have more extreme emotions.
- Some games let the player choose their character's gender, but even choosing a female main character did not lead to more than 50% female dialogue in over half of these games.
- In Stardew Valley, characters respond differently depending on the player character's gender. 24% of these cases perpetuated a gender stereotype while there were no cases of subverting a gender stereotype. For example, female players are offered a salad, wine, repeatedly described as beautiful and assumed to have little experience of video games, while male players are

offered pasta, ale, described as “full of energy” and are assumed to be good video game players.

- There are also imbalances in dialogue tree options. A player that had complete knowledge of the game could force there to be more female dialogue than male dialogue in 35.7% of dialogue trees. In contrast, a player trying to force more male dialogue would succeed in 64.6% of dialogue trees.
- More dialogue doesn't guarantee better gender representation. In the recent remake of Final Fantasy VII, the female character Jessie has 10 times more dialogue than in the original, but most of it is spent flirting with the main character.
- From 1986 to 2020, female dialogue increased by 6.3 percentage points per decade. Were this rate to continue, gender balance would not be reached until 2036.

50 Games ranked by the percentage of female dialogue

Rank	Game	Percentage of female dialogue
1	King's Quest IV: The Perils of Rosella	80.0%
2	King's Quest II: Romancing the Throne	79.8%
3	Lightning Returns: Final Fantasy XIII	54.6%
4	King's Quest VII: The Princeless Bride	49.2%
5	Final Fantasy X-2	48.4%
6	Persona 4	47.6%
7	Stardew Valley	45.2%
8	Horizon Zero Dawn	44.4%



9	Mass Effect 2	43.5%
10	Persona 3	43.0%
11	Final Fantasy XIII	42.1%
12	Mass Effect	41.8%
13	Final Fantasy XIII-2	41.2%
14	The Elder Scrolls IV: Oblivion	40.8%
15	Mass Effect 3	40.3%
16	Dragon Age 2	40.1%
17	Persona 5	39.6%
18	Chrono Trigger	38.0%
19	Final Fantasy VII Remake	37.2%
20	King's Quest Chapters	34.9%
21	Final Fantasy XIV	33.4%
22	The Elder Scrolls III: Morrowind	33.2%
23	Final Fantasy X	32.2%
24	Final Fantasy VIII	32.2%



25	Dragon Age: Origins	32.2%
26	The Elder Scrolls V: Skyrim	30.5%
27	Final Fantasy II	29.8%
28	King's Quest V	29.3%
29	Star Wars: Knights of the Old Republic	28.6%
30	Final Fantasy XII	27.2%
31	Final Fantasy V	27.0%
32	Final Fantasy IX	26.2%
33	Final Fantasy VII	25.9%
34	King's Quest III: To Heir Is Human	23.9%
35	Final Fantasy	22.9%
36	Kingdom Hearts	22.1%
37	The Elder Scrolls II: Daggerfall	21.2%
38	Final Fantasy XV	19.5%
39	Final Fantasy VI	18.2%
40	Monkey Island 2: LeChuck's Revenge	16.8%



41	Super Mario RPG: Legend of the Seven Stars	16.6%
42	Kingdom Hearts II	15.5%
43	King's Quest VIII	14.2%
44	Kingdom Hearts III	14.0%
45	King's Quest I: Quest for the Crown	11.2%
46	Final Fantasy IV	10.6%
47	The Secret of Monkey Island	7.9%
48	The Curse of Monkey Island	6.7%
49	Kingdom Hearts 3D: Dream Drop Distance	6.7%
50	King's Quest VI	6.4%