Measurement of Community Participation Using a Computer Adaptive Test (CAT) in Adult Burn Survivors

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Boston-Harvard Burn Injury Model System

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Key personnel

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Study goal

- To develop a specific burn survivors questionnaire for tracking social participation on an individual and community level over time
- To integrate the latest technology for constructing metrics that are reliable and valid using Computer Adaptive Testing (CAT)

- To apply CATs to population based studies, clinical trials and patient feedback in real time during the clinic visit

Study goal

- Specific focus for metrics include the following content:
  - Social interactions: family, friends, relating to strangers
  - Work reintegration: employment and domestic work
  - Personal relationships: intimate and romantic relationships

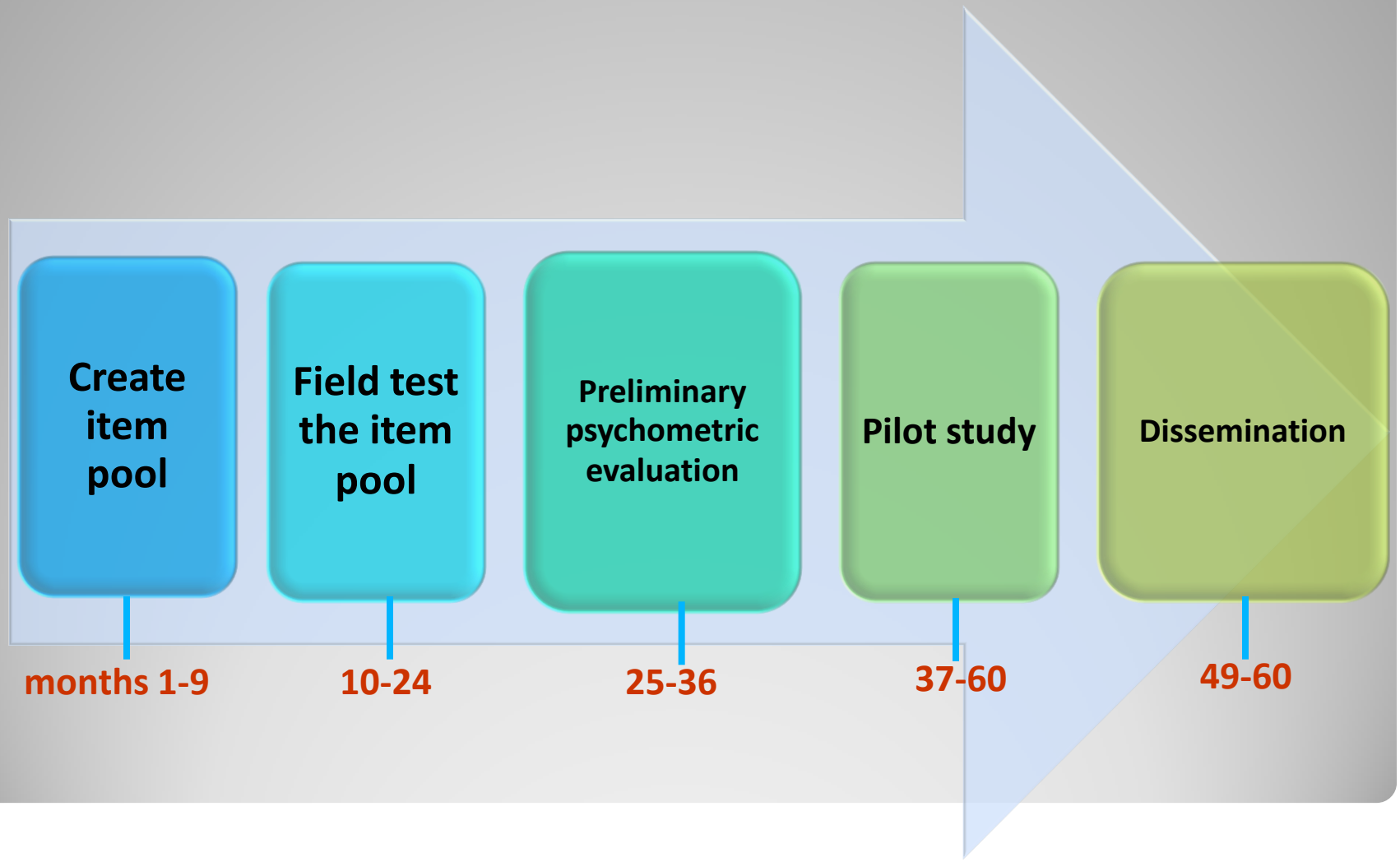
Significance

1. Questions specifically designed to measure social interactions, work reintegration, and personal relationships are practically non-existing for burn survivors
    - Measure how burn survivors get back to living over time
    - To improve quality of care. Measures are to be applied for outcomes assessment in adults with burns during the recovery process
2. Computer adaptive testing (CAT) will be administered to burn survivors and scored to inform clinicians and patients
    - Dissemination to the burn community
    - Enfranchising the Burn Model System, the Phoenix Society and the larger research and clinical community in the development of the CAT and in its' application in later year of the project

Study structure

- 5 year project, 5 objectives:
  1. **Create an extensive item pool**
  2. **Field test the item pools for each of the eight domains**
  3. **Develop, calibrate and conduct preliminary psychometric evaluation of the prototype CAT outcome instrument**
  4. **Conduct a pilot study of CAT**
  5. **Disseminate the CAT to the burn community**

Study Timeline



Objective 1: Item pool

a. Conceptual framework: SOCIAL PARTICIPATION

Major life areas and domestic work	Community, social and civic life
-Work and Employment -Domestic life	-Recreation and Leisure -Relating to strangers

Intimate relationships	Interpersonal relationships
-Romantic -Sexual	-Family -Informal: friends, neighbors, peers

Objective 1: Item pool

b. Comprehensive review of instruments 

c. Creation of new items 

>Total number of items: 250

d. Focus groups

- ❑ Burn survivors (March 11th 2014) 
- ❑ Clinicians (March 18th 2014) 
- ❑ Physicians (March 26th 2014)

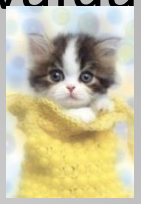
e. Cognitive testing

Objective 2: Field test the item pools

- Field test the item pools for each of the eight domains
  - 500 complete questionnaires required to conduct calibration of domains to derive metrics
  - How will burn survivors be chosen?
    - American Burn Association accredited burn centers
    - Phoenix Society for burn survivors membership
    - Boston-Harvard Burn Injury model system center sites

Objective 3: Psychometric evaluation

- Develop, calibrate and conduct psychometric evaluation of the prototype CAT outcome instrument



- Three major analytic steps to examine the dimensionality of the outcome domains:
  - Evaluation of response categories for items in each domain
  - Factor analysis to confirm the unidimensionality of items
  - IRT calibration of items

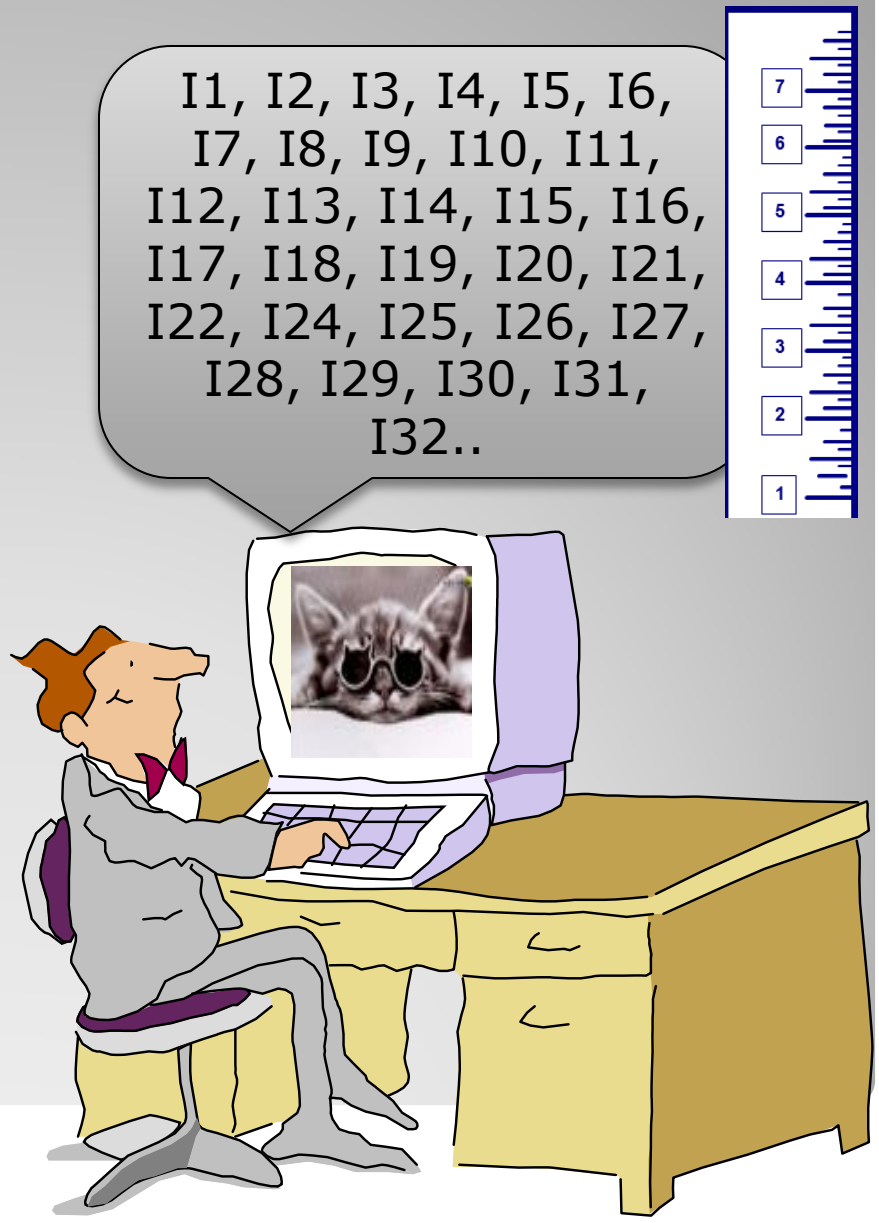
Objective 4: Pilot study

- Baseline and 6 month follow-up administration of the CAT and YABOQ
- Convenience sample of 50 burn survivors with recent injuries
- Examination of the response burden of the CAT compared to YABOQ

Objective 5: Disseminate the CAT

- Use of the CAT as one of the core data elements for the 4 burn model systems and the Seattle Data Coordinating Center
- Training and disseminating the CAT into routine clinical care nationally through collaborations with the American Burn Association and Accredited Burn Centers nationally, World Burn Congress and Phoenix Society.

Cat administration



Computer Adaptive Test (CAT)

- Not all items are administered to every person

- The items that are administered are chosen based on how a person responds to previous items

- Items selected from a large item bank

The Process of Building CATs

Modified Items from **existing questionnaires**

Items from **Burn Survivors groups**

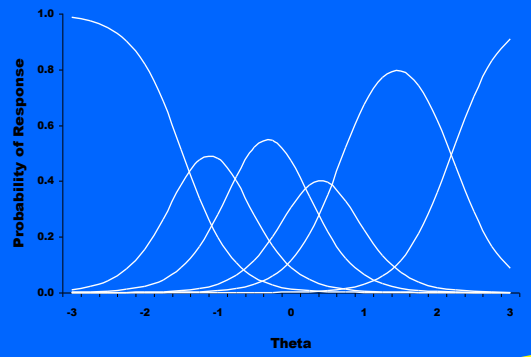
Items from **Providers**

New Items

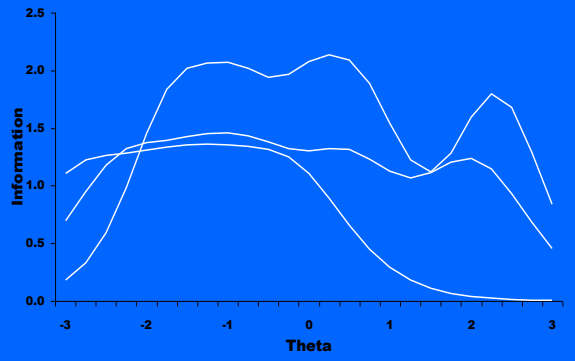
•Evaluate & Pre-Test Item Pool

•Evaluated by experts and burn survivors

Calibration Study administered to target Samples



Item Response Theory (IRT)



Final Item Bank

(Calibrated items eval. for Breadth, reliability, validity, and precision)

Short Form Instruments

CAT