

# Every Day Technology Interventions for People with Serious Mental Illness

Presented by  
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For Maine CITE 2017

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## Learning Objectives

1. Identify common psychosocial motor, cognitive, contextual, and environmental barriers which may interfere with AT and EDT use among individuals with SMI.
2. Discuss research regarding how people with SMI use EDT
3. List different types of AT and EDT that can be useful to meet the needs of individuals with SMI.
4. Identify effective strategies to increase the likelihood of good fit between the individual and technology.

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## Introductions



Who am I ? Who are you?

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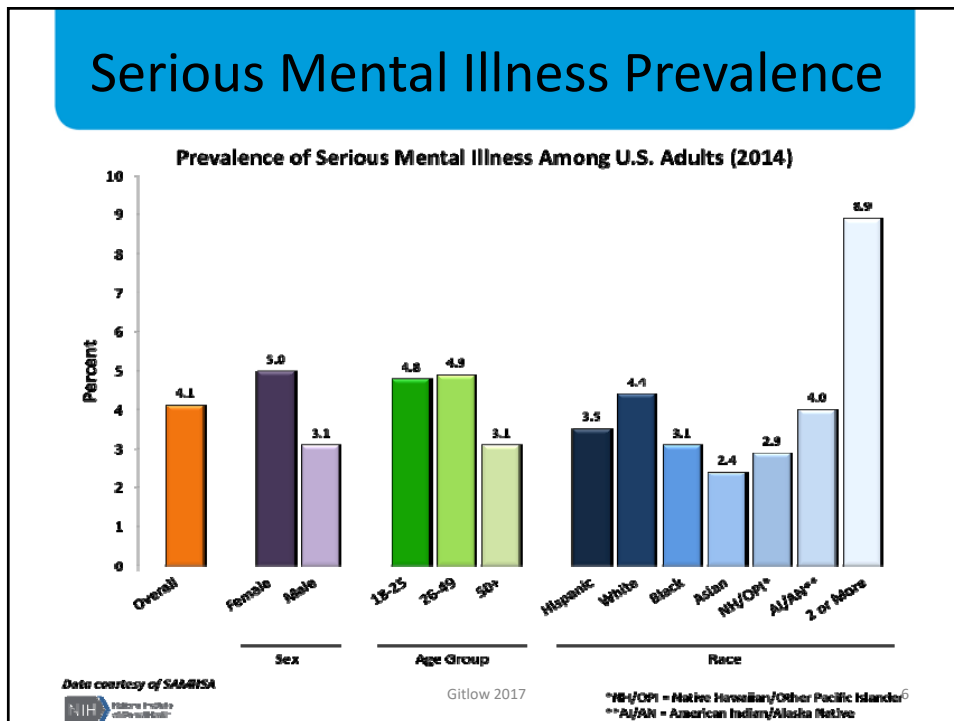
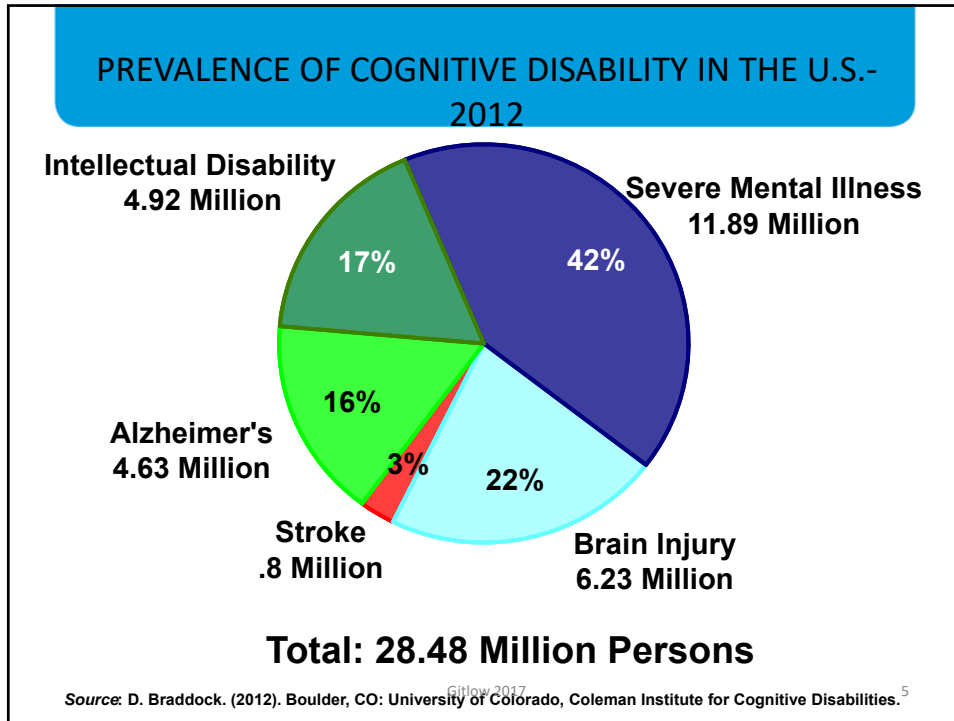
## Session Overview

- Who are we talking about?
- How does serious mental illness (SMI) impact everyday performance?
- What is Assistive Technology (AT) and Everyday Technology (EDT)
- How can we use it therapeutically



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## What is serious mental illness?

- Mental, behavioral or emotional disorder (excluding developmental disability or substance abuse disorder) resulting in serious functional impairment that interferes with one or more major life activities.
- Diagnoses included (but are not limited to):
  - Schizophrenia
  - Bipolar Disorder
  - Bulimia
  - Anorexia Nervosa
  - Borderline Personality Disorder
  - Major Depressive Disorder
  - Post-Traumatic Stress Disorder
  - Anxiety Disorders

Retrieved online at <http://www.nimh.nih.gov/health/statistics/prevalence/serious-mental-illness-smi-among-us-adults.shtml>  
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## Functional Impairment vs. Clinical Diagnosis

- While there are many symptoms that accompany the diagnoses of SMI, **cognitive disability** is the one we will mostly focus on for this presentation because it has implications for functional performance.

# Schizophrenia Symptoms

## Positive Symptoms      Negative Symptoms

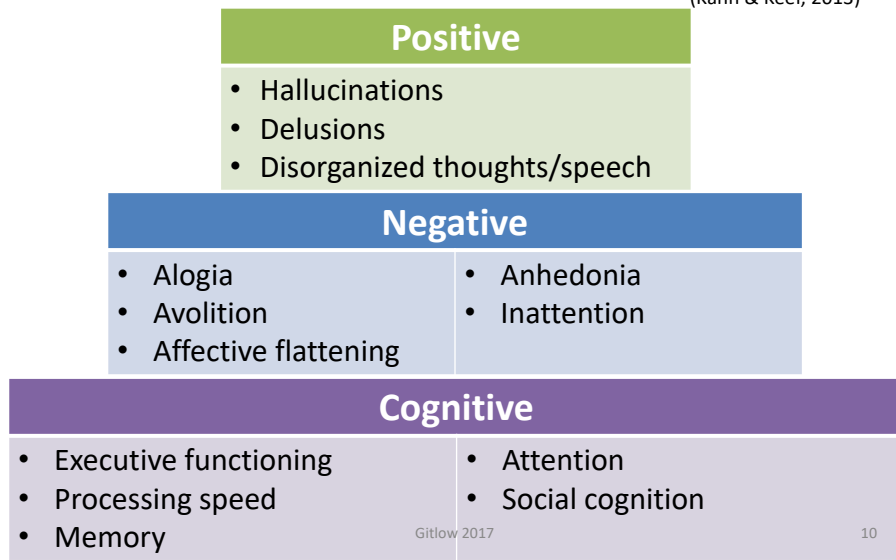
- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• <b>Hallucinations</b> <ul style="list-style-type: none"> <li>– Sensory disturbances: auditory, visual, tactile, etc.</li> </ul> </li> <li>• <b>Delusions</b> <ul style="list-style-type: none"> <li>– Persecution, grandeur, ideas of reference</li> </ul> </li> <li>• <b>Disorganized thoughts/speech</b> <ul style="list-style-type: none"> <li>– Pressured, tangential, etc.</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <b>Alogia</b> <ul style="list-style-type: none"> <li>– poverty of speech</li> </ul> </li> <li>• <b>Avolition</b> <ul style="list-style-type: none"> <li>– decreased initiative to perform self-directed, purposeful activity</li> </ul> </li> <li>• <b>Anhedonia</b> <ul style="list-style-type: none"> <li>– inability to experience pleasure</li> </ul> </li> <li>• <b>Inattention</b></li> <li>• <b>Affective flattening</b> <ul style="list-style-type: none"> <li>– restricted range of emotions</li> </ul> </li> </ul> |
|---|---|

Content courtesy Christine Linkie, OTR, Director Psych Rehab Services, Stairways Behavioral Health, Erie PA

## Schizophrenia

*“Schizophrenia is not primarily a psychotic disorder; it is a cognitive illness”*

(Kahn & Keef, 2013)



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## Similar cognitive deficits found In:

- Schizophrenia
- Bipolar Disorder
- Depressive Disorders
- Autism Spectrum Disorder

Content courtesy Christine Linkie, OTR, Director Psych Rehab Services, Stairways Behavioral Health, Erie PA  
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## Cognition: Attention

- Sustained
- Shifting (*attending to 2 or more foci*)
- Divided (*multitasking*)



attention

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## Cognition: Memory

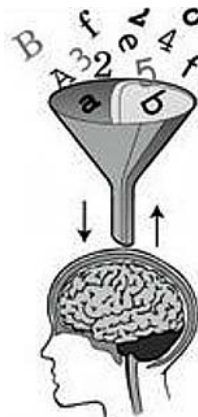
- Short-term
- Long-term
- Working memory
  - Responsible for transient holding, processing, and manipulation of information.
  - Important for reasoning and decision making.
  - Working memory is typically most impaired in SMI.



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## Cognition: Executive Functioning

- Concept formation
- Planning
- Sequencing
- Organizing
- Strategizing
- Problem solving



Retrieved 4/1/16: <https://www.understood.org/en/learning-attention-issues/child-learning-disabilities/executive-functioning-issues/key-executive-functioning-skills-explained>

## AT vs. EveryDay Technology(EDT)

- **EveryDay Technology (EDT)**
  - “any digital device which empowers disabled people to live more independently” (Jewell and Atkin,2013)
- **Assistive Technology (AT)**
  - “Any item, piece of equipment or product system whether acquired commercially, off the shelf, modified or customized that used to increase maintain or improve the functional capabilities of persons with disabilities (PL 101-407) –also in the law is the mandate for service.”

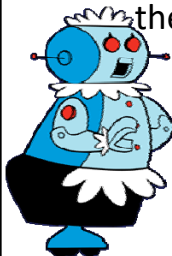
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## Everyone uses EDT for cognitive supports!

- What have you used that is successful?
- Why do you use it?
- What have you used that has fallen by the wayside? Why?
  - The higher the cognitive function of an individual the more cognitive supports they use.

(O'Neil and Gillespie, 2014)



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## Usability

- **Learnability**
  - Intuitive, learning curve
- **Efficiency**
  - easier than not using technology?
- **Memorability**
  - Recall use after period of non-use
- **Errors**
  - number of errors, severity of errors, *correctableness*
- **Satisfaction**
  - overall subjective experience

(Nielsen Norman Group Evidence-Based User Experience Research, Training, and Consulting <https://www.nngroup.com/articles/usability-101-introduction-to-usability/>. Retrieved 10/31/16)

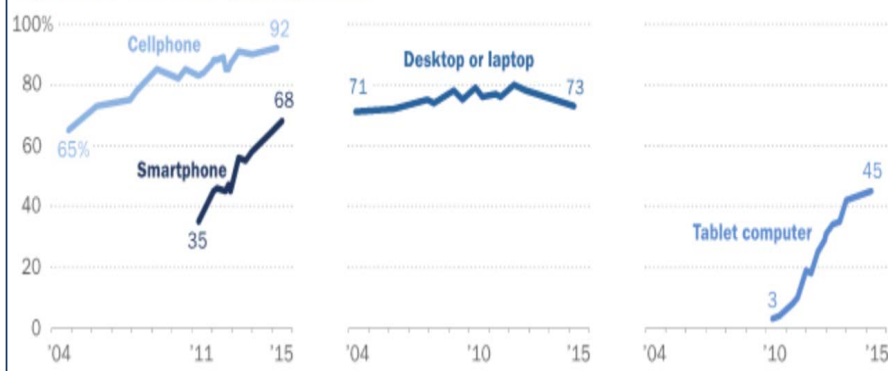
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## Use of Everyday Technologies

### Smartphones, Tablets Grew in Recent Years; Other Devices Declined or Stayed Flat

% of U.S. adults who own the following devices



[http://www.pewinternet.org/2015/10/29/technology-device-ownership-2015/pi\\_2015-10-29\\_device\\_ownership\\_0-01/](http://www.pewinternet.org/2015/10/29/technology-device-ownership-2015/pi_2015-10-29_device_ownership_0-01/) Retrieved 3/18/16

## Research Gaps

- Systematic reviews on technology for people with psychiatric issues lacking.
- Research frequently excludes those who have mental illness.
- Some research on technology interventions from psychiatric literature which do not have user input (Ben-Zeev et.al.,2013)



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## Purpose of Study

- Collect and analyze information regarding preferences and barriers to using everyday technology with individuals with serious mental illness.



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## Research Questions

- What types of EDT are individual with SMI using?
- What types of EDT would this population like to be using, that they currently are not using?
- What are the barriers to using EDT within this population?



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## Methods: Participants & Settings

- Inclusion criteria:
  - 18 and over
  - currently or during the past year had been diagnosed with a SMI that impacted their daily functioning
- 34 participants ( 15 males; 19 females)
- Mental Health Association of Tompkins County: Ithaca, NY
- Restoration Society of Buffalo, NY
- Motivational Services: Augusta, ME

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## Methods: Instrument

- Pen and Paper survey
- Adapted from the Survey of Users Needs for Wireless Technologies
  - 25 questions



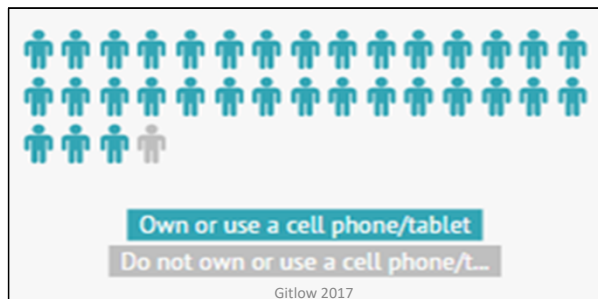
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## Results:

### Participants that own or use a cellphone/tablet

- **97.1% own or use a cell phone/ tablet**
- **64.7% own a smartphone**
- 32.4% own a tablet
- 79.4% reported EDT to be very important
- 76.5% are satisfied with their cell phone/tablet



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## Difficulties reported by participants:

- 61.8% reported having anxiety
- 50 % memory problems
- 41.7% problems with concentration
- 29.5% problems with decision making
- 29.5 % problems with socializing
- 26. 5% problems with organization
- 20.6% problems speaking so they were understood

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## What participants use EDT for:

- 82.4 % Text messaging
- 70.6 % Voice mail
- 67.7% Email
- 55.9% Web browsing
- 20.6% Voice calling
- 14.7% Voice notes / reminders
- 14.7 % Reminders to take meds
- 14.7 % Monitor health and fitness

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## Additional studies

- Quantitative and qualitative studies with college students
- Similar findings except that all participants have EDT
- Surprisingly in our qualitative studies students report that technology may cause some of their MH problems

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## Managing Roles with High-tech Options

- Disuse of apps
  - Trialing
- High tech solution not preferred
- Social Media as a “distractor”
  - Multiple individuals referred to YouTube, Netflix, and Reddit as a “hole,” explaining that it’s hard to stop looking at media once you start

*“My app and I have a complicated relationship. It’s really good for me but it’s also really frustrating because it makes me bring attention to things I don’t like to bring attention to,”*

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## Managing Roles with Low-tech Options

- Participants reported preferring low-tech related options compared to apps and other high tech options
- Common solutions reported included journaling and exercise

*“I would be benefited a lot more by just leaving my phone in my room and just going somewhere”*

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## What can we learn from these studies

- People with SMI use EDT technology
- How can we use it therapeutically and successfully ?

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## Technology Discontinuation

### Personal Factors

- Felt never needed/wanted it
- Opinion not considered during device selection process
- Negative view toward device
- Depression
- Lack of disability acceptance
- Decreased function

### Technology Factors

- Difficult to use
- Complex written instructions
- Insufficient/lack of training
- Lengthy set-up time
- Malfunction/device failure
- Mismatch (wrong device)
- Safety
- Aesthetics
- Cost to maintain

Lauer, April; Longenecker Rust, Kathy, & Smoth Roger O. ATOMS Project Technical Report - Factors in Assistive Technology Device Abandonment: Replacing "Abandonment" with "Discontinuance". Retrieved 10/31/16 from <http://www.r2d2.uwm.edu/atoms/archive/technicalreports/tr-discontinuance.html#content>

## Technology Discontinuation - 2

### Environmental Factors

- Accessibility problems
- Socially unacceptable (stigma)
- Contingent upon another devices or resource

### Positive Factors

- Increased function
- Replaced with better technology
- Alternative solution
- Preferred personal assistance

Lauer, April; Longenecker Rust, Kathy, & Smoth Roger O. ATOMS Project Technical Report - Factors in Assistive Technology Device Abandonment: Replacing "Abandonment" with "Discontinuance". Retrieved 10/31/16 from <http://www.r2d2.uwm.edu/atoms/archive/technicalreports/tr-discontinuance.html#content>

## Case Report

- Use smart phone to help L. prepare for a community-based job.
- Tasks of concern
  - getting to work on time
  - breaks and lunch
  - repetitive tasks



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## Case Report (continued)

- **Habits and Routines**
  - Habits:
    - Useful



AOTA (2014) Occupational therapy practice framework: Domain and process (3<sup>rd</sup> ed.) *American Journal of Occupational Therapy*, 68(suppl. 1), S27

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## What needs to happen

- We need to use a systematic process to match a person with EDT or AT solutions

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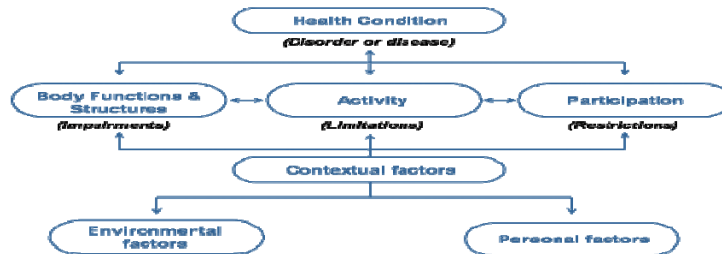
## Conceptual Practice Models

- International Classification of Function  
(ICF) – World Health Organization
- [Matching Persons with Technology \(MPT\) – Dr. Marcia Scherer](#)
- [Student Environment Tasks and Tools \(SETT\)– Dr Joy Zabala](#)

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## International Classification of Function (ICF)



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## Strategies

- Fit
- Motivation
- Willpower
- Teaching/Learning
- Link new behaviors to established habits



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## Strategies 2

- **Fit**
  - Cognitive demand
  - Cognitive compensation
  - Client need and desire
  - Client's cognitive functioning
- **Determine fit in collaboration with client.**

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## Strategies 3

- **Motivation**
  - Internal state
  - No action ≠ No motivation
  - Need (external)
  - Desire (internal)
  - Beliefs
    - Likely benefit of changing / Likely risk of not changing
    - Self-Efficacy
- **Address factors underlying motivation.**

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## Strategies 4

- **Willpower**

- Willpower requires brain energy.
- Grit: “passion and perseverance toward especially long-term goals”
- Goals representing a larger purpose or personal life values can fuel willpower.

(Nemec, Swarbrick, Merlo, 2015)

– **Support willpower.**

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## Strategies 5

- **Teaching/Learning**

- Task analysis: steps, sequencing, timing
- Tell – Show – Do – Critique
- Program newly learned behaviors:
  - Assign responsibility
  - Monitor
  - Reinforce/reward change

(Nemec, P., McNamara, S., Walsh, D, 1992)

– **Use effective teaching strategies.**

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## Strategies 6

- **Link new behaviors to established habits**
  - Harder to develop new habits; easier to build on existing (useful) habits.
  - Linking new behaviors to strongly established habits can facilitate adoption.

(Nemec, Swarbrick, Merlo, 2015)

### – **Make use of existing EDT, rather than introduce new devices.**

- What is novel and pleasurable to one person may be perceived as overly complex to another.

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## Let's look at some options!

- AOTA App List
- PsychiatryAdvisor:
  - <http://www.psychiatryadvisor.com/top-10-mental-health-apps/slideshow/2608/>
- CTD App List
- <http://mainecite.org/apps-as-assistive-technology-at/>
- 



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## Criteria for Evaluating Assistive Devices

- |                           |                            |
|---------------------------|----------------------------|
| 1. Affordability          | 10. Learnability           |
| 2. Compatibility          | 11. Operability            |
| 3. Consumer Repairability | 12. Personal Acceptability |
| 4. Dependability          | 13. Physical Comfort       |
| 5. Durability             | 14. Physical Security      |
| 6. Ease of Assembly       | 15. Portability            |
| 7. Ease of Maintenance    | 16. Securability           |
| 8. Effectiveness          | 17. Supplier Repairability |
| 9. Flexibility            |                            |

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## Systematic Analysis of devices and apps

- We have talked about using a systematic way to assess a clients need
- We need to do the same with the technology
- Open handouts
  - Criteria for evaluating AT
  - App Checklist

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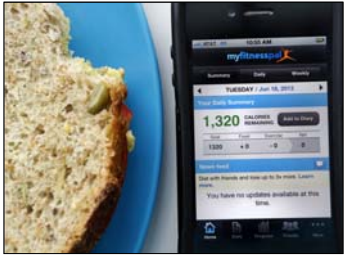


Check out

HEALTH NEWS

## Patients Lead The Way As Medicine Grapples With Apps

All things Considered  
Jun 18, 2013 | [See Full Story](#)



Patients love medical apps, but there's no way now to be sure that they're safe and effective.

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## Conclusions

- People with SMI do use EDT.
- EDT has been successfully used to support people with cognitive disabilities.
- How can we encourage the use of already habituated technology to provide cognitive supports for people with SMI.
- Consider the cognitive demands of the technology, along with the individual's cognitive abilities.
- Use effective strategies to determine fit and bridge cognitive gaps.

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## Questions?



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