

# Provider Perspectives on Integrating Sensor-Captured Patient-Generated Data in Mental Health Care

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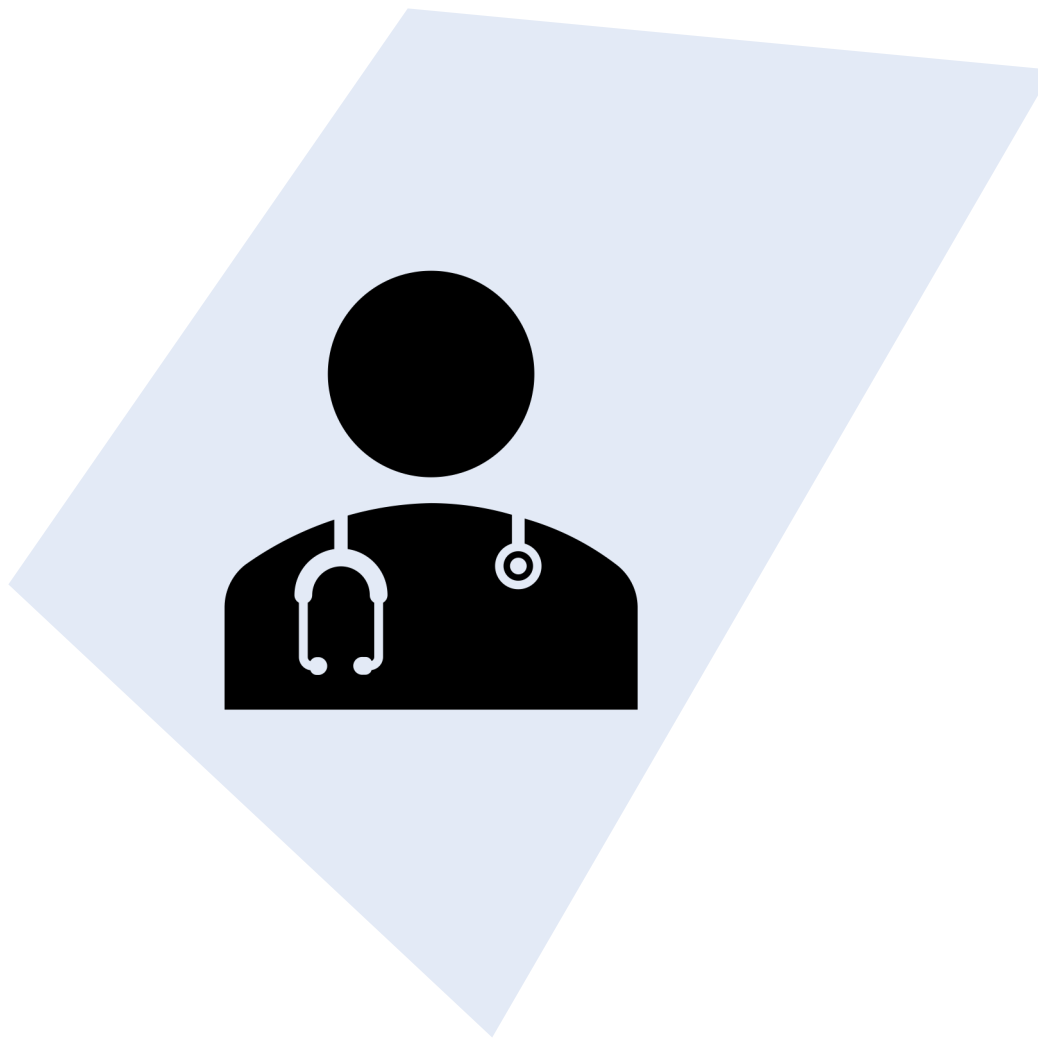
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and Technology  
Changing Health Lab





Fortney et al. The Kennedy Forum. 2015. Fixing Behavioral Health Care in America: A National Call for Measurement-Based Care in the Delivery of Behavioral Health Services

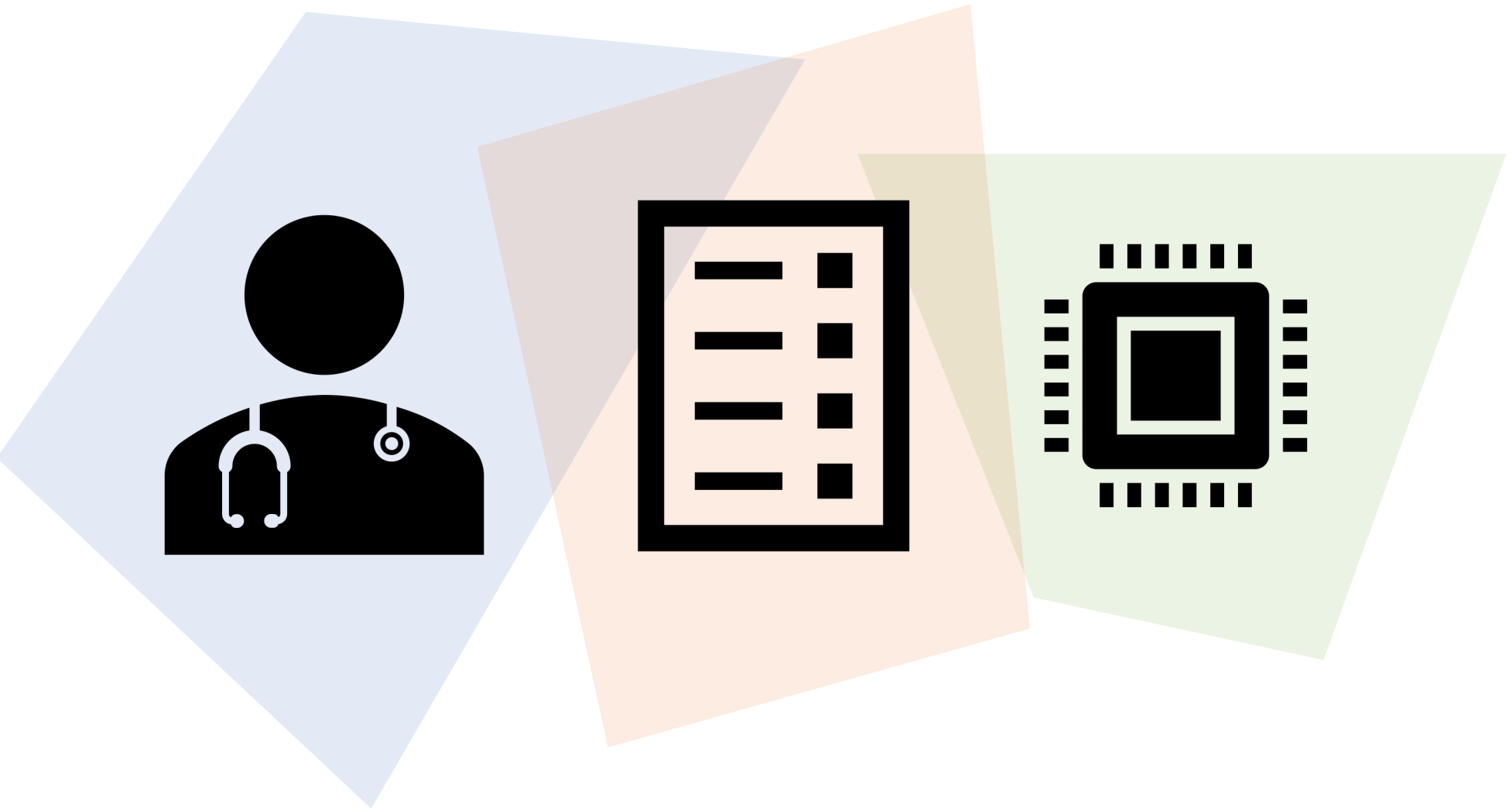
Fortney et al. 2016. A tipping point for measurement-based care. *Psychiatric Services*.

Hatfield et al. 2010. Do we know when our clients get worse? An investigation of therapists' ability to detect negative client change. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice*.



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# Prior work on sensors + mental health

Increasing physical activity

e.g. reduce depression by motivating users to increase physical activity

Digital phenotyping

Clinical integration

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e.g. feeding sensor data and symptom scores into machine learning models to predict mental states

Clinical integration

# Prior work on sensors + mental health

## Increasing physical activity

e.g. reduce depression by motivating users to increase physical activity

## Digital phenotyping

e.g. feeding sensor data and symptom scores into machine learning models to predict mental states

## Clinical integration

e.g. university counselor perceptions of data tracked by students

# Why use self-tracked data in the clinic?

 Learn about patient's unarticulated goals

 Provides context for diagnosis

 Supports shared-decision making

 Increase motivation to track



What are **providers' perspectives** on using **sensor-captured data** in **routine mental health** care settings?

# Post-traumatic Stress Disorder (PTSD) Symptoms

Intrusive  
thoughts

Avoidant  
behavior

Changes in  
mood

Changes in  
reactivity

Comorbid physical  
ill-health



# Study Method

Photo Credit: The Road Home Program: National Center of Excellence for Veterans and Their Families at Rush

# Veterans were provided Fitbits...

- Use of Fitbits were **voluntary**
- Use of Fitbits were **not directed**
- Care providers were **minimally or not trained** on Fitbit data
- Care providers **did not have access** to Fitbit data

# Participants

17  
participants



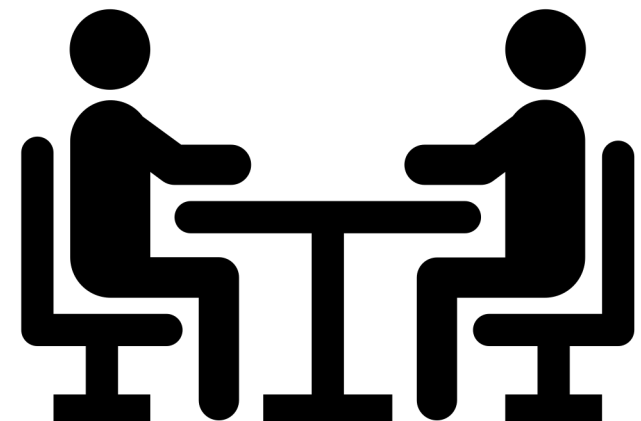
13 therapists  
4 non-therapists



3 administration

# Semi-structured interviews

1. **role** within the program
2. **perspectives on self-tracked data**
3. **experiences with self-tracked data** outside of the program
4. **experiences with the Fitbit** during the program
5. **envisioned uses** of sensor data in the program





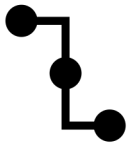
# Findings

Photo Credit: The Road Home Program: National Center of Excellence for Veterans and Their Families at Rush

# Envisioned benefits of using Fitbit data



“Outside” source of information



Connect data to symptoms



# Envisioned benefits of using Fitbit data



“Outside” source of information  
...that can show progress and empower patients



“A lot of the thoughts you have are that you are **incapable, inadequate**, cannot accomplish things. So, that [data] kind of directly speaks against that, right? **I am able to accomplish something**, like reaching 10,000 steps a day.”

(C6) ”

(Emphasis added)

# Survey Assessments

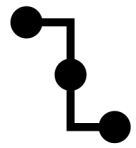


- PTSD (PCL-5)
- Depression (PHQ-9)
- Negative cognitions (PTC-I)
- Guilt (TRGI)

# Survey Assessments



# Envisioned benefits of using Fitbit data



Connect data to symptoms  
...to identify opportunities for intervention



It could be beneficial [to] have that information and say, 'Oh, wow, **as your scores have gone down, your sleep is gotten better**' [or]... '**Your heart rate is always up during the Group [therapy], what's going on with that?** (C2)

(Emphasis added)



# Challenges to use of Fitbit data



Data is not clinically validated



Lack of organizational support

# Challenges to use of Fitbit data



Data is not clinically validated  
...which imposes a risk to patient health



The Fitbit sleep data is not as solid as other sources of data so **I could see it backfiring**...if a person is actually sleeping fine their Fitbit could say that they're not...**it might just confuse things.**" (C1)



(Emphasis added)

# Challenges to use of Fitbit data



Lack of organizational support  
...due to lack of clinical validation



It's noticeable if a clinician is not sticking to protocol because...the **patient's scores aren't changing** and they're not as engaged in the program and the client lags behind...**everyone needs to be a united front and consistent.** (C8)

(Emphasis added)



# Challenges to use of Fitbit data



Lack of organizational support  
...due to lack of clinical validation



I had a client that I can remember that wore his Fitbit and every time he would get anxious he'd be like, 'My heart rate's at this, my heart rate's at this,' and that would just get him really amped up and he would **obsess about this** and it was like this instant biofeedback which just really **elevated his anxiety** because **he was just so fixated** on his heart rate and so we actually had to say, '**...Let's refocus on what we're doing here.**' (C9)



(Emphasis added)



# Study Implications

Photo Credit: The Road Home Program: National Center of Excellence for Veterans and Their Families at Rush

# Study Implications

- Shifting Fitbit Data from *Mechanical Objectivity* to *Situated Objectivity*
- Uncertainty and Risk of Non-Traditional Mental Health Data

# Study Implications

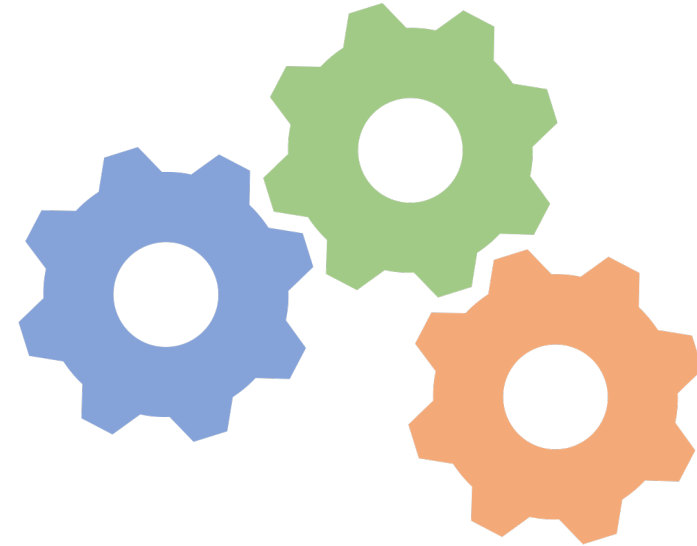
Shifting Fitbit Data from  
*Mechanical Objectivity* to  
*Situated Objectivity*



**MECHANICAL** \_\_\_\_\_ “uncontaminated”  
**OBJECTIVITY** by interpretation

# Study Implications

Shifting Fitbit Data from  
*Mechanical Objectivity* to  
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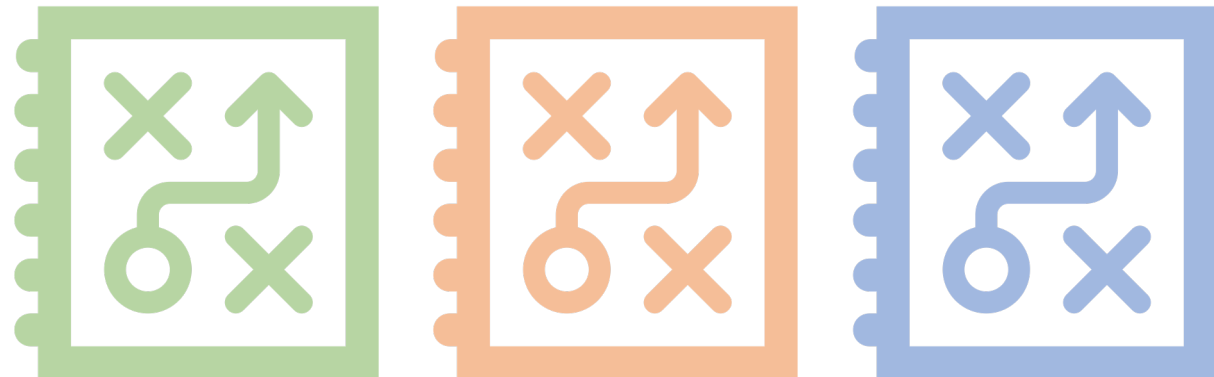
~~MECHANICAL  
OBJECTIVITY~~

**SITUATED  
OBJECTIVITY**

\_\_\_\_\_ value through  
interpretation

# Study Implications

## Uncertainty and Risk of Non-Traditional Mental Health Data





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Photo Credit: The Road Home Program: National Center of Excellence for Veterans and Their Families at Rush

The clinical team at The Road Home Program: National Center of Excellence for Veterans and Their Families at Rush

Wounded Warrior Project

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