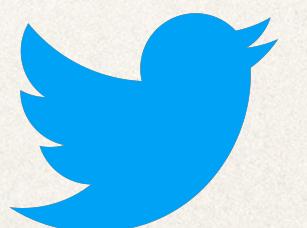


THE UNIVERSITY OF
AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

Reimagining software processes and practices for an inclusive RSE

Dr Kelly Blincoe

Human Aspects of Software Engineering Lab
University of Auckland, New Zealand



@KellyBlincoe

Socio-Technical Activity



A social perspective

❖ Negative sentiment and emotion

[Tourani et al, CASCON 2014; Gachechiladze at al., ICSE-NIER 2017]

❖ Discrimination

[Nafus, New Media & Society 2012; Terrell et al., PeerJ Computer Science 2017; Imtiaz et al., ICSE 2019; Blincoe et al., IEEE Software 2019]

❖ Profanity, insults, and toxic discussions

[Squire and Gazda, HICSS 2015; Raman et al., ICSE 2020]]

❖ Pushback during code review

[Engelman et al., ICSE 2020]

 Engadget

Report: Apple is a sexist, toxic work environment

Some of the complaints Mic reported on include a female engineer whose "male-dominated" team made jokes about an office intruder coming to...

Tech's gender discrimination

Let's just look at where women stand when it comes to some of the most valuable tech companies. Of the 291 unicorns — private companies with a...

2 days ago

 The Guardian

I worked on Facebook's Trending team – the most toxic work experience of my life

I worked on Facebook's Trending team – the most toxic work experience of my life ... Working at Facebook, even as a contractor, was supposed to be...

Codes of Conduct

Contributor Covenant

A Code of Conduct for Open Source Projects.

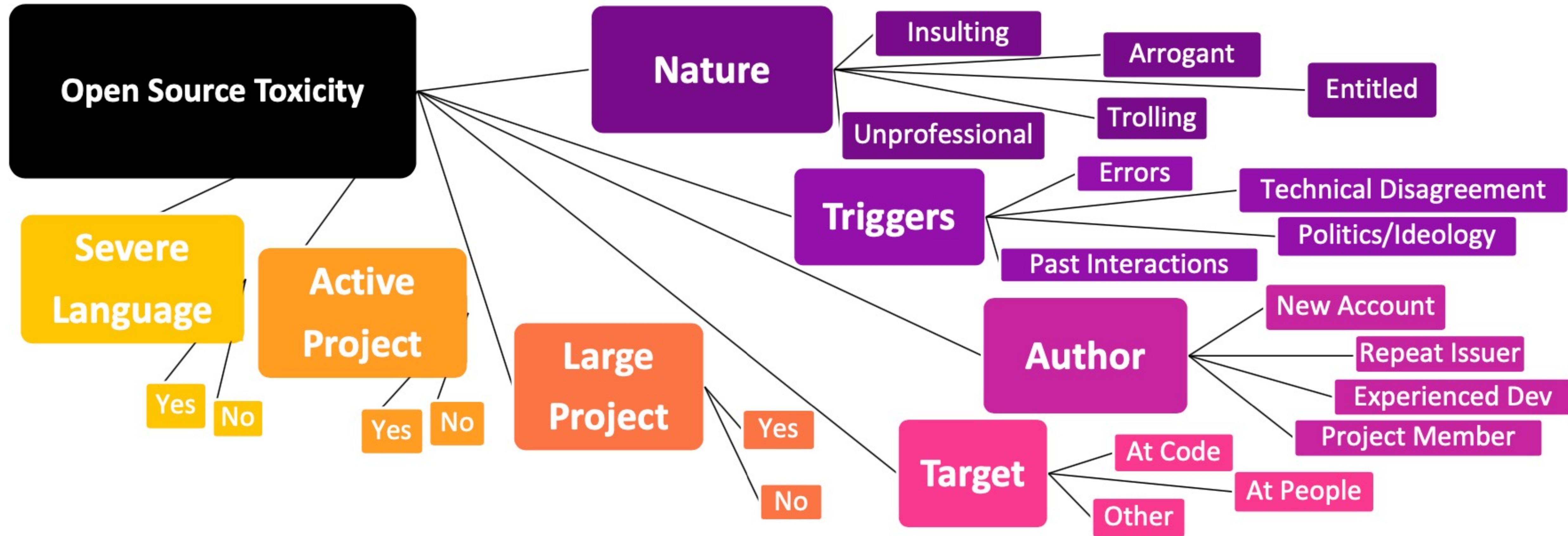
contributor-covenant.org/

The screenshot shows a GitHub repository page for 'domgetter / NCoC'. The repository is described as 'No Code of Conduct: A Code of Conduct for Adults in Open Source Software'. The page includes a GitHub logo, a 'Sign up' button, a menu icon, and a 'Public' badge. The background of the page is white, and the overall layout is clean and modern.

No Code of Conduct: A Code of Conduct for
Adults in Open Source Software

“We are all adults. Capable of having adult discussions.”

Toxicity in Open Source



Software Code Review



I Am Devloper

@iamdevloper

Code review can be:

- honest
- nice

Pick one...

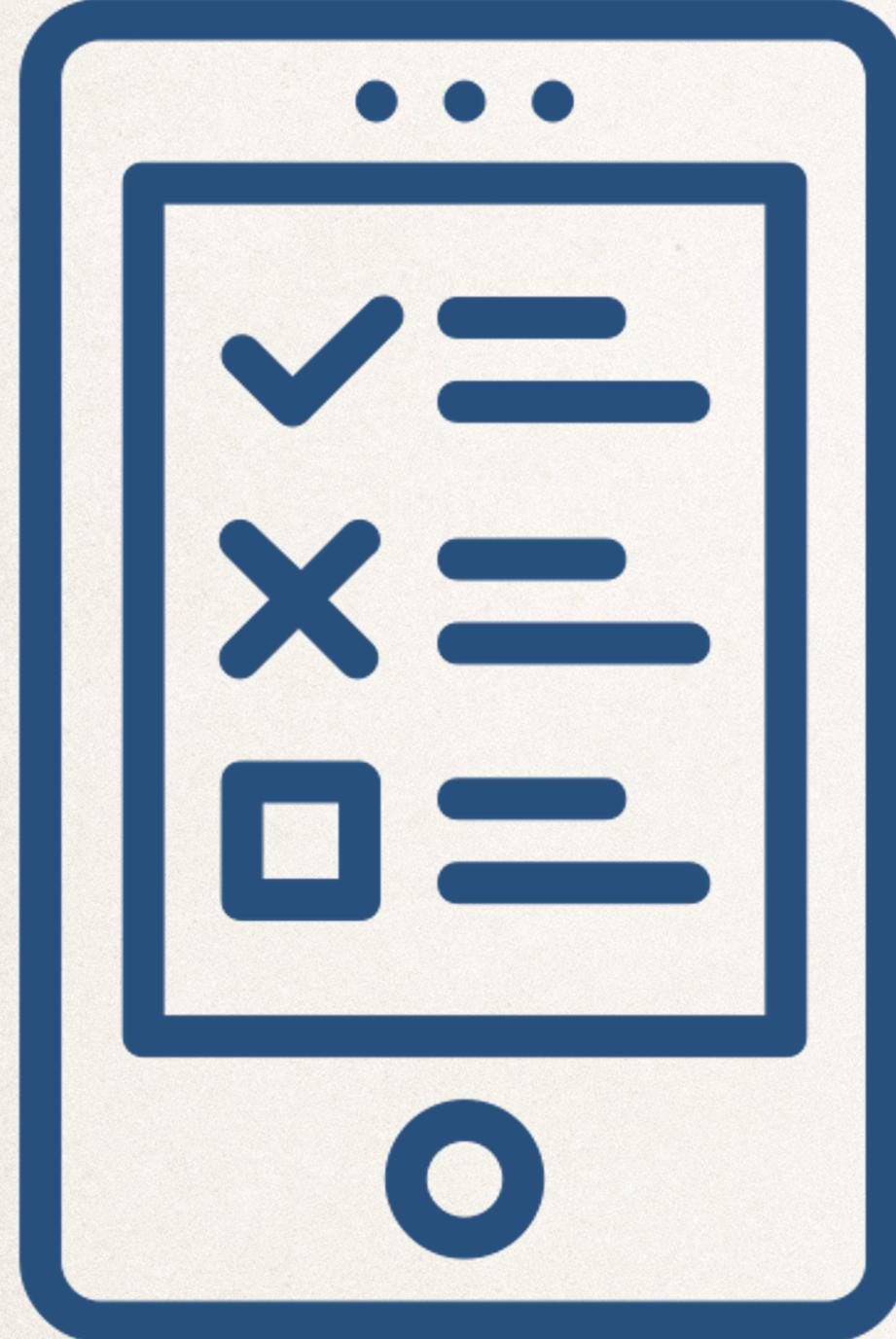
Studied perceptions of feedback in code review

- ❖ Destructive criticism lens
- ❖ Negative feedback that is both *nonspecific* and *inconsiderate*
- ❖ Shown to have negative impacts in other domains



Robert A Baron. 1988. Negative effects of destructive criticism: Impact on conflict, self-efficacy, and task performance. Journal of Applied Psychology 73, 2 (May 1988).

Method – Online Questionnaire



- ✿ Vignette style questions
- ✿ Frequency of destructive criticism
- ✿ General opinions on destructive criticism
- ✿ Demographic questions

What the heck is this? We don't need a null check here...

*You don't need to protect
instanceOf against null pointers*

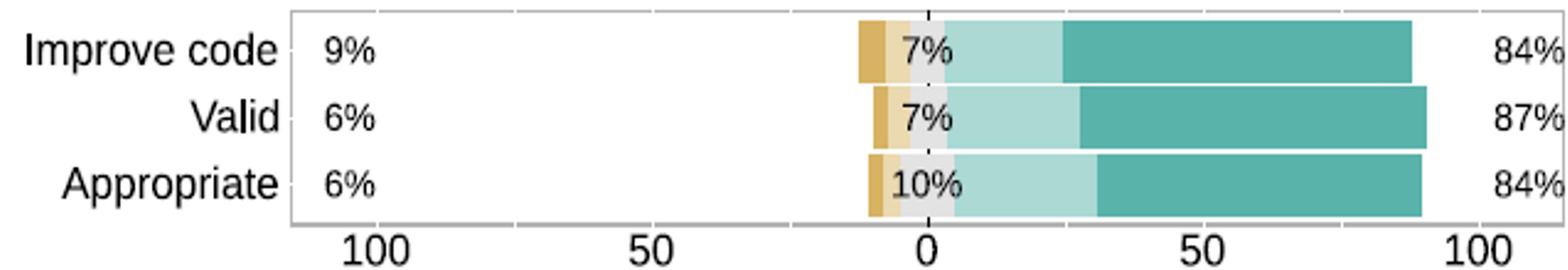
Participants

- ❖ Convenience sampling, 93 complete responses
- ❖ 43 men, 43 women, 3 non-binary, 4 did not disclose gender
- ❖ Average 7.8 years development experience

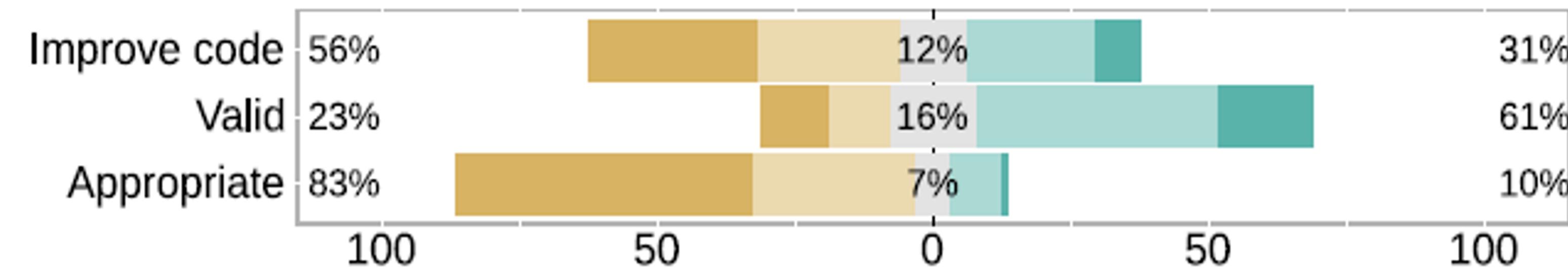


Perceptions of criticism

(a) Constructive



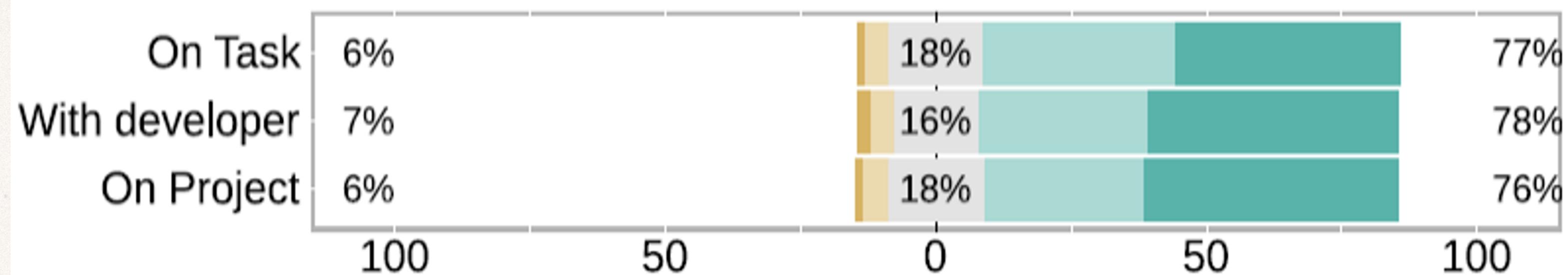
(b) Destructive



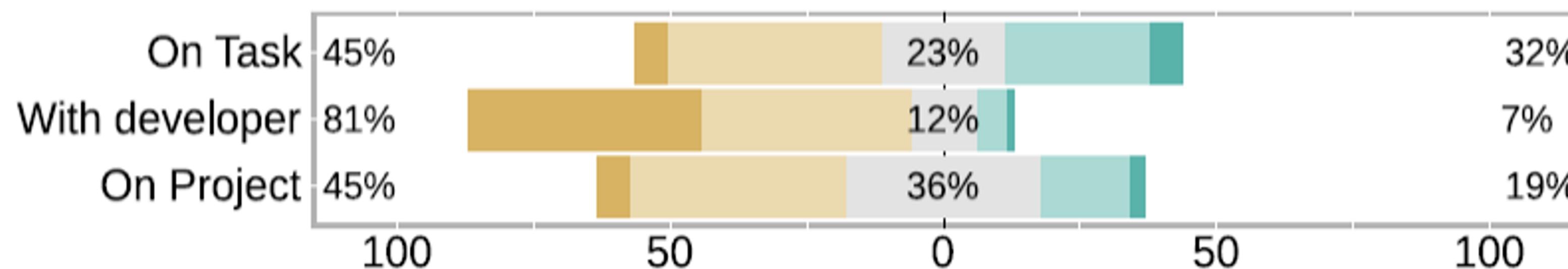
■ Strongly disagree ■ Somewhat disagree ■ Neither agree nor disagree ■ Somewhat agree ■ Strongly agree

Motivation to continue working

(a) Constructive



(b) Destructive



■ Very unmotivated ■ Somewhat unmotivated ■ Neither motivated nor unmotivated ■ Somewhat motivated ■ Very motivated

Types of written responses to criticism

- ✿ Constructive
 - ✿ Agree with criticism
 - ✿ Acknowledge comment reception
- ✿ Destructive
 - ✿ Ask for more information
 - ✿ Disagree with the manner of discourse in the criticism
- ✿ Both
 - ✿ Disagree with the criticism on a technical level

Tone of written responses

- ✿ Constructive
 - ✿ Gratitude
 - ✿ Praise
- ✿ Destructive
 - ✿ Neutral
 - ✿ Apologetic
 - ✿ Sarcasm
 - ✿ Anger

Mood after criticism

	Constructive		Destructive	
	Count	%	Count	%
Great	16	17.20%	0	0.00%
At ease	30	32.26%	5	5.38%
Good	38	40.86%	3	3.23%
Composed	41	44.09%	5	5.38%
Bad	5	5.38%	50	53.76%
Tense	5	5.38%	52	55.91%
Nervous	7	7.53%	28	30.11%
Uncomfortable	7	7.53%	59	63.44%

Demographic differences

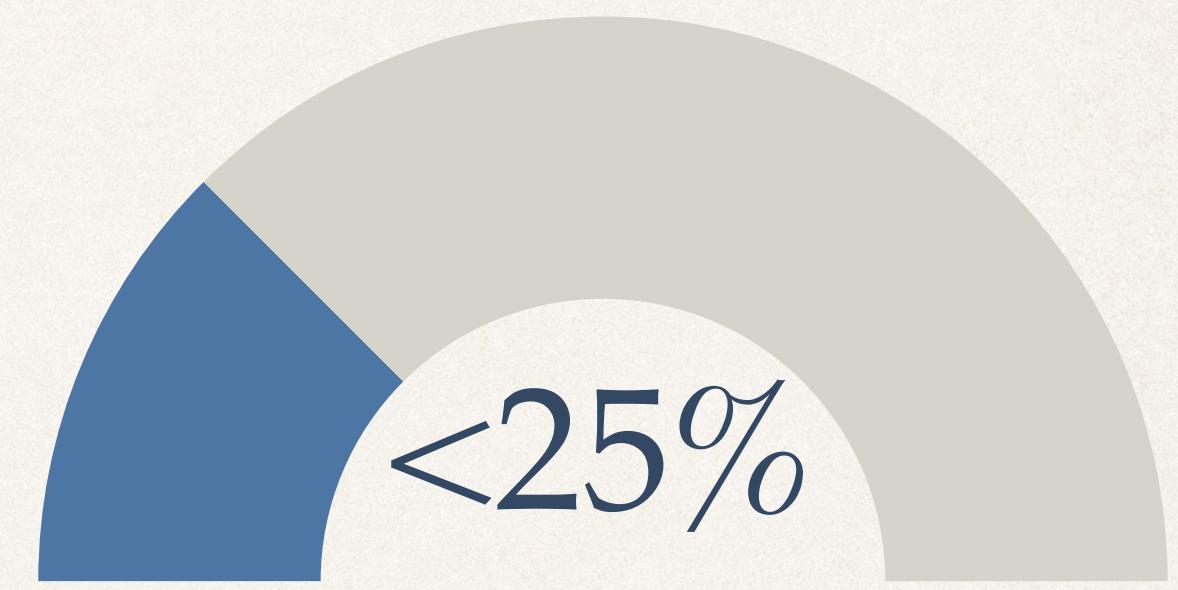
✿ Women

- ✿ Perceive as less appropriate
- ✿ Less motivated

✿ Less experienced developers

- ✿ Less likely to call it out

Women

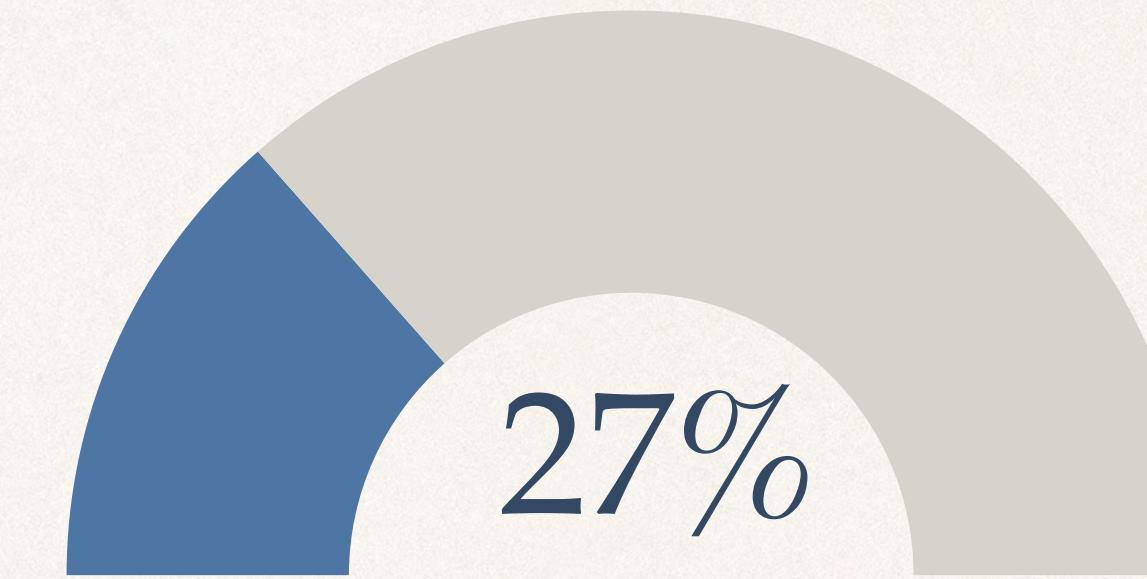


Sanuri Dananja Gunawardena, Peter Devine, Isabelle Beaumont, Lola Garden, Emerson Murphy-Hill, and Kelly Blincoe. 2022. Destructive Criticism in Software Code Review Impacts Inclusion. CSCW 2022.

Frequency of Destructive Criticism

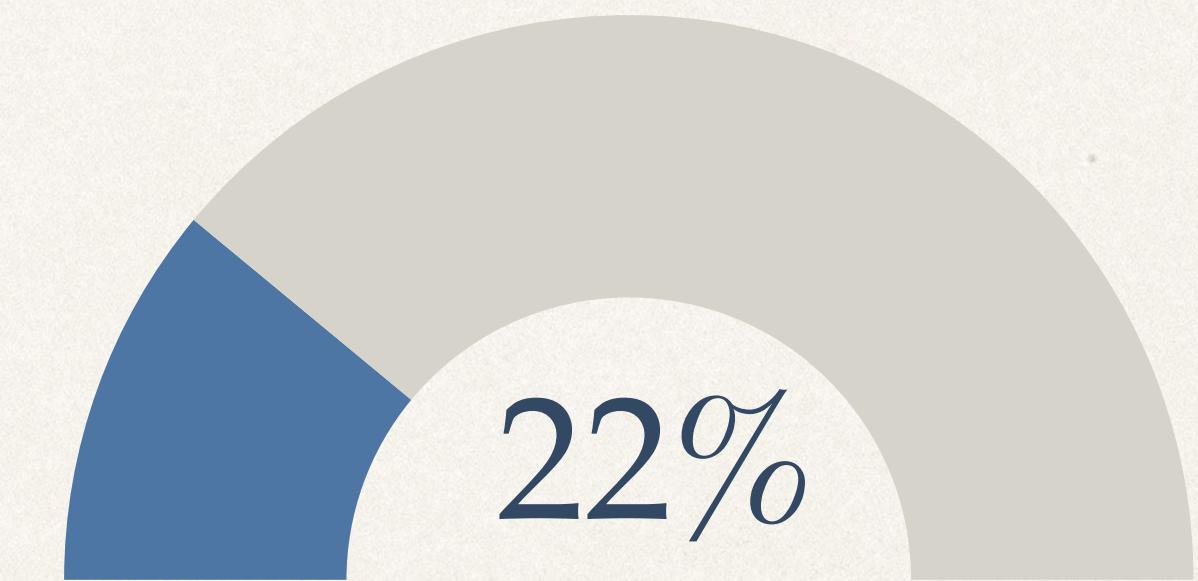
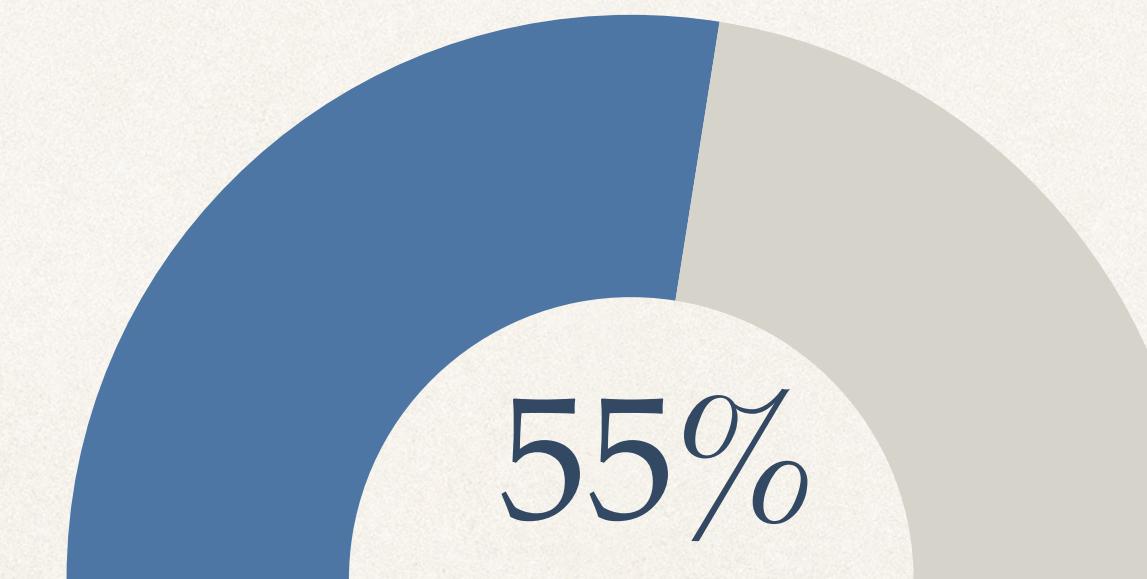
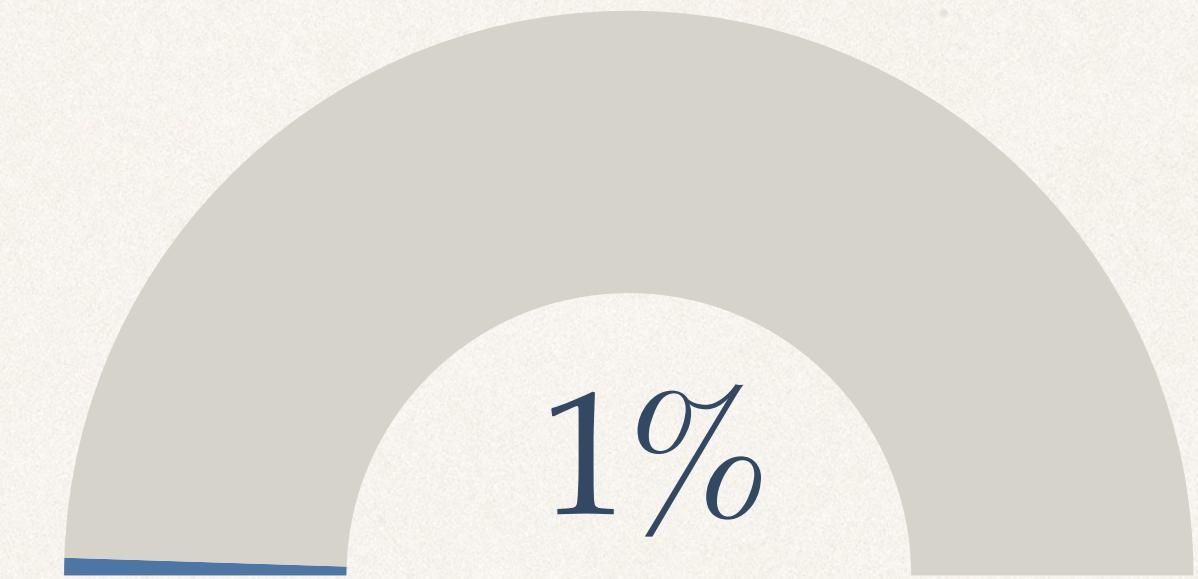
Report to
Give

Nonspecific

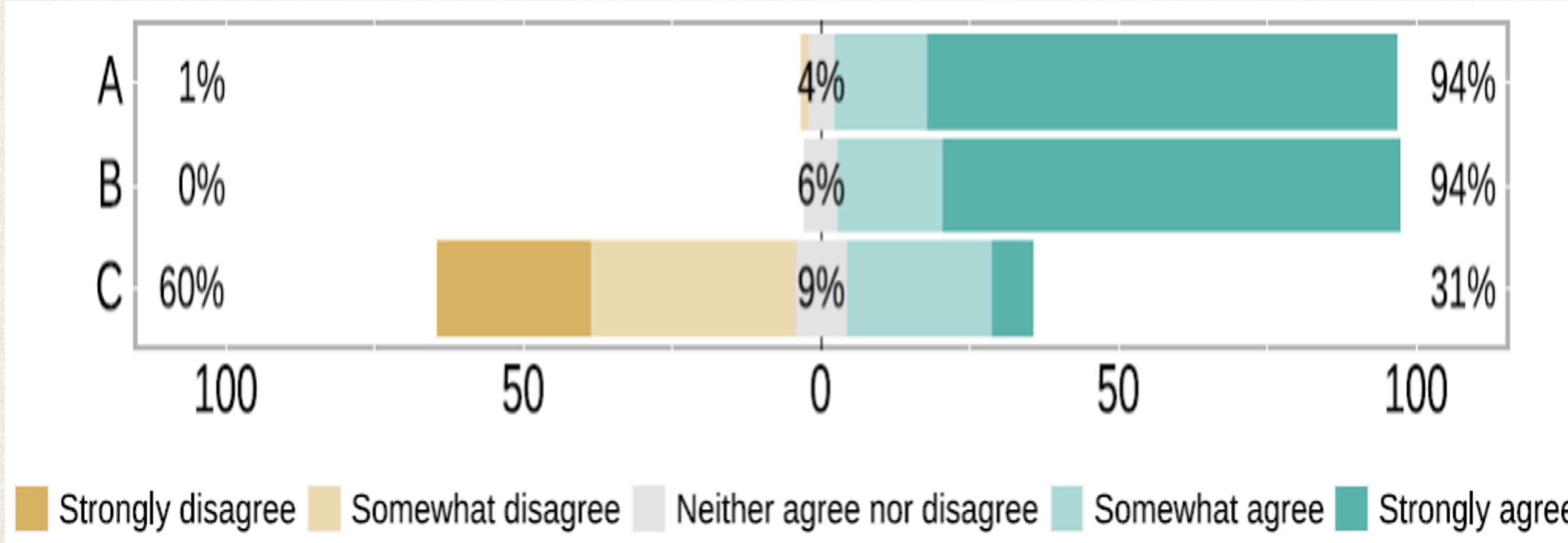


Report to
Receive

Inconsiderate



General opinions on destructive criticism



'this is a hack' is not negative at all in my books. In technical discussions, I prefer direct wording to have-a-good-day sugar-coated expressions. It's just easier to parse and act upon, though may sometimes appear harsh or inconsiderate.

- A** - “Destructive criticism is harmful”
- B** - “Destructive criticism will cause a negative reaction for the recipient”
- C** - “When receiving code review comments, I don't mind getting inconsiderate feedback as long as the feedback helps to improve the code quality”

I think it's important to indicate when the code is bad, but it should be communicated in a considerate way and the reviewer should explain why the code is bad so that the person can learn.

Other known differences

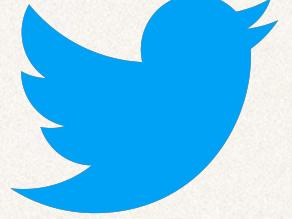
- ❖ Debugging strategies gender differences
[Grigoreanu et al. IS-EUD 2009]
- ❖ Code reading comprehension strategies gender differences
[Zohreh Sharafi et al. ICPC 2012]
- ❖ GitHub has inbuilt gender biases
[Mendez et al. ICSE 2018]
- ❖ Pull request acceptance rates differences across genders, race, nationality
[Terrell et al. PeerJ Computer Science 2017; Nadri et al. IEEE Software 2020; Furtado et al. IEEE Software 2020]

*How can we reimagine software
engineering tools and practices to
center DEI?*



Conclusion

- ✿ Destructive criticism in code review has negative impact
- ✿ Greater impact on women
- ✿ Conflicting opinions on destructive criticism
- ✿ Also evidence of gender differences in other software practices and tools
- ✿ More research needed to create inclusive SE

Dr Kelly Blincoe
 @KellyBlincoe

Thanks to my co-authors: Sanuri Gunawardena, Peter Devine, Isabelle Beaumont, Lola Garden, and Emerson Murphy-Hill

Worked funded by a Google Faculty Research Award

