

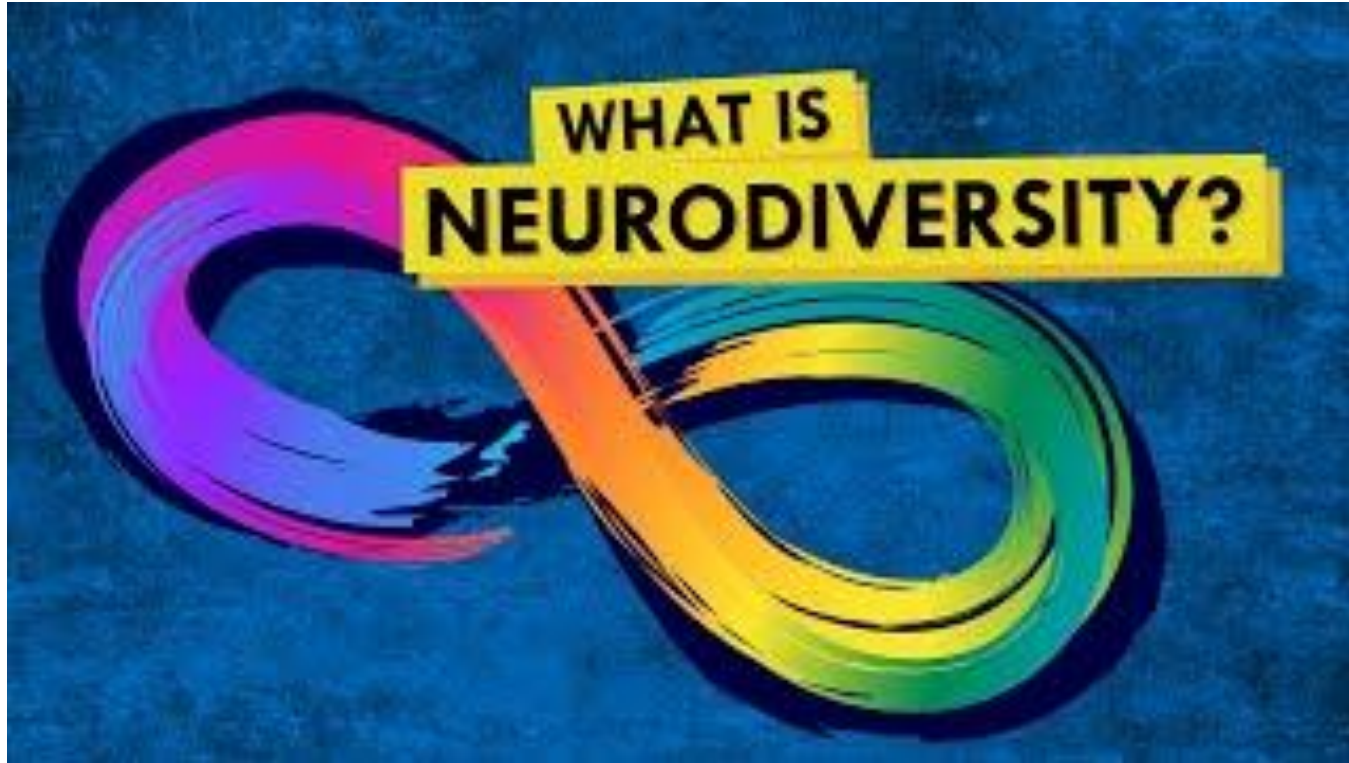


# Accessibility & Aging

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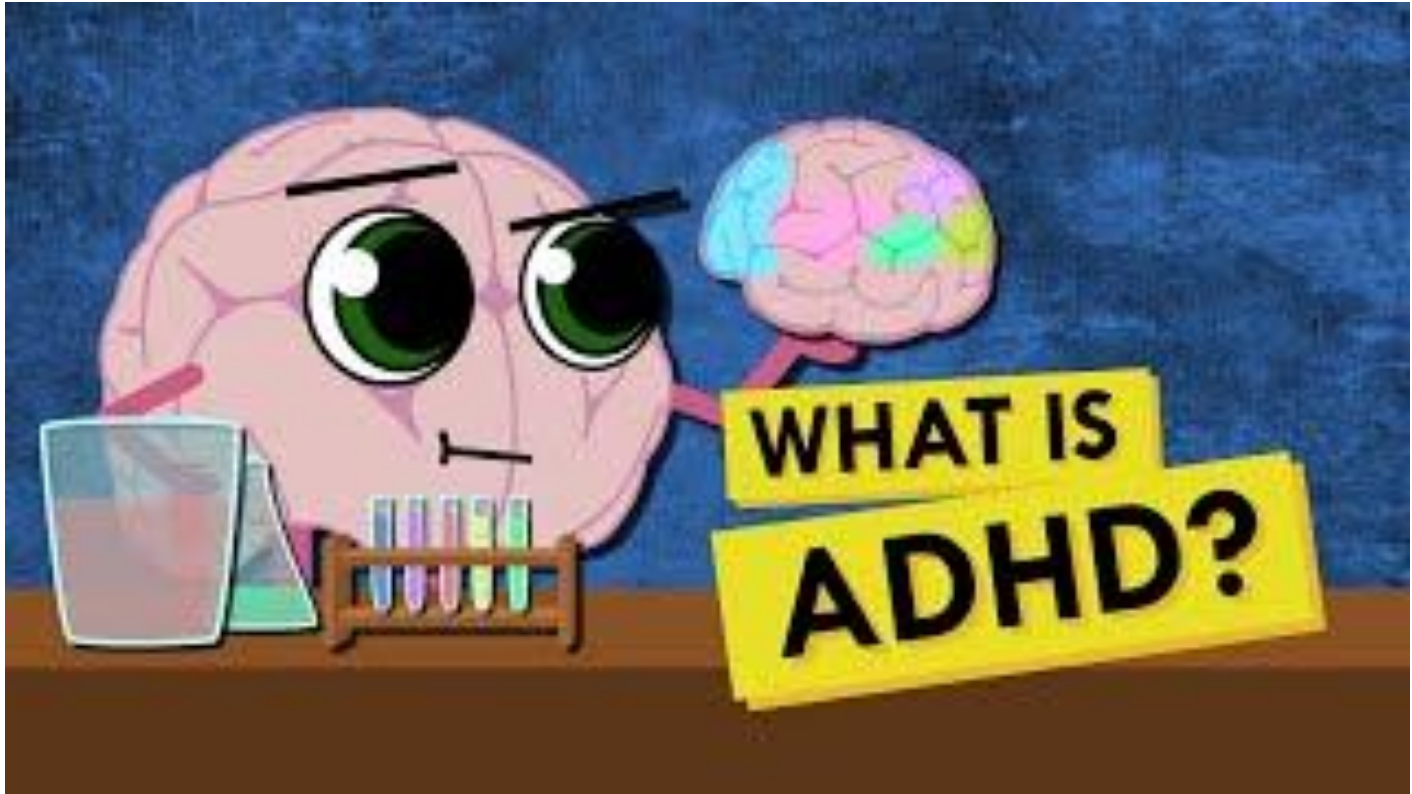
# What is neurodiversity?



# Discussion Papers

- 1 ADHD and Technology Research – Investigated by Neurodivergent Readers  
CHI'22
- 2 Designing a Customizable Picture-Based Augmented Reality Application For Therapists and Educational Professionals Working in Autistic Contexts  
ASSETS'22

# What is ADHD?



# ADHD and Technology Research – Investigated by Neurodivergent Readers

# Overview

Critical **literature review of technologies designed for people with ADHD**, focusing on **how ADHD is framed**, the **research aims** and approaches, the **role of people with ADHD** within the research process, and the types of **systems being developed** within Computing and HCI.

“Insider perspective”: from the perspective of researchers who are neurodivergent

Categorized the research aim into three groups:

- 1) Technical work on systems / methods for diagnosing ADHD
- 2) Development of behavioral therapy tools / devices
- 3) Other work

# How does this paper argue that its topic is worthy of study?

“What has been missing to date (2022) is a critical investigation which focuses on how technological research operates in the context of ADHD – particularly from a perspective ***explicitly*** shaped by people with ADHD.”

“Recent trends in CS and HCI have seen an **increase in research on neurodivergent populations** with the understanding of terminology similarly following suit as a result of analyses by neurodivergent scholars”

# Key Findings & Arguments

- Many papers emphasized the burden of ADHD on family, caregivers, teachers, etc
  - Does not focus on them as a population of interest
- **None** of the 10 papers that used a UCD approach include ADHD people in any of the research process!
  - Discussions with only teachers, parents, caregivers, other ADHD experts
- Technologies for intervention and diagnosis of ADHD are predominant, but exclude people with ADHD from knowledge production
  - **primarily embody neurotypical expectations rather than neurodivergent needs** and desires.





**Which of the typical HCI research contributions do you think this paper is making? And why?**

# Which of the typical HCI research contributions is this paper making?

## Survey

Surveys expose trends and gaps

A survey is evaluated on what is currently known about a topic & reveal opportunities for further research

“We conducted a **critical literature review** of technologies designed for people with ADHD, focusing on how ADHD is framed, the research aims and approaches, the role of people with ADHD within the research process, and the types of systems being developed within Computing and HCI.”

# What areas of inquiry within HCI and outside of HCI does this paper draw from?

## Venues

- HCI-related venues
- Ubiquitous Computing venues
- ADHD/Disorder-related venues
- Disability Justice-related venues
- Psychology-related venues



## Areas of inquiry

- HCI (Accessibility)
- HCI (Health Informatics)
- HCI (Ubiquitous Computing)
- Psychology/Psychiatry
- Clinical Health
- Disability Studies
- Critical Theories  
(Crip-Technoscience, Feminist, & CRT)



# **What is Crip Techno Science? What is its relevance to HCI?**

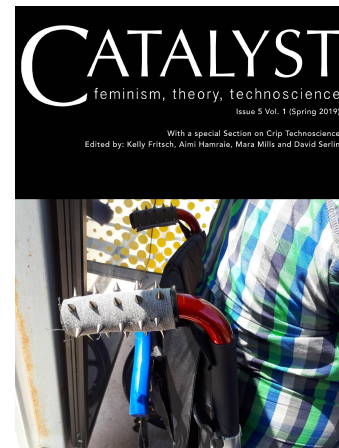
**(Perusall Question)**

# Crip-Techno Science Manifesto

## 4 Main Principles

1. "Crip technoscience centers the **work of disabled people as knowers and makers.**"
2. "Crip technoscience is committed to **access as friction.**"
3. "Crip technoscience is committed to **interdependence** as political technology."
4. "Crip technoscience is committed to **disability justice.**"

Coined by Aimi Hamrie & Kelly Fritsch 2019





# Why do you think the paper draws contributions from those areas?

## **Areas of inquiry**

- HCI (Accessibility)
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# Why do you think the paper draws contributions from those areas?

## HCI

Designing assistive technology requires an **interdisciplinary** understanding of computer science, engineering, psychology, and disability studies.

## Psychology & Health

Psychology & Health offers a **historical foundation of research literature** and studies for people with cognitive disorders like ADHD. Most of the research was very clinician-centric.

## Disability Studies & Critical Theory

Technology often tries to operate as neutral. Given the **contextual understanding** of disability studies & critical theory like crip technoscience researchers are able to **engage critically and equitably** with technology research involving people with ADHD

Disability Studies is a critical component in bringing the **social model of disability** into context for designers of assistive technology.

## HCI

## Psychology

## Health

## Disability Studies

## Critical Theory

## Crip Technoscience



# How does the paper expand on those areas to make its contribution?

## **Areas of inquiry**

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# How does the paper expand on those areas to make its contribution?

Creates a interdisciplinary informed insight **bridging other fields of critical inquiry** regarding creating technology-driven solutions for people with disabilities **to Computer Science field.**

Generates **design implications** for future assistive technologists designing for people with ADHD

Highlights the **social model of disability** and its applied connection to HCI accessibility researchers

Builds upon the work of disability justice & crip technoscience and expands it to researchers within HCI who work with disabled populations like ADHD. Significant because ADHD is an overlooked **(invisible) disability**

HCI

Psychology

Health

Disability  
Studies

Critical  
Theory

Crip-Techno  
science

# What are the main takeaways of this paper?

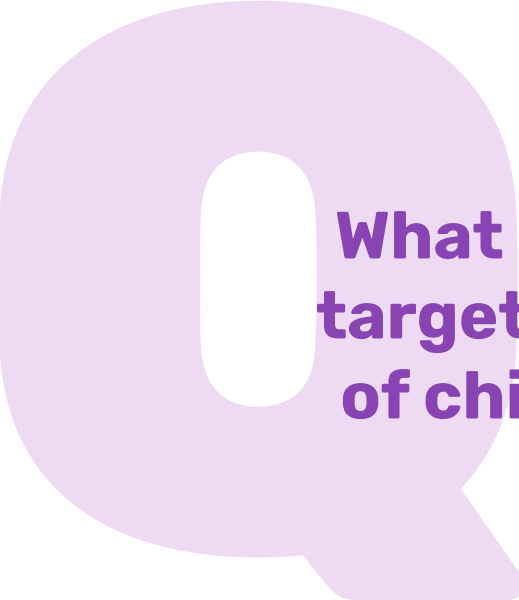
## HCI Practitioners & Researchers

- **Disability studies informed perspective** to conceptualize ADHD
- Understand “users” and **Crip Technoscience** for equitable engagement with ADHD technology research
- **Involve neurodivergent individuals** directly and equitably in technology research
- Consider the potential for critically informed technological development
- **ADHD researchers** may have different suggestions for conducting research with this population


## Overall

- People with **ADHD are often excluded** from co-producing technologies meant to assist them
- Current technological research on ADHD **focuses on harmful diagnostic and interventionist approaches**, operating from a (medical model) deficit model of ADHD traits
- Encourage **equitable engagement** with neurodivergent populations
- The potential for **appreciative approaches** in technology research

that the children were then guided through by the app. In this entire process, it is not mentioned that the children were ever consulted about their preferences and experiences: in any case, the publications do not include children's perceptions, comments or feedback. While children with ADHD tend to exist within family units, not explicitly attending to their specific perspectives amplifies the power structures enacting on them in their daily lives. Garcia et al. [59] developed wearable activity monitoring devices coupled



**What if the technology is supposed to be targeted toward assisting the caregivers of children with ADHD? Then should the children still be brought in?**



**How can computer science research  
better incorporate the perspective  
and needs of neurodivergent  
populations?**

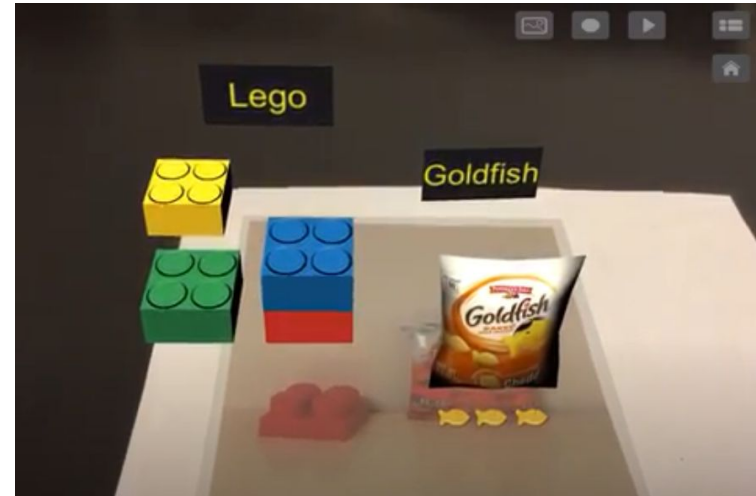
Designing a Customizable Picture-Based  
Augmented Reality Application For  
Therapists and Educational Professionals  
Working in Autistic Contexts.  
Assets '22

# What is Autism?



# Summary of this paper

1. Designed CustomAR (customizable AR application) which can be used to create and customize picture-based AR in an autistic context.
  - a. Another distinct feature: *Freeze feature*
  - b. Purpose of the application: To help autistic individuals learn certain tasks and objects.
2. Designed a 2-week diary study with therapists and educational professionals to receive feedback.
3. Discovered challenges and design implications of using picture-based AR in autistic contexts.



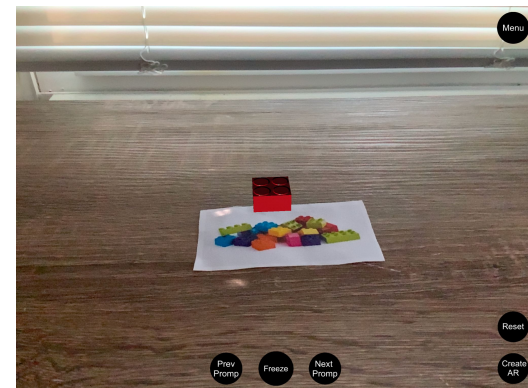
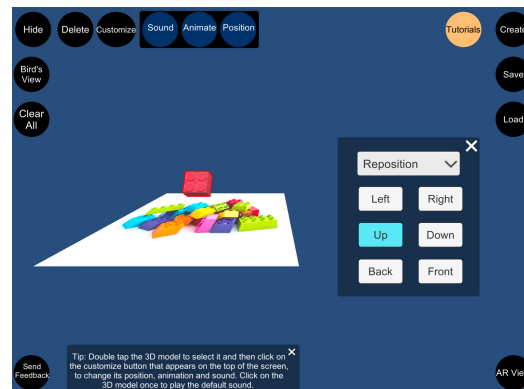
# How does this paper argue that its topic is worthy of study?

A gap between *research into* AR applications and the *practical use of* those applications, especially in autistic contexts.

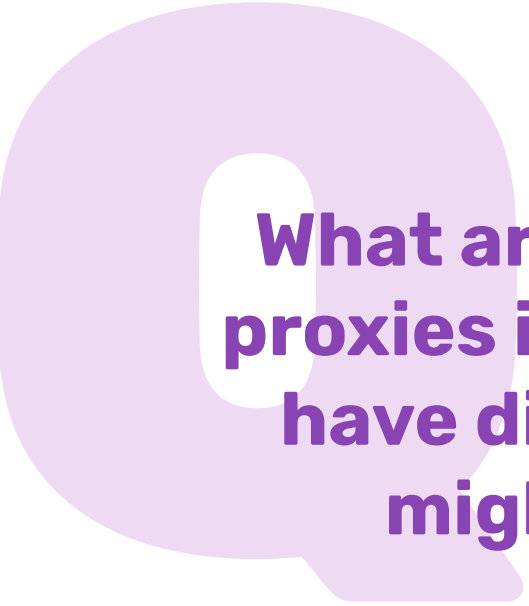
Picture-based AR can be an effective learning tool for autistic people.

## The research as a result provides

1. Insight into using customizable picture-based AR in practical therapy settings for autistic people
2. Future research directions in developing customizable AR in an autistic context







**What are the pros and cons of using proxies instead of those who actually have disabilities? In what settings might proxy be most useful?**

# What areas of inquiry within HCI and outside of HCI does this paper draw from?

## Venues

- Autism/Disorder-related venues
- HCI-related venues
- Education-related venues
- Psychology-related venues
- AR/VR & Computing-related venues




## Areas of inquiry

- Clinical health
- Disability studies
- HCI (Accessibility)
- HCI (Computing)
- AR/VR
- Education
- Psychology/Psychiatry



**Is conducting expert studies before  
applying new designs to real or wider  
target audiences a common practice  
in HCI research?**

**What are some reasons and benefits  
for doing so?**



**What types of contribution do you  
think this paper is making in the field  
of HCI?**

**[PollEv.com/emanidotch545](https://PollEv.com/emanidotch545)**

# What types of contribution is this paper making in the field of HCI?

## Artifact

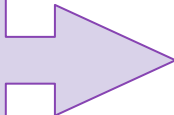
The paper presents a new type of customizable mobile AR application, “*CustomAR*”, that can be used in therapy sessions for autistic people.

## Empirical

Conducted a participatory design session, a 2-week diary study, and a follow-up interview to evaluate the usefulness of the features of “*CustomAR*”.

# How does the paper expand on those areas to make its contribution?

## Expands on the..

1. Traditional methods of therapy/education sessions in the autistic context.
  2. Using picture-based AR to educate autistic children.
  3. Study method that is prevalent in the field of Accessibility in HCI.
- 

## As a result..

Presents an AR-based mobile application and identifies the potential of the artifact in therapy sessions for autistic individuals.



**What are the pros and cons of using  
technologies in clinical or therapy  
settings?**

# What are the main takeaways of this paper within the HCI community?

## **Technical HCI**

Broadens the application area of customization features of an emerging technology in a practical setting.

## **Accessibility in HCI**

Opens future research areas of conducting user studies with autistic individuals using similar artifacts OR including autistic individuals in the participatory design to design similar artifacts.





**What are the main takeaways of this  
paper in research communities  
outside of HCI?**

# What are the main takeaways of this paper in communities outside of HCI?

## **AR/VR & Computing**

Contributes to a niche area of using customizable AR to support autistic individuals and understanding its potential.

## **Disability Studies**

Contributes to a research area that opens a new area (positioning autistic individuals as the AR content creators)

## **Psychology/Psychiatry, Education**

Introducing the use of picture-based AR to enhance learning effects during practical therapy/education sessions for autistic individuals.

**Thank you!**



**What is one new thing you learned  
about this paper?**

**(Content or Paper Framing)**