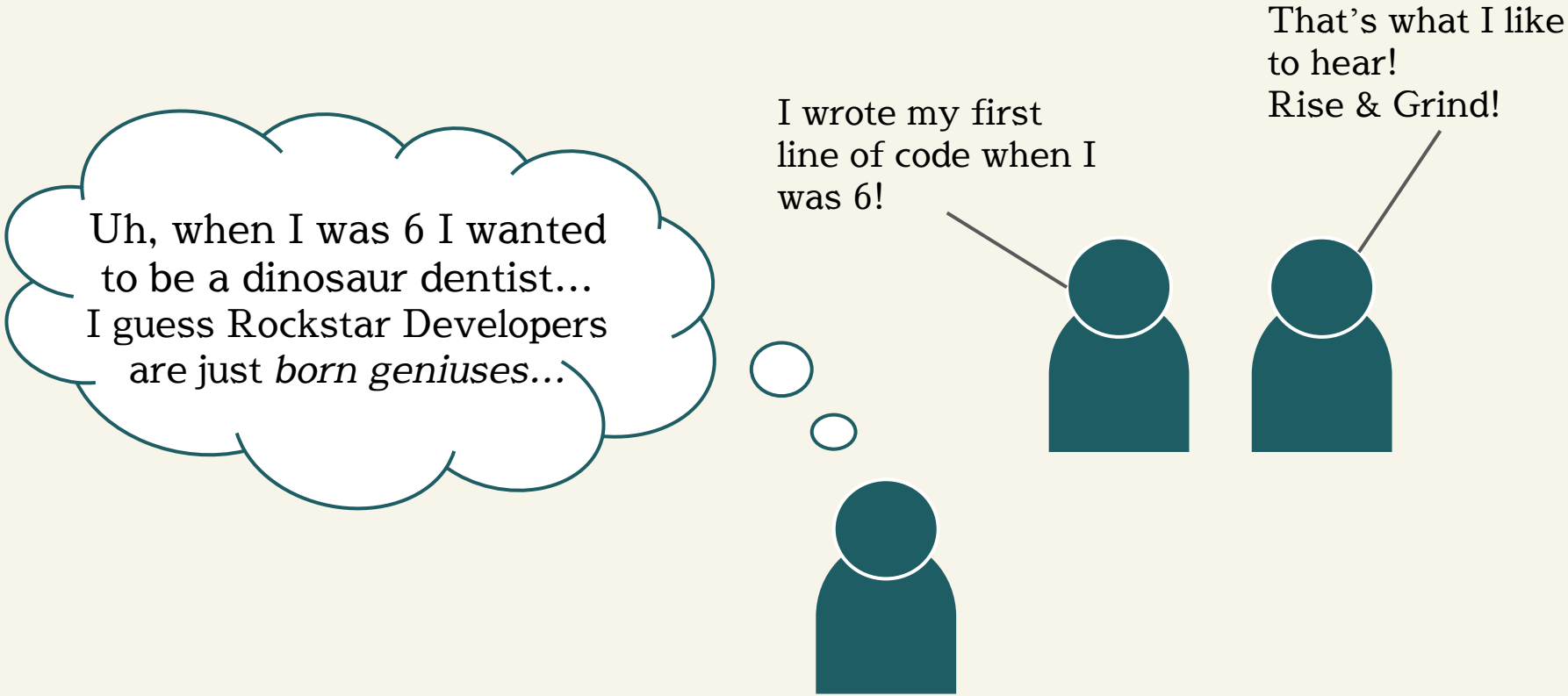
Building For The New Developer

Why the psychological science of software teams unlocks the future

Dr. Cat Hicks
Founder, Developer Success Lab

We constantly look for signals about what success means HERE

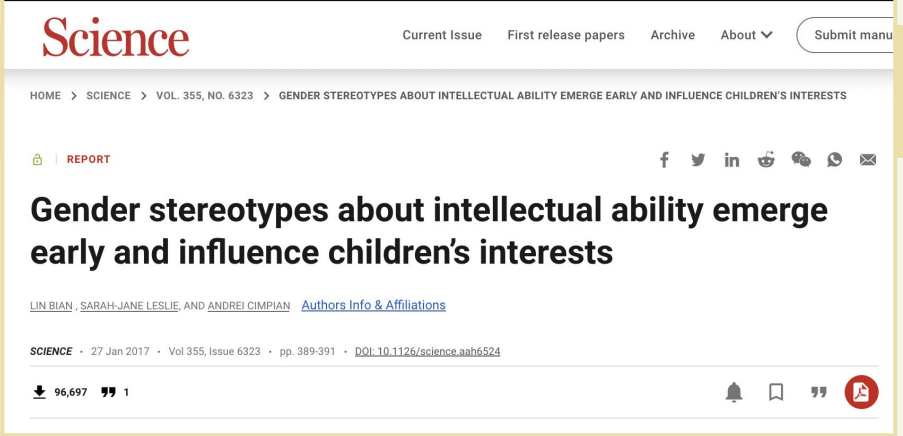


The Brilliance Trap

Field-specific Ability Beliefs (FABs): **beliefs** we hold about what success requires in a certain field – can be **inaccurate**

These can interact with pre-existing biases about **who is brilliant**

Leslie, S. J., Cimpian, A., Meyer, M., & Freeland, E. (2015). Expectations of brilliance underlie gender distributions across academic disciplines. *Science*, *347*(6219), 262-265.



The Brilliance **Trap**: feels positive

We're looking for human innovation & we want this for our teams!

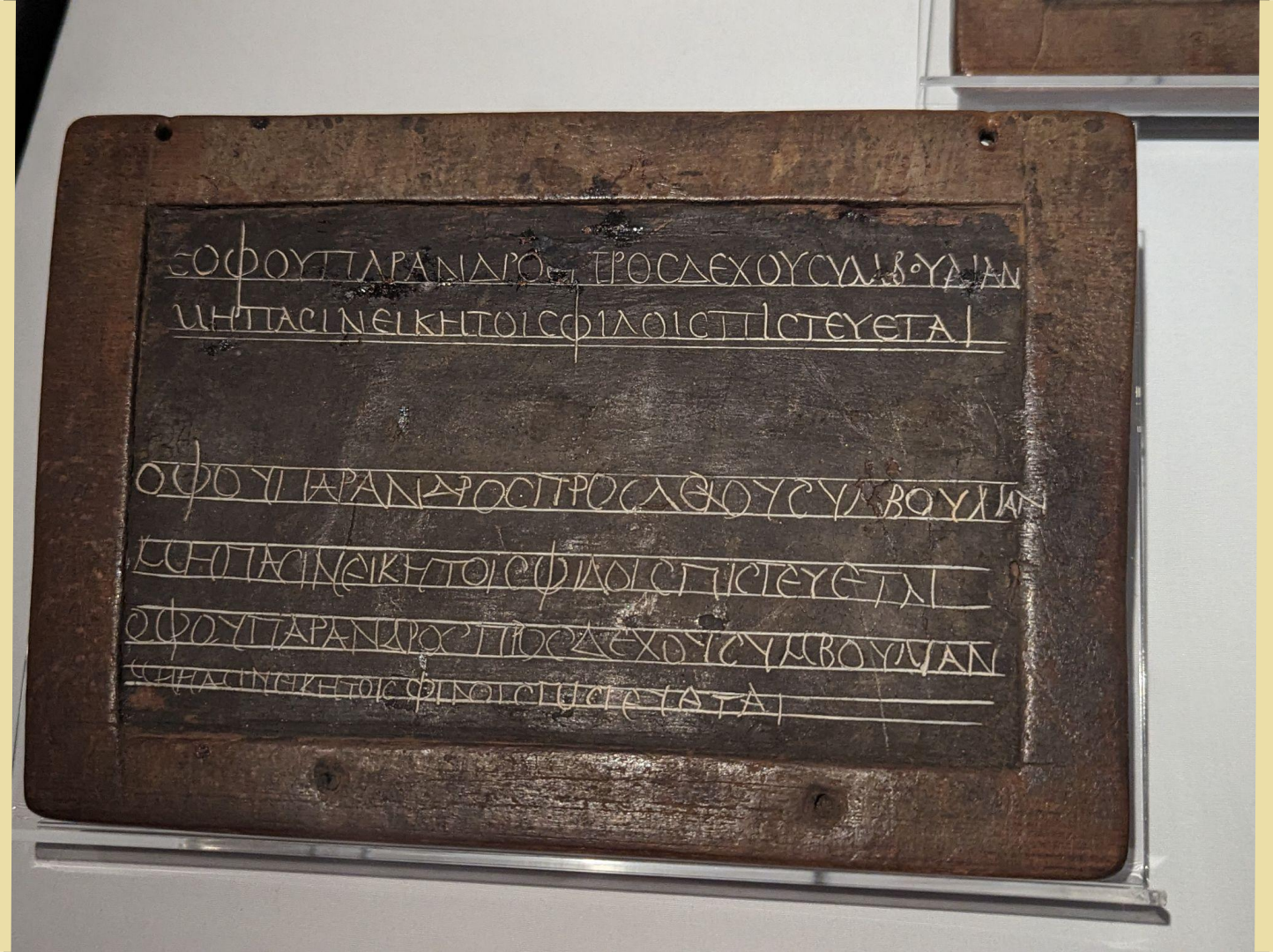
But we're brewing a psychological process with big costs

Contest Cultures

Contests fuel brilliance beliefs for ourselves and for how we treat others

Fig. 1. Relationship between perceived emphasis on brilliance and perceptions of a masculinity-contest culture at the field level in the pilot study. The line indicates the best-fitting regression, and the error band represents ±1 *SE*.

Vial, A. C., Muradoglu, M., Newman, G. E., & Cimpian, A. (2022). An emphasis on brilliance fosters masculinity-contest cultures. *Psychological Science*, *33*(4), 595-612.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Can we mitigate the **Contest Cultures** that are making our tech careers unhealthy for us?

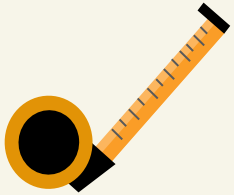
Could this be key to how technology teams face **rapid technological shifts?**

The New Developer

How do generative coding tools (e.g., Copilot) impact developers' deep beliefs about their future?

What do developers need to thrive while grappling with this change?

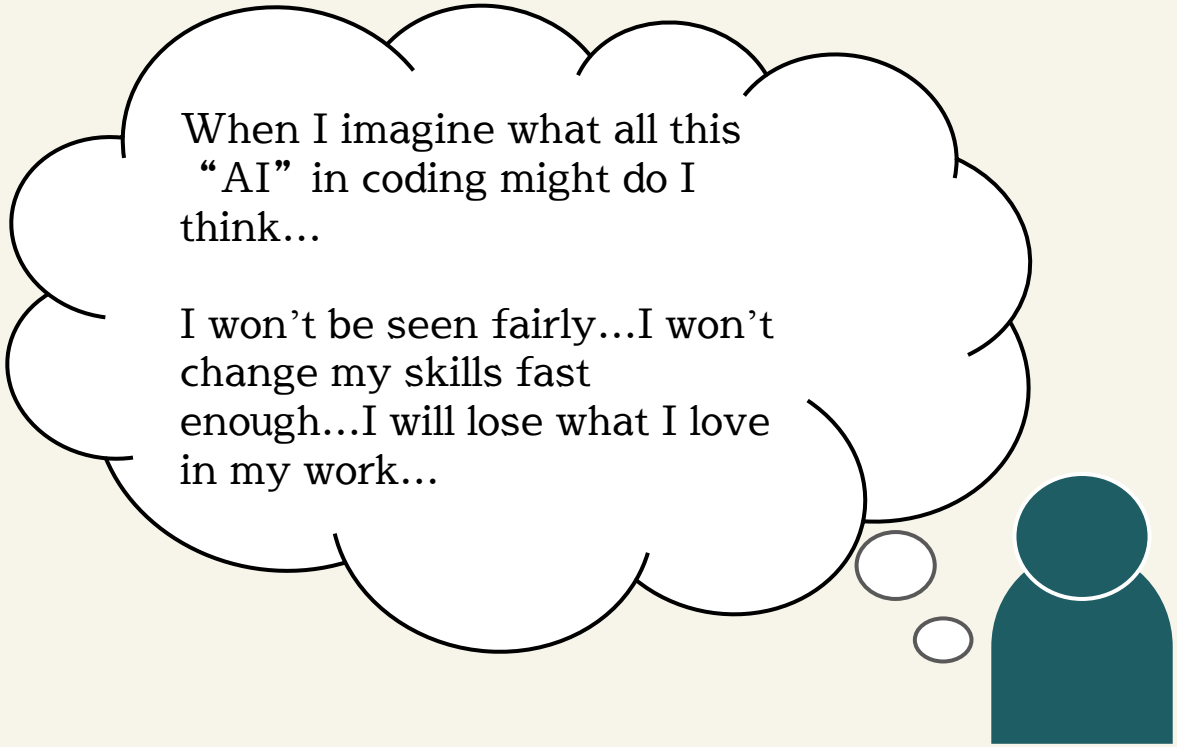
Recruit (a lot of) real teams doing real generated coding adoption. Recruit inclusively + intersectionally for insight & generalizability.



Create brand-new measures for developer experience. Build on empirically-validated scales.

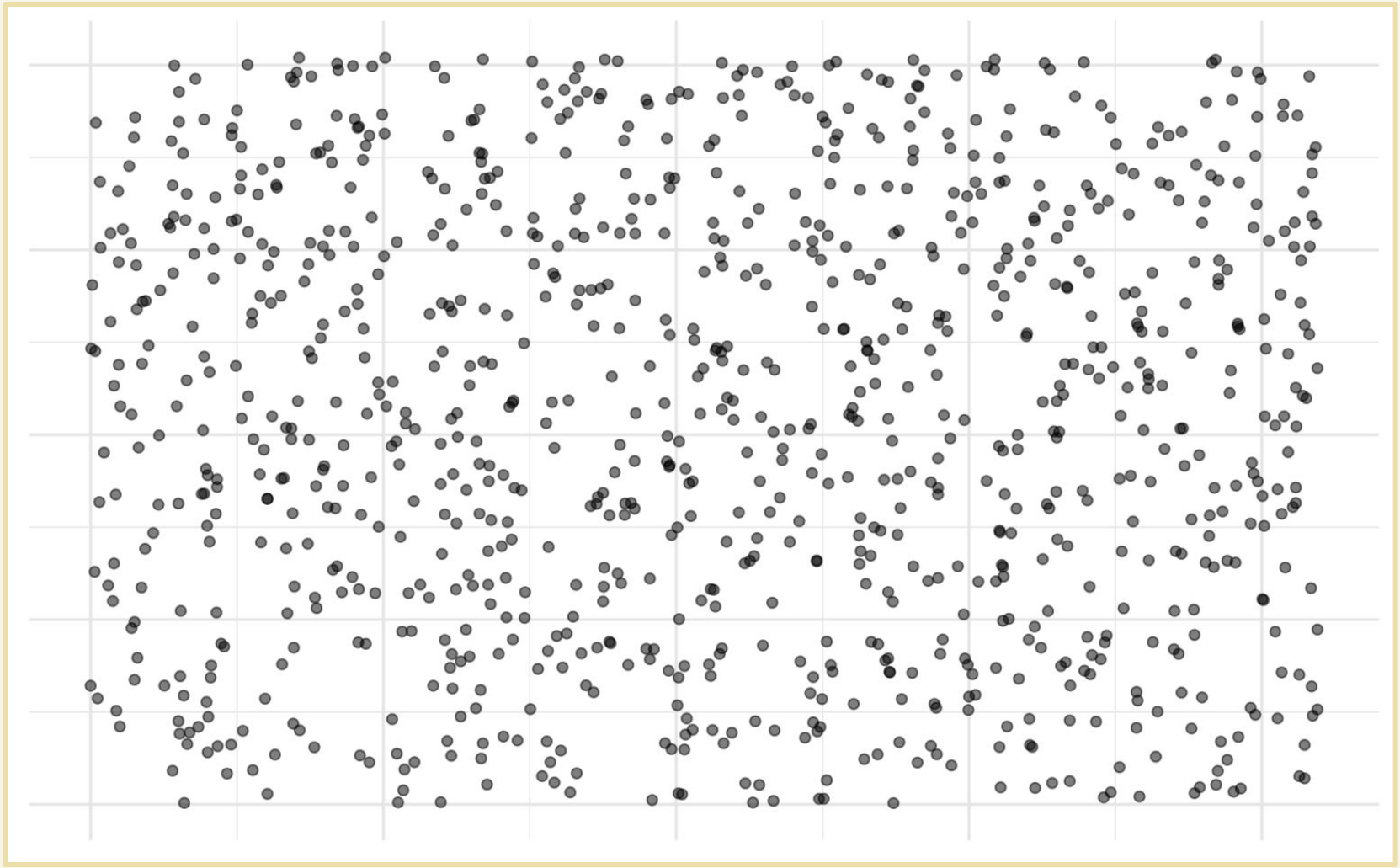
Open Science Pre-register hypotheses & analysis plan. Publish no matter what is found. Ground approach in peer-reviewed science.

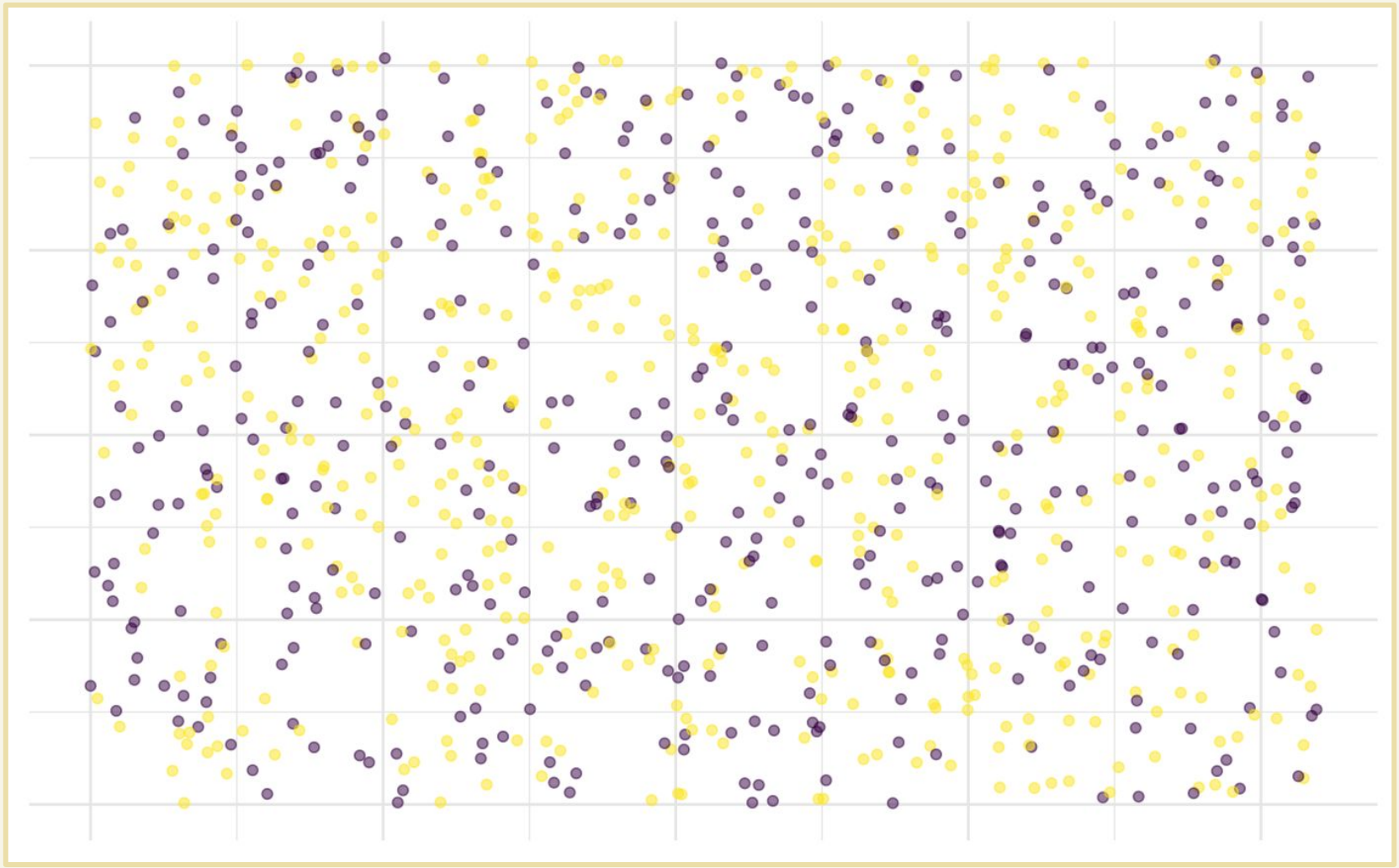
AI Skill Threat



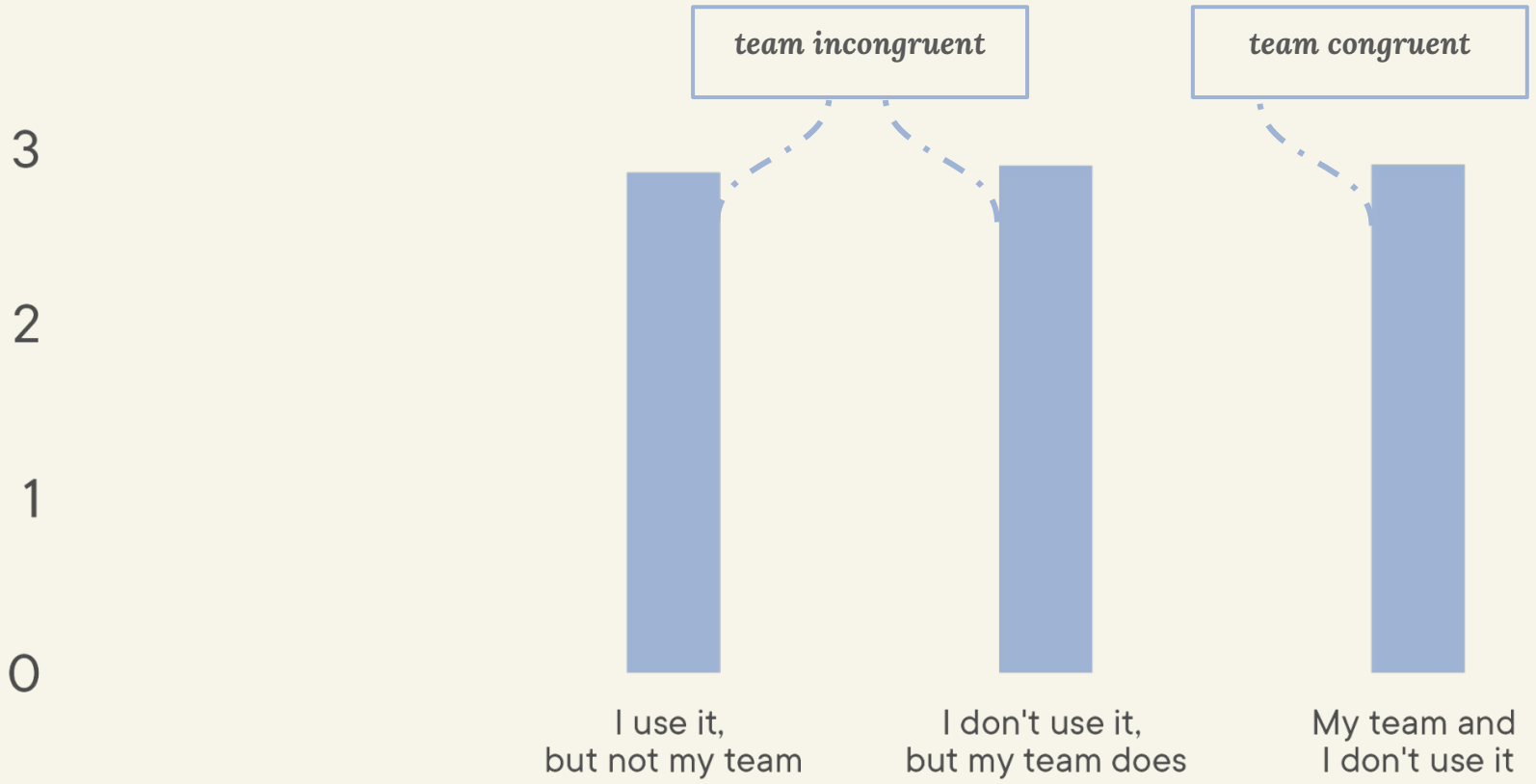
43% of developers experiencing AI Skill Threat

2400+ professional developers in 12+ industries





Does experience with this change mitigate AI Skill Threat?



We identified 4 key psychological targets help people thrive in software work

Learning Culture

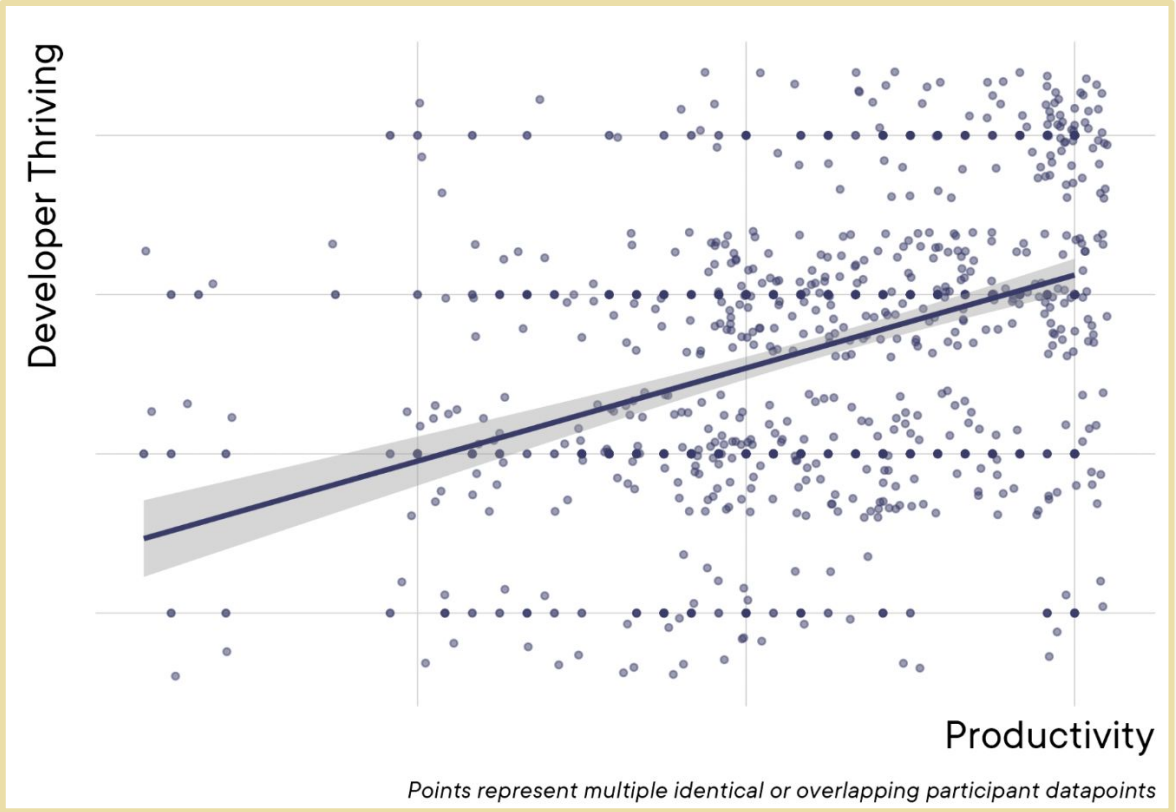
Agency

Belonging

Self-efficacy & Motivation

Hicks, C.M., Lee, C.S., Ramsey, M. (2024). Developer Thriving: four sociocognitive factors that create resilient productivity on software teams. *IEEE Software, 2024*

Developer Thriving: The LABS model for psychological thriving on software teams (Hicks, Lee, Ramsey)



Does Thriving Culture mitigate AI Skill Threat?

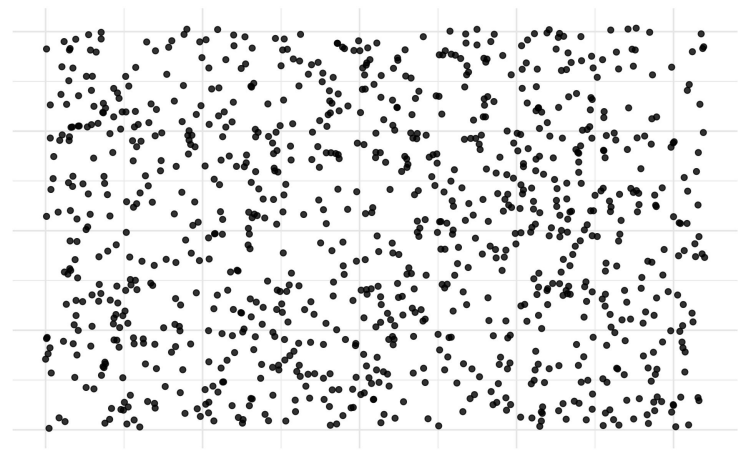
Does Contest Culture make it worse?

We care about whether people feel like they belong!

A good developer is a learner…so learning effort is a technical win!

Brilliance is a trait…and we're looking for it!

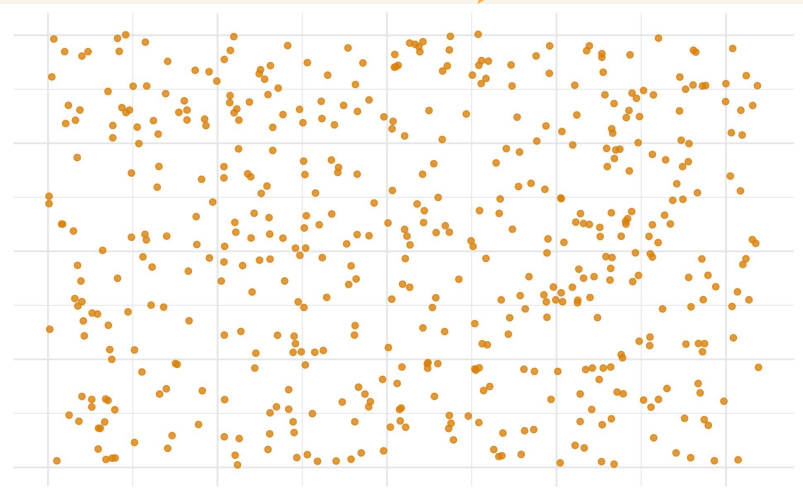
A good developer is a genius…so prove you're a genius!



Thriving Culture

LEARNING A good developer learns, learning is effort & process

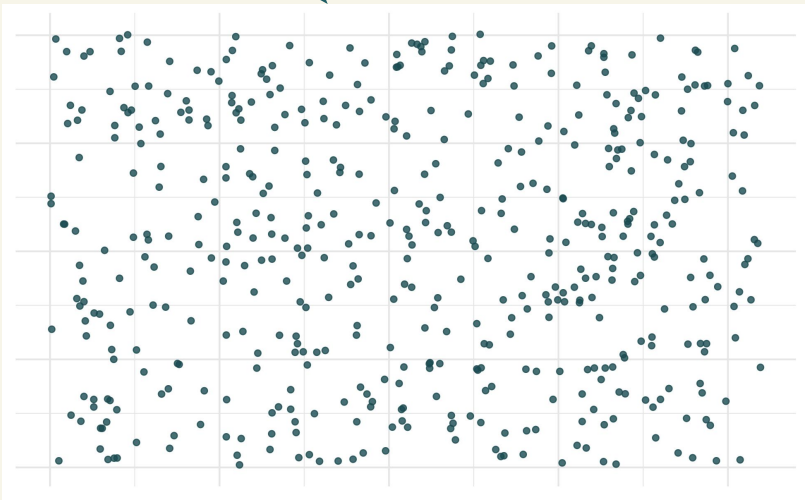
BELONGING On this team, we care about whether you feel like you belong

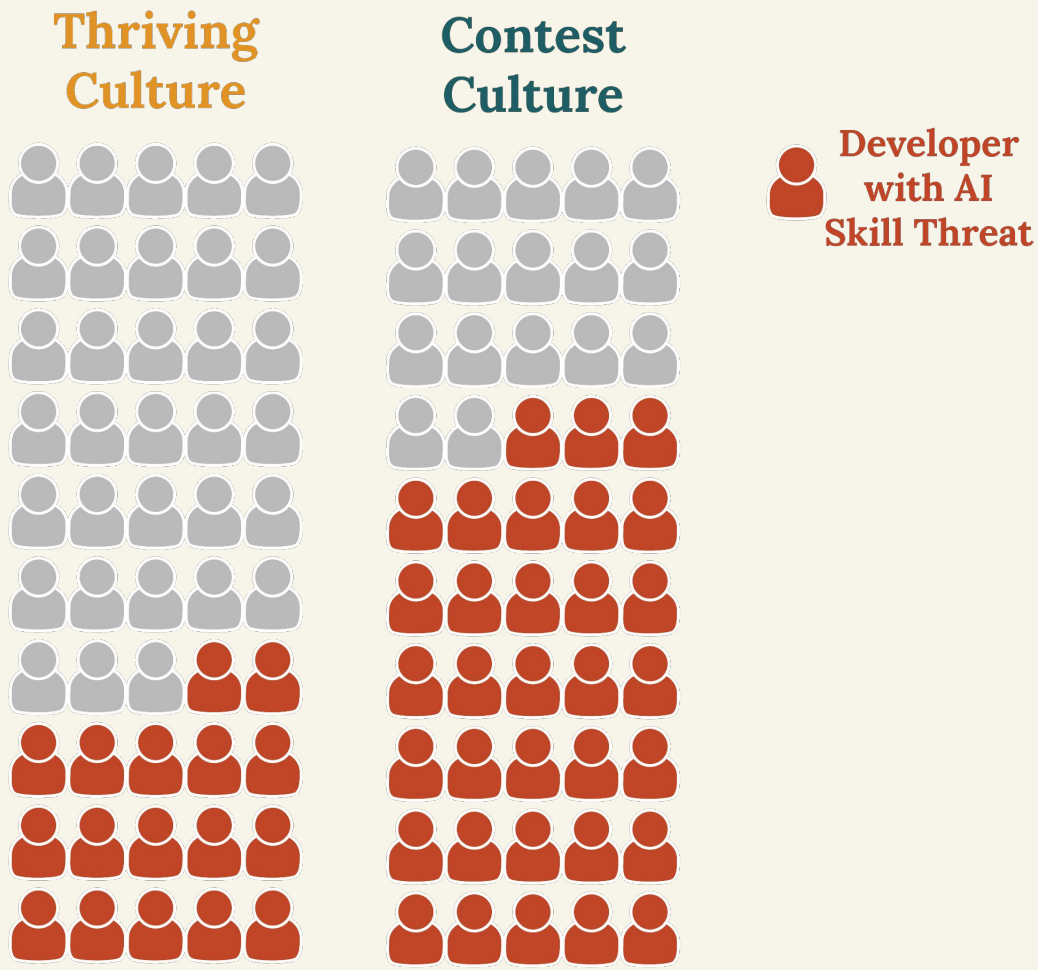


Contest Culture

BRILLIANCE A good developer is brilliant, brilliance is a trait

CONTEST On this team, we expect you to prove yourself in technical contests




Thriving Culture
Contest Culture
Developer with AI Skill Threat

Thriving Culture

A good developer learns, learning is an activity

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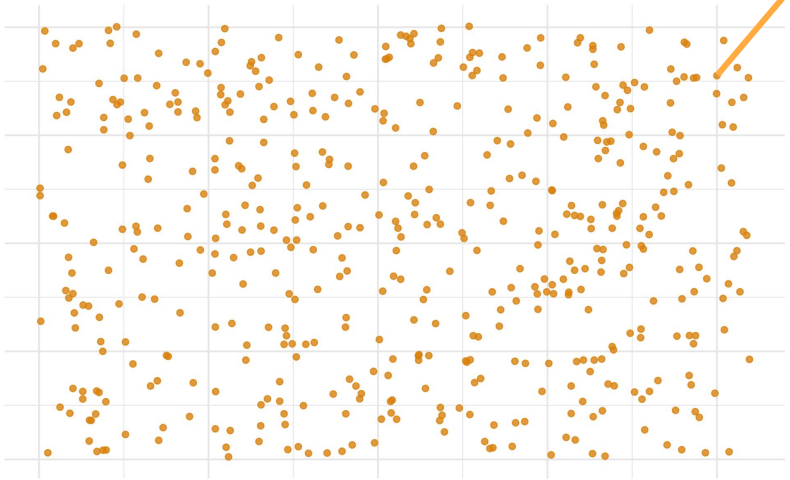

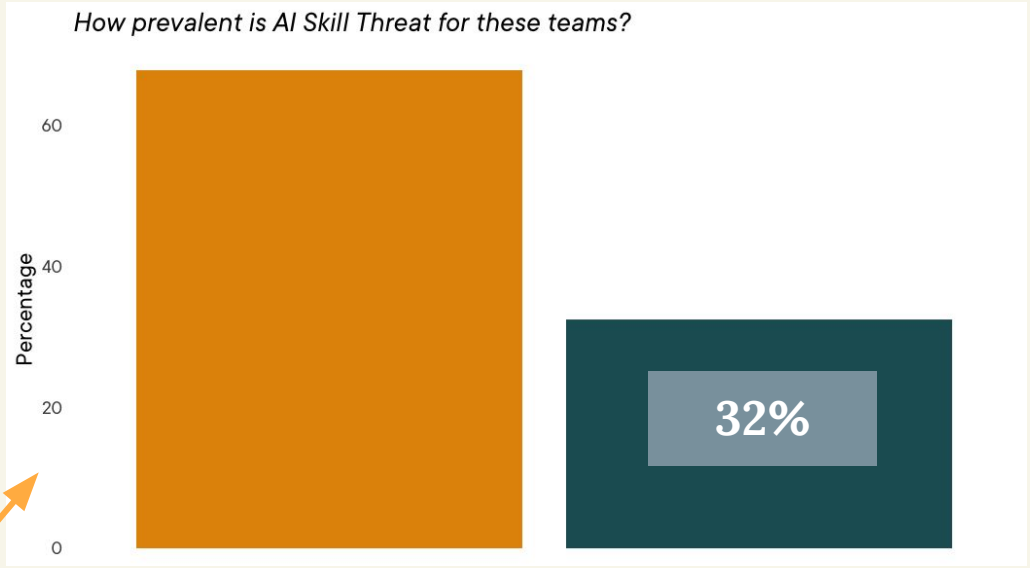

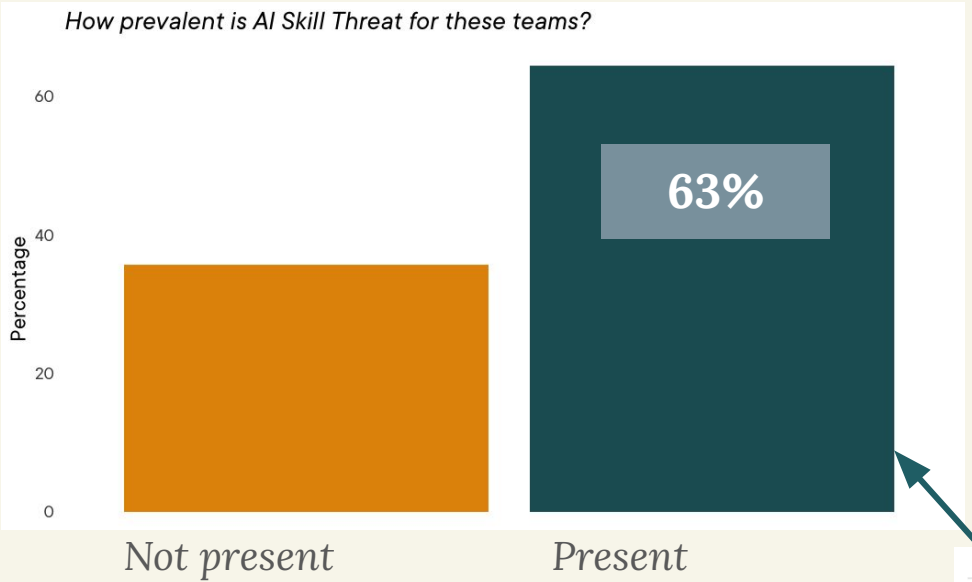

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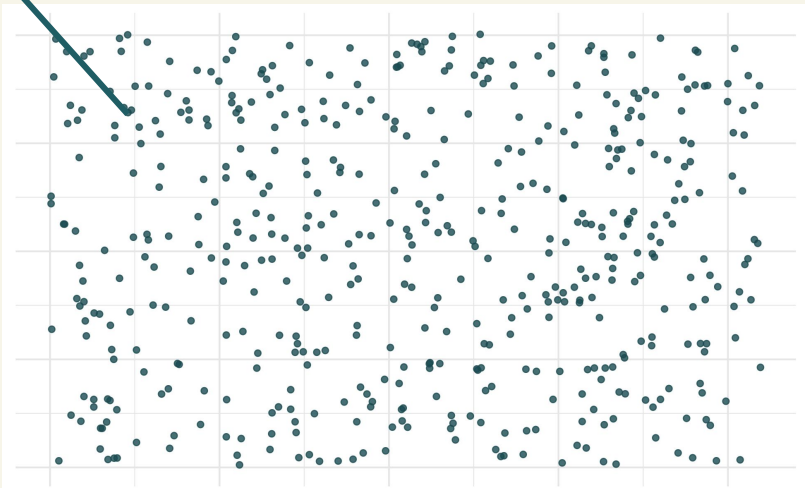


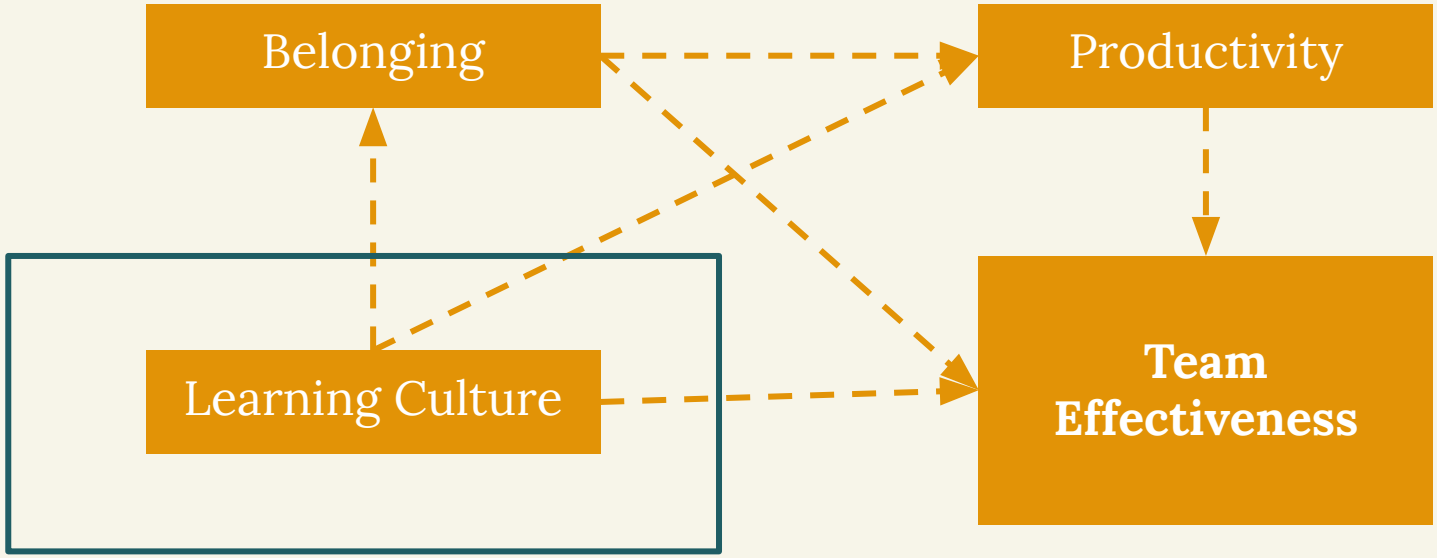
Modeling AI Skill Threat

Underlying ability beliefs, reinforced by contest culture, drive maladaptive cycles

**statistically significant in a mediation analysis; see our open access paper for full statistical modeling details*

Modeling Thriving during rapid technology & identity shift

Psychology is how we programmatically protect culture



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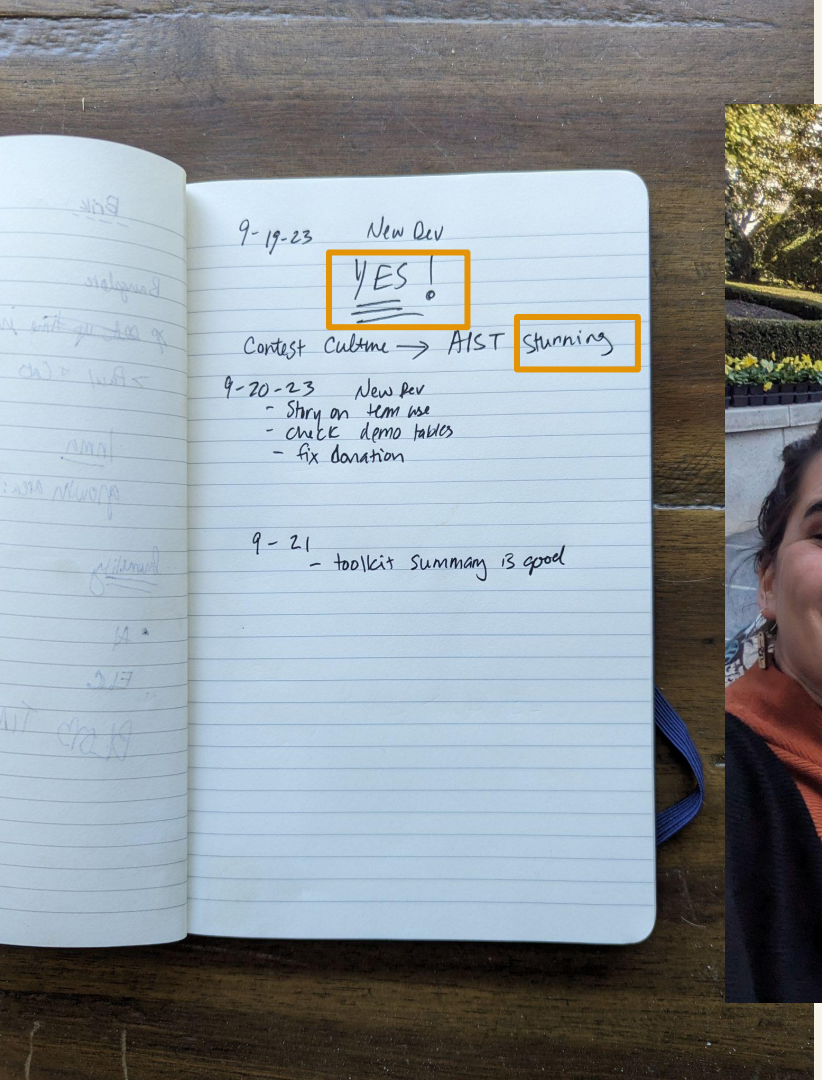

9-19-23 New Dev
YES!
Contest Culture → AIST stunning
9-20-23 New Dev
- Story on team use
- check demo tables
- fix donation
9-21
- toolkit summary is good

Emerging Equity, Opportunity & **Insight Gaps**

Women & LGBTQ+ developers

- ⬇ less likely to upskill in AI
- ⬆ more left out of team AI adoption

Racially Minoritized/Global Majority developers

- ⬇ rate AI coding output lower quality
- ⬆ nearly 2x more AI Skill Threat

- ⬆ more likely to upskill in AI; high coding self-efficacy

AI Skill Threat is not "an experience thing!"

Takeaways

Takeaways: Psychology of Software Teams

The Brilliance Trap → fueled by Contest Cultures in technical spaces

Beliefs about the future → developers are facing high rates of AI Skill Threat

Beliefs about ability → Thriving cultures drive better outcomes for *both* wellbeing *and* productivity and team effectiveness!

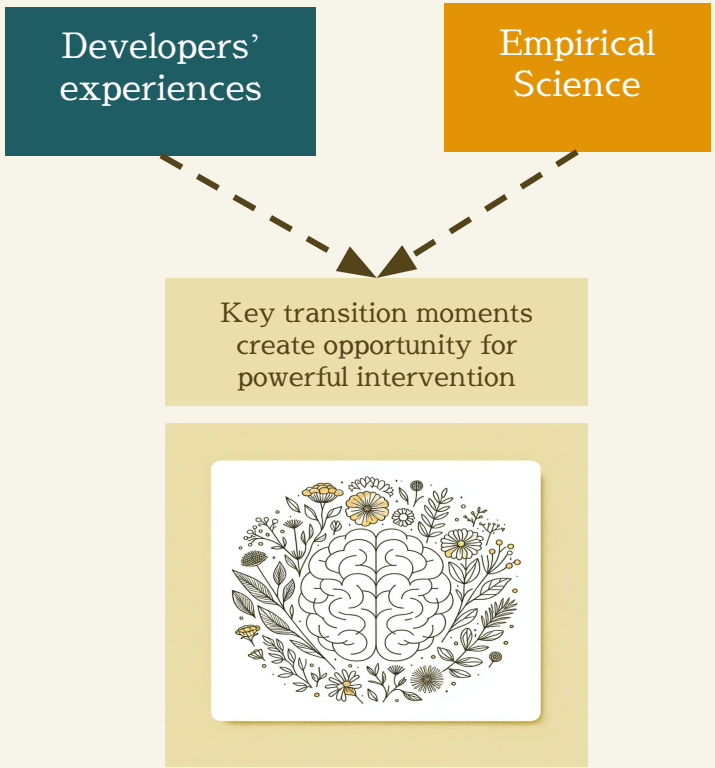
Our psychological systems can create resilience on our teams

Takeaways: Developer Science

We need a science of human-centered technology development: our recipe

Ask: what is happening for my developers?

Ask: why is it happening and how does it work?



Takeaways: Your Experience Matters

Open science is our particular craft; helping your teams is yours

There are existing strengths in software thinking that you can draw on to face this moment

You can be a citizen scientist for your teams!

Choose your own Developer Science adventure!

Read the full scientific paper

Download a Science Comic!

Use our open measures & toolkit