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# *Applying Human Centered Design in Implementation Science*

Hosted by:



**Jeremiah Brown, PhD**  
Director, DCIS



**Alex Dopp, PhD**  
Senior Researcher  
RAND



## Learning Objectives:

1. Describe the purpose and foundations of human-centered design.
2. Identify points of alignment between implementation science and human-centered design methods.
3. Generate ideas for how human-centered design could advance equitable implementation research and practice.

# Applying Human Centered Design in Implementation Science

**Dartmouth Fundamentals of Implementation Science seminar series  
January 14<sup>th</sup>, 2026**

**Alex R. Dopp, PhD**  
Senior Researcher, RAND



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# The UW ALACRITY Center

Our multidisciplinary team leverages human-centered design, education, and implementation science to uncover and overcome obstacles that prevent quality mental health treatments from reaching underserved communities.



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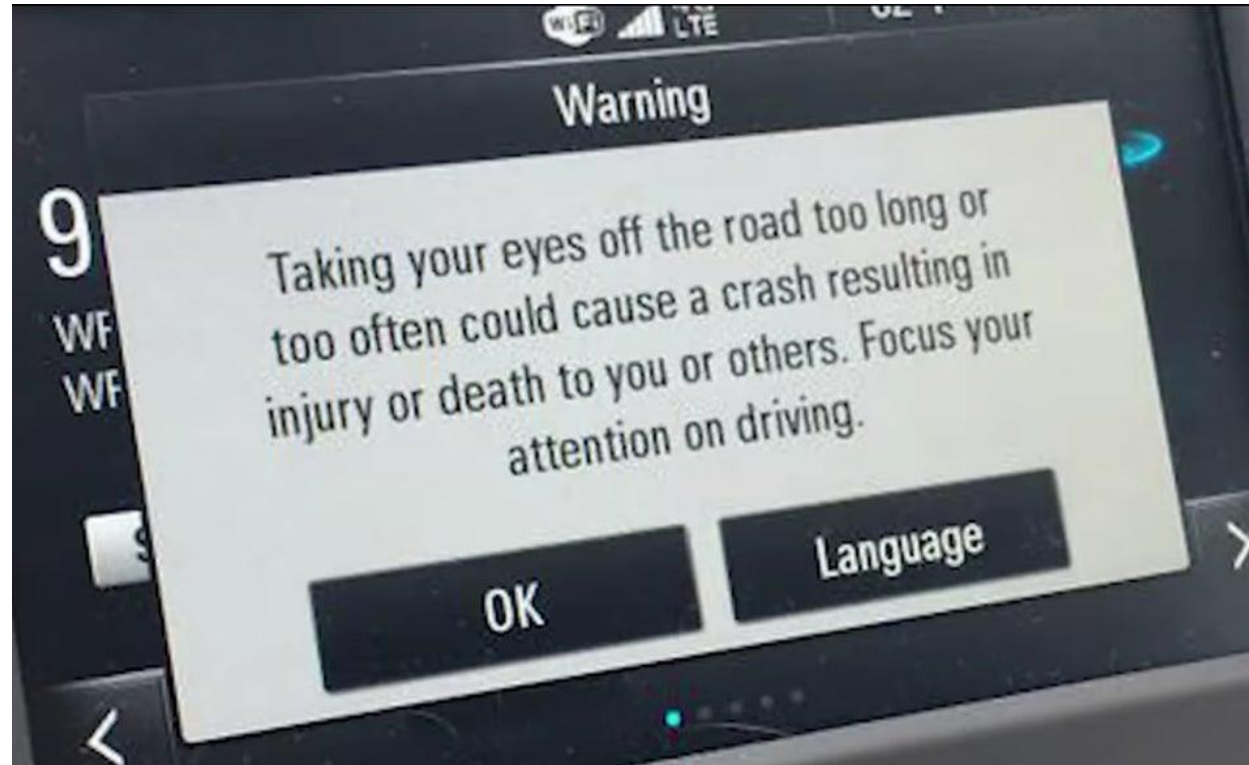
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# Main points (last things first!)

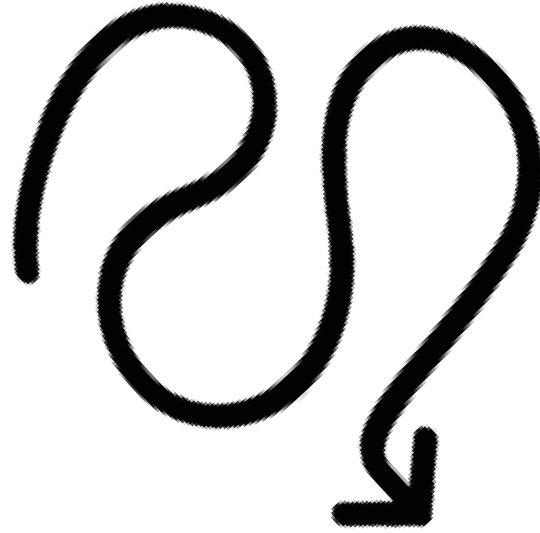
- All human creations are designed - including interventions and implementation processes - and thus include bias and could be better designed
- Human-centered design (HCD) and implementation science (IS) have **complementary - but distinct** - foci and strategies
- There are opportunities to better align HCD and IS to **enhance equitable impacts on health** and beyond...and much left to figure out

# Design problems are everywhere



*“The alternative to good design is bad design, not no design at all. Everyone makes design decisions all the time without realizing it.”*

Douglas Martin (1990)



**if inequity is woven  
into the very fabric of society  
then each twist, coil, and code  
is a chance for us to weave  
new patterns, practices, politics  
its vastness will be its undoing  
once we accept that we are**

**pattern makers.**



Ruha Benjamin (2020)

**You might be an implementation scientist if:**

you've ever worried your intervention or strategy...

...isn't readily scalable beyond your immediate team

... is unusable to stakeholders e.g., practitioner, organizational administrator, research collaborator

... is too cumbersome

...isn't applicable and accessible across a range of groups



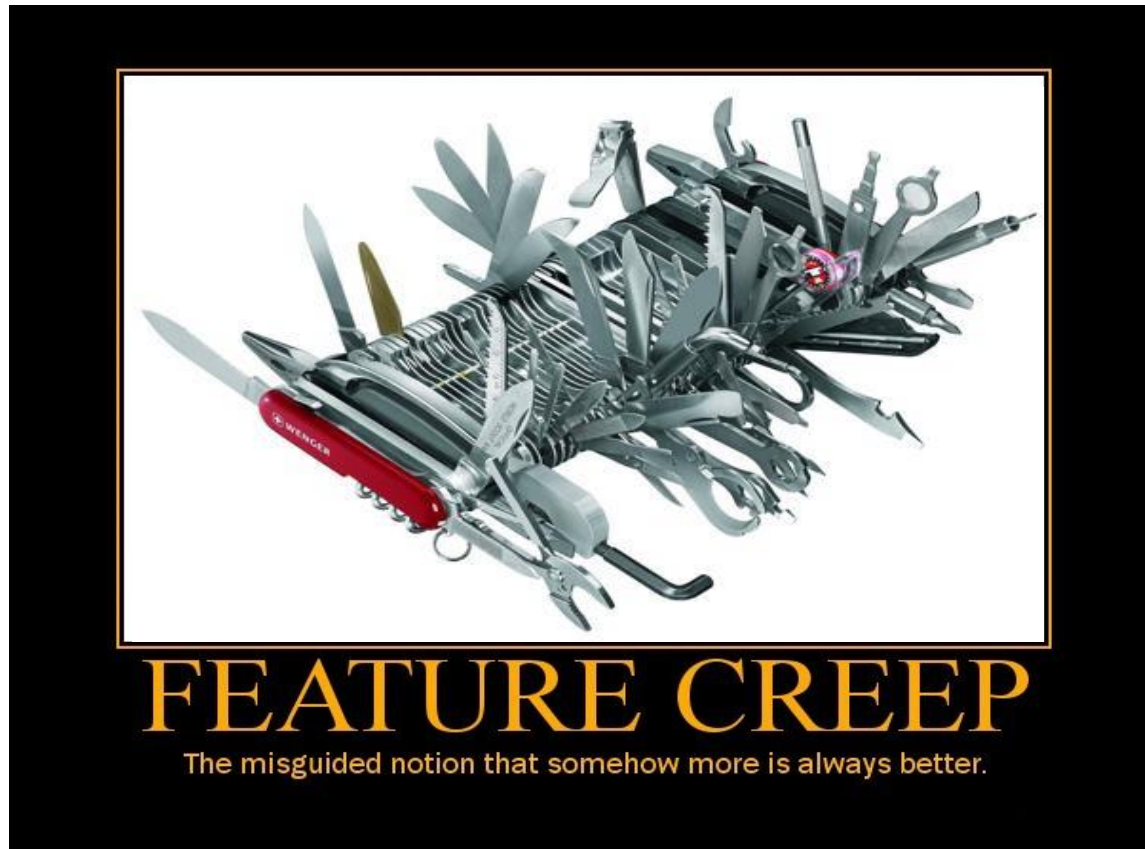
# Common usability issue categories

1. Complex and/or cognitively overwhelming	7. Interventionist buy-in (trust)
2. Time required exceeds time available	8. Overreliance on technology
3. Incompatibility with interventionist preference or practices	9. Requires unavailable infrastructure
4. Incompatibility with existing workflow	10. Inadequate scaffolding for recipients
5. Insufficient customization to recipients	11. Inadequate training and scaffolding for interventionists
6. Intervention buy-in (value)	12. Lack of support for necessary communication

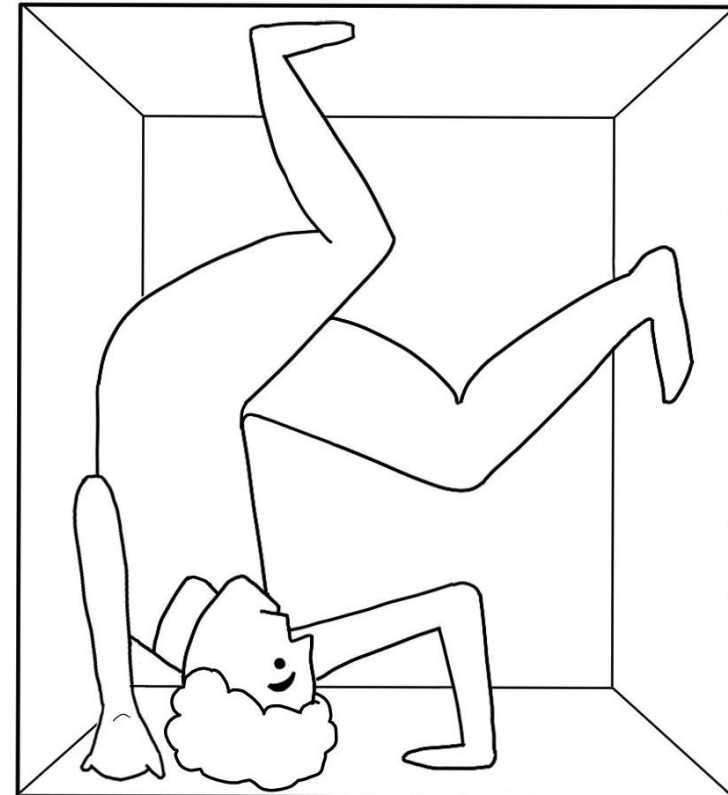
Munson, S. A., Friedman, E. C., Osterhage, K., Allred, R., Pullmann, M. D., Areán, P. A., & Lyon, A. R. (2022). Common Usability issues in Evidence-Based Psychosocial Interventions and Implementation Strategies: A Cross-Project Analysis. A cross-project analysis. *Journal of Medical Internet Research*, 24(6), e37585.

# Design problems result from...

**OVER** design for research



**UNDER** design for practice



Co-Design

User Interface

Human-Computer Interaction

User Experience

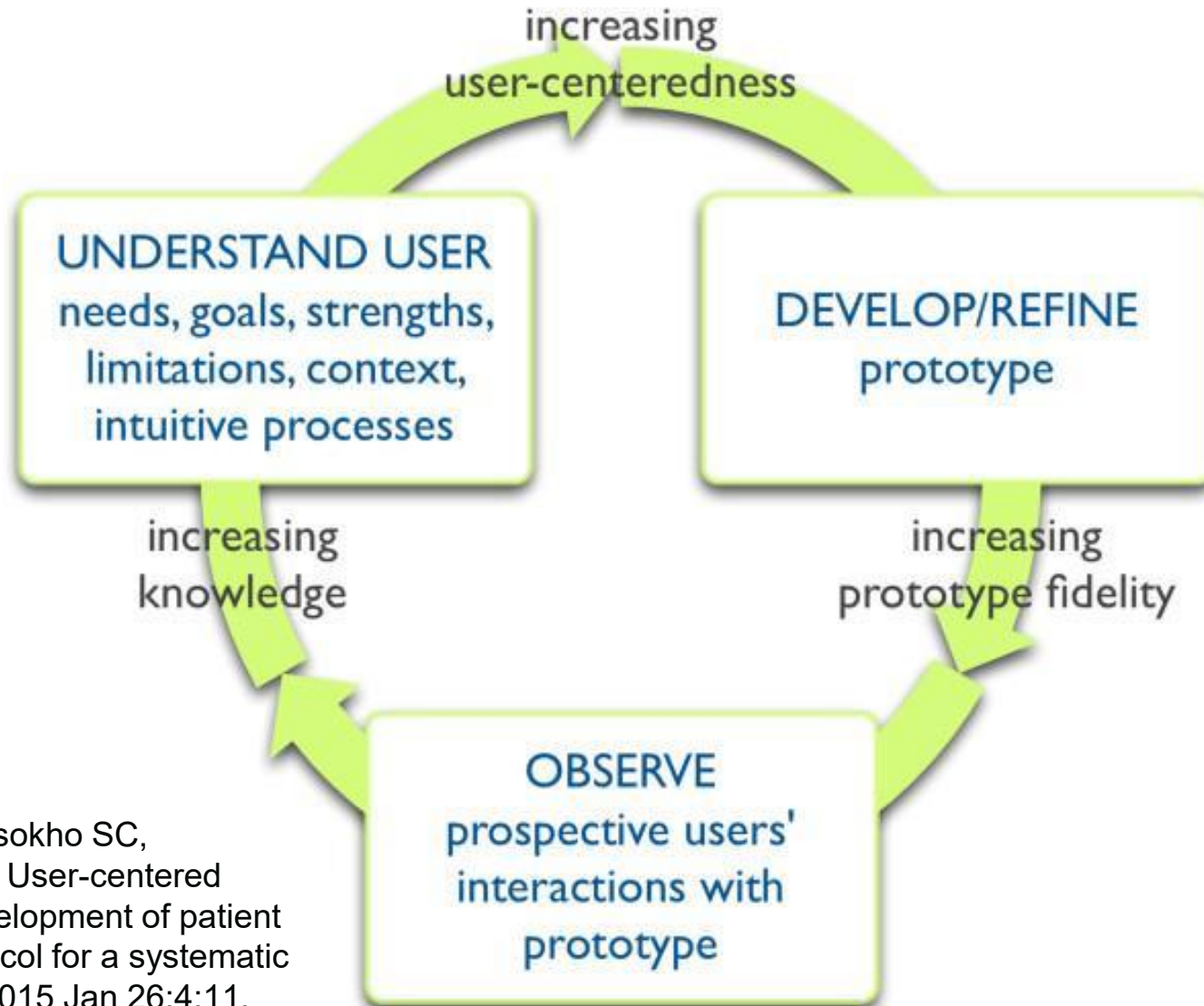
Human-Centered Design

Design Thinking

User-Centered Design

Human Factors Engineering

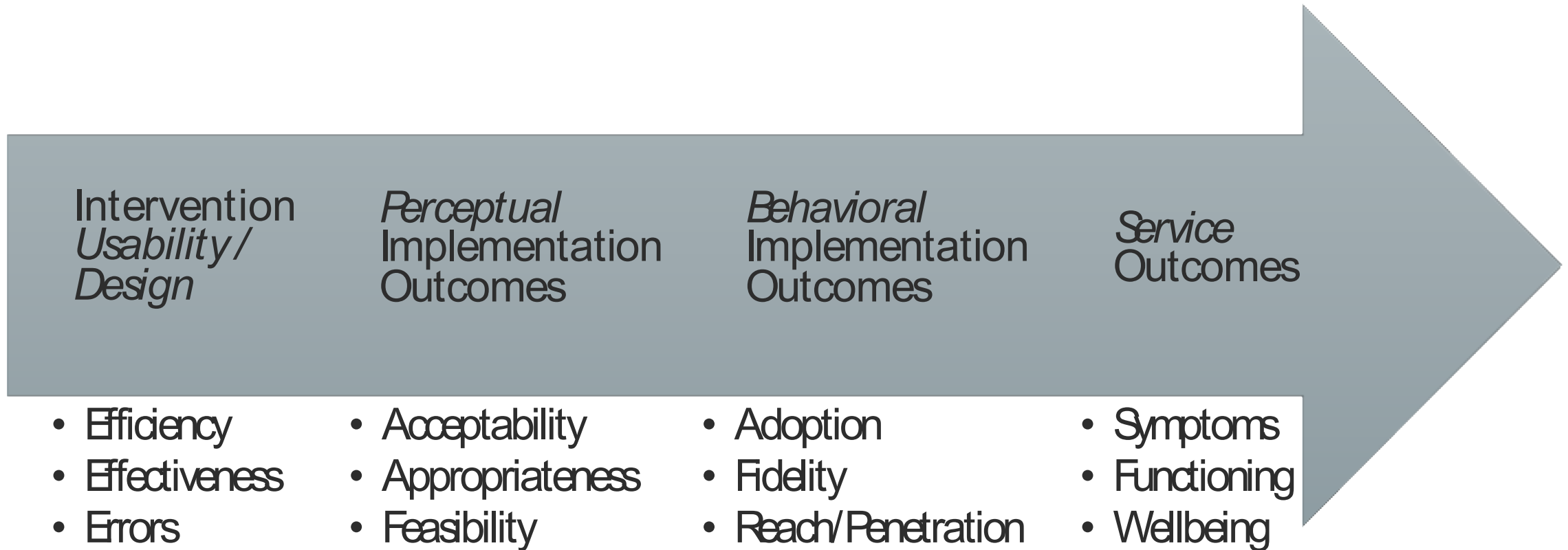
# Human-Centered Design (HCD)



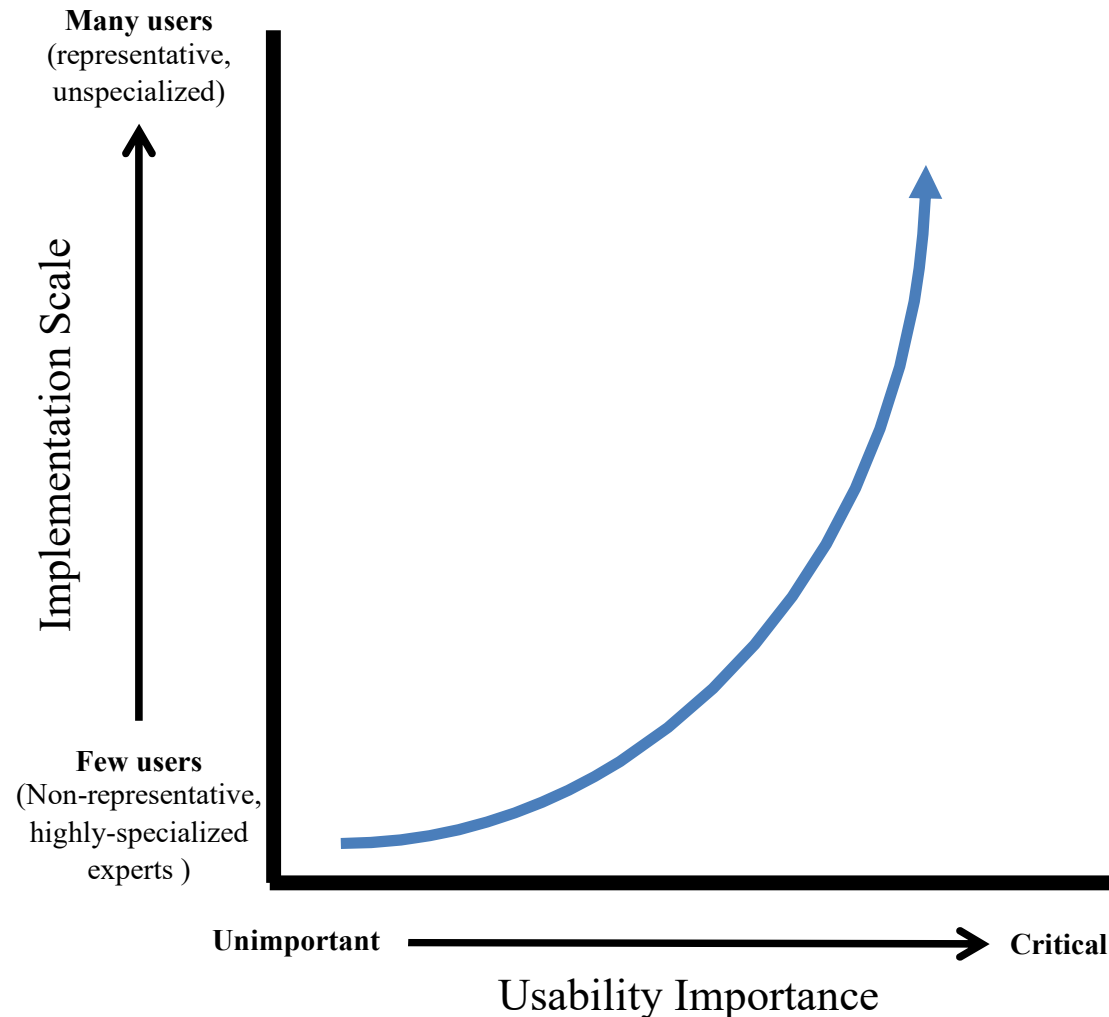
**Human-centered design** is an approach that grounds the product development process in information about the **people** and **settings** that will use the product (ISO, 1999)

**Usability**: the extent to which a product can be used by specified users to achieve specified goals in a specified context of use

# Usability relates to implementation outcomes

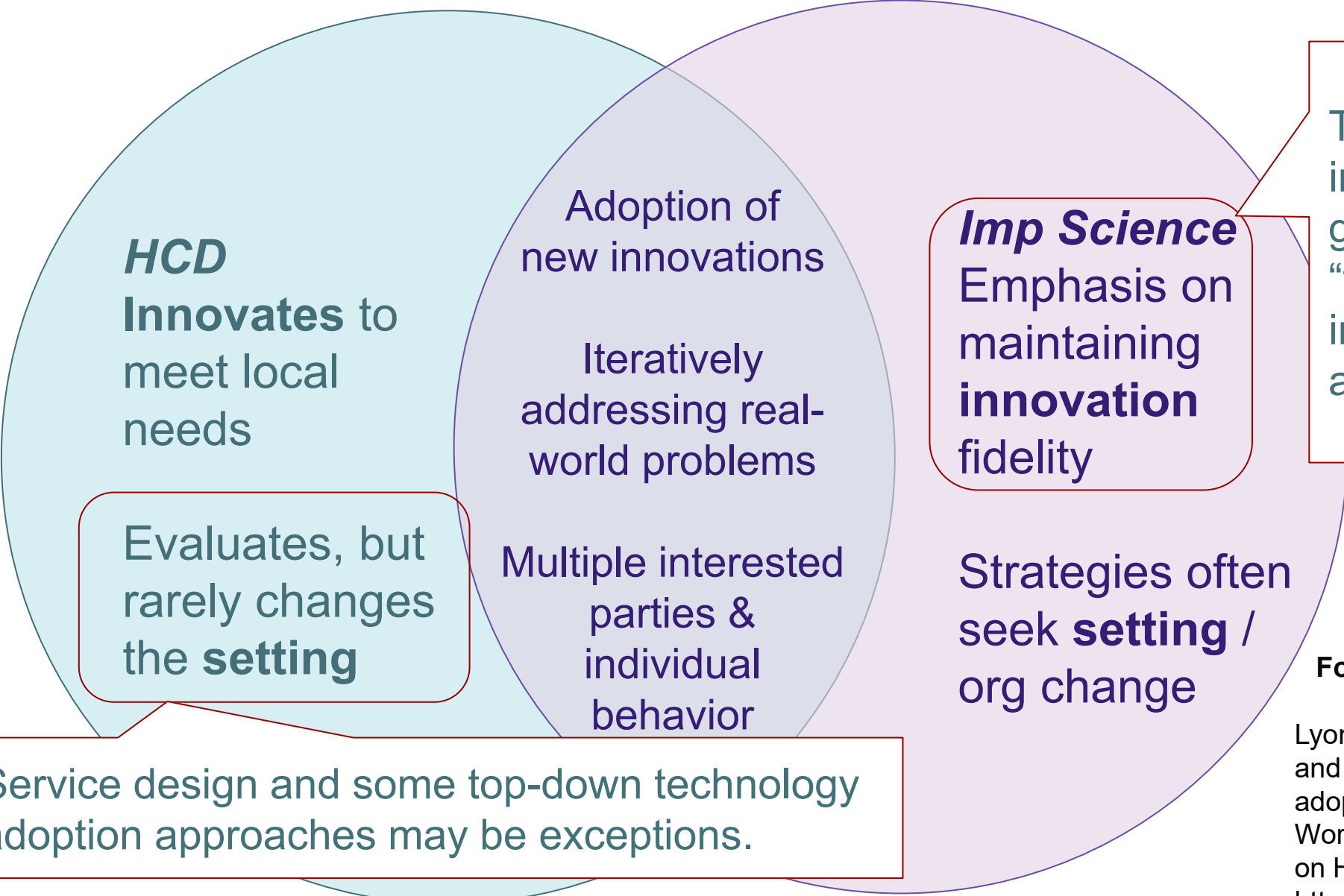


# Usability's importance increases with scale



Lyon, A. R., Brewer, S. K., & Areán, P. A. (2020). Leveraging human-centered design to implement modern psychological science: Return on an early investment. *American Psychologist*, 75(8), 1067-1079.

# HCD and IS: Complementary Objectives



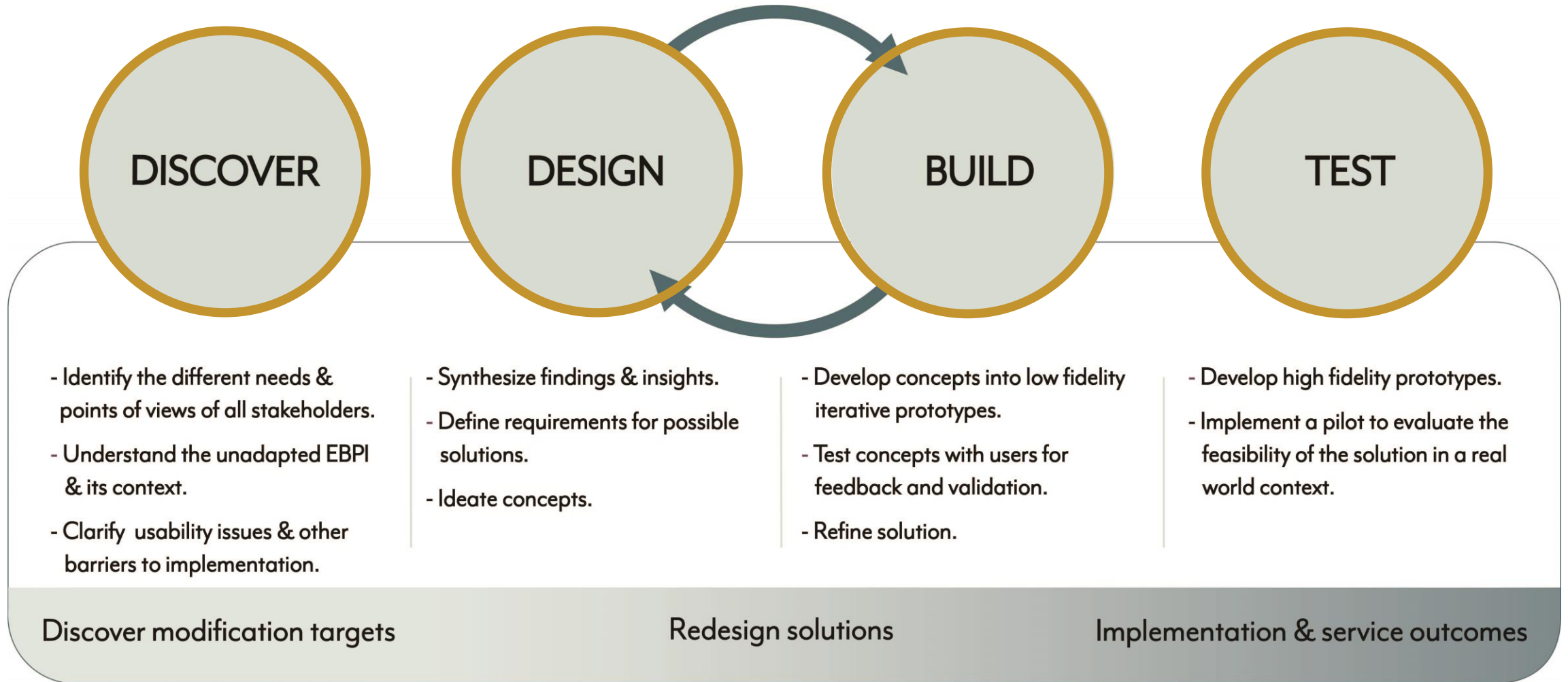
This has begun to shift in recent years with growing recognition that “there is no implementation without adaptation”

Service design and some top-down technology adoption approaches may be exceptions.

For a more detailed discussion, see:

Lyon, A. et al. (2023, April). Bridging HCI and implementation science for innovation adoption and public health impact. Workshop presented at CHI conference on Human Factors in Computing Systems <https://doi.org/10.1145/3544549.3574132>

# HCD + IS = DDBT Framework



Lyon et al. (2019) Use of human-centered design to improve implementation of evidence-based psychotherapies in low-resource communities: Protocol for studies applying a framework to assess usability. *JMIR Research Protocols*.

Lyon et al. (2025). Harnessing human-centered design for evidence-based psychosocial interventions and implementation strategies in community settings: a protocol for redesign to improve usability, engagement, and appropriateness. *JMIR Research Protocols*.

# HCD targets for implementation

Health services research product (HSRP)	Definition	Examples
Evidence-based psychosocial intervention (EBPI)	Interpersonal or informational activities, techniques, or strategies that target biological, behavioral, cognitive, emotional, interpersonal, social, or environmental factors with the aim of reducing symptoms of these disorders and improving functioning or well-being (Institute of Medicine 2015)	Parent training protocols Cognitive behavioral therapy Applied behavior analysis
Digital technology	A broad range of technologies to support users (most typically clinicians or clients) in changing behaviors and cognitions related to mental health and wellness	Devices and wearables Clinical decision support tools Digital therapeutics Mobile health apps
Implementation strategy	Methods or techniques used to enhance the adoption, implementation, and sustainment of a clinical program or practice (Proctor et al. 2013)	Initial training meetings Post-training consultation Leadership training for implementation Clinician motivation enhancement

Lyon, A. R., Dopp, A. R., Brewer, S. K., Kientz, J. A., & Munson, S. A. (2020). Designing the future of children's mental health services. *Administration and Policy in Mental Health and Mental Health Services Research* 47, 735–751.

# HCD and Implementation Science

TBM

ORIGINAL RESEARCH

## A glossary of user-centered design strategies for implementation experts

Alex R. Dopp,<sup>1</sup> Kathryn E. Parisi,<sup>1</sup> Sean A. Munson,<sup>2</sup> Aaron R. Lyon<sup>3</sup>

<sup>1</sup>Department of Psychological Science, University of Arkansas, Fayetteville, AR 72701, USA

<sup>2</sup>Department of Human Centered Design and Engineering, University of Washington, Seattle, WA 98195, USA

<sup>3</sup>Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine, Seattle, WA 98195, USA

### Abstract

User-centered design (UCD), a discipline that seeks to ground the design of an innovation in information about the people who will ultimately use that innovation, has great potential to improve the translation of evidence-based practices from behavioral medicine research for implementation in health care settings. UCD is a diverse, innovative field that remains highly variable in terms of language and approaches. Ultimately, we produced a glossary of UCD-related strategies specifically for experts in implementation research and practice, with the goal of promoting interdisciplinary collaboration in implementation efforts. We conducted a focused literature review to identify key concepts and specific strategies of UCD to translate into the implementation field. We also categorized the strategies as primarily targeting one or more levels of the implementation process (i.e., interventions, individuals, inner context, and outer context). Ultimately, we produced a glossary of 30 UCD strategies

### Implications

**Practice:** Use of shared language around user-centered design (as presented in this glossary) can maximize the usefulness of interdisciplinary efforts to promote the implementation of evidence-based practices through improved design.

**Policy:** Policymakers who wish to promote a user-centered culture in health services should consider the value of tools like this glossary in developing shared language and interdisciplinary partnerships between implementation experts and user-centered design experts.

Dopp, A. R., Parisi, K. E., Munson, S. A., & Lyon, A. R. (2018). A glossary of user-centered design concepts and strategies for implementation experts. *Translational Behavioral Medicine*, iby119. <https://doi.org/10.1093/tbm/iby119>

Correspondence to: A R Dopp  
[ardopp@uark.edu](mailto:ardopp@uark.edu)



# HCD in Practice:

How do we design interventions and implementation strategies for diverse users and settings?

“If you’re designing for everyone, you’re designing for no one”

# User identification

***“The user is not like me”***

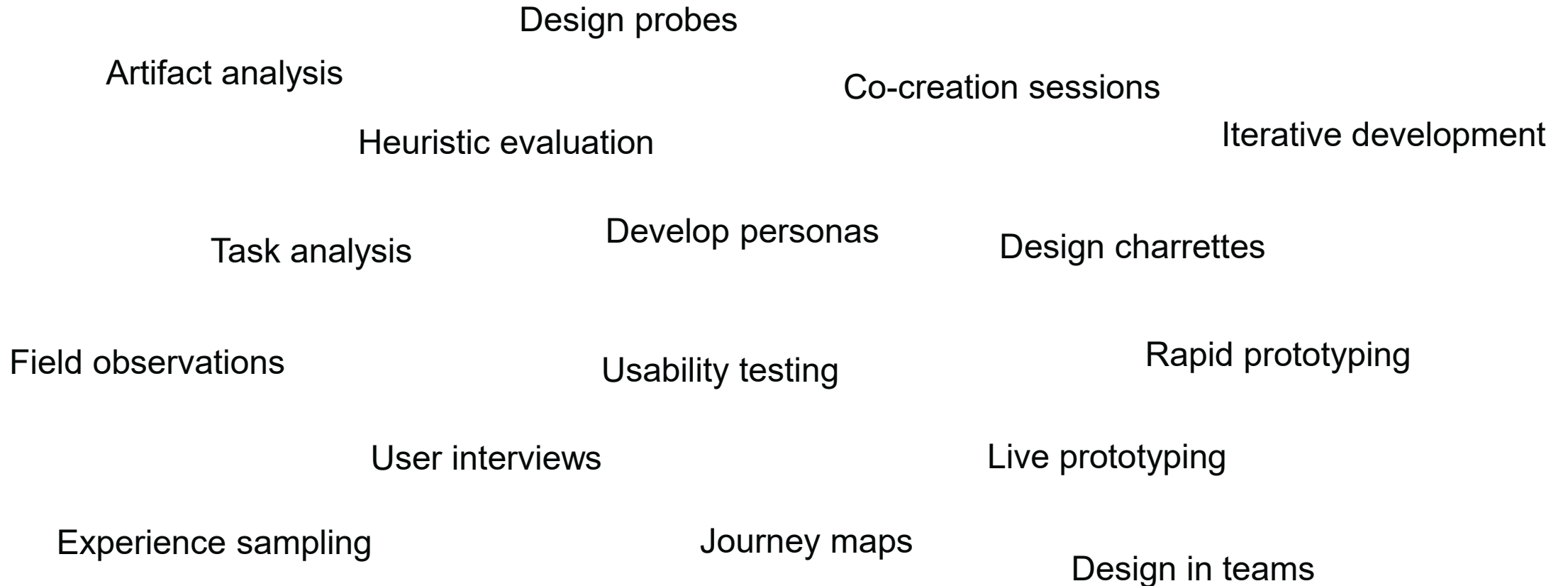
- Identification of end users is a key aspect of precondition articulation
- Product developers tend to underestimate user diversity in their design processes
  - Base designs on people similar to themselves (Cooper, 1999; Kujala & Matyla, 2000)
  - Identification of representative users / user needs can correct this bias (Kujala & Kauppinen, 2004)

# Categorizing HCD techniques

**Information gathering**



**Design / redesign**



*Most example techniques drawn from Dopp et al. (2018)*

# **HCD can support equitable health and well-being by increasing individual and community agency over health interventions and implementation strategies**

- Aligns innovation development with the needs of the people and settings that use those innovations
- Promotes more usable innovations based on the lived experiences of affected individuals and communities, and iteration to improve contextual fit and cultural responsiveness
- A core principle of HCD is that innovation users are in the best position to communicate their needs to design teams  
(Kujala and Kauppinen 2004)

## ...but not without some re-examination

*“Despite HCD's framing as a collaborative approach with end users, **power structures are insidious to its practice history** (22). Indeed, the potential for the development of the following power structure is rampant in HCD: a designer, often a cisgender, heterosexual white male, attempting to ‘uncover’ the needs of a marginalized user and/or community to create a product (23). **Marginalized users and communities may often already have strong notions of what might work for them** and do not need these ideas to be “uncovered” for them (24).”*

# UWAC design heuristics (from Munson et al., 2022)

Usability Issue Category	Proposed Heuristic
Complex and/or Cognitively Overwhelming	→ <b>Low cognitive load</b>
Time required exceeds time available.	→ <b>Efficiently uses time</b>
Incompatibility with interventionist preference	→ <b>Responsive to existing practices</b>
Incompatibility with existing workflow	→ <b>Responsive to existing system constraints</b>
Insufficient customization to clients	→ <b>Flexible and adaptable</b>
Intervention buy-in (value)	→ <b>Demonstrates value</b>
Interventionist buy-in (trust)	→ <b>Satisfaction and trust</b>
Overreliance on technology	→ <b>Avoid technology choices that exclude</b>
Requires unavailable infrastructure	→ <b>Minimal infrastructure</b>
Inadequate scaffolding for client	→ <b>Learnable for recipients</b>
Inadequate training and scaffolding for provider	→ <b>Learnable for interventionists</b>
Lack of support for necessary communication	→ <b>Enhances communication and feedback</b>

# Self-assess your use of HCD

1. Are you sharing decision-making (and associated resources) with the people who will use the product?
2. Are you exploring multiple points in the design space?
3. Are you intervening at the desired scale/scope?
4. Might your product generate or reinforce inequities or otherwise cause harm?
5. Are you using your resources efficiently and effectively?

**Want to improve your HCD skills?**

<https://www.uwalacrity.org/hcd-training-opportunities/>

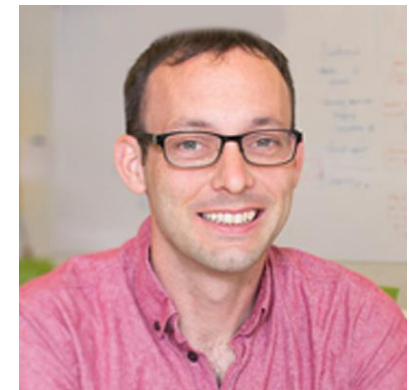
# Main points (revisited)

1. All human creations are designed – including interventions and implementation processes – and thus include bias and could be better designed
2. Human-centered design (HCD) and implementation science (IS) have complementary – but distinct – foci and strategies
3. There are opportunities to better align HCD and IS to enhance equitable impacts on health and beyond...and much left to figure out

# THANK YOU!

<https://www.uwalacrity.org/>

[adopp@rand.org](mailto:adopp@rand.org)





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# Learning Opportunities at Dartmouth

## Seminar Series

### Fundamentals of Implementation Science

Monthly on the 2<sup>nd</sup> Wednesday  
12:00 – 1:00PM ET  
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### Works in Progress

Monthly on the 3<sup>rd</sup> Wednesday  
12:00 – 1:00PM ET  
*In Person & Virtual*



#### Hosted by:

Jeremiah Brown, PhD, DCIS Director  
Kelly Aschbrenner, PhD, DCIS Co-Director  
Sarah Lord, PhD, DCIS Co-Director

[implementation.science@dartmouth.edu](mailto:implementation.science@dartmouth.edu)

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**What is Implementation Science?**  
Implementation science is a rapidly growing field with robust government investment and industry interest that addresses the lag between evidence-based practices and widespread practical application in the real world.

The Implementation Science program at Dartmouth provides rigorous training in dissemination and implementation science including theory, methods, and practical applications, as well as essential project management, collaboration, and leadership skills. Graduates will be equipped to apply these skills in a broad range of disciplines and communities throughout the country and the world.

**1<sup>st</sup>**

Be part of one of the first implementation science master's programs in the world.

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**Accelerated** In this delivery option, students take two concurrent courses at a time (four courses per term) and spend approximately 10-15 hours per week on coursework and class time.

**9 Months Total**    **30 Students Per Class**    **2 Courses At A Time**

**Traditional** In this delivery option, students take one course at a time (two courses per term) and spend approximately 16-20 hours per week on coursework and class time.

**18 Months Total**    **30 Students Per Class**    **1 Course At A Time**

#### Why Implementation Science and Why Now?

Employment for Implementation Science related occupations is projected to grow annually by 9% by 2021.

The salary range for jobs in the Implementation Science field is \$70,000 - \$100,000.

*"Implementation science is the bridge between great ideas and great people ready to act on them. This science brings the 'know' to the 'do.'"*  
-Genevieve Shafer '26

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The Dartmouth Center for Implementation Science is a Center of Biomedical Research Excellence (COBRE) supported by the National Institute of General Medical Sciences (NIGMS) of the National Institutes of Health (NIH) under Award Number P20GM156710



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