



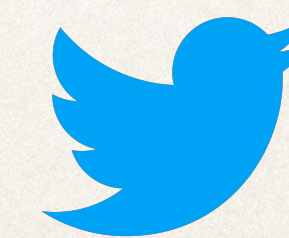
THE UNIVERSITY OF  
**AUCKLAND**  
Te Whare Wānanga o Tāmaki Makaurau  
NEW ZEALAND

# 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 et 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/](https://contributor-covenant.org/)



Sign up

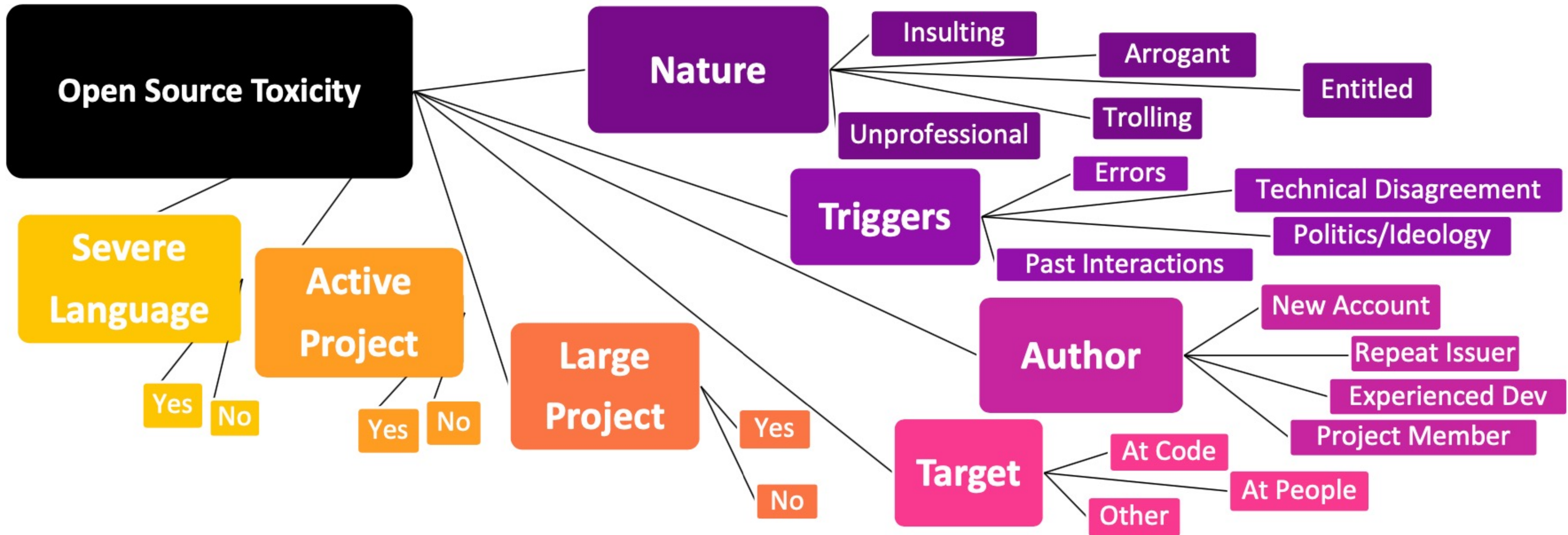


[domgetter](#) / **NCoC** Public

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 Developer**

@iamdeveloper

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

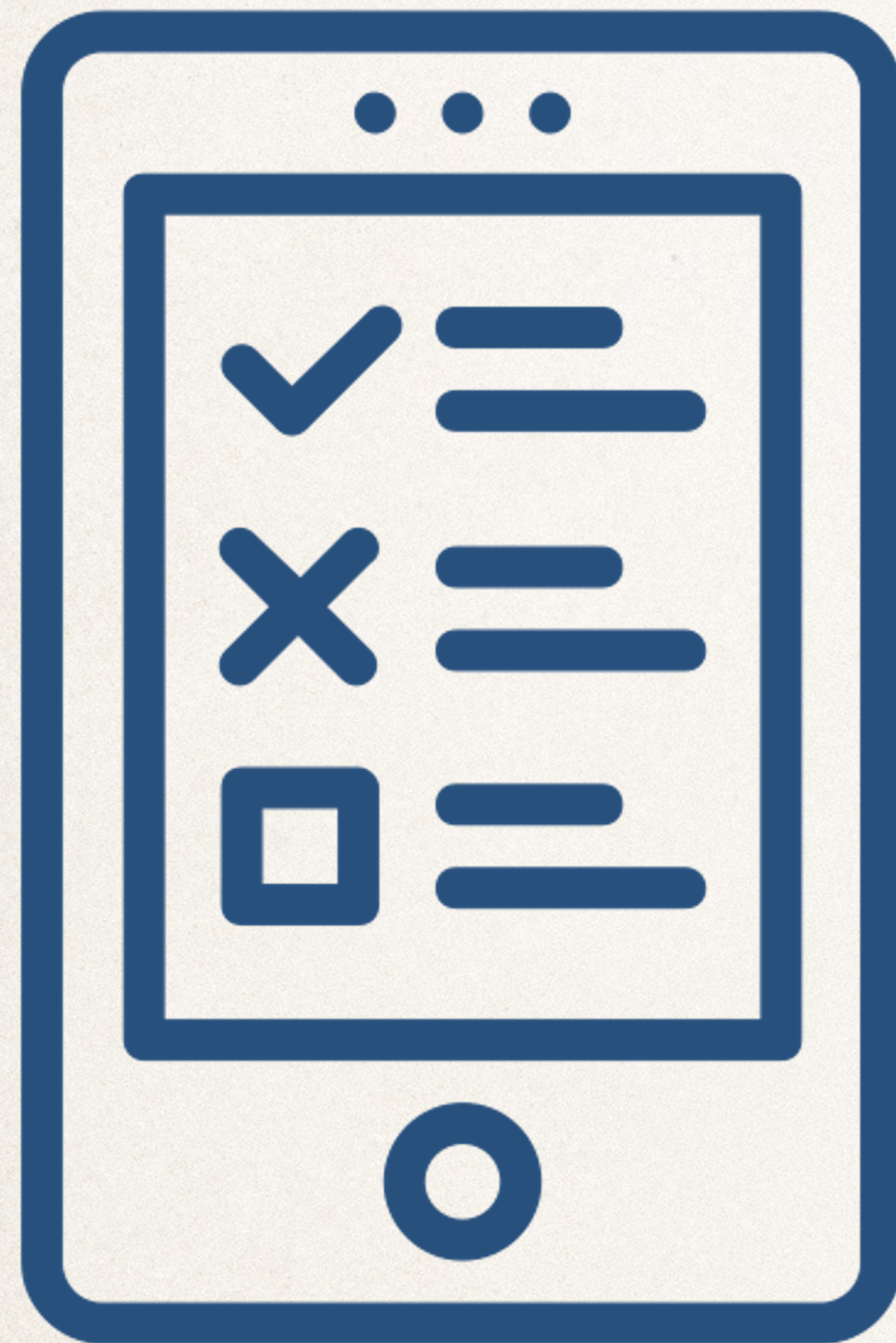
*This is seriously obtuse*

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

---



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

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

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

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.



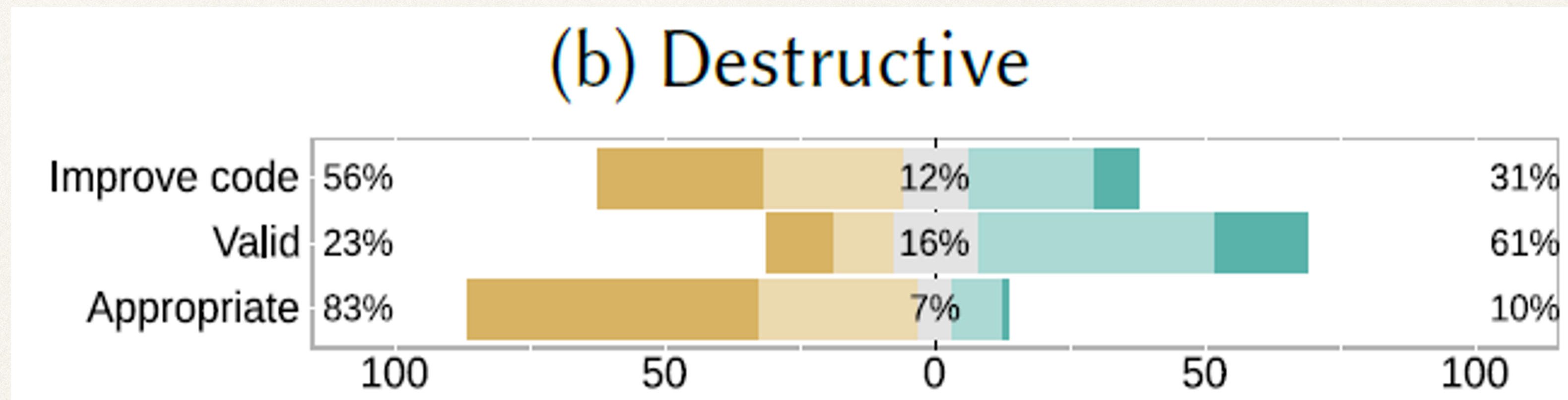
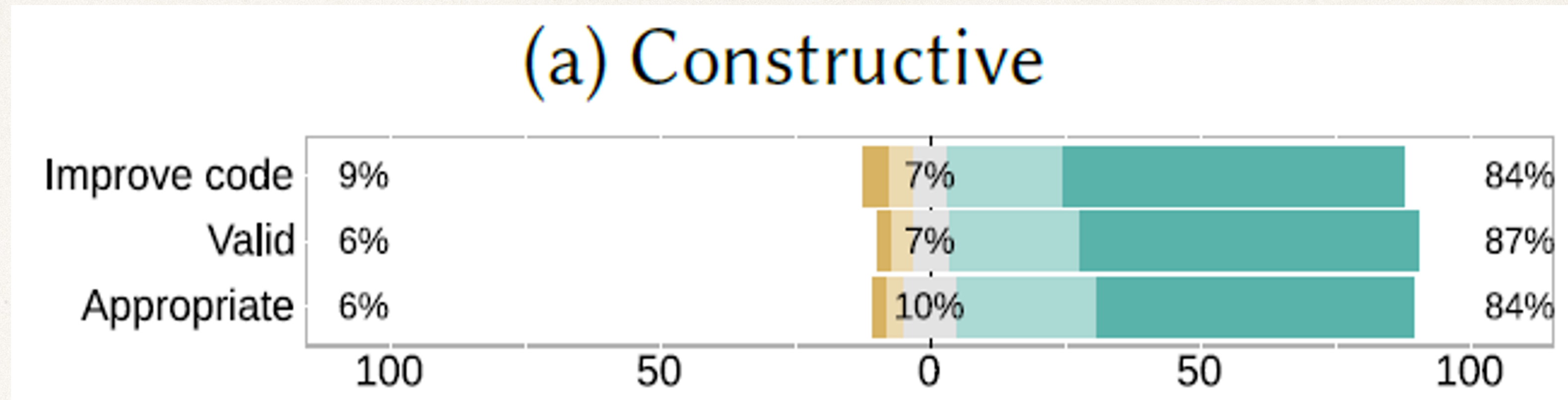
# Participants

---

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

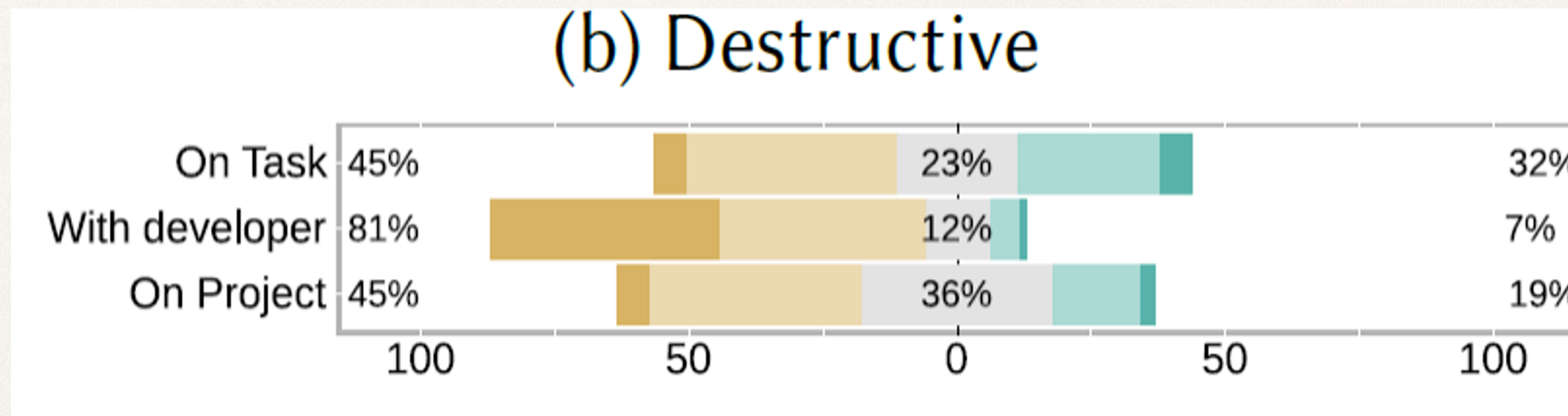
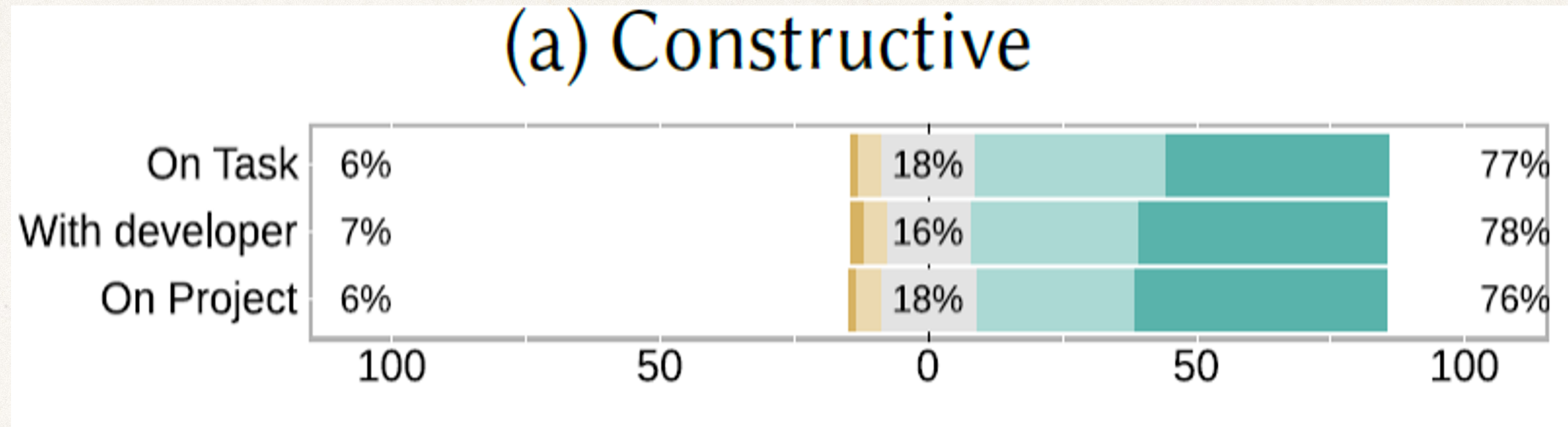


# Perceptions of criticism



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

# Motivation to continue working



■ 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

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

# Demographic differences

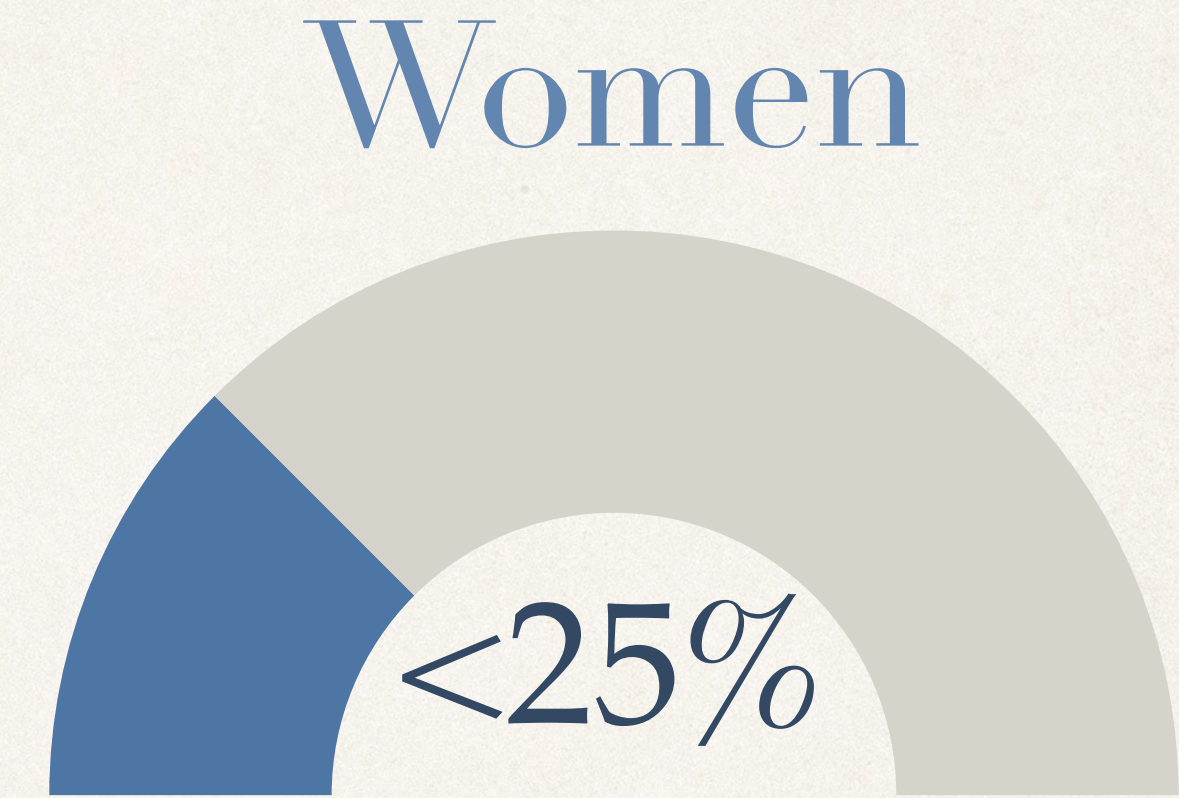
---

## ❖ Women

- ❖ Perceive as less appropriate
- ❖ Less motivated

## ❖ Less experienced developers

- ❖ Less likely to call it out



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.

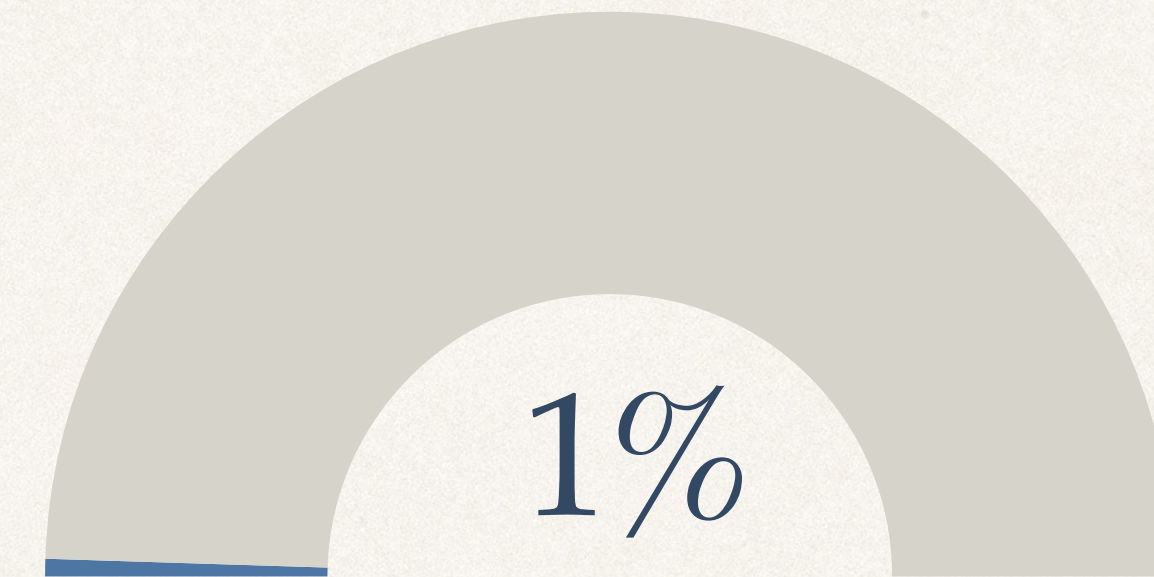
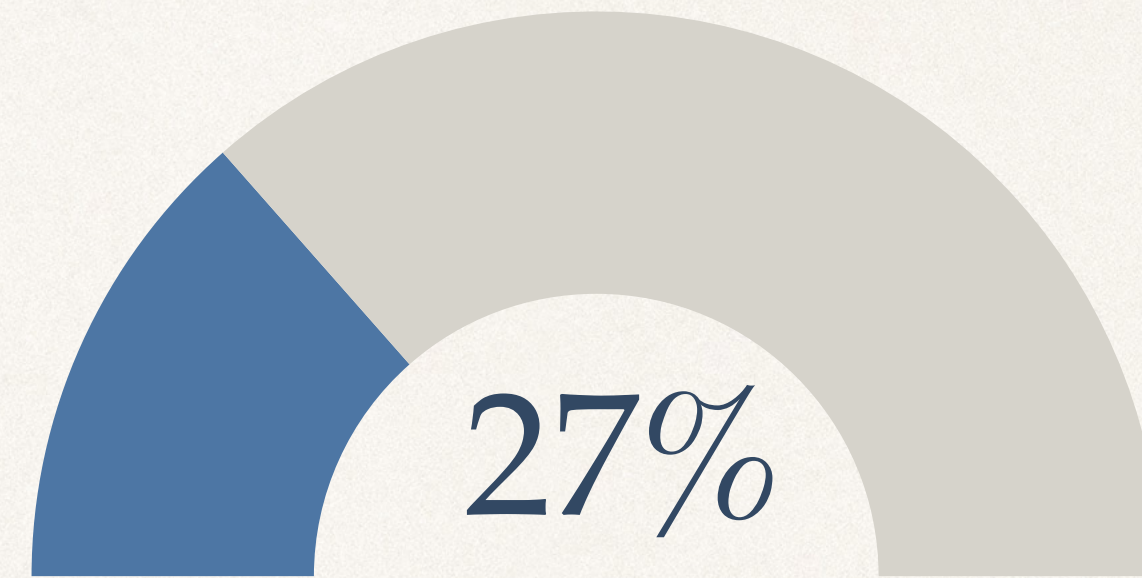
# Frequency of Destructive Criticism

---

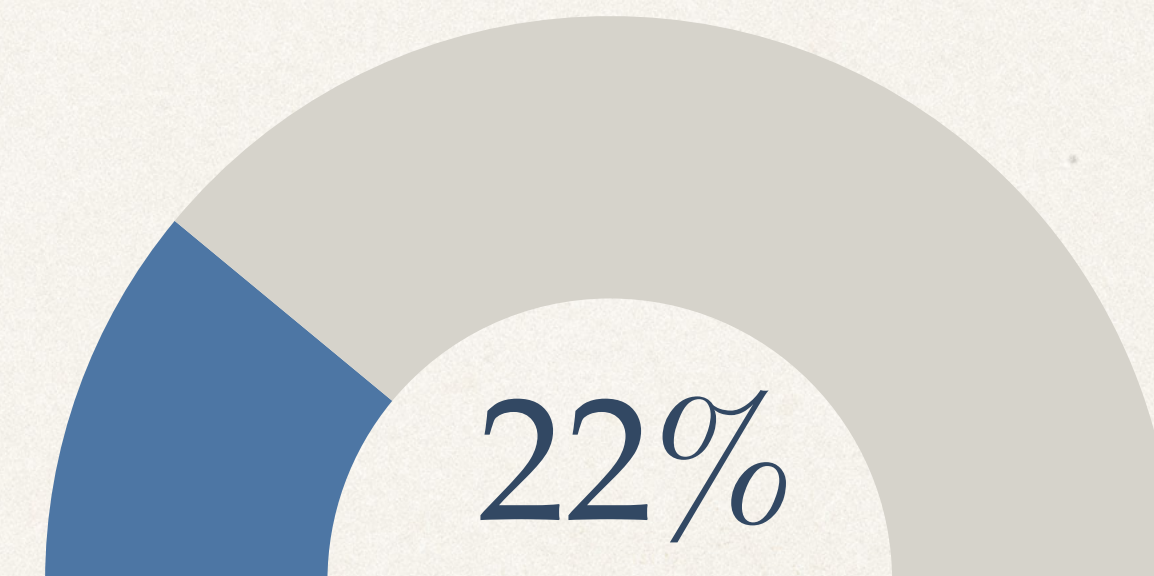
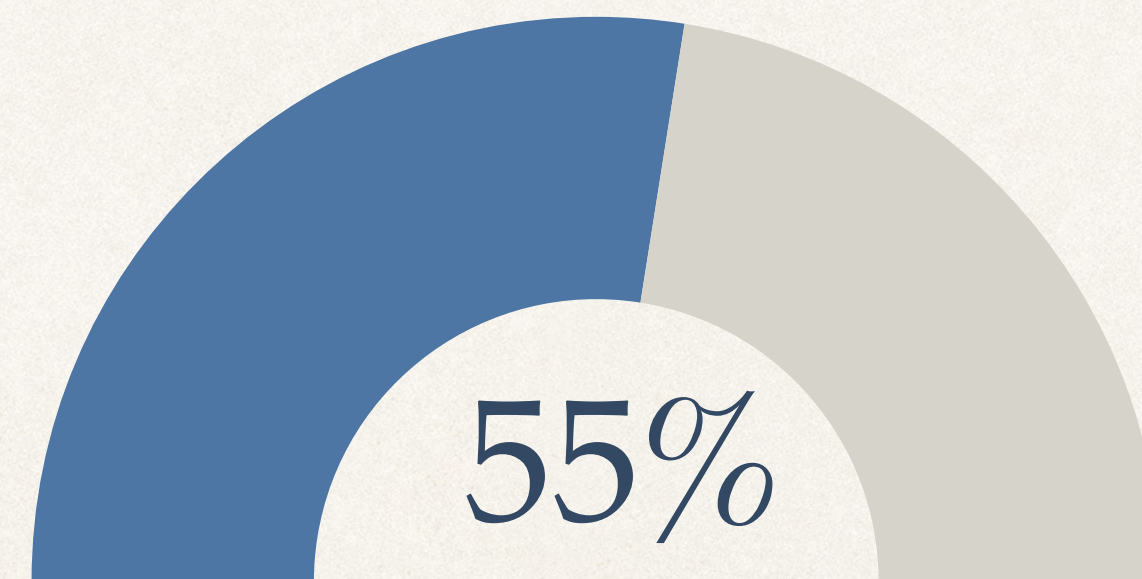
Nonspecific

Inconsiderate

Report to  
Give

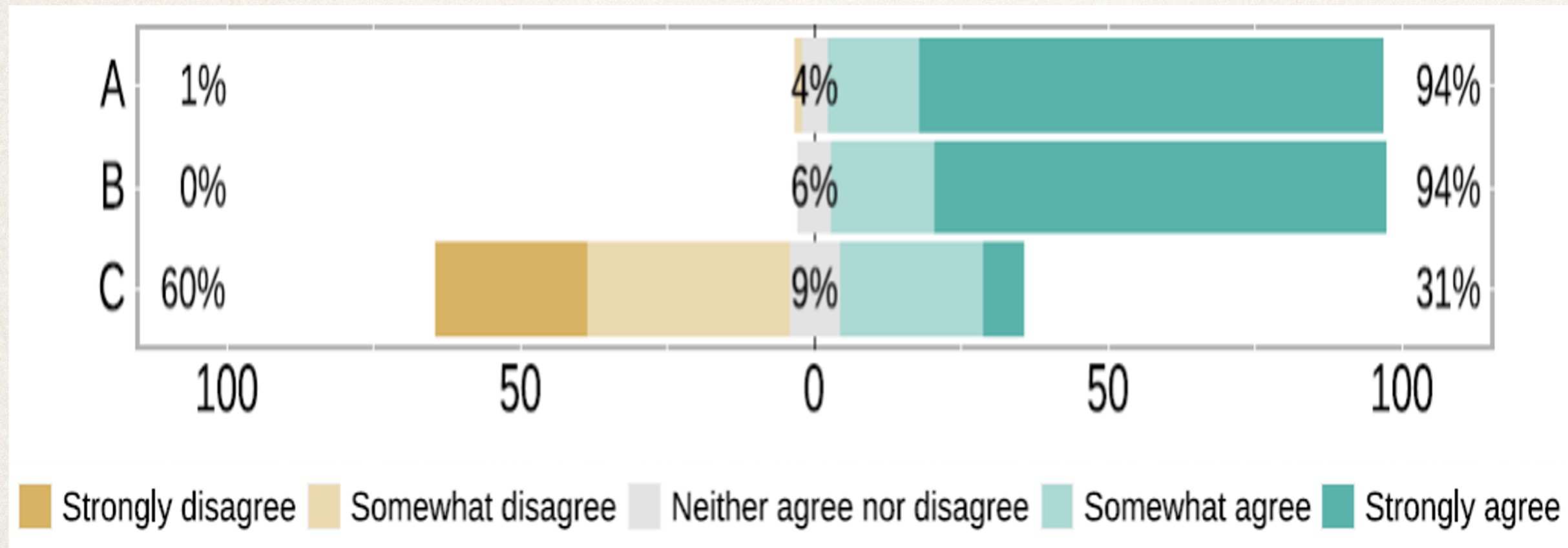


Report to  
Receive





# 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. Peer] Computer Science 2017; Nadri et al. IEEE Software 2020; Furtado et al. IEEE Software 2020]

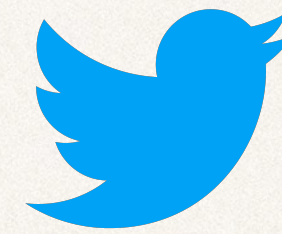
*How can we reimagine software  
engineering tools and practices to  
center DEI?*



# Conclusion

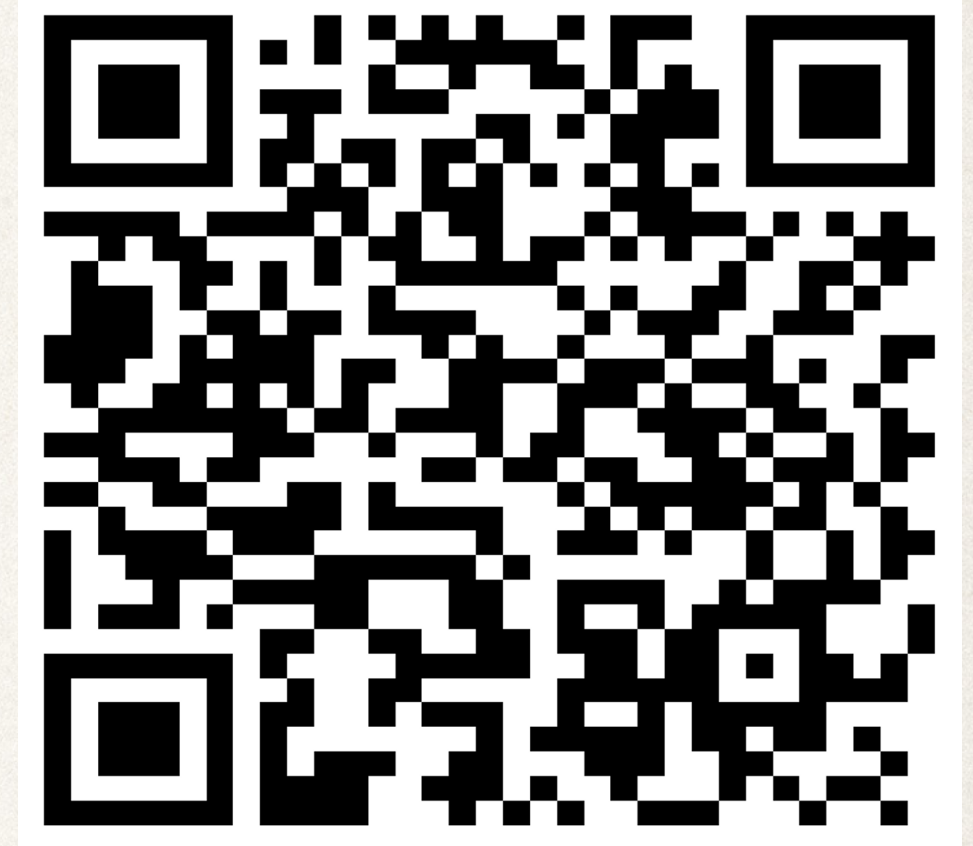
- ❖ Destructive criticism in code review has negative impact
- ❖ Greater impact on women
- ❖ Conflicting opinions on destructive criticism
- ❖ Also evidence of gender differences in other software practices and tools
- ❖ More research needed to create inclusive SE

Dr Kelly Blincoe



@KellyBlincoe

Research paper:



*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