New Opportunities with PROMIS

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EpicRehab

The Promise of PROMIS

- Patient Reported Outcome Measures Information System
  - National Institutes of Health
- Develop and make available performance and self-report measures of the components of quality-of-life.
- Available at no charge, with normative data that reflect the national population.
- Item response theory was used to develop measures.

PROMIS Slideshow

- What follows are culled from PowerPoint presentations made by Len and various PROMIS researchers:
  - David Cella, PhD
  - Nan Rothrock, PhD
  - Shani Rolle, MS
  - James Witter, MD, PhD

- We thank them for their generosity and acknowledge their work.

Re-engineering the Clinical Research Enterprise

- To continue NIH's mission of successful medical research, it will need to recast its entire clinical research system
  - Requires the development of new partnerships of research with organized patient communities, community-based health care providers, industry, and academic researchers.
  - Need new paradigms in how clinical research information is collected, used, and reported.
  - Includes the advances in information technology, psychometrics, and qualitative, cognitive, and health survey research.

PROMIS:
Long-term Objectives

- Create a publicly available, adaptable and sustainable Internet-based system, the Patient-Reported Outcomes Measurement Information System (PROMIS) -- that will:
  - Administer "tailored" questionnaires (using CAT technology) that measure a patient's health status.
  - Collect the patients' responses for research and for upgrading the system.
  - Provide instant health status reports to patients and health care providers to improve treatment decision making.
- Lay groundwork for public-private partnership to extend the PROMIS beyond its five-year development stage.

Item Response Theory (IRT)

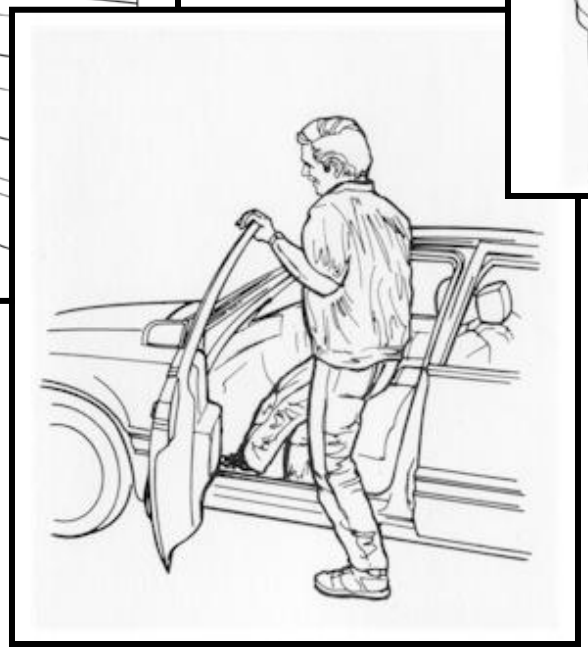
- Graduate Record Examination
- Graduate Management Admissions Test
- Uniform Certified Public Accountant Examination
- American Society of Clinical Pathologists -- Board of Registry Certification Examination
- Armed Services Vocational Aptitude Test Battery
- Missouri DMV Licensing Exam

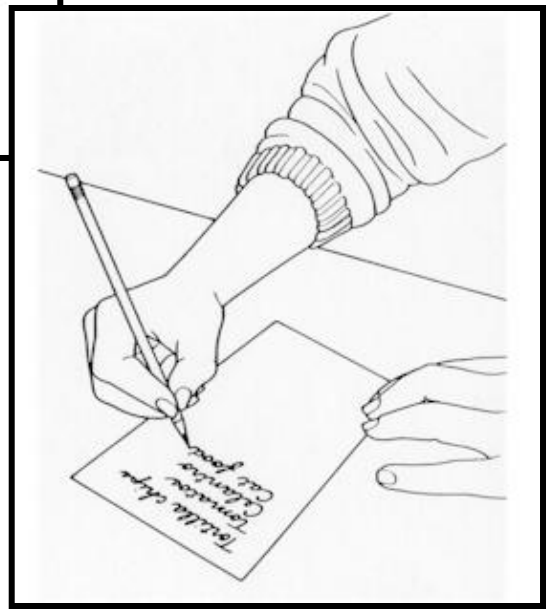
Item-Demand Calibration

With item-demand calibration, *every* response of the evaluee generates a physical functional ability score.

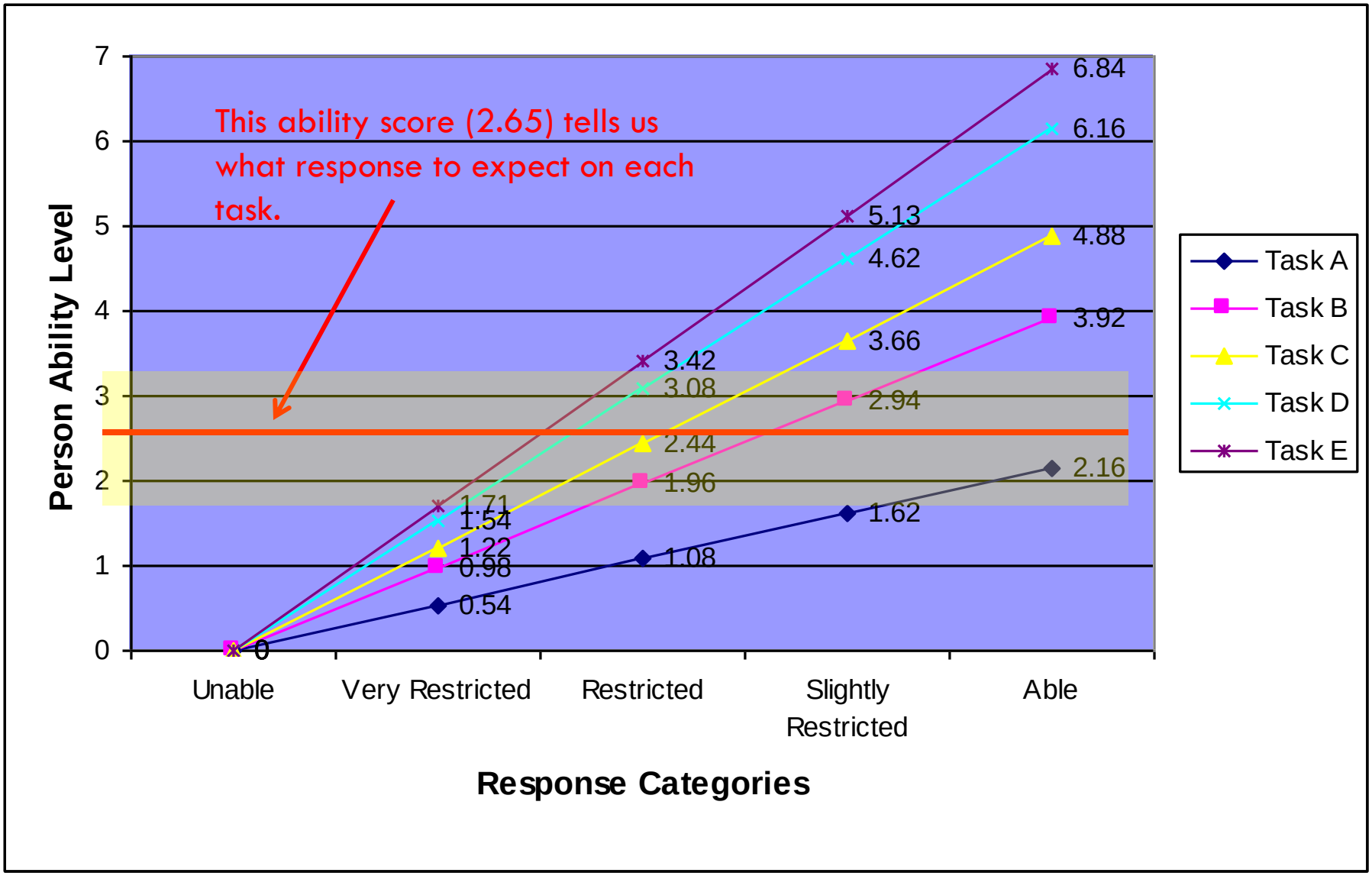
Therefore, *every response* can be compared with *every other response* and with the *total score* for consistency.

Sample MTAP Items





Ability Calibration Across Tasks



What is Computerized Adaptive Testing (CAT)?

A technique for administering a PRO instrument that

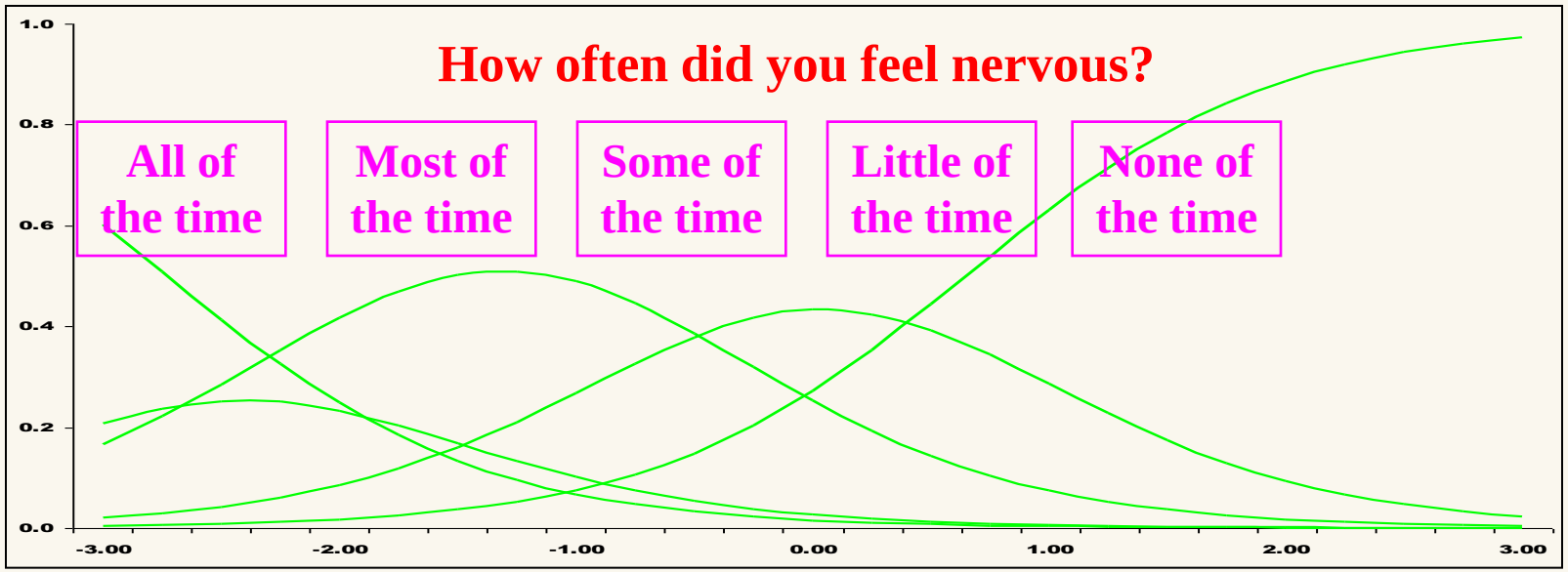
- selects questions on the basis of a person's response to previously administered questions
  - each question, stored in an "item bank" has been psychometrically and qualitatively reviewed as informative for measuring the health construct
- determines a person's score with the minimal number of questions and no loss of measurement precision

Computerized Adaptive Testing (CAT)

- Select questions based on a person's response to previously administered questions.
- Iteratively estimate a person's standing on a domain (e.g., depressive symptoms)
- Administer most informative items
- Desired level if precision can be obtained using the minimal possible number of questions.

Advantages of CAT Assessments

- Provide an accurate estimate of a person's score with the minimal number of questions
  - Questions are selected to match the health status of the respondent
- Minimize floor and ceiling effects
  - People near the top or bottom of a scale will receive items that are designed to assess their health status

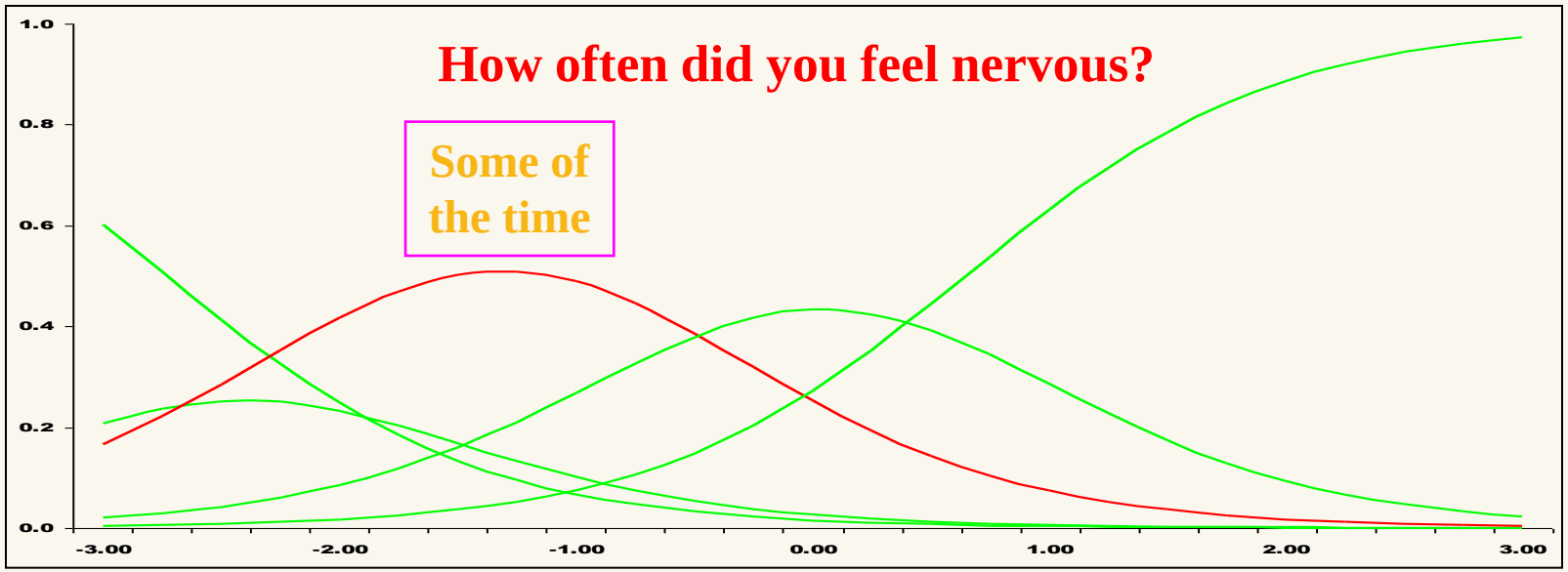


-3 -2 -1 0 1 2 3

Severe high moderate low very low

Emotional Distress

Item Bank
(Validated & IRT-Calibrated Emotional Distress Items)



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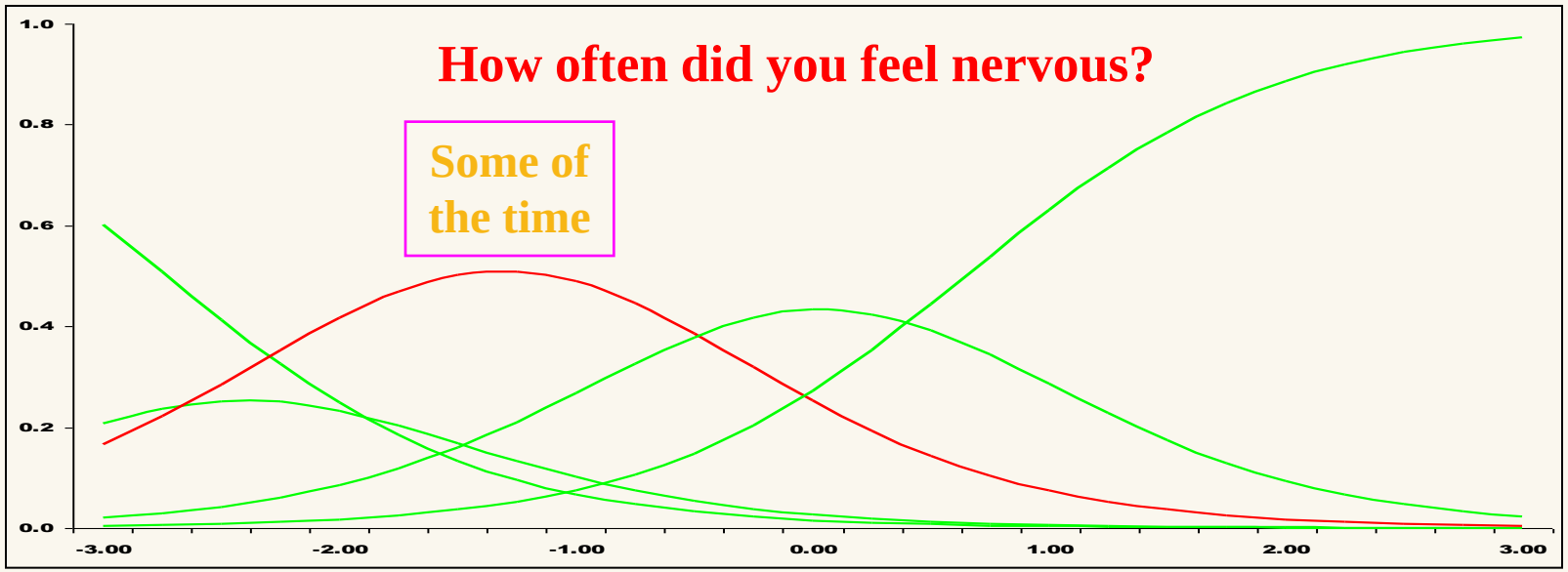

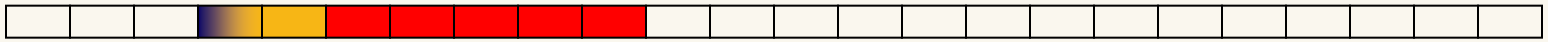

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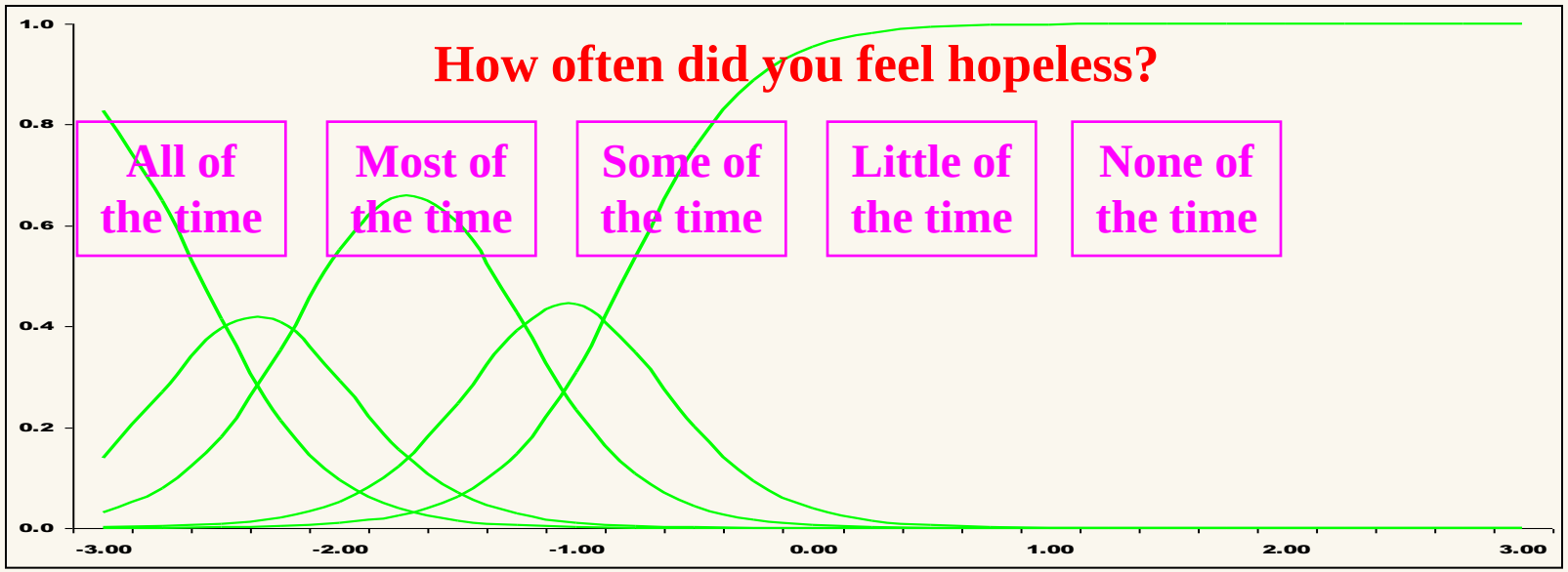

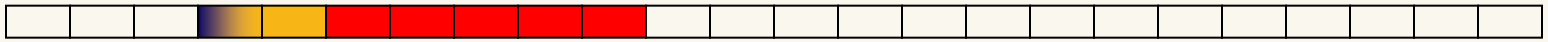

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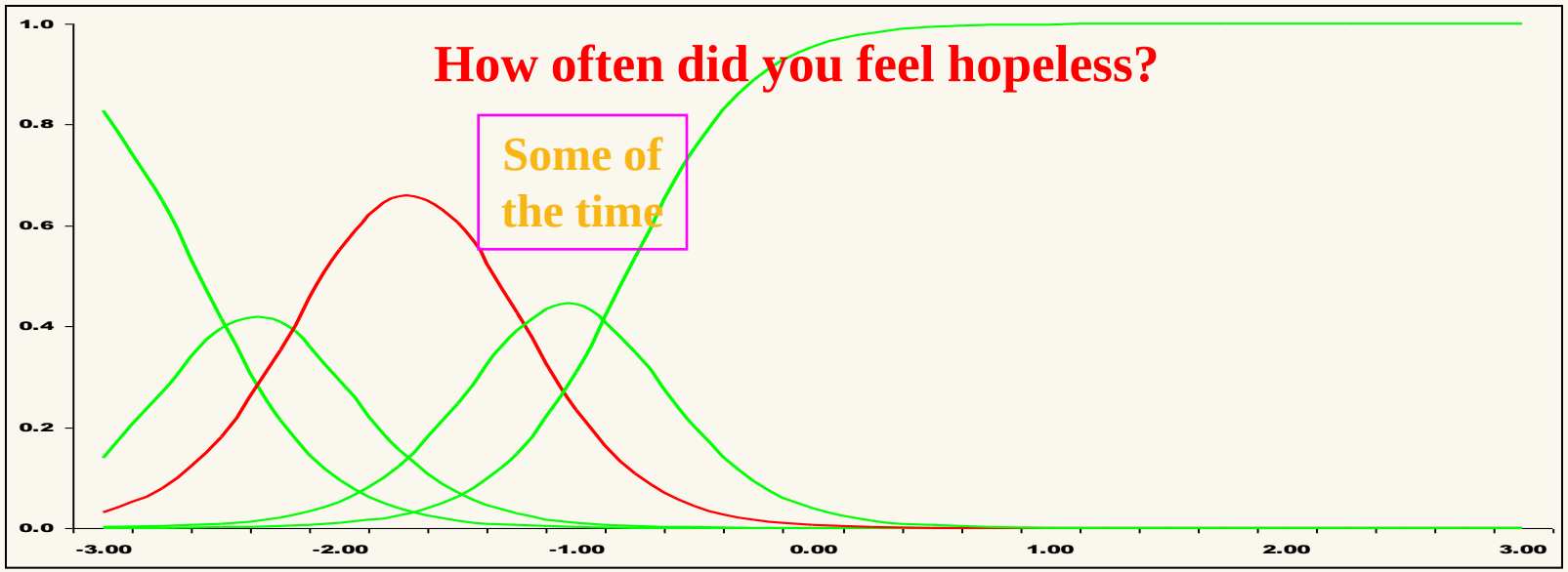

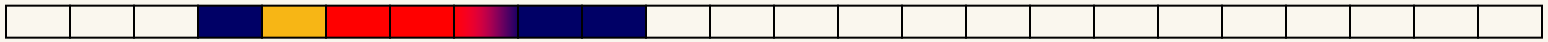

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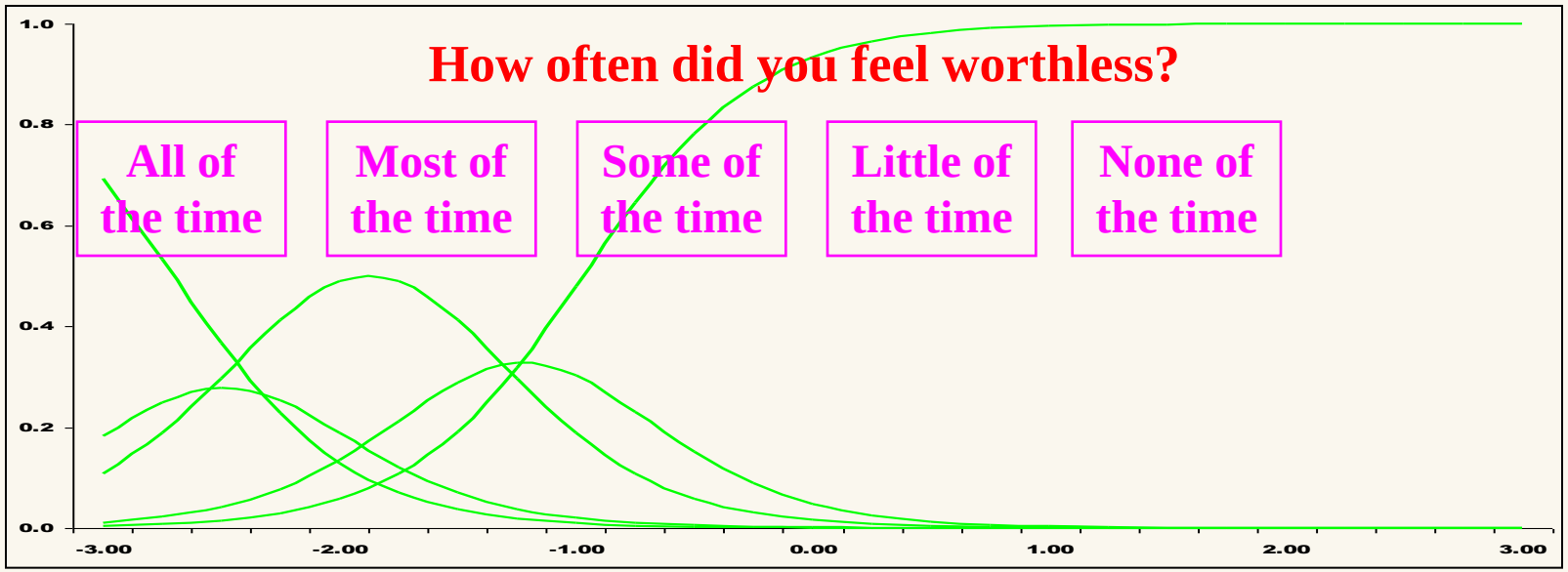

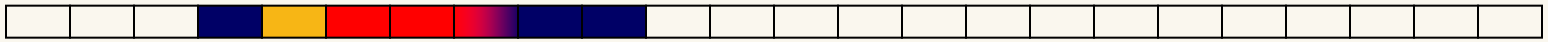

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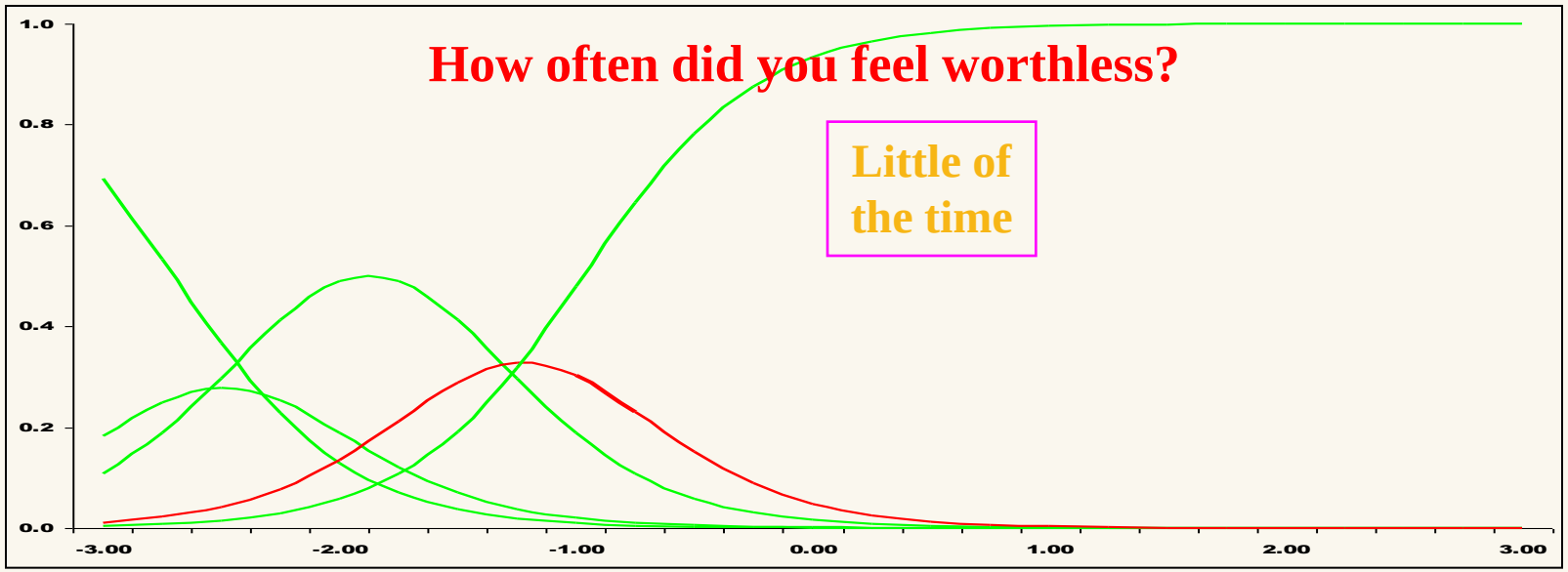

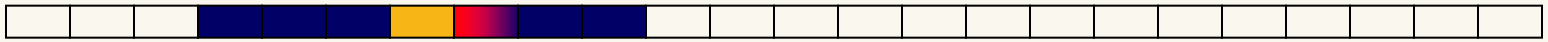

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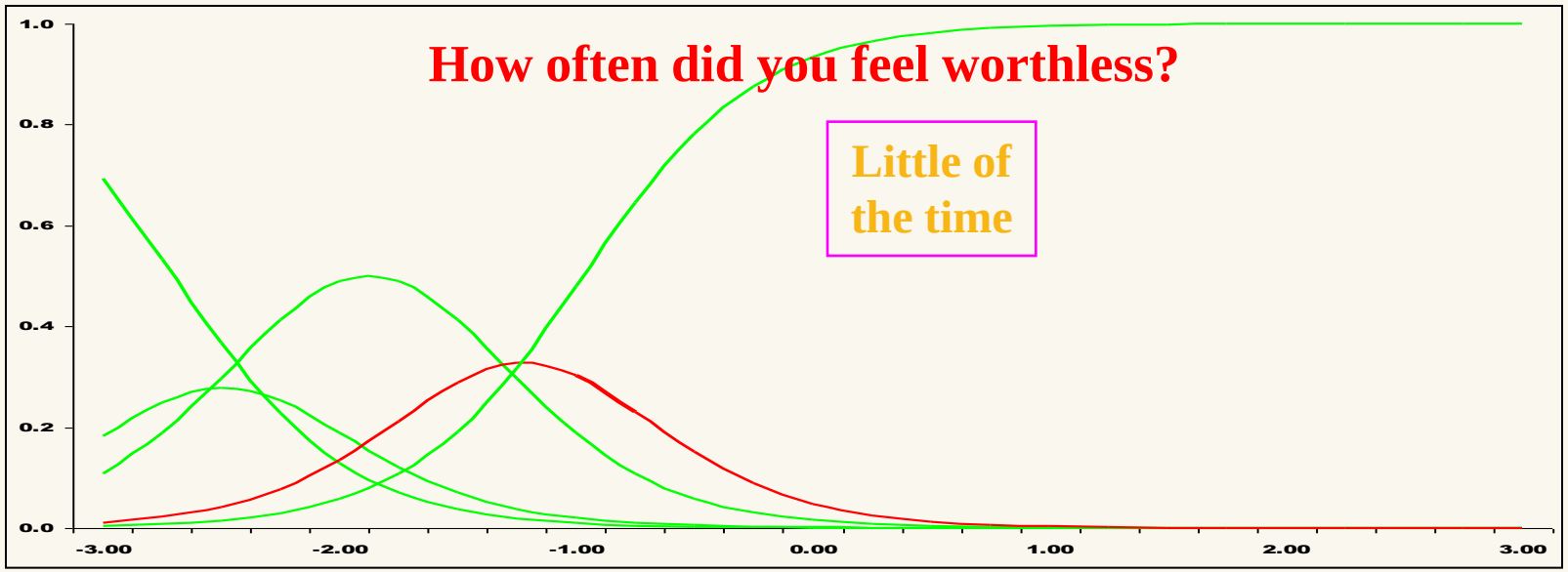

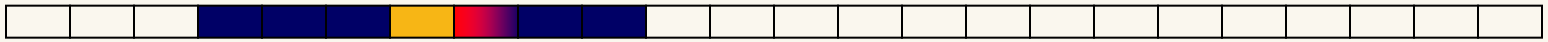

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Target in on emotional distress score

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Limitations of PROMIS

- Quality of Life rather than Work
- IRT excellent for item development, but limited for CAT administration because inherent value is brevity.
- Brevity (low response burden) emphasizes consistency over validity - *incremental validity* is excluded.
- Clinicians make decisions based on incremental validity, e.g. what to test next or what question to follow-up.
- Try a PROMIS CAT: http://www.nihpromis.org/software/demonstration

Assessment Center
Software Demonstration
Sample Questions
Request Short Forms

Software Demonstration

The PROMIS® Computer Adaptive Test (CAT) provides an instant personal health status report on up to nine different areas (or domains) of health. The CAT works by choosing the questions in each area that are best for you based on your answers to earlier questions. Each area only takes 1–2 minutes to complete. After you are done with all the questions, the CAT will show you how your health compares to the general public and people who are similar to you in age and gender.

Try a demonstration of the PROMIS CAT.

Select CATs

PROMIS Assessment Center℠

Welcome to the Assessment Center Computerized Adaptive Test (CAT) Demonstration Page

Please select the CATs you would like to complete and then click the Start Demo button. Each CAT takes 1-2 minutes. If you take 3 CATs, it will take 3-6 minutes to answer all the questions and get your report.

- ☐ Anger
- ☐ Anxiety
- ☐ Depression
- ☐ Fatigue
- ☐ Pain Behavior
- ☐ Pain Impact
- ☐ Physical Function
- ☐ Satisfaction with Discretionary Social Activities
- ☐ Satisfaction with Social Roles

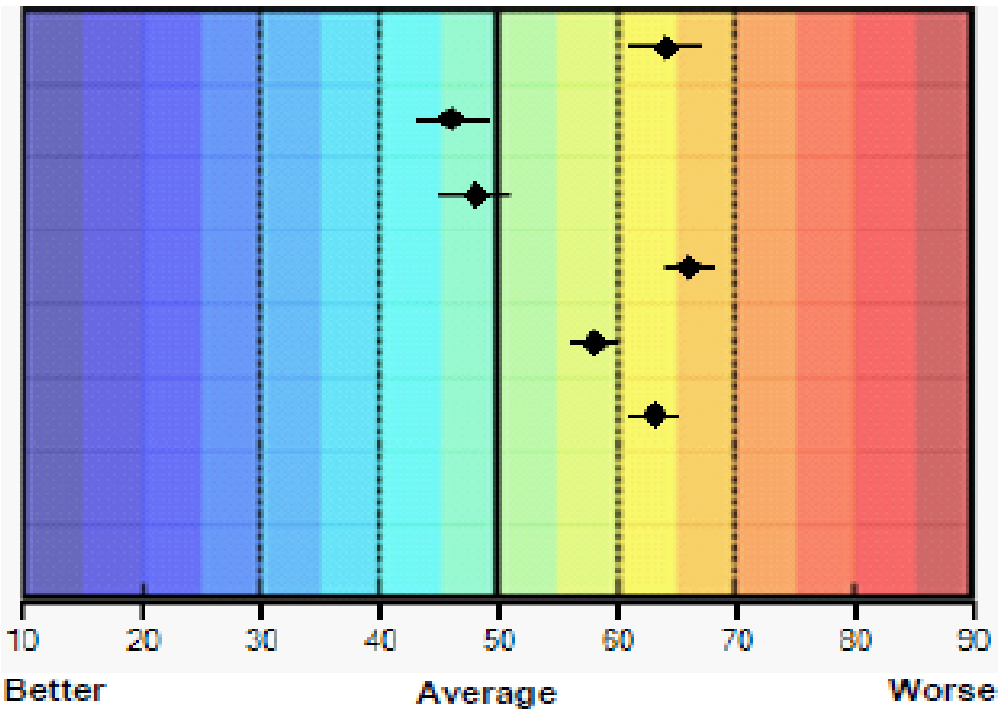
Please enter your age

Please choose your gender

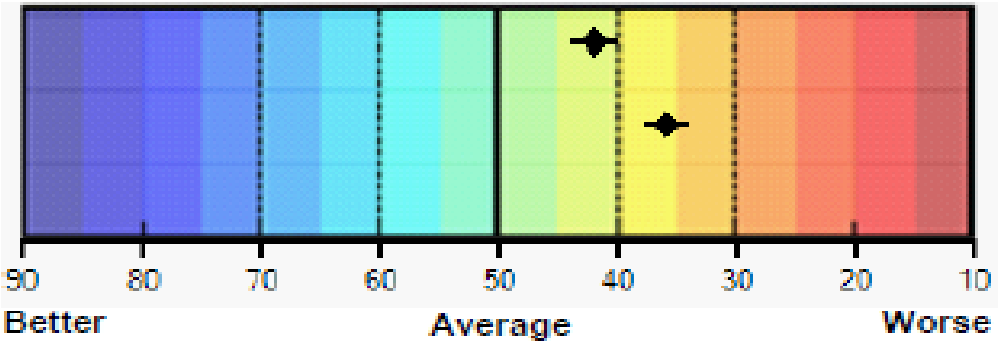
Start Demo

CAT demo results

	Your Score	SE
Anger	64	3
Anxiety	46	3
Depression	48	3
Fatigue	66	2
Pain Behavior	58	2
Pain Interference	63	2



	Your Score	SE
Social Activity	42	2
Social Role	36	2



Long-Term Care FCE

- Female age 65 will live another 22.7 years
- Male age 65 will live another 20.5 years
- Chronic, non-catastrophic impairments accumulate > diminished ADL function:
  - **D**ressing
  - **E**ating
  - **A**mbulating
  - **T**oileting
  - **H**ygiene

Long-Term Care ADLs / IADLs

- To be eligible for benefits, person must be unable to perform without substantial assistance from another person at least two activities of daily living for at least 90 days due to a loss of functional capacity or must require substantial supervision to protect from threats to health and safety due to severe cognitive impairment.
- Assistance with instrumental activities of daily living is not a trigger for benefit eligibility.

Thank you!

Discussion and follow-up questions.

http://www.nihpromis.org