

# An fMRI Localizer for Deliberative Counterarguing

Matthew Brook O'Donnell<sup>1</sup>, Jason Coronel<sup>2</sup>, Christopher N. Cascio<sup>3</sup>,  
Matthew D. Lieberman<sup>4</sup> & Emily B. Falk<sup>1</sup>

<sup>1</sup>University of Pennsylvania, <sup>2</sup>Ohio State University, <sup>3</sup>University of Wisconsin–Madison, <sup>4</sup>UCLA



## Background & Goals

- Individuals often counterargue information that challenges their pre-existing beliefs and behaviors
- Behavioral tasks are limited in their capacity to measure counterarguing online
  - use post-message thought listing with valence classification
  - associate the presence of counterarguing with entrenchment of opinion

- Develop fMRI task to localize neural activity associated with forced deliberative counter argumentation to generic low-ideology statements
- Validate the task using ideological statements (e.g. *gun control*, *affirmative action*) with deliberative argumentation congruent with individuals' views

## Observations & Further developments

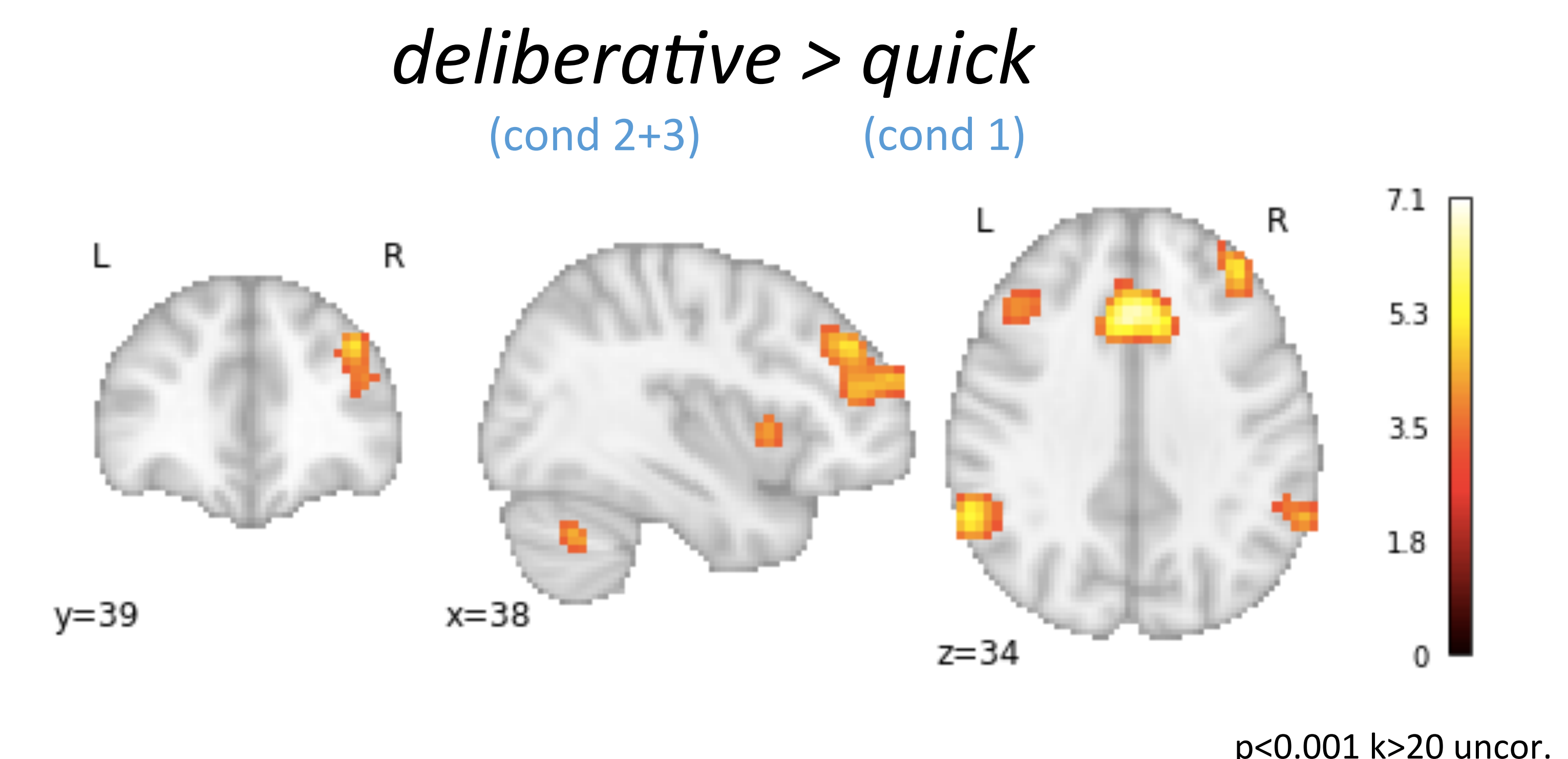
- We hypothesized that LPFC would be involved in counterarguing
- In generic-issue forced deliberation task (Study 1)
  - Bilateral LPFC clusters seen for deliberative argumentation vs quick judgment
  - Right DLPC cluster seen for counter (against) vs pro (in favor) deliberation
  - Activation in rTPJ suggesting the social implications of engaging in counter arguing
- Findings hold for deliberation congruent with ideology (Study 2), supporting
  - Use of generic localizer in fMRI studies of persuasion, e.g. health communication
- Tasks and ROI masks available at: <https://github.com/cnlab/counterargue>

## Study 1 – Deliberative counterarguing localizer

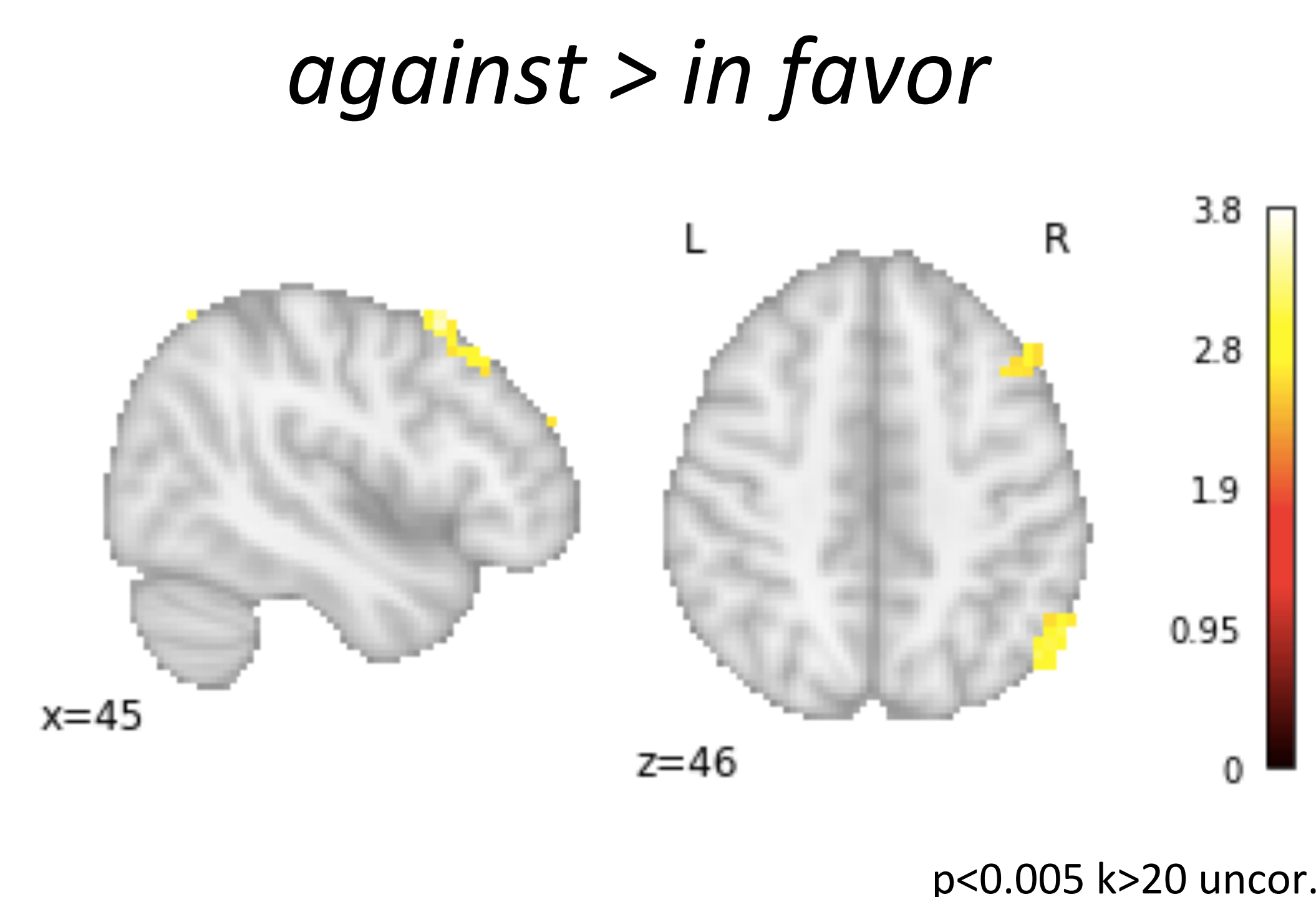
### Task: “People should...” (n=59)

- Generated generic statements completing stem ‘people should (not) ...’
- Used MTurk to select 70 items rated for ease of *pro/con* argumentation
- Conditions:
  - AGREE** – quick response Y/N to statement
  - IN FAVOR** – 12 secs to generate as many pro reasons as possible (button press for each)
  - AGAINST** – 12 secs to generate as many con reasons as possible (button press for each)

Easy to generate reasons in favor	Easy to generate reasons against	Middle
adopt animals in need	act without thinking	get to bed early
always try to do better	arrive late	sleep in
continue to learn	be late to appointments	squash bugs and spiders
do the crossword	bike on the sidewalk	stay up late
follow the news	bike without helmets	talk to strangers
forgive others	block an empty seat	use weed killer
help those in need	boast about money	vote in local elections
keep a journal	carve initials in trees	wake up earlier



## Study 1 (cont.)



## Study 2 – Measuring counterarguing in response to ideological statements

### Task: (n=39)

- Participants rated support for range of issues:  
*affirmative action, universal health care, gun control, death penalty, legalization of marijuana, state use of torture*
- Assigned **one** issue and directed to argue congruently with their position
- Conditions:
  - IN FAVOR** – 20 secs to generate as many reasons supporting statement as possible
  - AGAINST** – 20 secs to generate as many reasons opposing statement as possible

<p>pro-death penalty</p> <p><b>IN FAVOR</b></p> <p>Life is sacred, those who take a life should have his own life taken away.</p> <p>[Press for each reason]</p> <p><b>AGAINST</b></p> <p>There is no credible evidence that the death penalty deters crimes.</p> <p>[Press for each reason]</p>	<p>pro-universal healthcare</p> <p><b>IN FAVOR</b></p> <p>A right to universal healthcare could saves many lives in the US--especially the poor.</p> <p>[Press for each reason]</p> <p><b>AGAINST</b></p> <p>Universal healthcare would raise taxes to astronomical levels in the US.</p> <p>[Press for each reason]</p>
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