Disability Employment

05-499/899 Fall 2024

Celebrating Accessibility

https://cmu-05-499.github.io

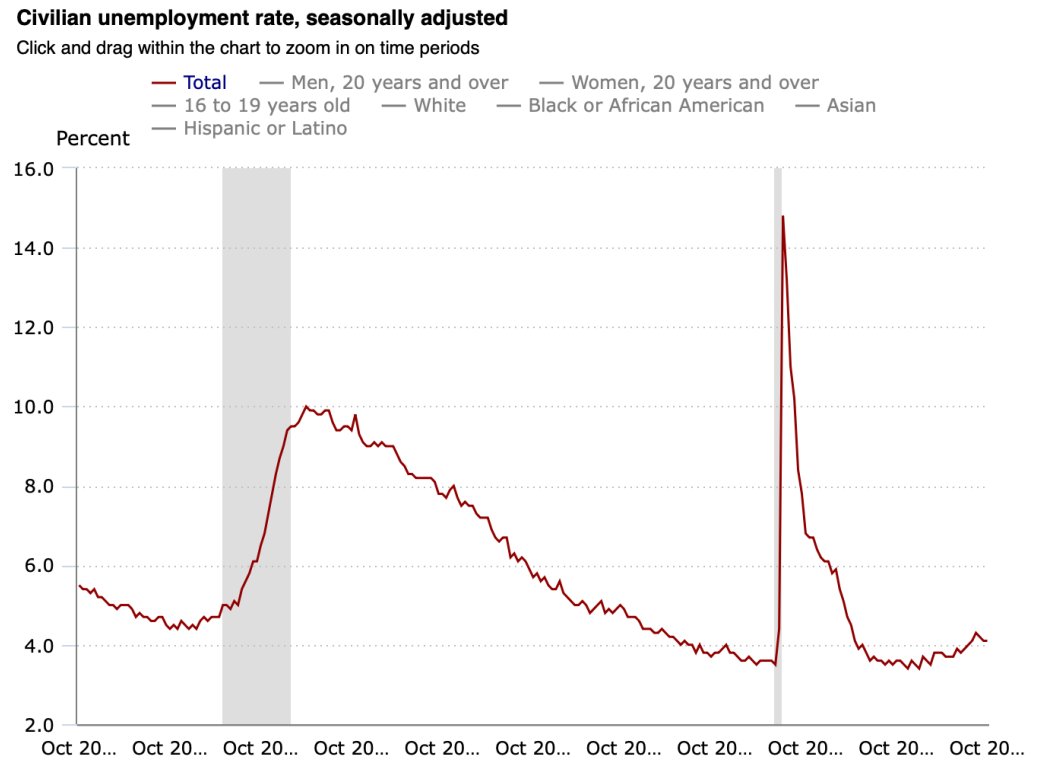
Andrew Begel and Patrick Carrington

Administrivia

- P4 - Project Milestone 1 due tonight, 11:59pm

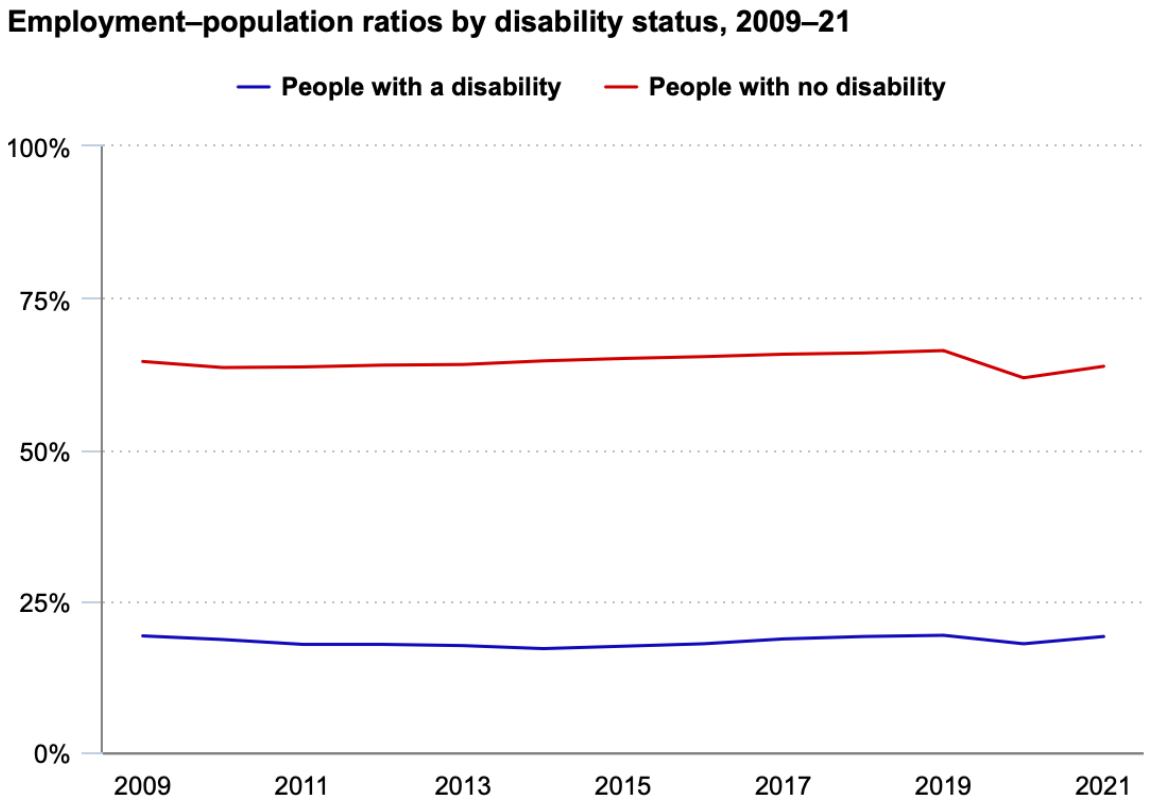
- 1. Unemployment. 2. Disclosure. 3. ADA. 4. Accommodations. 5. Physical and Invisible Disabilities. 6. Managing Disabled Employees. 7. Being Disabled as a Manager. 8. Becoming Disabled on the Job.

USA Unemployment Rate



Source: U.S. Bureau of Labor Statistics.

Disabled Unemployment Rate



Disability Inclusion is our Responsibility

The Disability Divide

The gap in societal inclusion for people with disabilities, including in education, employment, and access to technology.

Disability numbers are growing

- 20% of the world has a disability
- 15-20% of the population is neurodivergent.
- Mental health conditions are increasing

The employment divide is worsening

- 61% of people with disabilities in the USA are unemployed.
- 85% of autistic people are unemployed!

Education gaps are increasing

- People with disabilities and the neurodivergent consistently have lower levels of education than their peers

Our commitment

“

For most people, technology makes things easier. For people with disabilities, technology makes things possible.

Mary Pat Radabaugh,
Director of the IBM National Support Center for Persons with Disabilities

Focus areas:

Technology: affordable technology that is accessible by design

Talent development: skilling, education, and connection with job opportunities for people with disabilities

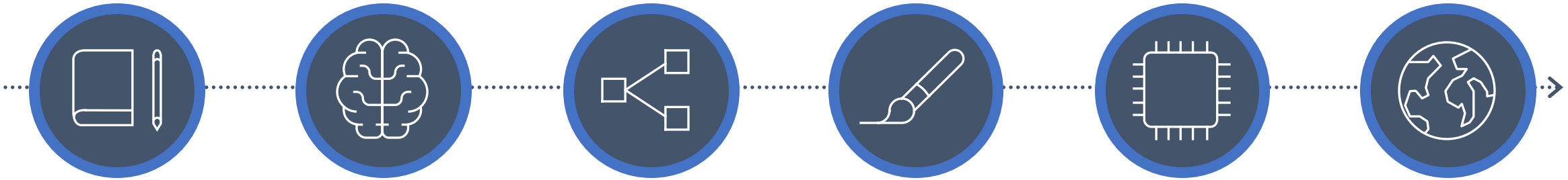
Workplace culture: fostering a welcoming and inclusive culture for people with disabilities

Disability Employment Research Pipeline

- Vocational policy, training, and support
- Job readiness training
- Social & collaboration skills development

- Employee experience & outcomes
- Organizational design and impact
- Barriers & best practices
- Assistive technology

Autism at Work Research Agenda

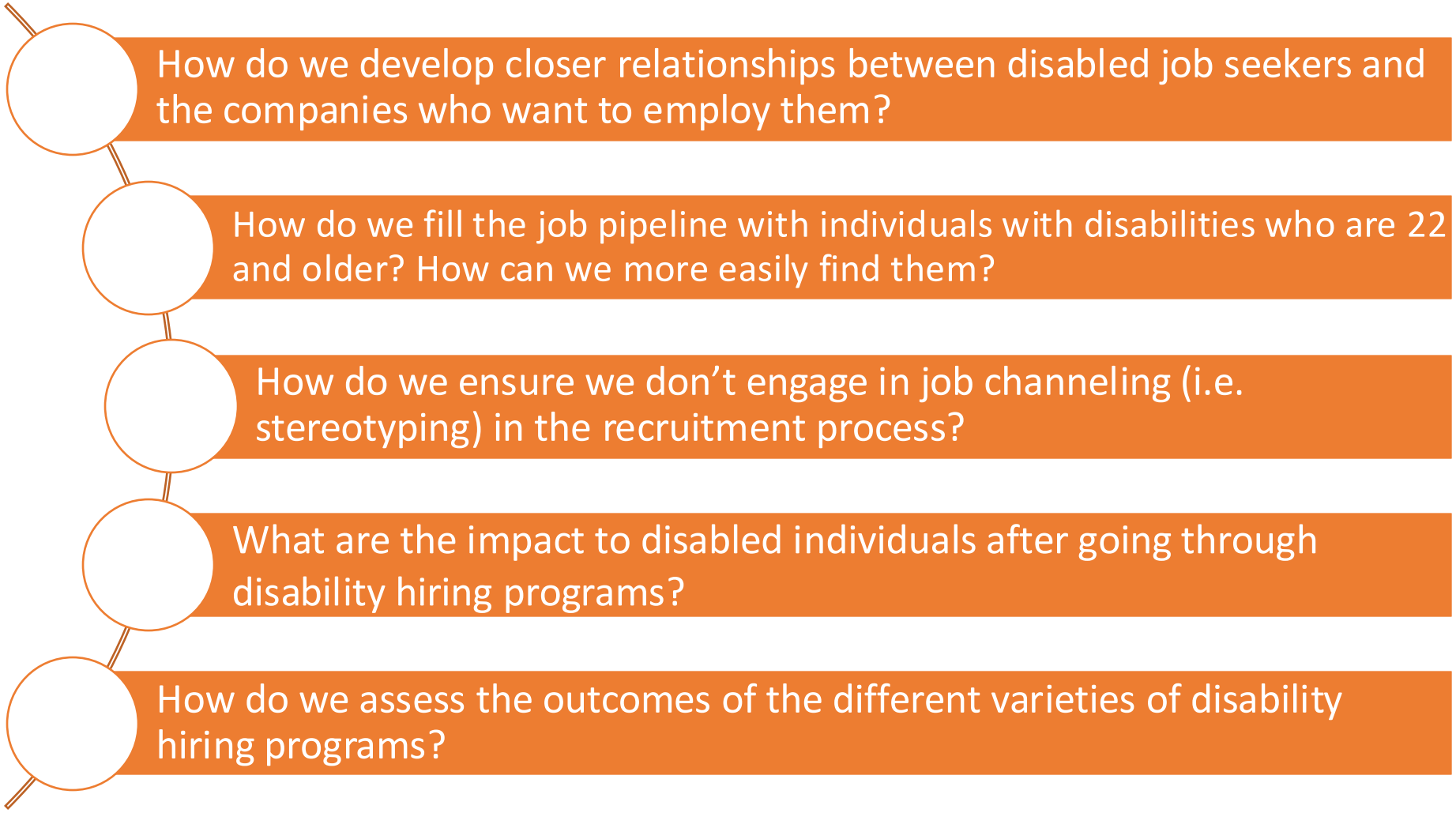


Preparation	Recruitment	Onboarding	Retention	Advancement	Management
How can we improve workplace readiness?	How do we create closer relationships between autistic job seekers and companies?	What activities promote a culture of autism awareness and acceptance?	How do we support autistic people with co-occurring mental health needs throughout their career?	How can we use measurements across differences to help maintain equity?	What unique strengths do autistic people bring to management positions?

Preparation

- How can we enhance workplace readiness through evidence-based early intervention?
- How can these programs reach disabled persons outside of school?
- Investigate the implications of disclosure for those adults with invisible disabilities who are already in the workplace.
- How can we facilitate transition without vocational rehab funding?
- Investigate the different preparation needs for job readiness across gender/ethnicity/other identities
- What is the role of educational institutions in thinking about the ecosystem around disability hiring?

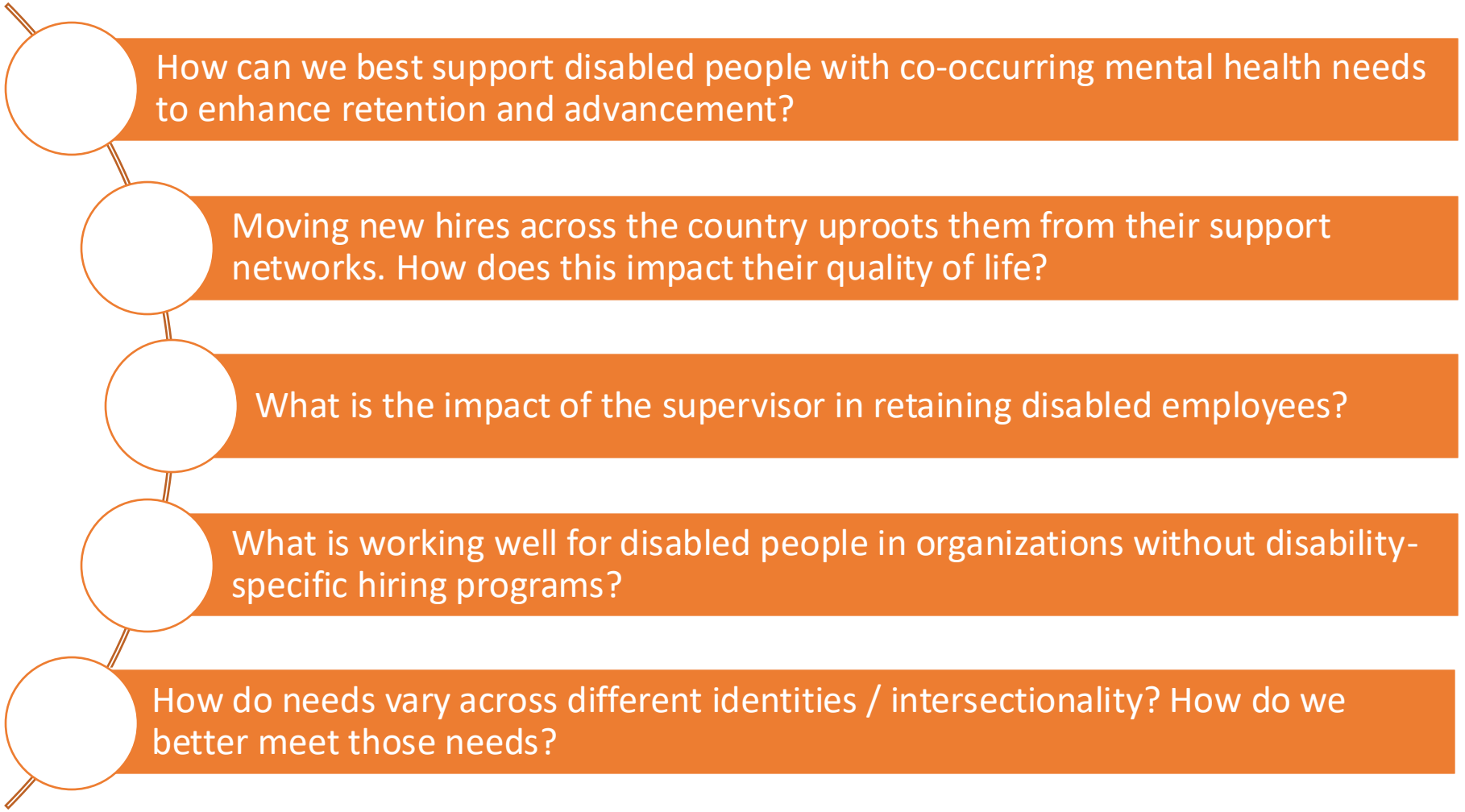
Recruitment



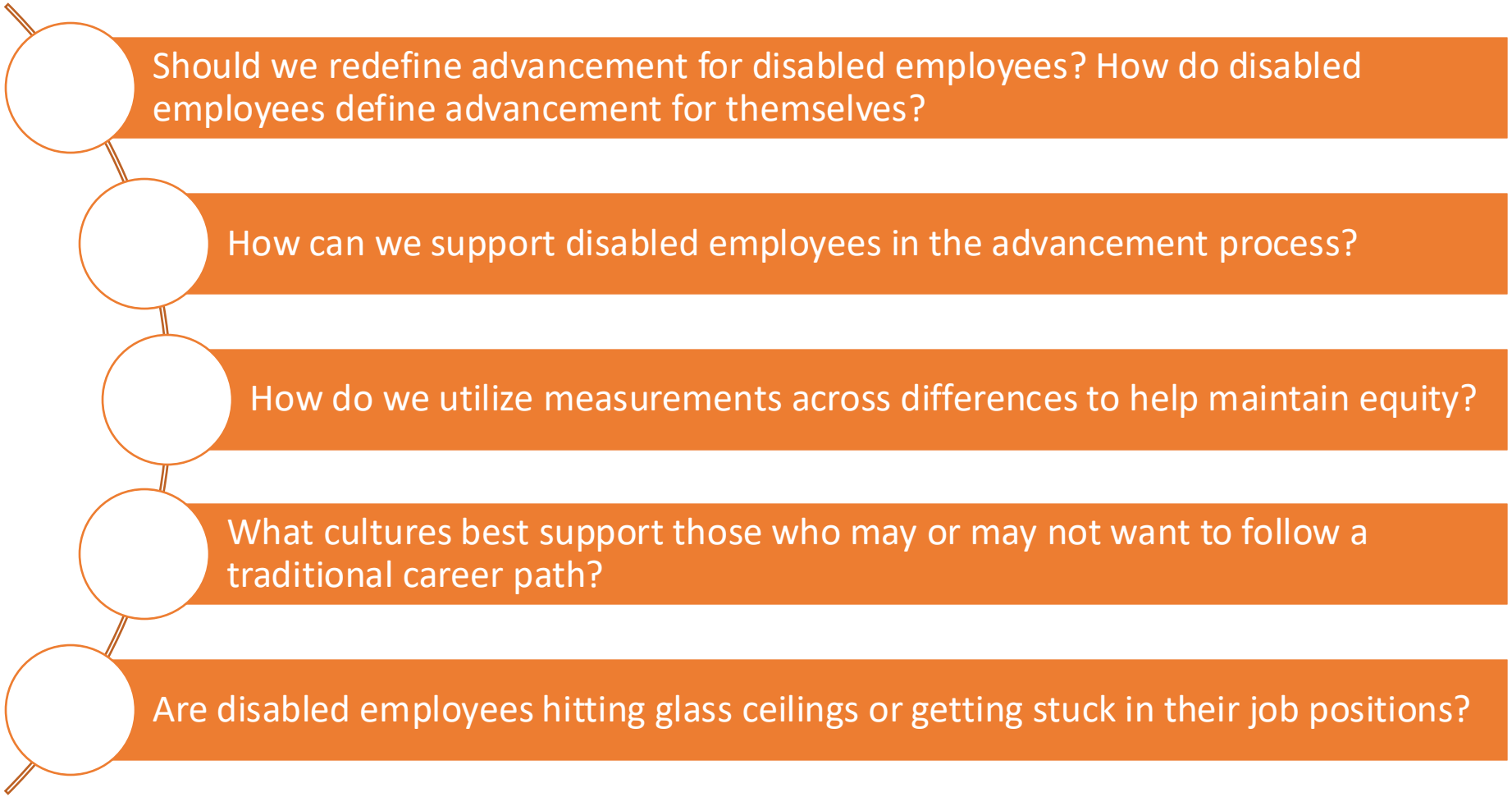
Onboarding

- How can we evaluate onboarding processes and associated outcomes for people with disabilities?
- When is it safest/best to disclose invisible disabilities to management and co-workers?
- What activities might promote a culture of disability awareness?
- Is it better to have specialized onboarding processes for disabled people or embellish mainstream processes?

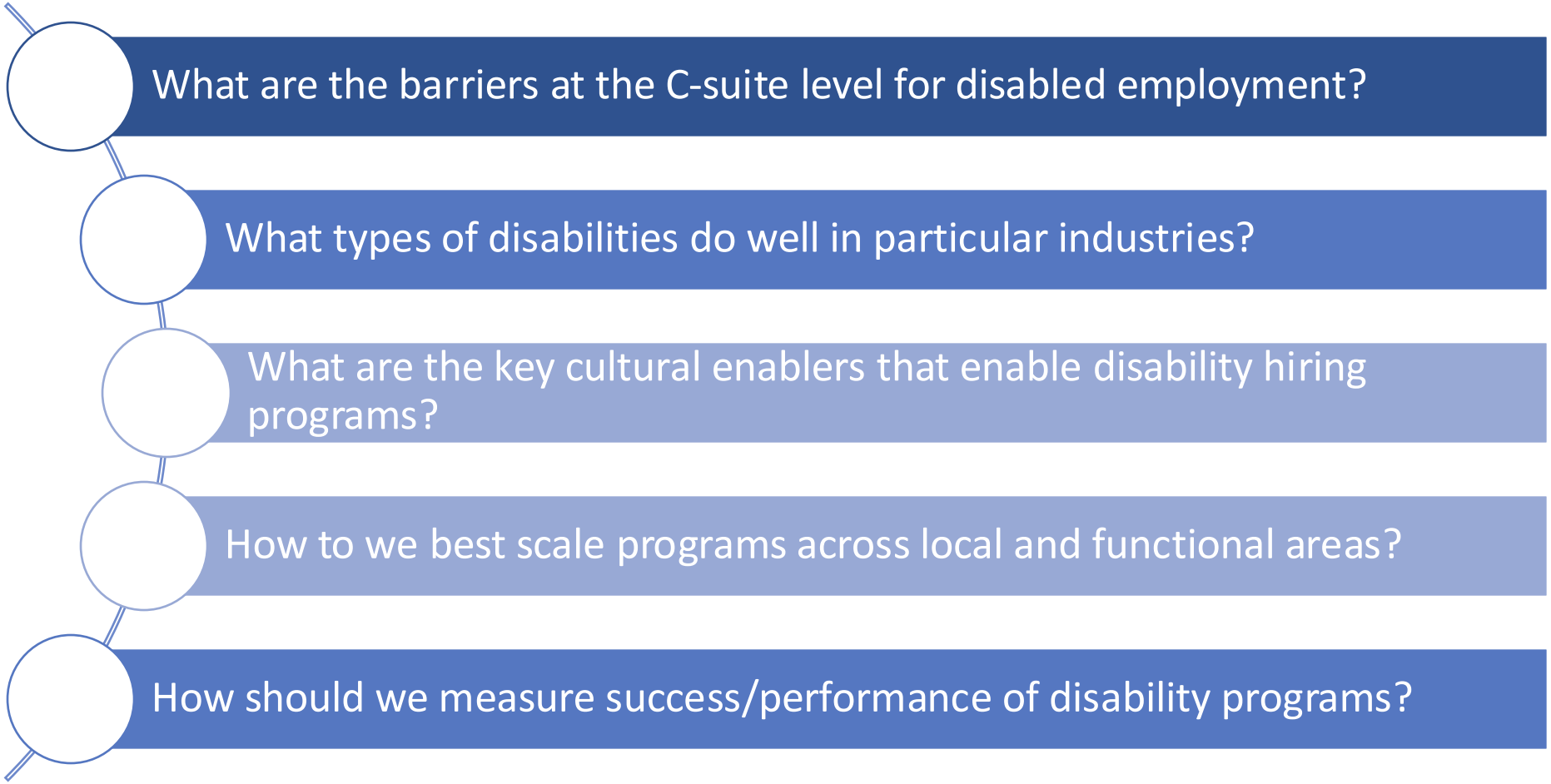
Retention


How can we best support disabled people with co-occurring mental health needs to enhance retention and advancement?
Moving new hires across the country uproots them from their support networks. How does this impact their quality of life?
What is the impact of the supervisor in retaining disabled employees?
What is working well for disabled people in organizations without disability-specific hiring programs?
How do needs vary across different identities / intersectionality? How do we better meet those needs?

Advancement



Organizational Impact



Meta


How do we center the voices of disabled self advocates?
How can we best facilitate/support/manage job transitions throughout life?
What unique strengths would disabled people bring to management positions?
How do we best allocate resources to support disability hiring programs?
How do we get access in industry to study and evaluate the outcomes of the programs?

Readings Discussion

- Education for Employment Pathways
- The Dandelion Principle: Redesigning Work for the Innovation Economy

There is a shortage of software developers

- We can fix this problem by making development jobs genuinely accessible to people with disabilities.
- 20% of the world's population has a disability.
  - In 2019 in the USA, only 39% of disabled people are employed.
  - Only 33% of those who didn't make it to college were employed.
  - Only 30% of those with a cognitive disability are employed (e.g., autism, ADHD, TBI)
- Let's give every person the opportunity to succeed by making our universities and workplaces more accessible and inclusive for the disabled.
  - This will help us meet the demand for software engineers while also increasing employment.

Erickson, W., Lee, C., von Schrader, S. (2022). Disability Statistics from the American Community Survey (ACS). Ithaca, NY: Cornell University Yang-Tan Institute (YTI). Retrieved from Cornell University Disability Statistics website: www.disabilitystatistics.org

Autistic Individuals Enter the Job Market

The need for talented IT professionals is growing faster than the supply. Autistic individuals demonstrate a proclivity towards technology. Employing them can help meet the demand.

This increases the importance of understanding the autistic population to develop supports and build skills in social interaction and job training.

1 in 59	80%	<14%
Children diagnosed with autism in USA	Unemployed autistic adults	Autistic adults work for pay

Autistic people are neurodiverse

All people offer unique strengths. The neurodiversity movement recognizes the positive attributes of *neurominorities* – those that think different from the majority population.

Autistic people tend to excel in concentration, fine detailed processing, memory, and sensory awareness.

Autism@Work Roundtable

50 companies have Autism/Neurodiversity Hiring Programs.

Microsoft has hired over 350 autistic people into engineering roles.

“Some job tips for people with autism or Asperger's syndrome… Computer science is a good choice because it is very likely that many of the best programmers have either Asperger's syndrome or some of its traits.”

– Temple Grandin

Studying Autism at Microsoft

- Interviewed 10 autistic tech workers in USA/UK
  - 4 Autistic, 4 Asperger's, 1 PDD-NOS, 1 ADHD. 90% male.
- 32 questions based on interview findings
- Sent to 2600 random U.S.-based developers at Microsoft
- 846 completed surveys (32.5% response rate)
  - 85% male
  - 59 neurodivergent (7%)
    - 11 (1.3%) w/ ASD
    - 38 (4.5%) w/ attention-deficit disorder
    - 16 (1.9%) w/ dyslexia or learning disabilities

Neurodiverse Workplace Challenges

- Diagnosis late in life
- Disclose autism to coworkers?
- Team meetings
- Job interviews
- Environmental distractions
- Team reorganizations
- Communication tools

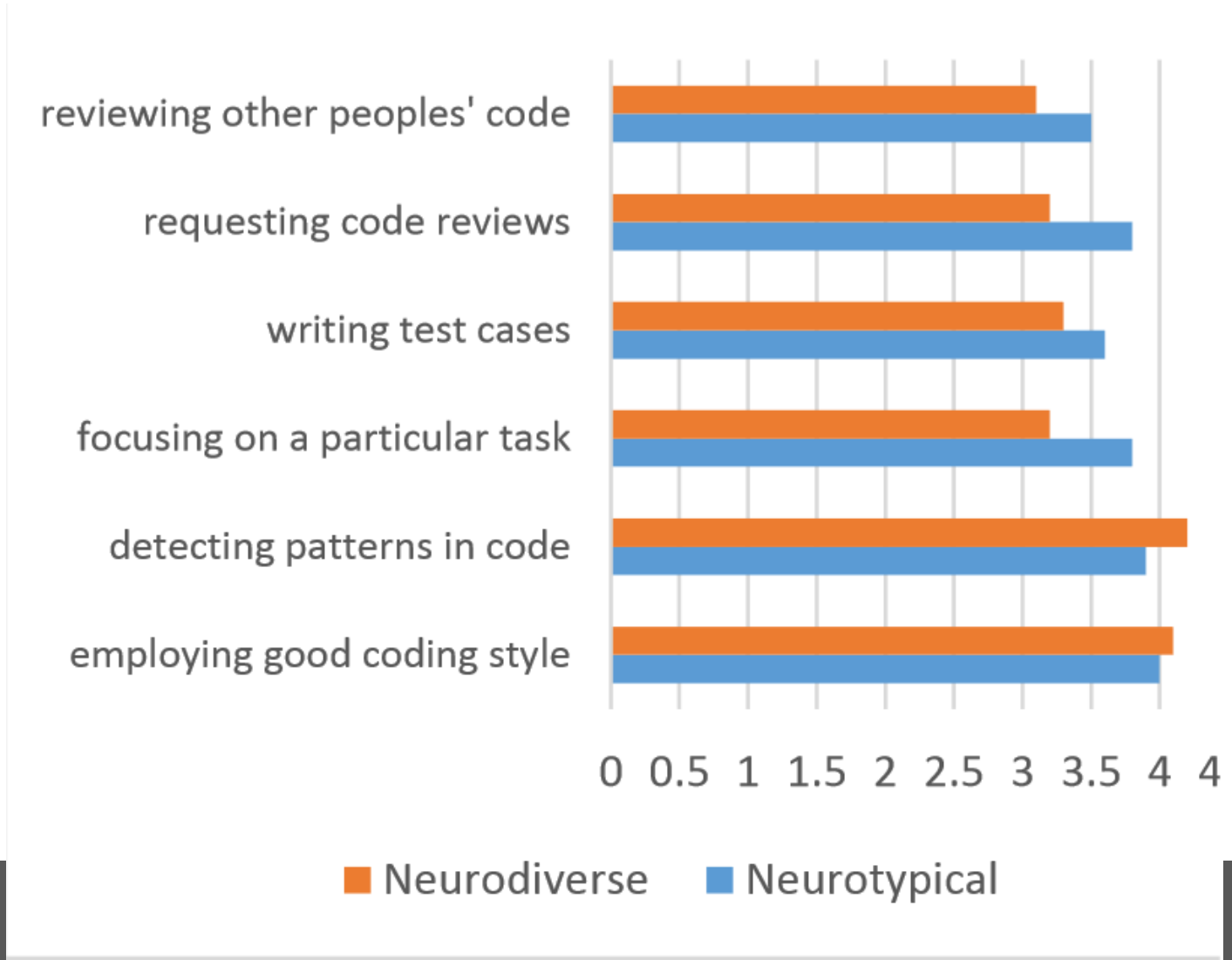
Self-perceived Strengths and Weaknesses

- Strengths
  - Pattern recognition
  - Hyperfocus
  - Coding Style
  - Out-of-the-box thinking

- Weaknesses
  - Rigidly interpreting coding style or team process
  - Difficulty focusing on particular tasks (e.g. testing)
  - Inappropriate emotional reactions (e.g. code review)

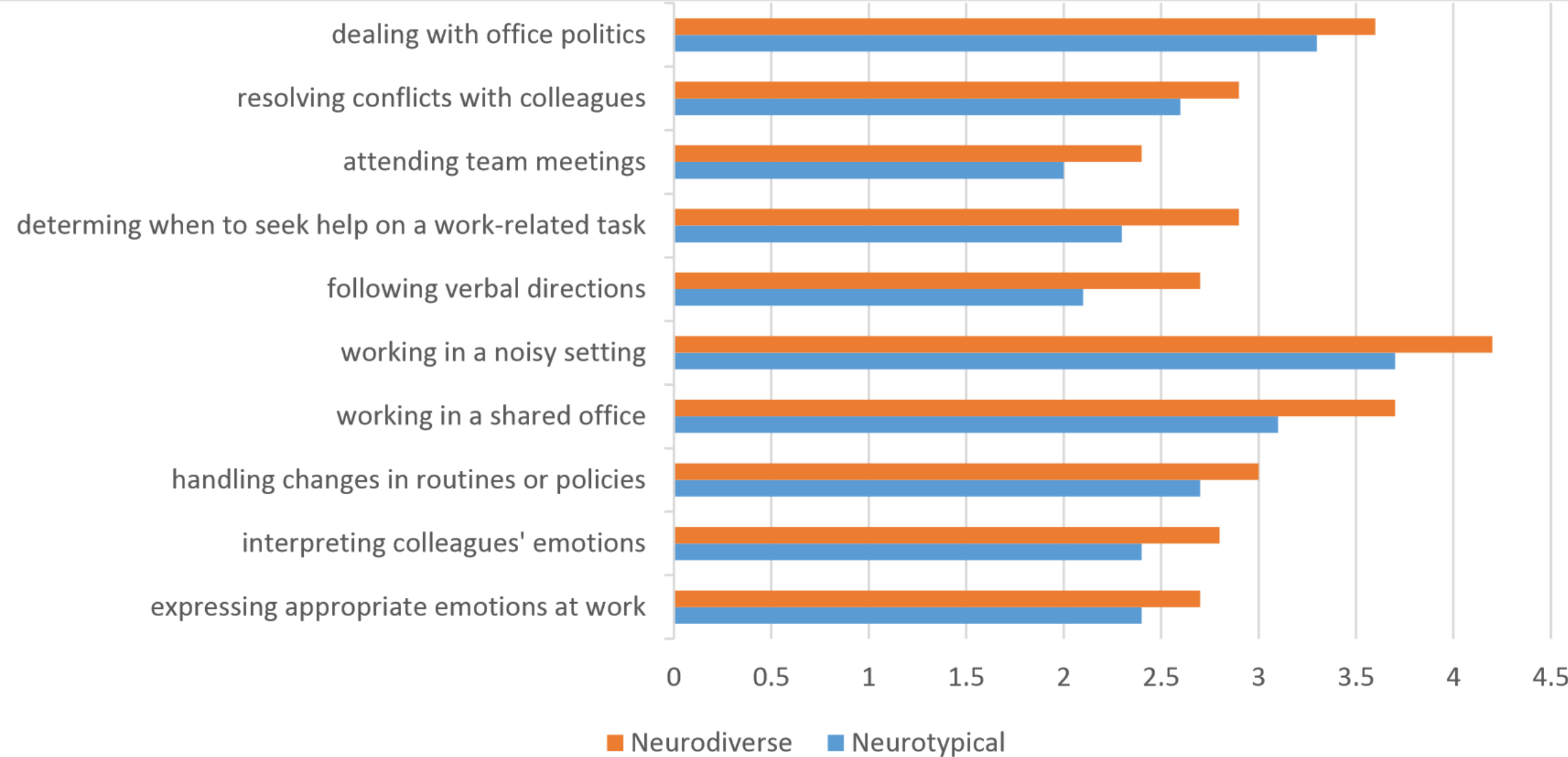
How good are you at this software engineering task?

(longer bars are better)



How comfortable are you with this activity?

(longer bars are more comfortable)



Microsoft's Autism Hiring Program

- Autistic job candidates often strike out at interviews due to stress.
- Microsoft's program changes the process to assess talent through practical programming assignments, demonstrate collaboration skills through team projects, practice talking about themselves in mock interviews, and receive guidance through job coaches.
- Hiring managers and their teams receive training about autism, and how to work with autistic people.

09-06-16 | MOST INNOVATIVE COMPANIES

Microsoft Wants Autistic Coders. Can It Find Them And Keep Them?

Job interviews can be especially hard if you're autistic. A Microsoft effort aimed at a wider spectrum of the workforce wants to solve that.

[ILLUSTRATION: BRIAN REA]

BY VAUHINI VARA LONG READ

Autism Hiring Programs

- Fill important jobs suffering from skills shortage
- Offer access to much higher levels of talent
- Provide marketing benefits for favorable corporate perception
- Increase employee engagement and morale, which improves productivity and work quality
- Innovation through “accessing outliers” – neurodivergent employees offer a diversity of ideas
- Strong potential for process improvement comes from neurodivergent abilities to spot irregularities and inefficiencies, and the willingness to call them out.

Spillover Benefits

- Challenges experienced by neurodivergent employees are also experienced by others, but they're more impactful to the neurodivergent.
- Designing for neurodiversity helps the rest of the company's employees
  - Organizational communication standards reduce ambiguity
  - Improvements in mgmt. practices because of being aware of needs to manage neurodiversity program. Makes managers better.
  - Improved employee support practices (e.g. coping with stress and depression) for neurodiverse help the NT employees.
  - Explicit processes are easier to improve. Provides way for anyone to question processes whereas before, everything was assumed.

FIT: Fostering Inclusion through Technology

- Prof. Yi Ting Huang (UMD Linguistics)
- Prof. Kathryn Dow-Burger (UMD Speech and Hearing)
- Prof. Shevaun Lewis (UMD Linguistics and Director of UMARC)
- Prof. Ge Gao (UMD Information School)
- Prof. Carol Espy-Wilson (UMD ECE)
- Prof. Elizabeth Redcay (UMD Pyschology)
- Prof. Louiqa Raschid (UMD Information Systems)
- Ira Kraemer (Autistic advocate)
- Quentin Leifer (Autistic advocate)

Workplace Communication Relies on Common Ground

- *Common ground* is the alignment between communication partners and is based on a range of verbal and non-verbal channels:
  - Speech
  - Facial Expressions
  - Eye Contact
  - Written text
- Differences in sensory and social information processing reduce the common ground in communication between autistic and non-autistic people.
- These differences lead to miscommunication and misunderstandings, which can lead to discrimination.

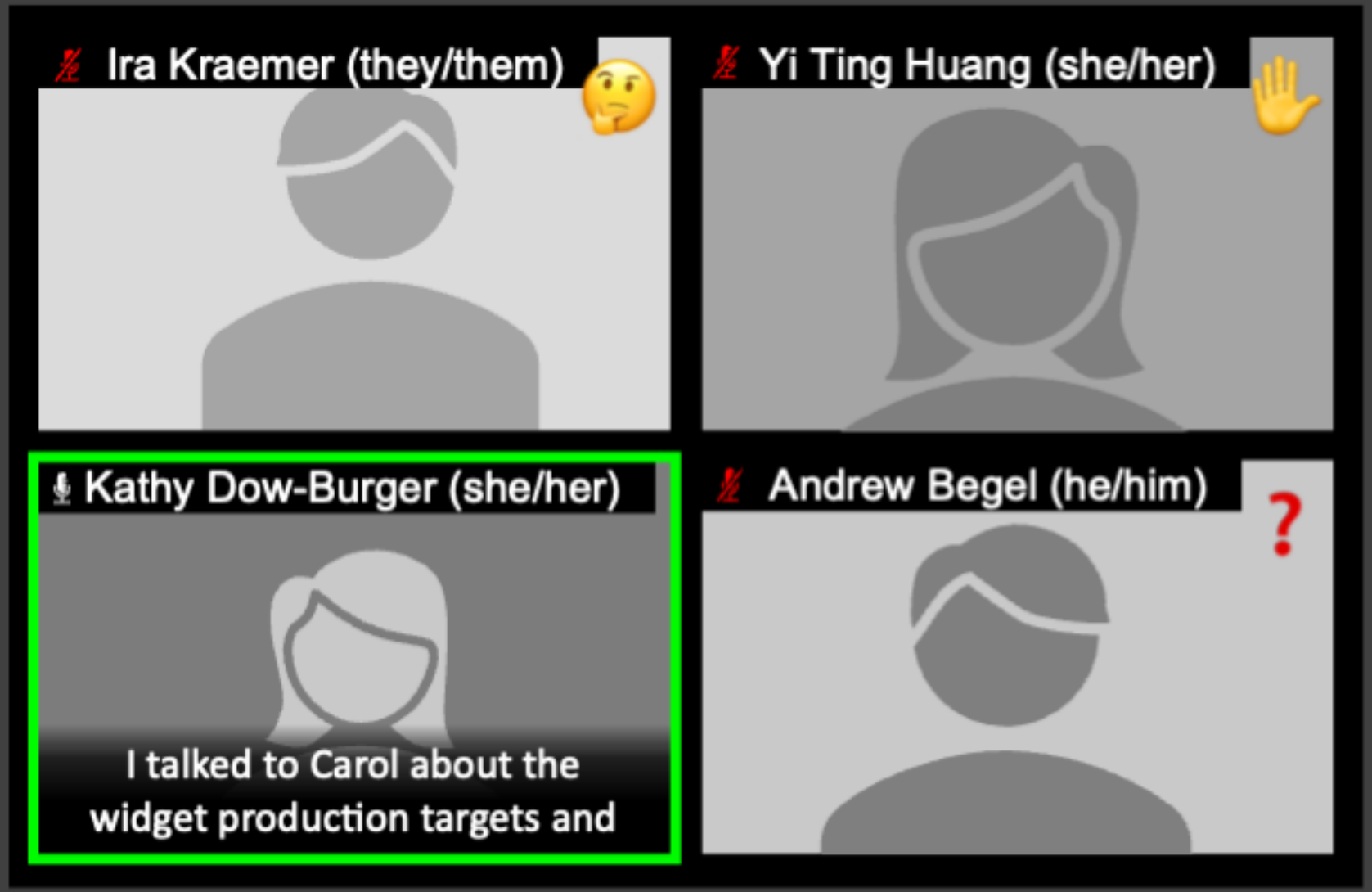
Video Calling

- Makes mutual understanding and alignment more difficult.
  - Limits information from faces and voices
  - Slows exchanges between partners
  - Reduces collaboration
  - Increases “Zoom fatigue”
  - Requires tracking additional information channels
  - Disrupts established routines for navigating social norms

The FIT Video Calling Platform Can Help

- Harness structured relationships in multimodal signals, conversational dynamics, and workplace objectives.
  - Highlight group sentiment and emotional alignment
  - Support rapport with prompts for expressing alignment
  - Track topics and connect to conversational goals
  - Detect misalignment and offer prompts for conversational repair

Current topic: **Widget production**



Unmute Stop video Stop CC Audio/video

You could say:
I'm not sure I see what you mean. Could you just say that again in a different way?

Meeting rules

Agenda

1. Introductions
2. Widget production
3. Open discussion
4. Budget
5. To do for next week

Suggestions

Don't understand
- *I'm not sure I understand...*
- *Could you say that differently?*
- *I don't see how this relates to…*

Disagree

Slow down

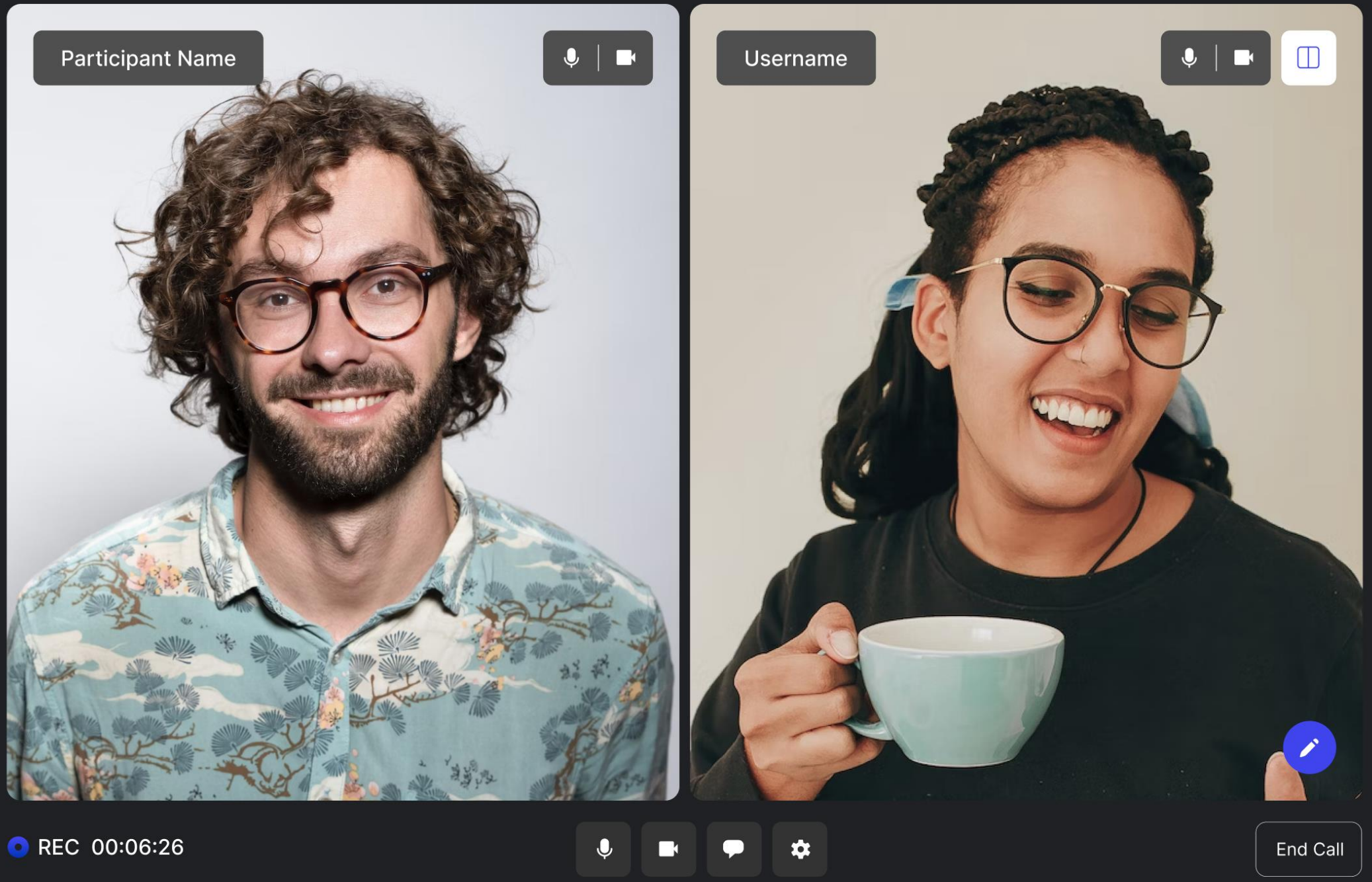
Group alignment

Your alignment: 35%

General sentiment: excited

Check in with the group
- *I think I may have missed…*
- *Let's review...*
- *Does everyone understand…*
- *Are we all agreed on…*

Public chat


Participant Name
Username
REC 00:06:26
End Call

This Year's Project Activities

- Interviewing autistic stakeholders
- Qualitatively analyzing autistic/non-autistic conversations
  - Initial focus on politeness and critical moments
- Training new ML models to recognize non-verbal signals of mis-understandings
- Preparing study to collect additional corpus of autistic/non-autistic conversations

Participation Activity

- Pair with a neighbor and write your names on a piece of paper.
- Together, conceive of and draw a mockup of a new feature for the FIT AI-powered video calling platform to help mixed neurotype pairs have better conversations.
- Discuss your design with the class!
- Turn in your design at the end of class.

Become an Ally to Autistic Colleagues with INTENT

INteractive Tool for Empathy in NeuroTypicals

Elizabeth Redcay, Andrew Begel, and Kathy Dow-Burger

University of Maryland & Carnegie Mellon University

Kennedy Krieger

Neurodiversity at Work

Promoting Allyship with INTENT

Adapted from Learn How to Be a Successful Ally: Four Key Practices and Amplifying Allyship as Part of IDEAL IT https://itcommunity.stanford.edu/news/amplifying-allyship-part-ideal-it

Kennedy Krieger Neurodiversity at Work

Building Allyship

Neurodiversity Employment Ecosystem

Kennedy Krieger
Neurodiversity at Work

INTENT Allyship Design

- A game can help people understand. Highly transporting stories make players more receptive to new information.
- Games can get people to change interpersonal behavior enabling them to practice relationships without putting themselves at risk.

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of personality and social psychology*, *79*(5), 701.

Kaufman, G. and Flanagan, M. 2015. A psychologically “embedded” approach to designing games for prosocial causes. Cyberpsychology: Journal of Psychosocial Research on Cyberspace 9, 3 (2015).

Stage 2: Design Challenges

1. Ensure lessons are told from an autistic perspective.
2. Representing the heterogeneity of autistic people with just a few characters in the game.
   - Avoid stereotypes in appearance and dialogue.
   - Emphasize characters' intersectionality.
3. Design scenarios that show autistic people as multidimensional, not defined by deficits.

Stage 2: Transformational Framework

Kennedy Krieger
Neurodiversity at Work

Stage 2: Transformational Design Goals

- Learn about autistic people
- Grow empathy towards autistic people
- Support autistic people

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tasks
?
Conference Room

Carnegie Mellon University | University of Maryland Fearlessly Forward

Stage 3: Demo

https://intent-jnr5.onrender.com

Play along with us!
Google Chrome works best.

Kennedy Krieger Neurodiversity at Work

Next Steps: Pilot

1. Evaluate game with autistic workers to gauge their reaction.
   - Tweak the narrative to increase the realism while maintaining the lesson.
2. Deliver allyship instruction to allistic workers with traditional lesson and INTENT game.
   - Evaluate how well the game induces transformative change vs. just the traditional lesson.
3. Do you want to help out with our study?

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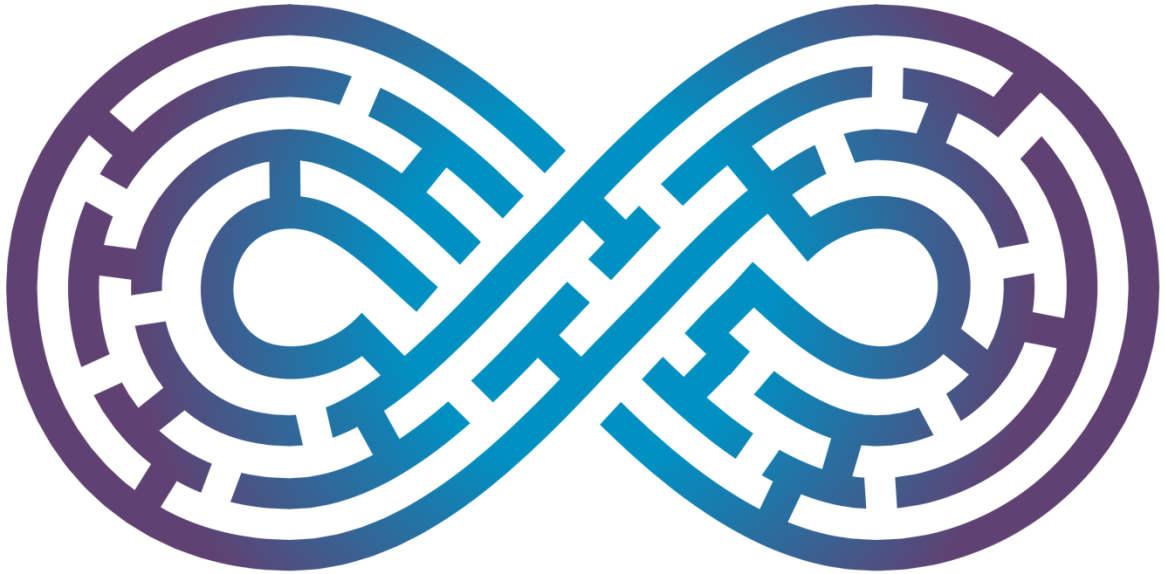
Connecting Research with the Community



SOUTHERN GREAT LAKES REGION

Neurodiversity at Work Hub