

 slack +



**Team project
management tutorial**

2.009 Blue

2009slack



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2009slack (you)

Alaisha

Emma DeSoto

Georgia Van de Zande

Jani Adcock

#electronics

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November 27th, 2017



5:26 PM

Lab is closed rn so i went to grab food

Will be back at 6



5:33 PM

Yes we got the circuit almost working - if we can get a gain then we will draw and send to PCB team for next iteration



5:36 PM

Did you work on the vibration motor adjusting?



5:37 PM

I have the parts out on the table and found a tutorial for it but haven't started working on it

<https://www.precisionmicrodrives.com/tech-blog/2016/05/16/how-drive-vibration-motor-arduino-and-genuino>



Precision Microdrives

[How to Drive a Vibration Motor with Arduino and Genuino | Precision Microdrives](#)

Looking to drive a DC vibration motor using an Arduino or Genuino? In this article you'll find simple circuitry, suggestions on using PWM, and example code to download.



5:37 PM

Okay. Also, did you see the button that we never finished attaching to the bracelet and pin housing?



6:02 PM

Lab just opened back up



6:41 PM

<https://www.pololu.com/file/0J793/tps6306x-datasheet.pdf>



Message #electronics



Apps for Slack



Wrike



Trello

+Poll apps!

The screenshot shows the Slack App Directory interface. At the top, it says "slack app directory" with navigation links for "Browse", "Manage", and "Build". A user profile for "2009 TAs and ..." is visible in the top right. The main heading is "Add apps, get work done" with a subtext "Pull reports, start calls, file tickets, and more — right within Slack." and a "Get Essential Apps" button. To the right, there's a "Share and search files..." section showing a file "New Hire Onboarding from Google Drive" shared by Lisa Zhang. Below this, there's a search bar with the text "Find a new app, or a service you already use." and a grid of app icons. A section titled "Take action with your essential tools in Slack" includes a subtext "Discover how to use shortcuts from your favorite apps to take action without leaving Slack." and three app cards: "Google Drive File Management", "Sidequest Communication", and "Zoom Communication". At the bottom, there's a "Working from home" section with app cards for "monday.com Communication", "Loom Communication", and "Parabol HR & Team Culture".

Primary research questions

How do the online communication patterns of student product design teams vary?

Do these patterns relate to the strengths of their design processes?



Hypotheses about how communication patterns would relate to design process strength

Quantity of communication would change with respect to course milestones, increasing throughout the semester

High quantity of total team messages would not necessarily correlate with a stronger design process

What defines the “*strength of a team's design process?*”

Teams with **stronger** processes:

- Made decisions efficiently
- Delivered prototypes in line with the design process
- Sought resources appropriately
- Worked well together

Teams with **weaker** processes:

- Had trouble making decisions
- Delivered prototypes that didn't contribute to learning
- Didn't seek help effectively
- Had concerning team dynamics

Observed staff meetings, milestone debriefs

Used these criteria to sort the teams in this study:
8 stronger teams and 8 weaker teams

Hypotheses about how communication patterns would relate to design process strength

Quantity of communication would change with respect to course milestones, increasing throughout the semester

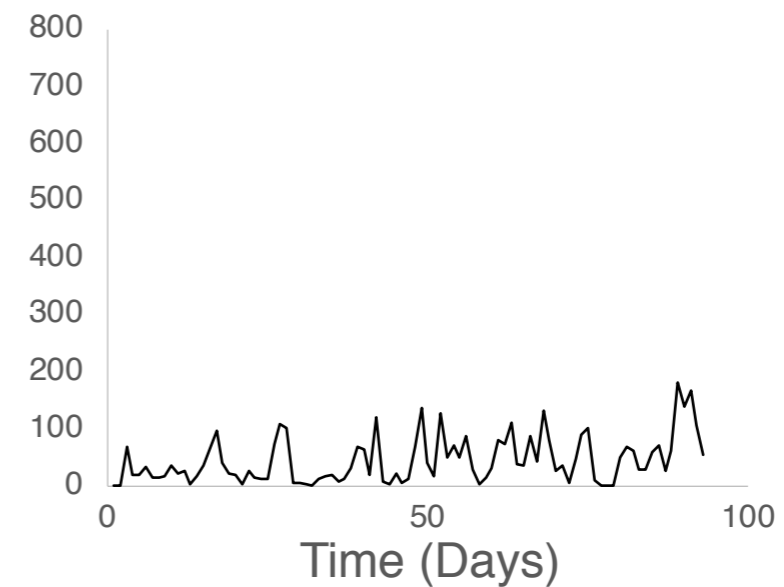
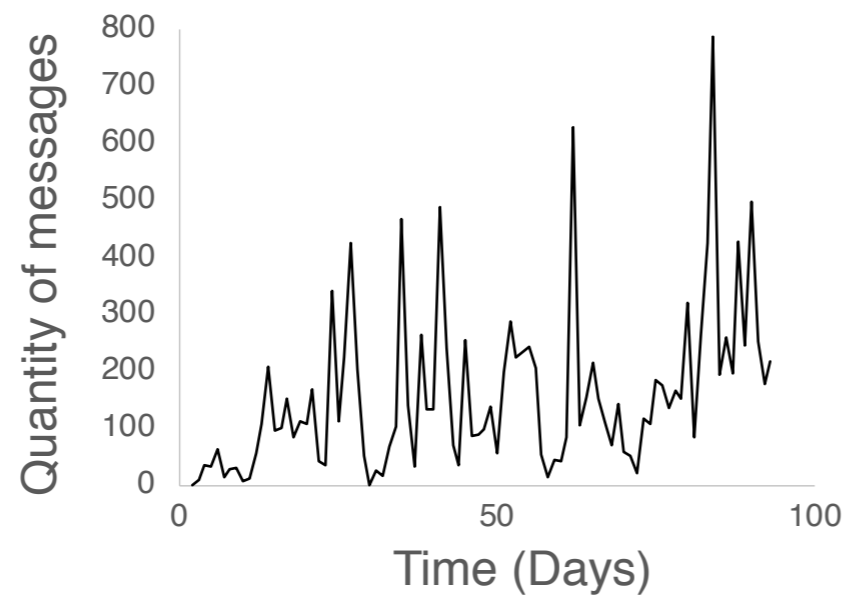
High quantity of total team messages would not necessarily correlate with a stronger design process

Uniformity of a team's online communication would correlate with a stronger design process

- **Consistency** of daily team messages sent throughout the semester
- **Equality** of percentages of team messages sent by individuals

Analysis methods

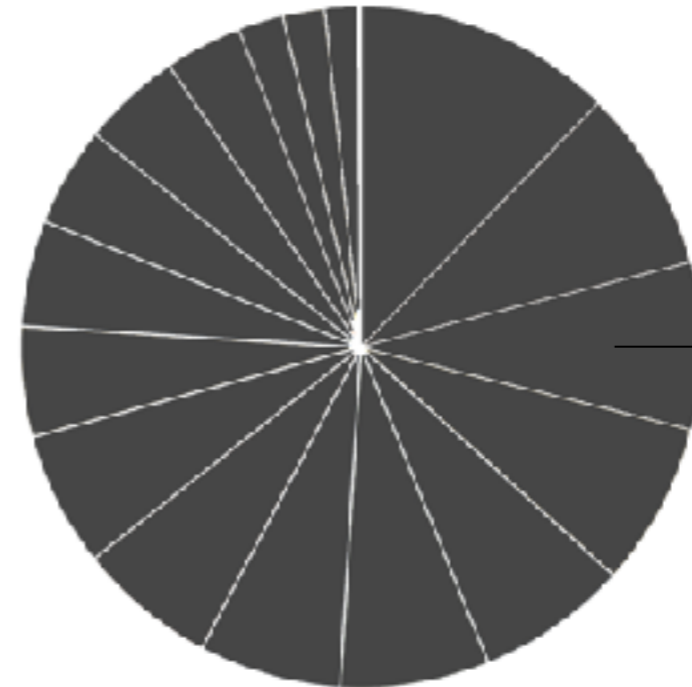
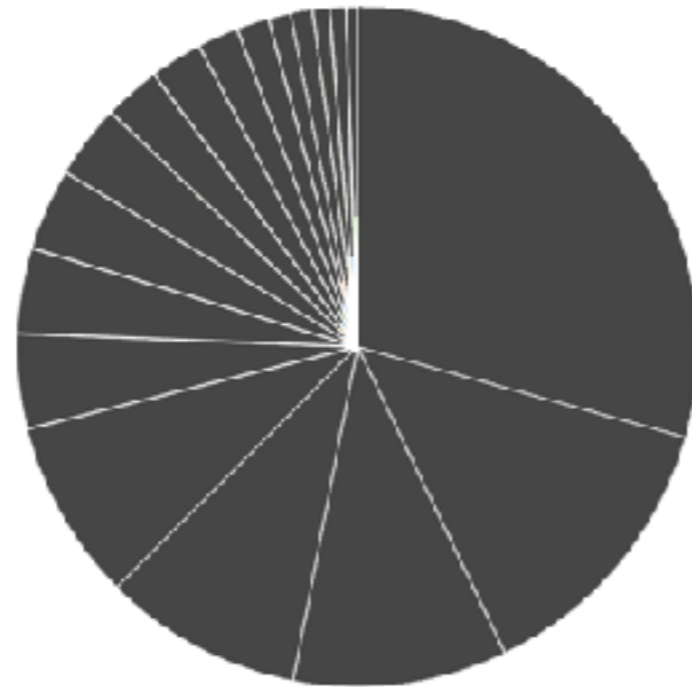
First way I analyzed communication: Daily messages sent by team



Quantity	14,966 messages total More quantity	4147 messages total Less quantity
Uniformity (consistency)	Standard deviation of 143 Less consistent	Standard deviation of 45 More consistent

Analysis methods

Second way I analyzed communication: Percent of team messages sent by individuals

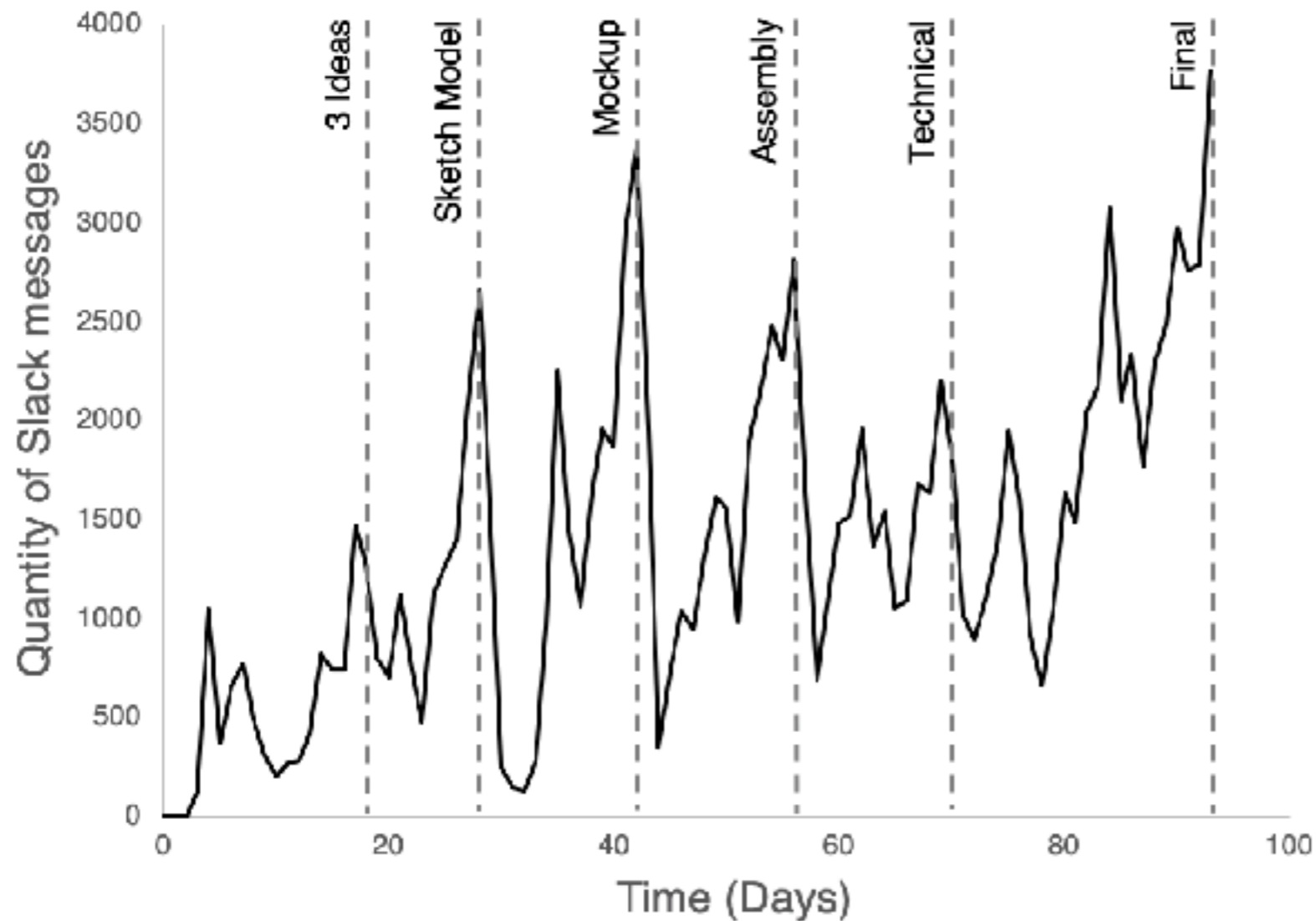


One slice represents one individual

Quantity	29% messages sent by most communicative individual
Uniformity (equality)	Standard deviation of 7 Less equal
	12% messages sent by most communicative individual
	Standard deviation of 3 More equal

Quantity of communication changed throughout semester

Total daily Slack activity of all 2016 and 2017 teams (282 students) throughout the semester compared to course milestones

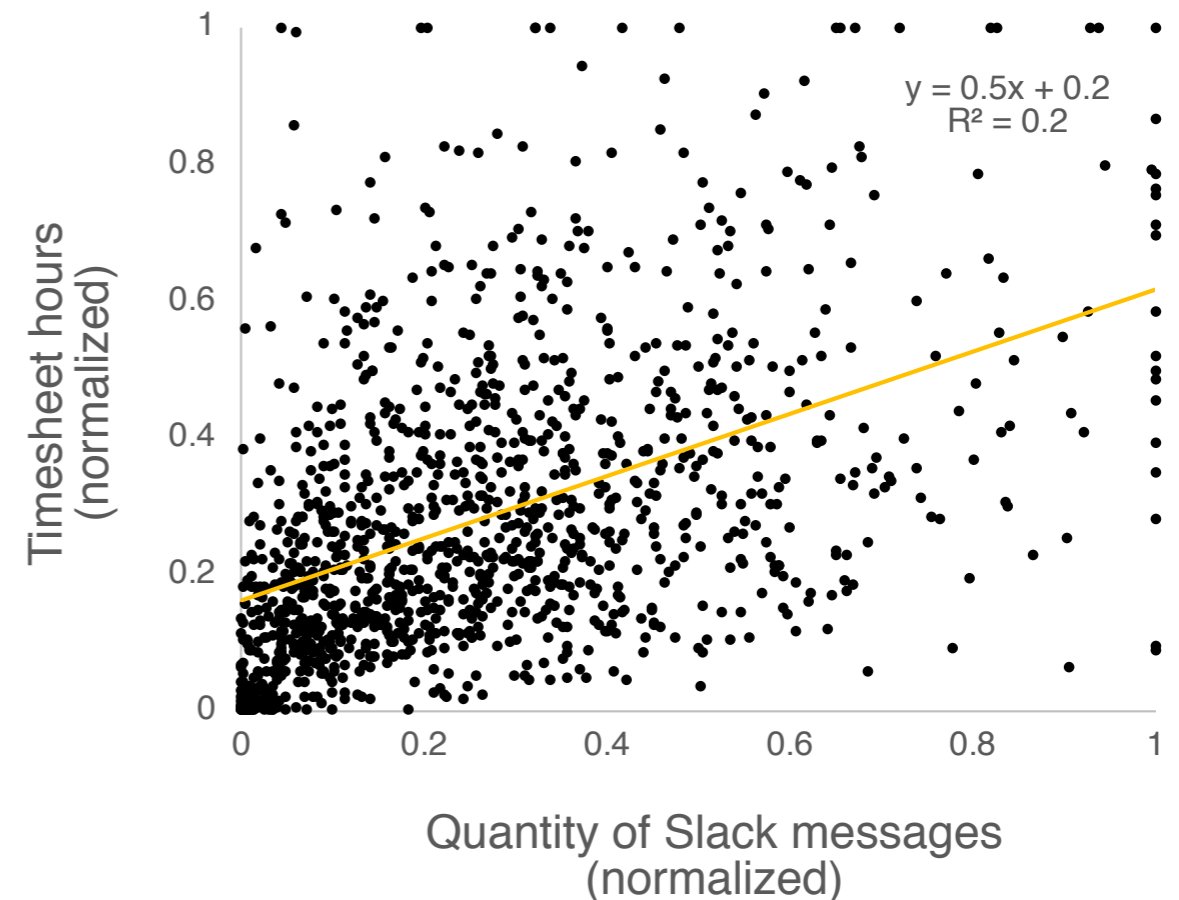
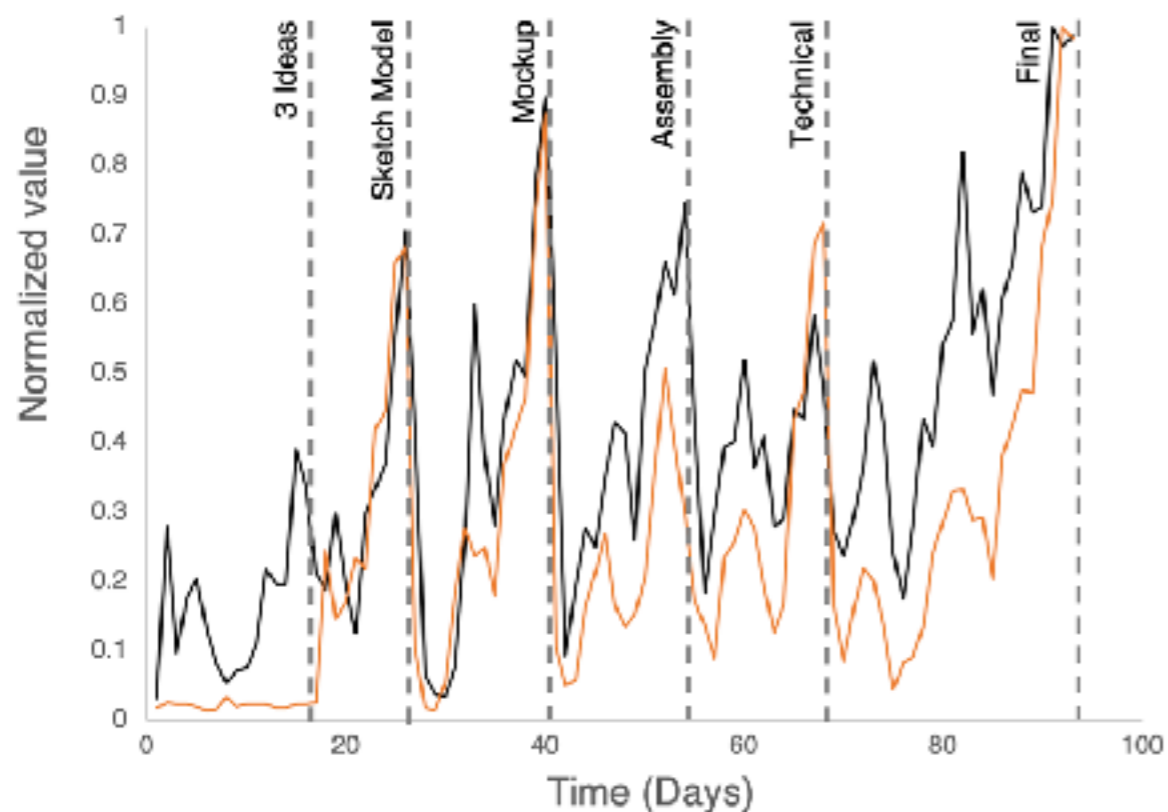


Dips in communication after every milestone

High quantity of online communication didn't correlate with time spent working

Reported timesheet hours with quantity of Slack messages of 282 students over the course of the semester, normalized

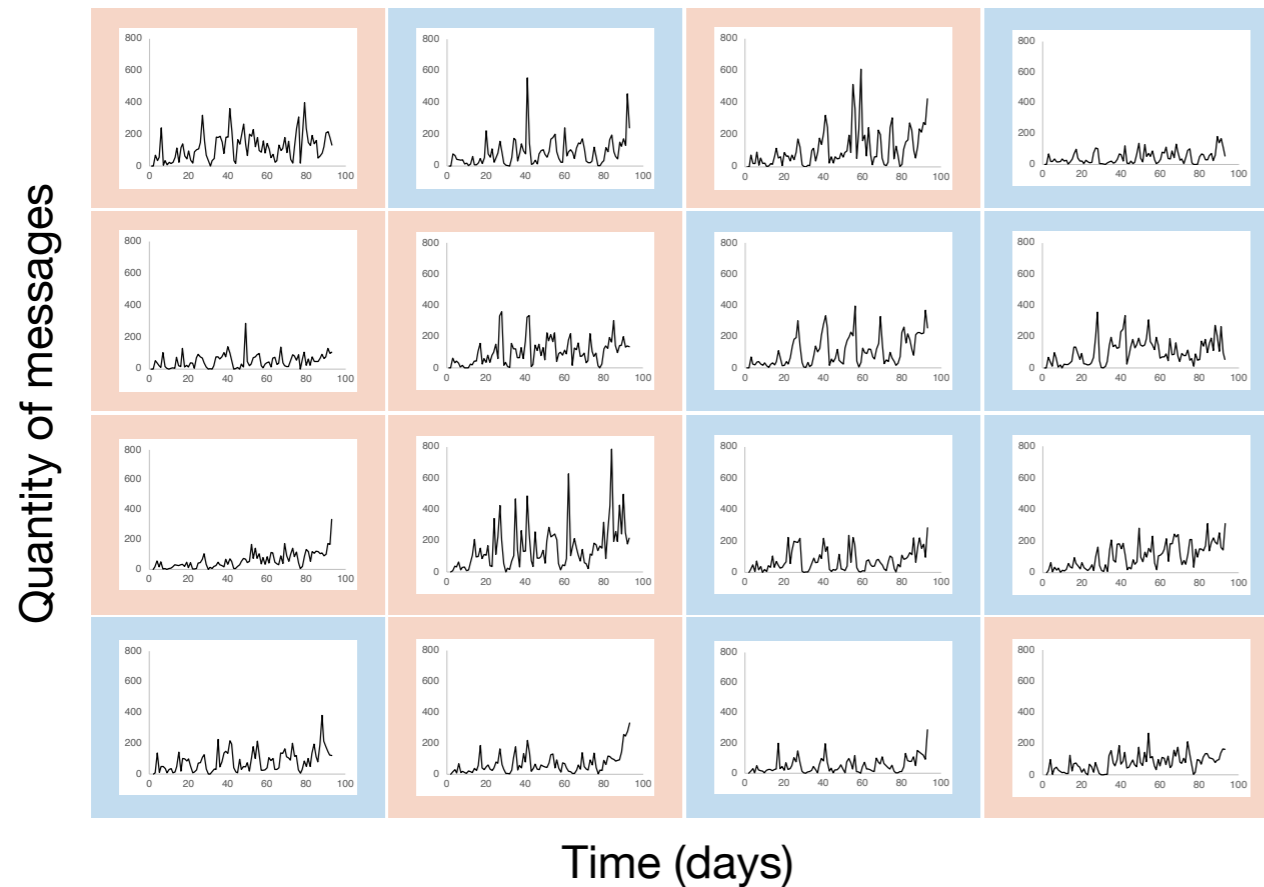
Normalized daily timesheet hours versus daily quantity of Slack messages of all teams. $R^2 = 0.2$



- Quantity of Slack messages
- Timesheet hours

Low communication doesn't mean low progress
(if progress correlates with time spent working)

Lower quantities of communication might suggest a stronger team process



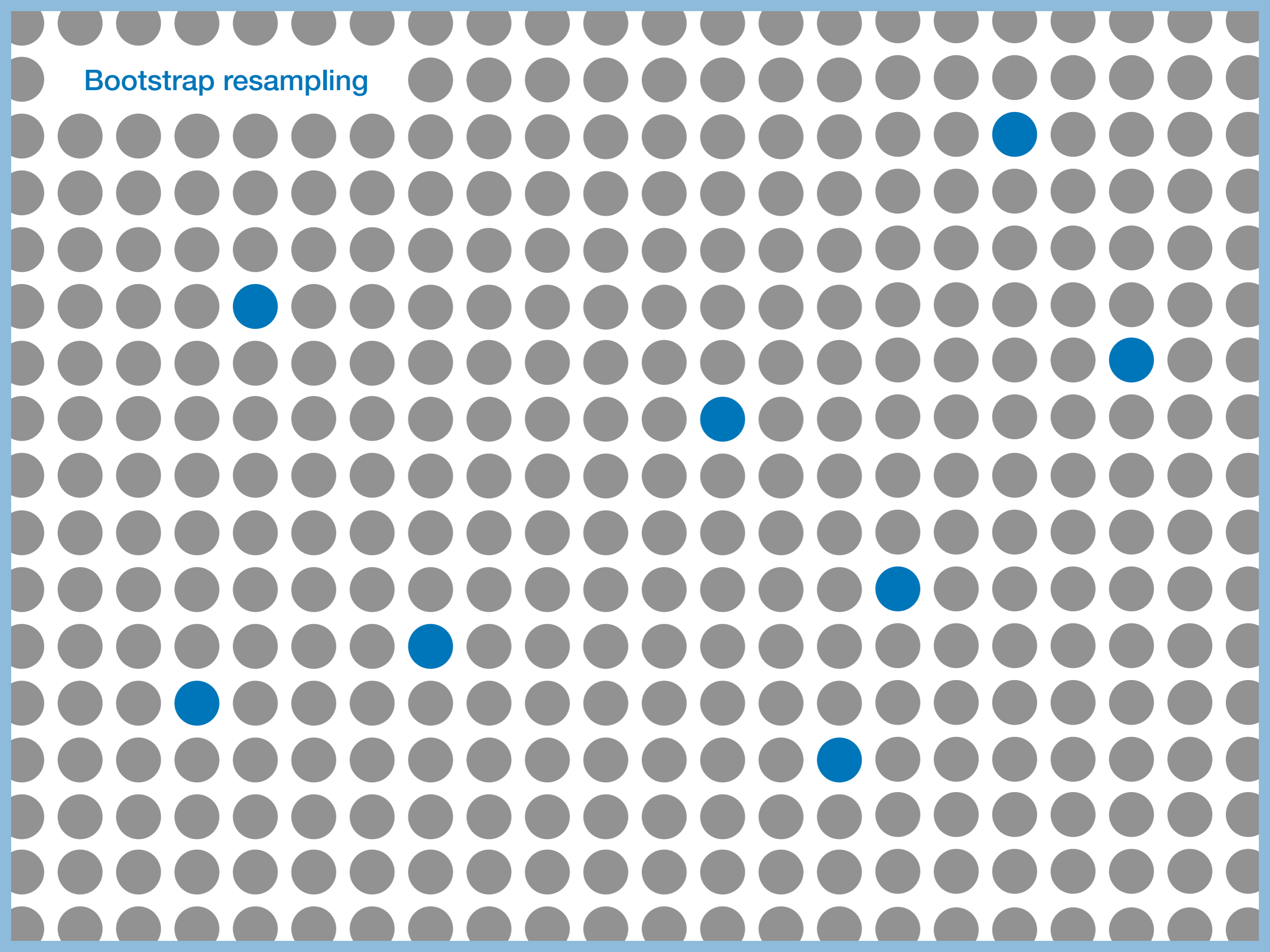
Quantity of messages stronger teams	Quantity of messages of weaker teams
7160	5606
9593	14,966
8207	6511
4619	7295
7847	11,210
4174	10,204
10,046	4965
10,069	9978

- Stronger teams
- Weaker teams

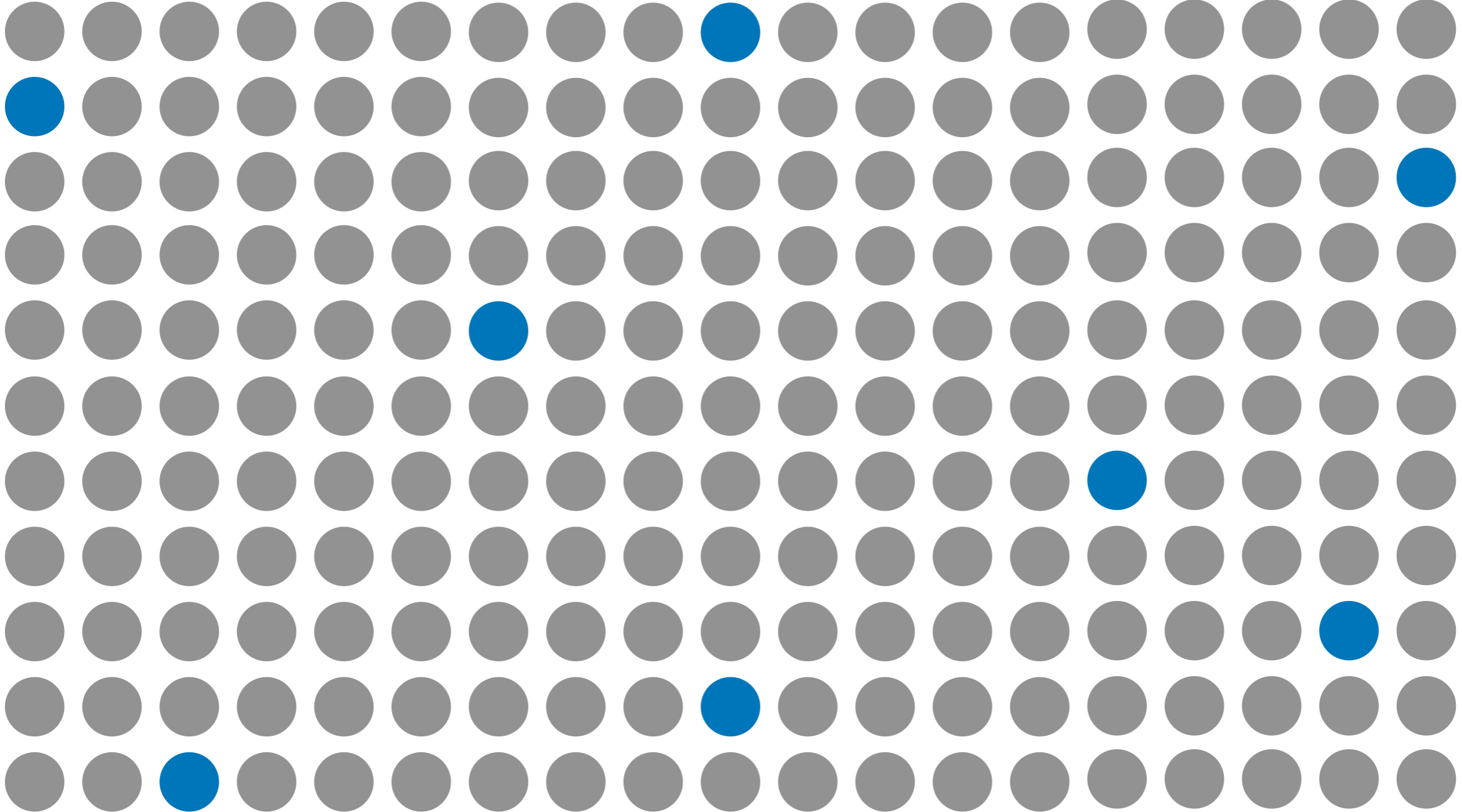
Bootstrap resampling

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

Bootstrap resampling

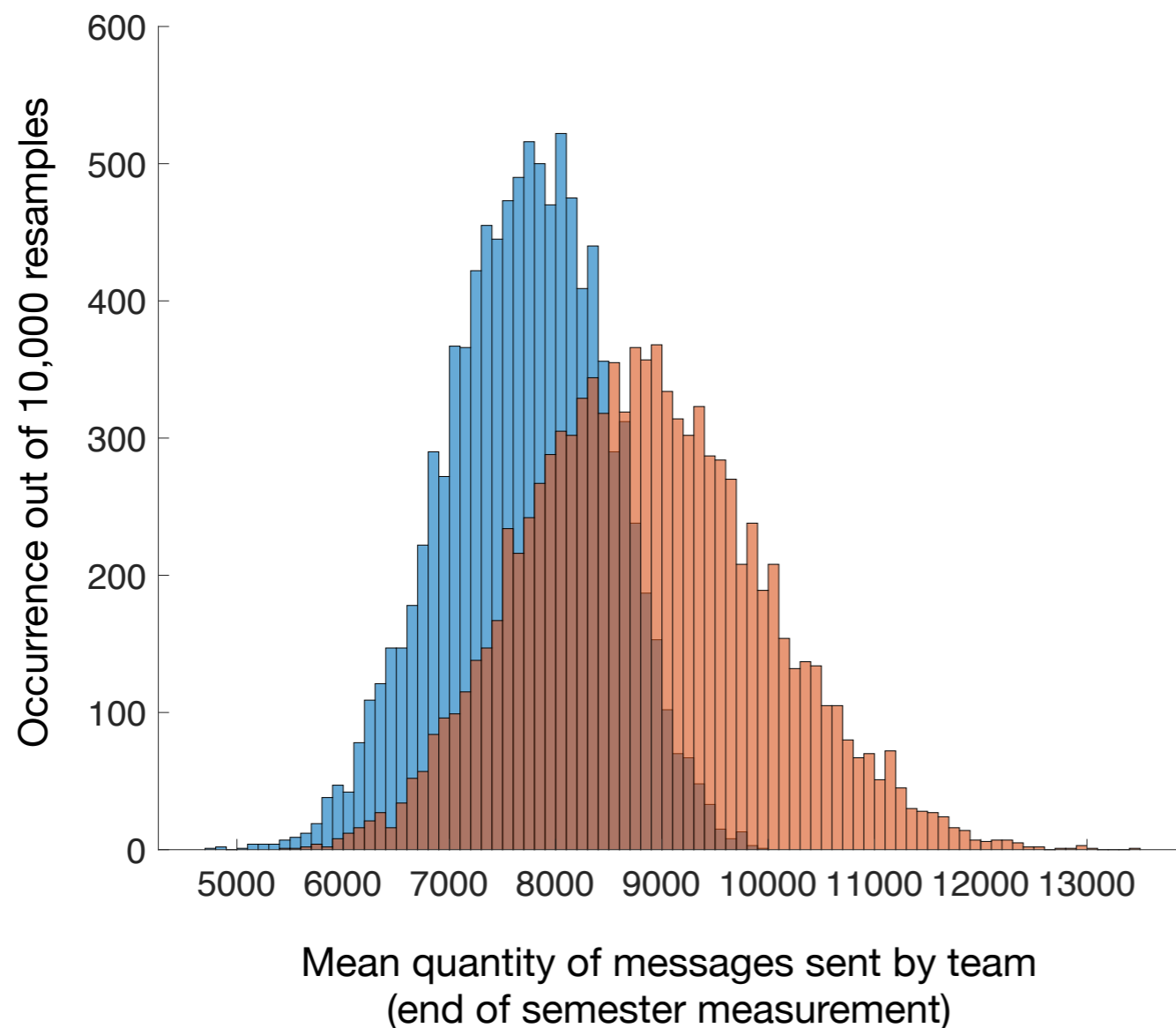


Bootstrap resampling



Lower quantities of communication might suggest a stronger team process

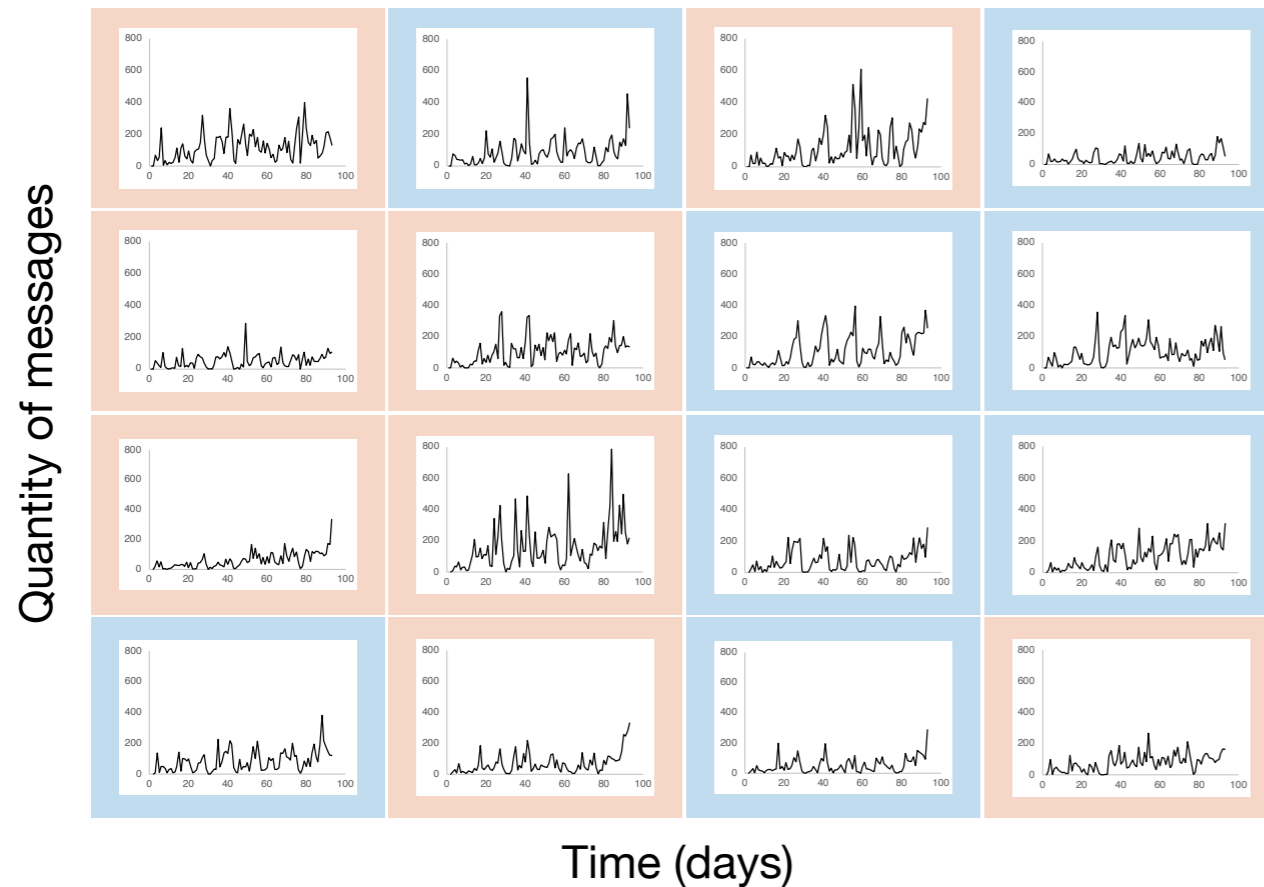
Bootstrap distributions of stronger and weaker teams' quantity measurements



One-tailed z-test showed that stronger teams had lower communication quantities

p-value of 0.21

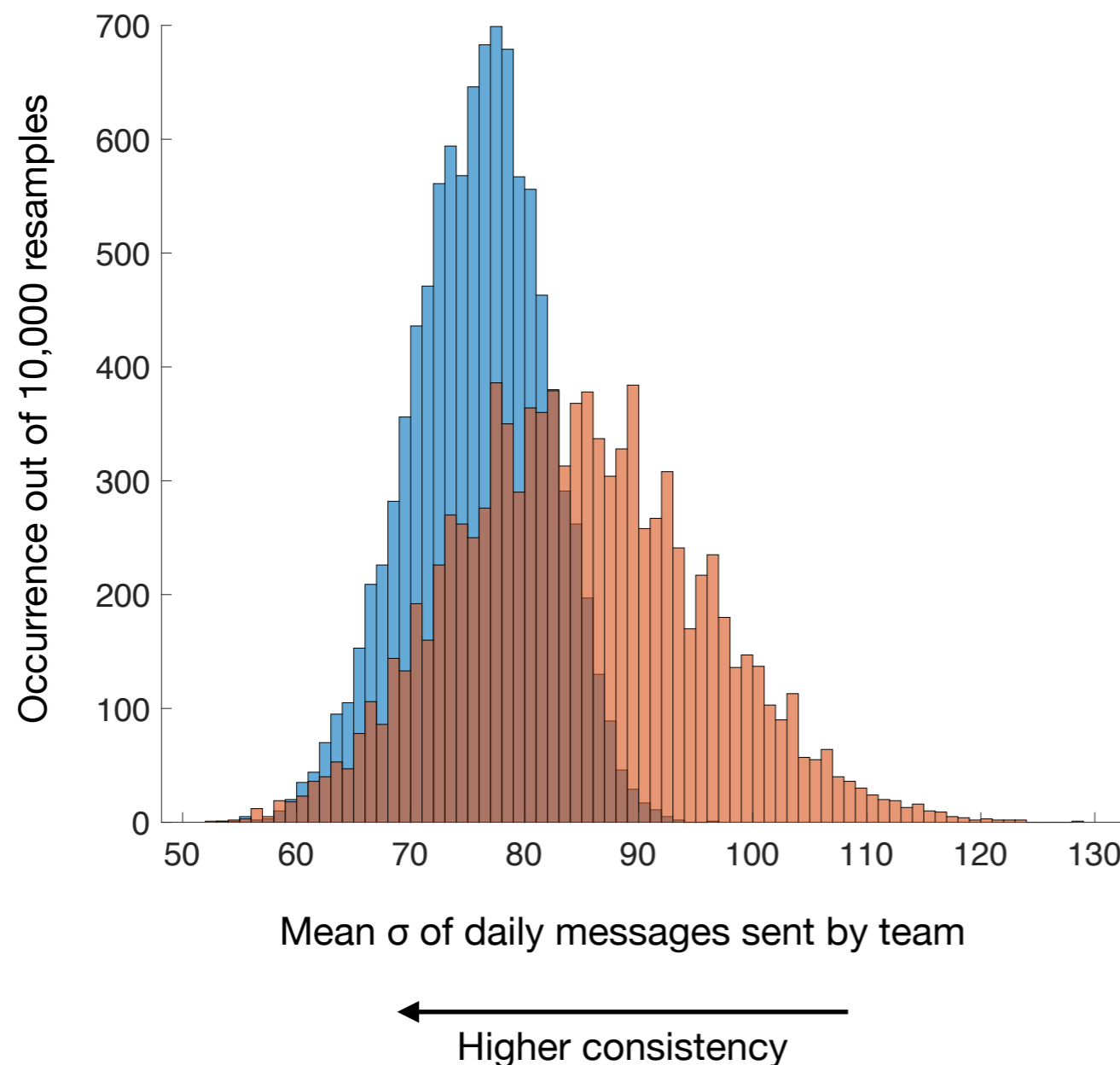
Consistency of communication might suggest a stronger team process



σ of stronger teams	σ of weaker teams
74	57
82	143
76	77
57	57
92	87
45	119
98	50
82	87

Consistency of communication might suggest a stronger team process

Bootstrap distributions of stronger and weaker teams' consistency measurements



Stronger teams
Weaker teams

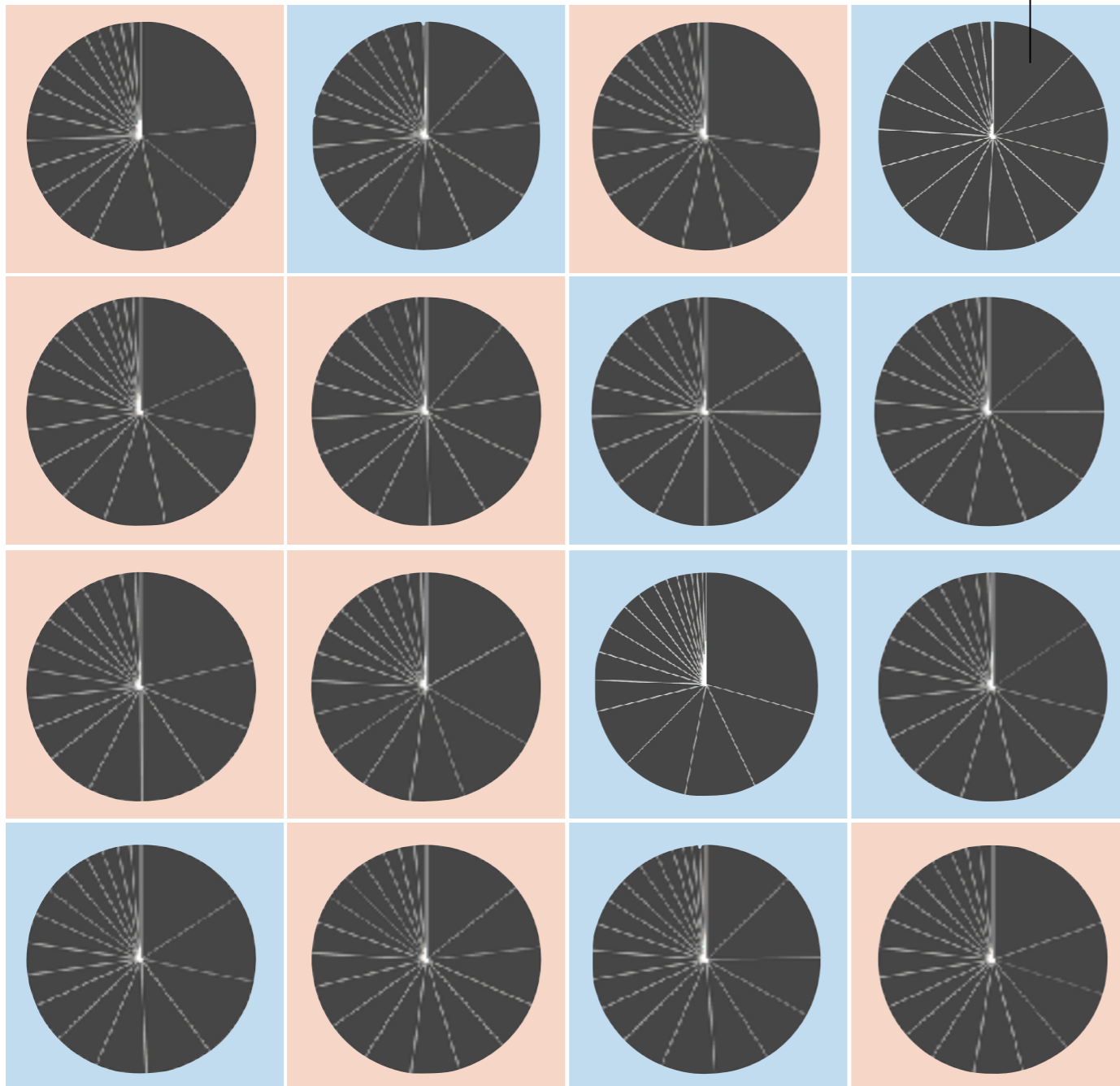
One-tailed z-test showed that stronger teams had higher communication consistencies

p-value of 0.24

Equality of communication might suggest a stronger team process

Equality of communication by team

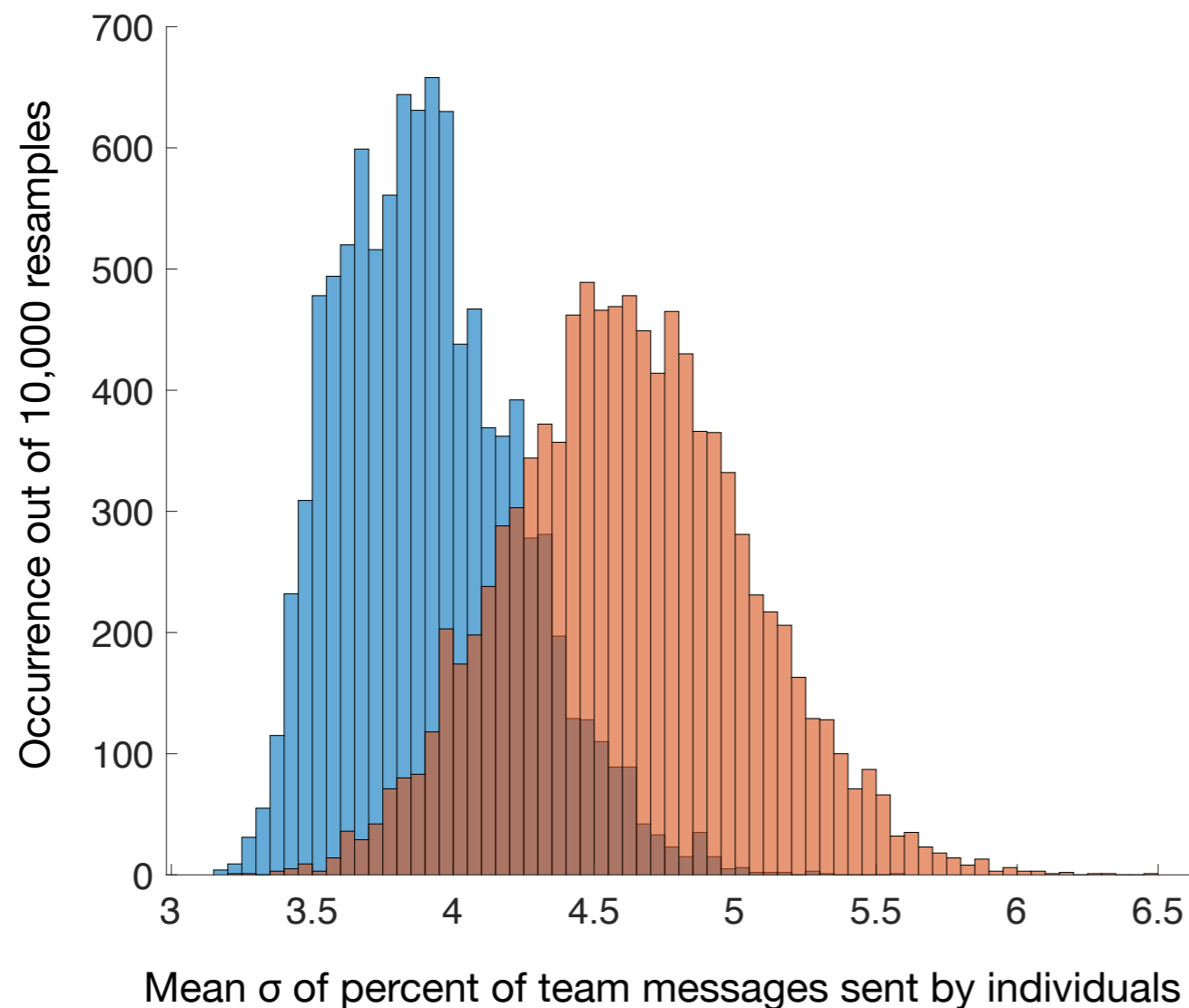
One slice represents one individual



σ of stronger teams	σ of weaker teams
4.8	6.1
4.8	4.1
3.1	4.1
4.2	3.5
5.5	3.4
7.0	3
4.4	3.6
3.2	3.6

Equality of communication might suggest a stronger team process

Bootstrap distributions of stronger and weaker teams' equality measurements



Stronger teams
Weaker teams

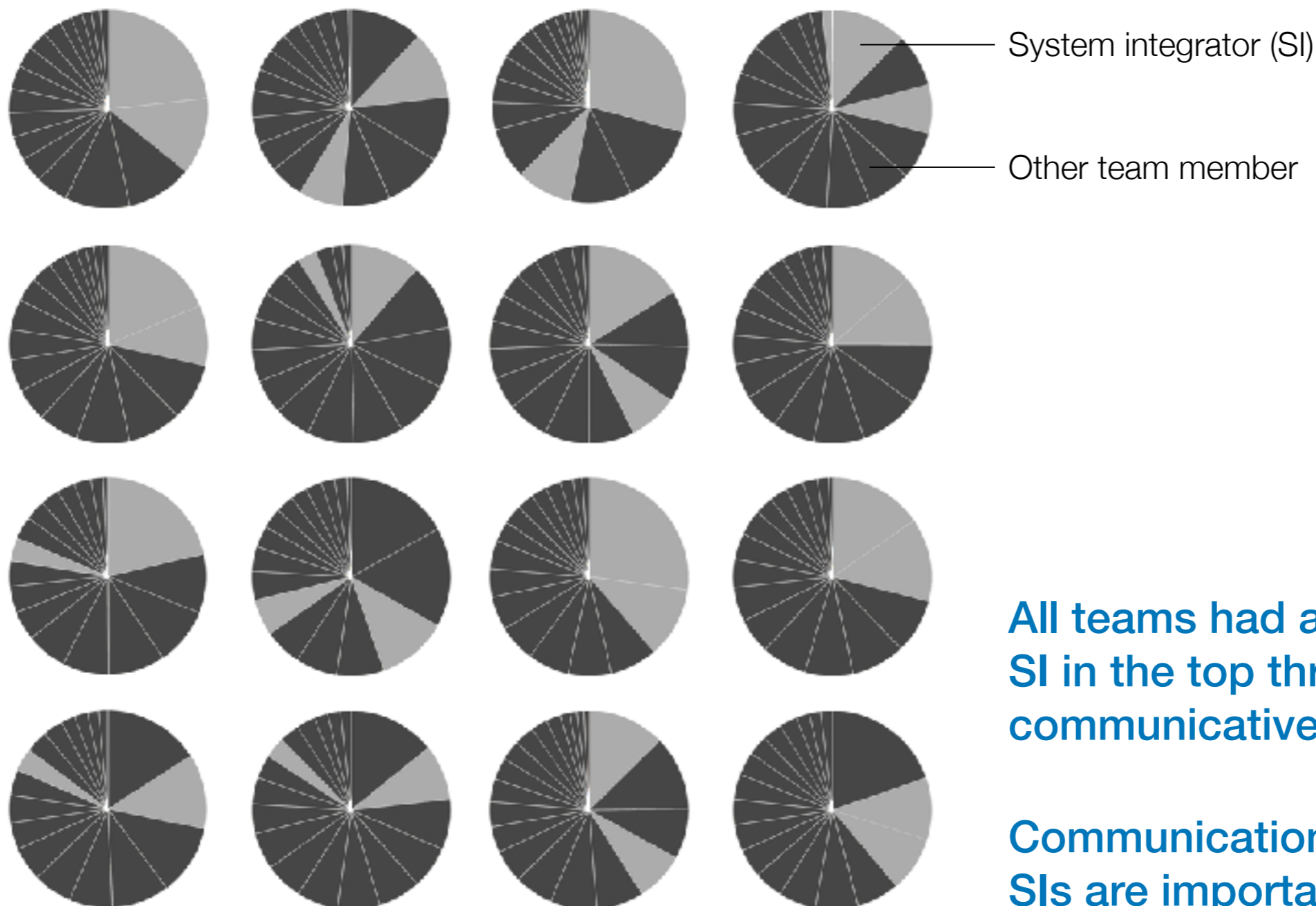
One-tailed z-test showed that stronger teams had higher communication equalities

p-value of 0.09

← Higher equality

System Integrators are among the most communicative individuals

Equality of communication by team



All teams had at least one SI in the top three most communicative members

Communication patterns of SIs are important to study

Slack communication: Take-aways

Communication patterns were quite varied between teams

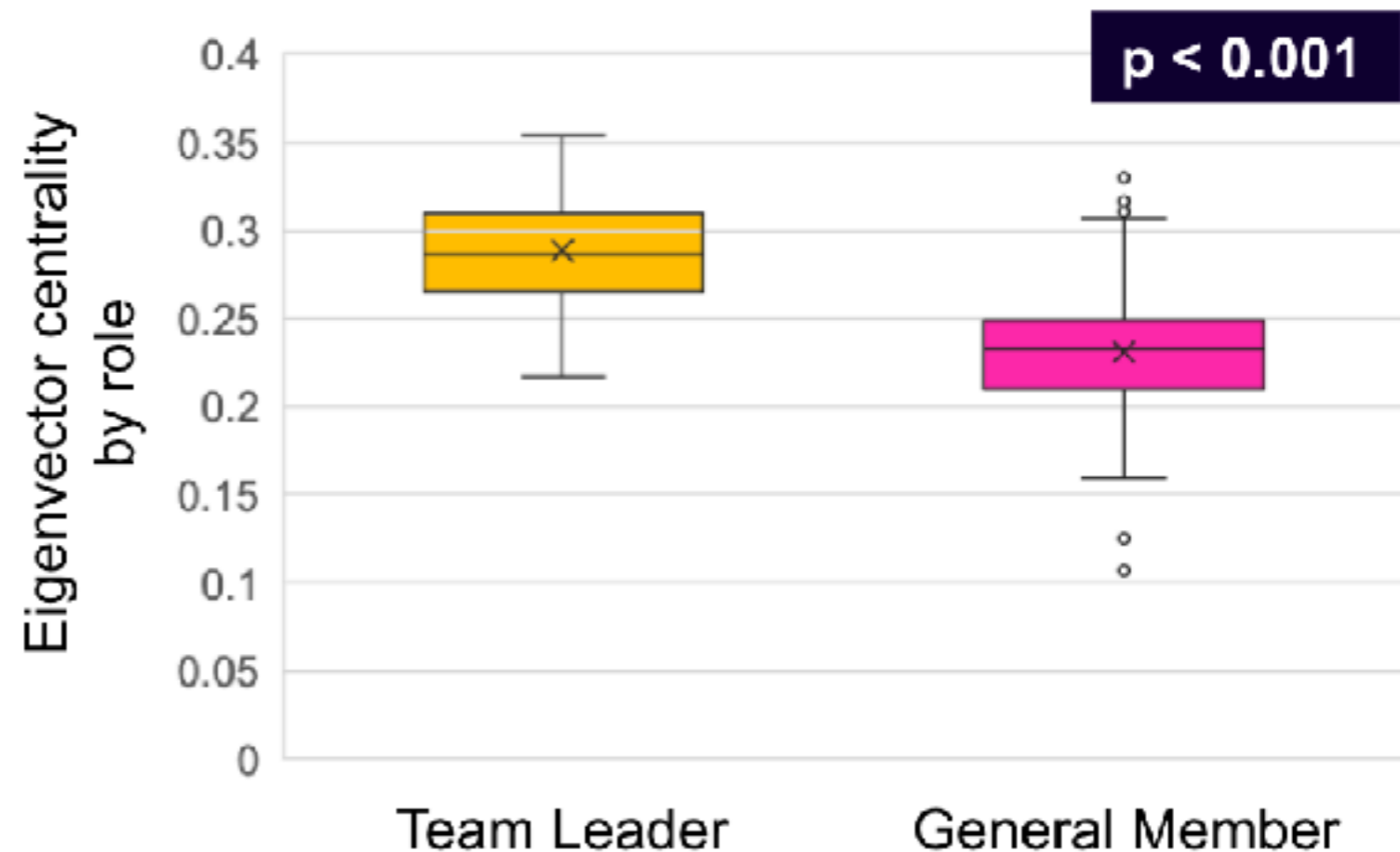
Quantity of communication isn't necessarily an indicator of progress; low communication doesn't always mean low project progress

Uniformity of communication is possibly a better indicator; teams with uniformity have tended to follow stronger design processes and have better outcomes

Now for four year's worth of data!

Analysis of virtual communication within engineering design teams and its impact on team effectiveness.
Lauren Adolphe, Georgia D. Van de Zande,
David Wallace, Alison Olechowski

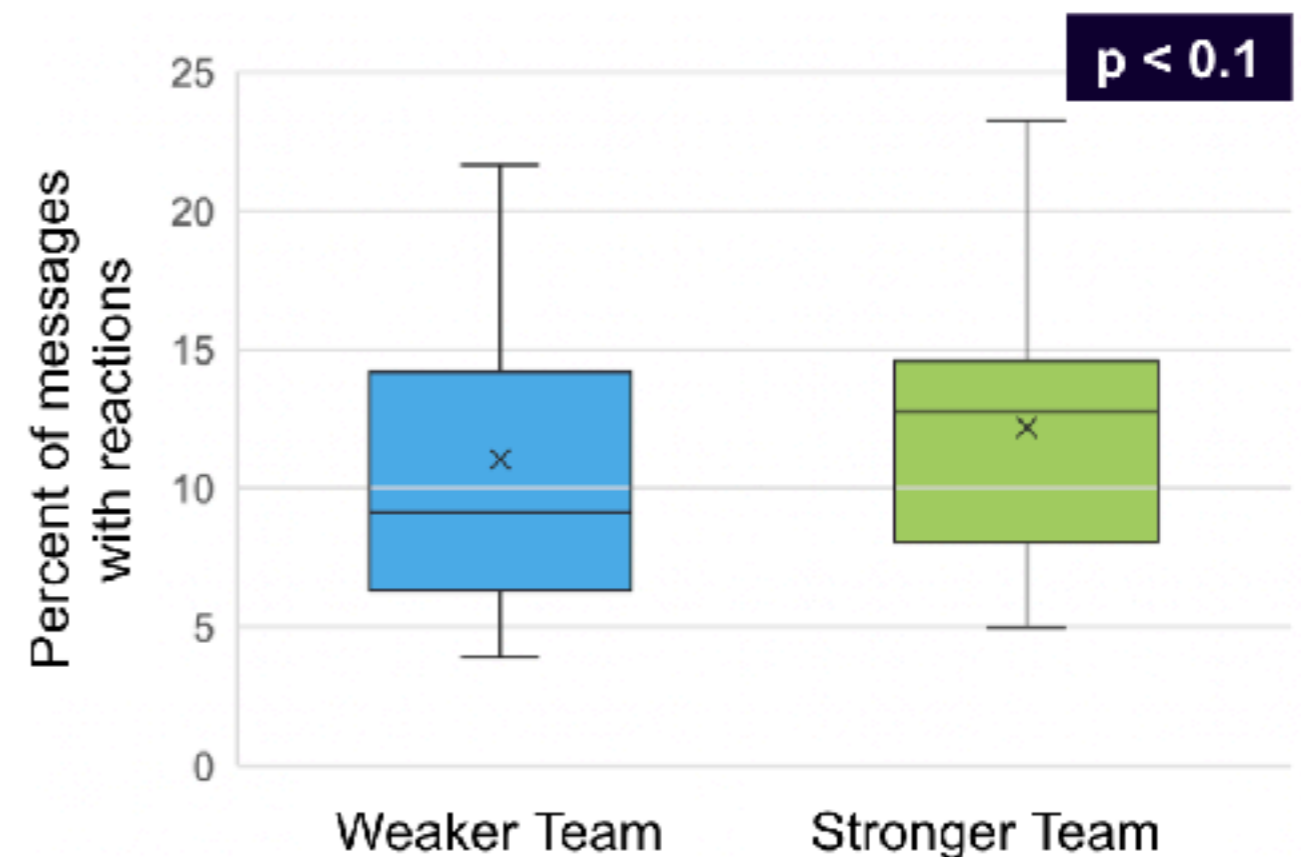
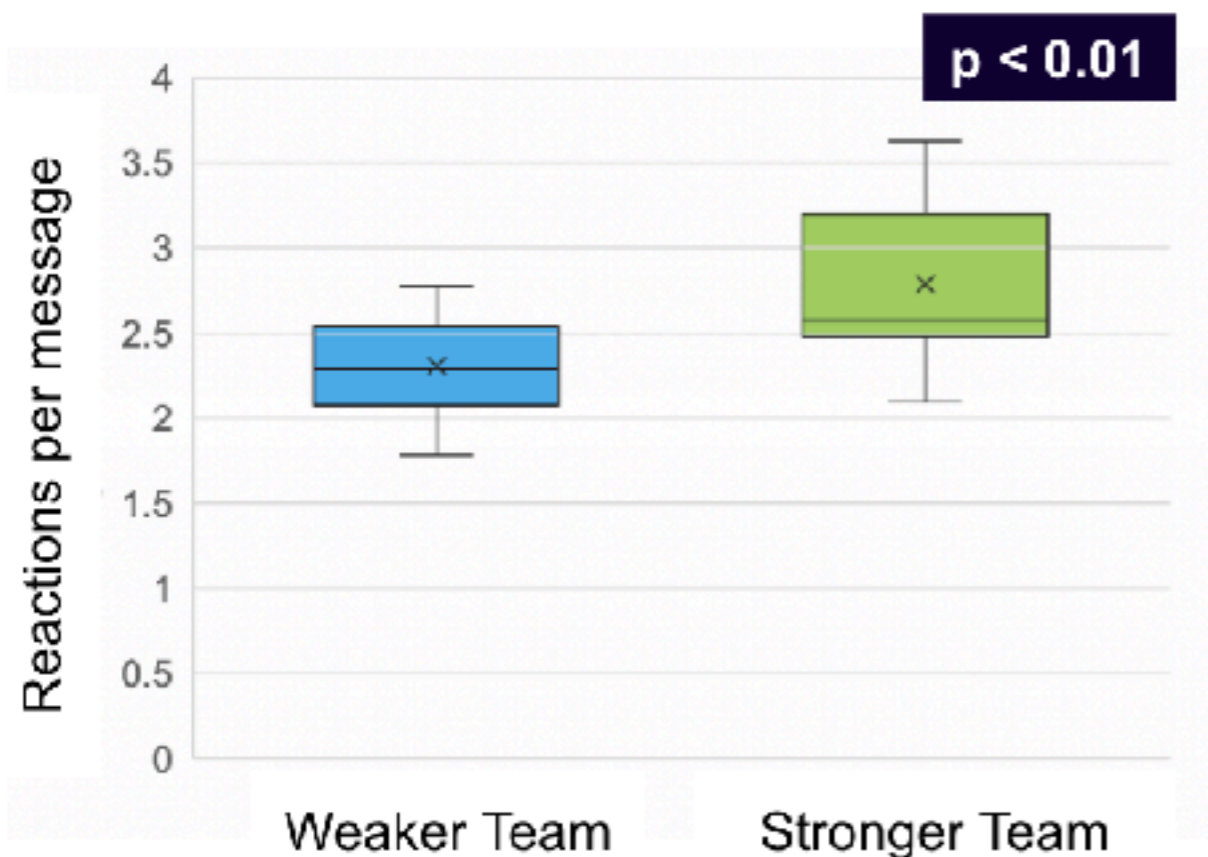
Central leadership style: Team leads are most central to the network



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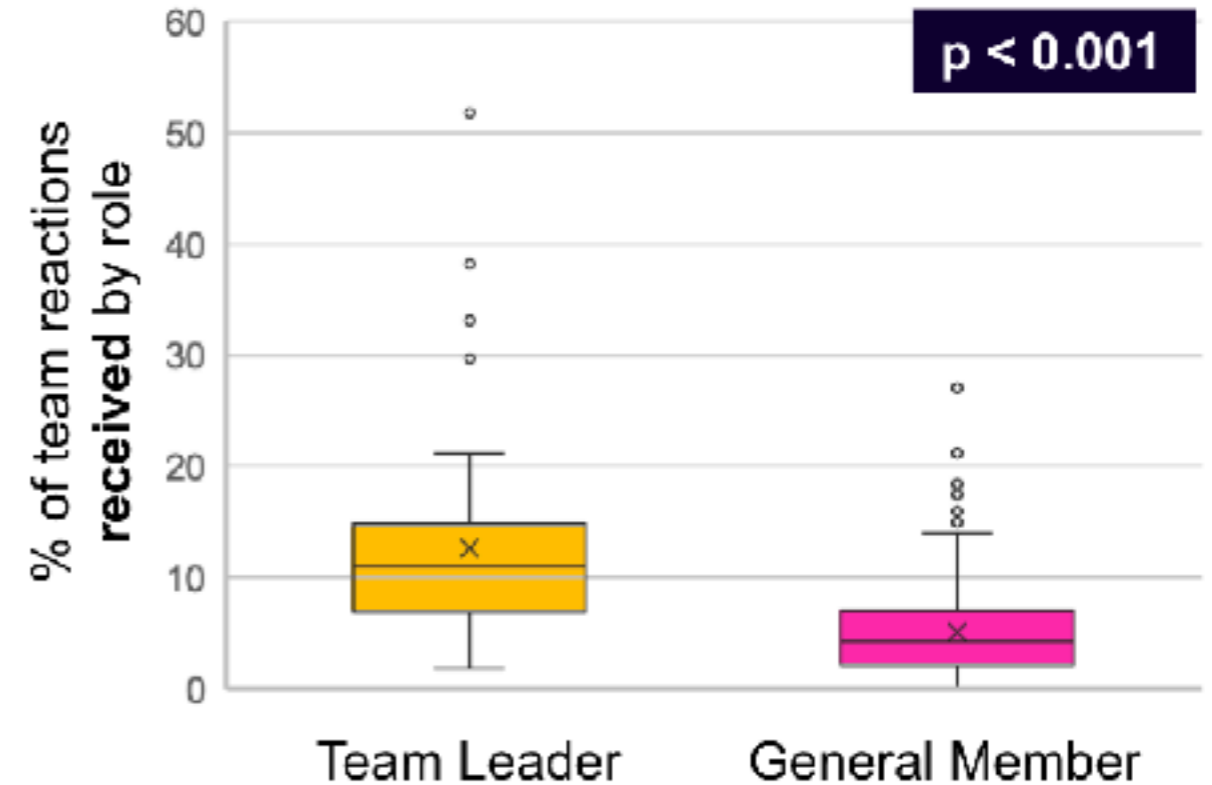
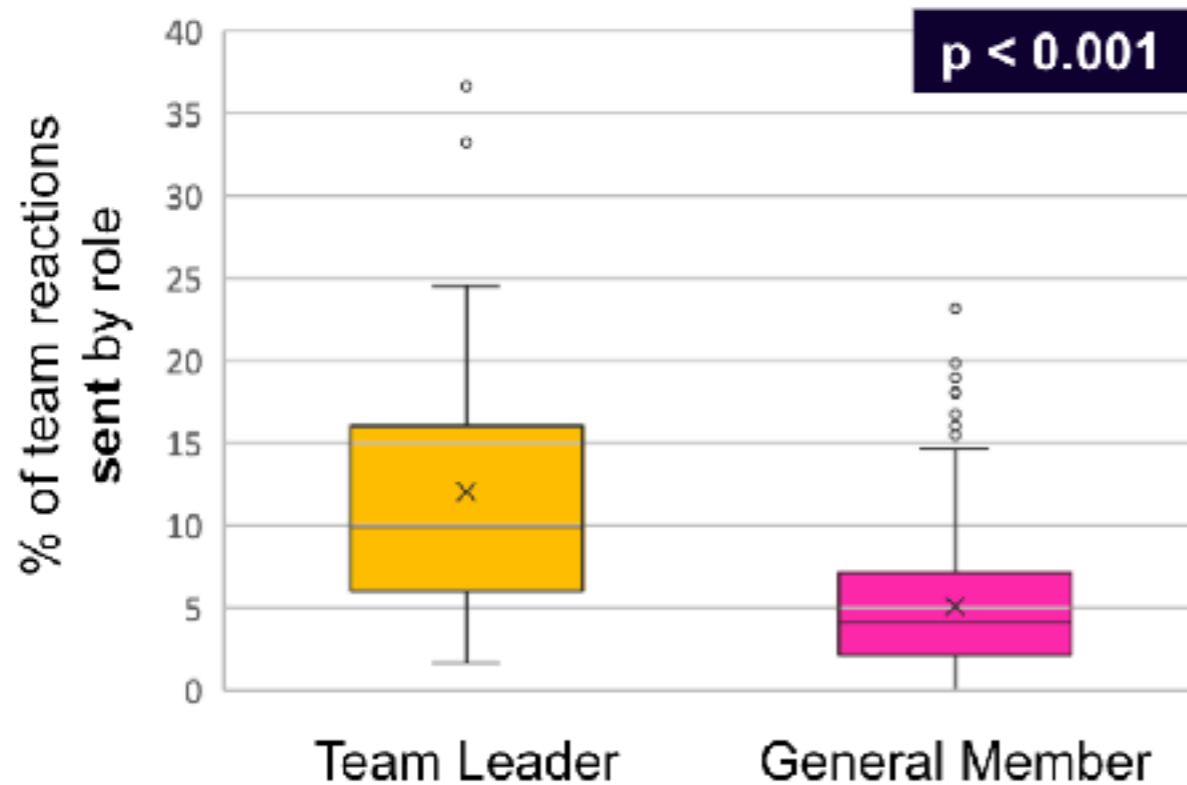
Value of Nonverbal Communication: Stronger teams use emojis at a **higher rate**



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Leading with Emotion: Team leads send and receive **more emojis**



Other ways to communicate





slack

+



Questions?