How could it possibly matter?

- Isn’t IQ just a narrow academic ability?
  - No: IQ captures a very general, very practical ability

- Aren’t there multiple intelligences?
  - No: many abilities but only one broad intelligence

- Don’t other things matter in life—motivation, social advantages?
  - Yes, of course: but higher IQ boosts odds throughout

Small but consistent tilt in odds has huge cumulative effect over a lifetime
“Intelligence”
General mental ability factor \((g)\)
(century of research)
Many abilities, but only one general intelligence

- All mental tests measure mostly the same ability: \( g \)
- \( g \) is \( \sim \)content independent
- \( g \) carries the freight of prediction

General proficiency at:
- Learning
- Reasoning
- Abstract thinking
- Solving novel problems

\[ \text{IQ} \approx g = \]

General

Narrow
## Sample IQ Items

(individually administered)

<table>
<thead>
<tr>
<th>Easy</th>
<th>Moderate</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fill in the next two numbers</strong></td>
<td>3, 5, 7, 9, __, __</td>
<td>3, 5, 6, 8, 9, __, __</td>
</tr>
<tr>
<td><strong>Name one similarity</strong></td>
<td>orange—banana (93%)</td>
<td>table-chair (55%)</td>
</tr>
<tr>
<td><strong>Define the word</strong></td>
<td>concealed</td>
<td>reluctant</td>
</tr>
</tbody>
</table>

**Complexity is the active ingredient:**
More complex tasks are more “g loaded”

% = % of 16-65 year-olds getting at least partial credit for answer, WAIS, 1955
Life’s arenas differ in $g$ loading

- Standardized academic achievement $r = 0.8$
- Job performance—complex jobs
- Years of education $r = 0.6$
- Occupational level
- Job performance—middle-level jobs $r = 0.4 - 0.5$
- Income $r = 0.3 - 0.4$
- Delinquency $r = -0.25$
- Job performance—simple jobs $r = 0.2$
“Jobs”
Status level & on-the-job performance
(century of research)
Higher-status jobs $\rightarrow$ higher-IQ workers

<table>
<thead>
<tr>
<th>IQs of applicants for:</th>
<th>80</th>
<th>100</th>
<th>120</th>
<th>IQs: Middle 50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attorney, Engineer</td>
<td></td>
<td></td>
<td></td>
<td>108-128</td>
</tr>
<tr>
<td>Teacher, Programmer</td>
<td></td>
<td></td>
<td></td>
<td>100-120</td>
</tr>
<tr>
<td>Secretary, Lab tech</td>
<td></td>
<td></td>
<td></td>
<td>96-116</td>
</tr>
<tr>
<td>Meter reader, Teller</td>
<td></td>
<td></td>
<td></td>
<td>91-110</td>
</tr>
<tr>
<td>Welder, Security guard</td>
<td></td>
<td></td>
<td></td>
<td>85-105</td>
</tr>
<tr>
<td>Packer, Custodian</td>
<td></td>
<td></td>
<td></td>
<td>80-100</td>
</tr>
</tbody>
</table>
Typical IQs in Occupations

Typical IQ range of workers

Assembler
Food service
Nurse’s aide

Clerk, teller
Police officer
Machinist, sales

Manager
Teacher
Accountant

Attorney
Chemist
Executive

No jobs centered here

Why?

IQ

MR

MG

70
80
90
100
110
120
130
IQ predicts performance in all jobs—but especially higher up

<table>
<thead>
<tr>
<th>IQs of applicants for:</th>
<th>80</th>
<th>100</th>
<th>120</th>
<th>Criterion validity (corrected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attorney, Engineer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher, Programmer</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Meter reader, Teller</td>
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<td></td>
</tr>
<tr>
<td>Welder, Security guard</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Packer, Custodian</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Why?
### Judgment & Reasoning Factor

Job analysis 1 (Arvey, 1986)

<table>
<thead>
<tr>
<th>Job requirements</th>
<th>Correlation with factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn and recall relevant information</td>
<td>.75</td>
</tr>
<tr>
<td>Reason and make judgments</td>
<td>.71</td>
</tr>
<tr>
<td>Deal with unexpected situations</td>
<td>.69</td>
</tr>
<tr>
<td>Identify problem situations quickly</td>
<td>.69</td>
</tr>
<tr>
<td>React swiftly when unexpected problems occur</td>
<td>.67</td>
</tr>
<tr>
<td>Apply common sense to solve problems</td>
<td>.66</td>
</tr>
<tr>
<td>Learn new procedures quickly</td>
<td>.66</td>
</tr>
<tr>
<td>Be alert &amp; quick to understand things</td>
<td>.55</td>
</tr>
</tbody>
</table>
Typical Learning Needs by IQ Level

- IQ 70: Slow, simple, concrete, one-on-one instruction
- IQ 80: Very explicit, structured, hands-on
- IQ 90: Mastery learning, hands-on
- IQ 100: Written materials & experience
- IQ 110: Learns well in college format
- IQ 120: Can gather, infer information on own
- IQ 130: Military trainability thresholds

Military trainability thresholds:
- 10th
- 15th
- 30th
## Overall Complexity Factor

### Job analysis 2 (Gottfredson, 1997)

<table>
<thead>
<tr>
<th>Complexity</th>
<th>r</th>
<th>Task</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex</td>
<td>.88</td>
<td>Self-direction</td>
<td>Combine information</td>
</tr>
<tr>
<td></td>
<td>.86</td>
<td>Reason</td>
<td>Advise</td>
</tr>
<tr>
<td></td>
<td>.85</td>
<td>Update knowledge</td>
<td>Write</td>
</tr>
<tr>
<td></td>
<td>.83</td>
<td>Analyze</td>
<td>Plan</td>
</tr>
<tr>
<td></td>
<td>.79</td>
<td>Lack of structure</td>
<td>Negotiate, Persuade</td>
</tr>
<tr>
<td></td>
<td>.71</td>
<td>Criticality of position</td>
<td>Coordinate</td>
</tr>
<tr>
<td>Simple</td>
<td>.51</td>
<td>Transcribe</td>
<td>Instruct</td>
</tr>
<tr>
<td></td>
<td>.36</td>
<td>Recognize</td>
<td>Patient?</td>
</tr>
<tr>
<td></td>
<td>-.49</td>
<td>Repetitive</td>
<td>Parent?</td>
</tr>
<tr>
<td></td>
<td>-.56</td>
<td>Physical exertion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-.73</td>
<td>Supervision</td>
<td></td>
</tr>
</tbody>
</table>
Common Building Blocks of Job Complexity

- Individual tasks
  - Abstract, unseen processes; cause-effect relations
  - Incomplete or conflicting information; much information to integrate; relevance unclear
  - Inferences required; operations not specified
  - Ambiguous, uncertain, unpredictable conditions
  - Distracting information or events
  - Problem not obvious, feedback ambiguous, standards change

- Task constellation *(Often neglected, even in job analyses)*
  - Multi-tasking, prioritizing
  - Sequencing, timing, coordinating
  - Evolving mix of tasks
  - Little supervision; need for independent judgment

Like life itself!
“Functional literacy”
Daily self-maintenance in modern life
(2 decades of research)
## Functional Literacy (NALS)
(nationally representative sample, ages 16-65)

<table>
<thead>
<tr>
<th>NALS Level</th>
<th>% pop. (white)</th>
<th>Simulated Everyday Tasks</th>
</tr>
</thead>
</table>
| 5          | 4%             | Use calculator to determine cost of carpet for a room  
Use table of information to compare 2 credit cards |
| 4          | 21%            | Use eligibility pamphlet to calculate SSI benefits  
Explain difference between 2 types of employee benefits |
| 3          | 36%            | Calculate miles per gallon from mileage record chart  
Write brief letter explaining error on credit card bill |
| 2          | 25%            | Determine difference in price between 2 show tickets  
Locate intersection on street map |
| 1          | 14%            | Total bank deposit entry  
Locate expiration date on driver’s license |
### Functional Literacy (NALS)  
(nationally representative sample, ages 16-65)

<table>
<thead>
<tr>
<th>NALS Level</th>
<th>% pop. (white)</th>
<th>Simulation</th>
<th>Difficulty based on “process complexity”</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4%</td>
<td>Use calculator to...</td>
<td>level of inference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use table of information</td>
<td>abstractness of info</td>
</tr>
<tr>
<td>4</td>
<td>25%</td>
<td>Use eligibility panel...</td>
<td>distracting information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Explain difference</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>36%</td>
<td>Calculate miles per...</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Write brief letter</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>25%</td>
<td>Determine difference...</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locate intersection</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>14%</td>
<td>Total bank deposit...</td>
<td>Not reading per se, but “problem solving”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locate expiration</td>
<td></td>
</tr>
</tbody>
</table>
“Health literacy”
Adherence to treatment
(decade of research)
Example (TOFHLA)
(Controlling for personal resources, access, insurance, education, etc.)

Health literacy

More health knowledge
Better adherence

Better health
Less hospitalization
Lower health costs/year
Sample TOHFLA Items & Error Rates

Patients examine the actual vials or documents

<table>
<thead>
<tr>
<th>% of urban hospital outpatients not knowing:</th>
<th>Health literacy level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V-low</td>
</tr>
<tr>
<td>How to take meds 4 times per day</td>
<td>24</td>
</tr>
<tr>
<td>When next appointment is scheduled</td>
<td>40</td>
</tr>
<tr>
<td>How many pills of a prescription to take</td>
<td>70</td>
</tr>
<tr>
<td>What an informed consent form is saying</td>
<td>95</td>
</tr>
</tbody>
</table>

Many professionals have no idea how difficult these “simple” things are for others.
Sample TOHFLA Items & Error Rates

Patients examine the actual vials or documents

<table>
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<td>How many pills of a prescription to take</td>
<td>70</td>
</tr>
<tr>
<td>What an informed consent form is saying</td>
<td>95</td>
</tr>
</tbody>
</table>

But how representative?
Health Adult Literacy Survey (HALS)
(nationally representative sample)

- Items simulate everyday health tasks
- Analyzed what increases item difficulty (error rates)
- 3 increasingly difficult questions for this item
#1—Underline sentence saying how often to administer medication

- One piece of info
- Simple match
- But lots of irrelevant info

% US adults routinely functioning below this level? 20%

Caution! Could train them do this item, but not all like it
#2—How much syrup for 10-year-old who weighs 50 pounds?

% US adults routinely functioning below this level? 54%

HALS LEVELS: Below Level 1  Level 1  Level 2  Level 3  Level 4  Level 5
HALS SCORES:  175  225  275  325  375  500

Pediatric Dosage Chart

<table>
<thead>
<tr>
<th>Age</th>
<th>Approximate Weight Range*</th>
<th>Drops</th>
<th>Syrup</th>
<th>Dosage</th>
<th>Chewables 80 mg</th>
<th>Chewables 160 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>† Under 3 mo</td>
<td>Under 13 lb</td>
<td>½ dropper</td>
<td>⅛ tsp</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>† 3 to 9 mo</td>
<td>13-20 lb</td>
<td>1 dropper</td>
<td>½ tsp</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>† 10 to 24 mo</td>
<td>21-26 lb</td>
<td>1 ½ droppers</td>
<td>¾ tsp</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2 to 3 yr</td>
<td>27-35 lb</td>
<td>2 droppers</td>
<td>1 tsp</td>
<td>2 tablets</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>4 to 5 yr</td>
<td>36-42 lb</td>
<td>3 droppers</td>
<td>1¼ tsp</td>
<td>3 tablets</td>
<td>1½ tablets</td>
<td>–</td>
</tr>
<tr>
<td>6 to 8 yr</td>
<td>44-62 lb</td>
<td>–</td>
<td>2 tsp</td>
<td>4 tablets</td>
<td>2 tablets</td>
<td>–</td>
</tr>
<tr>
<td>9 to 10 yr</td>
<td>63-79 lb</td>
<td>–</td>
<td>2½ tsp</td>
<td>5 tablets</td>
<td>2½ tablets</td>
<td>–</td>
</tr>
<tr>
<td>11 yr</td>
<td>80-89 lb</td>
<td>–</td>
<td>3 tsp</td>
<td>6 tablets</td>
<td>3 tablets</td>
<td>–</td>
</tr>
<tr>
<td>12 yr and older</td>
<td>90 lb &amp; over</td>
<td>–</td>
<td>3-4 tsp</td>
<td>6-8 tablets</td>
<td>3-4 tablets</td>
<td>–</td>
</tr>
</tbody>
</table>

† Consult with physician before administering to children under the age of 2 years. Dosage may be given every 4 hours as needed but not more than 5 times daily.
#3—Your child is 11 years old and weighs 85 pounds. How many 80 mg tablets can you give in 24-hr period?

## Pediatric Dosage Chart

### Drops, Syrup, & Chewables

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight Range</th>
<th>Drops</th>
<th>Syrup</th>
<th>Chewables 80 mg</th>
<th>Chewables 160 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>✶ Under 3 mo</td>
<td>Under 13 lb</td>
<td>½ dropper</td>
<td>½ tsp</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>✶ 3 to 9 mo</td>
<td>13-20 lb</td>
<td>1 dropper</td>
<td>½ tsp</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>✶ 10 to 24 mo</td>
<td>21-26 lb</td>
<td>1 ½ droppers</td>
<td>¾ tsp</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2 to 3 yr</td>
<td>27-35 lb</td>
<td>2 droppers</td>
<td>1 tsp</td>
<td>2 tablets</td>
<td>-</td>
</tr>
<tr>
<td>4 to 5 yr</td>
<td>36-43 lb</td>
<td>3 droppers</td>
<td>1 ½ tsp</td>
<td>3 tablets</td>
<td>1 ½ tablets</td>
</tr>
<tr>
<td>6 to 8 yr</td>
<td>44-62 lb</td>
<td>-</td>
<td>2 tsp</td>
<td>4 tablets</td>
<td>2 tablets</td>
</tr>
<tr>
<td>9 to 10 yr</td>
<td>63-79 lb</td>
<td>-</td>
<td>2 ½ tsp</td>
<td>5 tablets</td>
<td>2 ½ tablets</td>
</tr>
<tr>
<td>11 yr</td>
<td>80-89 lb</td>
<td>-</td>
<td>3 tsp</td>
<td>6 tablets</td>
<td>3 tablets</td>
</tr>
<tr>
<td>12 yr and older</td>
<td>90 lb &amp; over</td>
<td>-</td>
<td>3-4 tsp</td>
<td>6-8 tablets</td>
<td>3-4 tablets</td>
</tr>
</tbody>
</table>

**Note:** Consult with physician before administering to children under the age of 2 years. Dosage may be given every 4 hours as needed but not more than 5 times daily.

% US adults routinely functioning below this level: **95%**
Non-compliance with treatment

- Often due to a failure to “learn, reason, & problem-solve”
- Leads to higher morbidity
- Leads to higher mortality
- Can create new health problems (e.g., by taking medication incorrectly)
Material resources not enough

- Equalizing resources *increases* health disparities
  - When Britain introduced **national health care**
  - When media made **health information** *more* widely available (signs and symptoms of cancer, diabetes, etc.)

- Old story—average rises, but variance too
  - Like in schools—some students more effectively exploit the same instruction

- Mental resources matter too—insufficiency means:
  - Inefficient use of available care
  - Inappropriate criticism of care
“Health”
Health self-care
(new research)
Health Self-Care Is a Lifelong Job: Yours!

- Constellation of tasks to perform, actions to avoid
- Training required
- Coordinate & communicate with others
- Exercise independent judgment
- Only occasional supervision or consultation
- Job changes as technology & conditions evolve
- Sometimes tiring, frustrating, affects family life
- Central to personal well-being
- But no vacations, no retirement
Major Causes of Premature Death

- Chronic illnesses (heart disease, cancer, etc.)
  - Middle-age & older

- Unintentional (“accidental”) injury
  - Childhood & early adulthood

All are “preventable.”
Avoiding Chronic Illness Requires Foresight & Prevention

- Keep informed
- Live healthy lifestyle
- Get preventive checkups
- Detect signs and symptoms
- Seek timely, appropriate medical attention
Chronic Illnesses Require Self-Regulation

- Follow treatment regimen
  - Use medications as prescribed
  - Diet, exercise, no smoking, etc.
  - Including for diseases without outward signs (e.g., hypertension)
- Monitor daily signs and symptoms
- Adjust medication and behavior in response to signs
- Have regular check-ups
Accidents: Prevention Is Key

- Recognize hazards
- Prevent incidents starting
- Halt progress of incidents
- Limit damage during incidents
- Recover and redesign

• Same process as with chronic illnesses
• Myriad low-probability, often-hidden hazards
Plan, Anticipate Problems

“Shhhh. Zog! ... Here come one now!”
Motor Vehicle Fatalities. Are They Just “Accidental”?

- IQ is best predictor
- Predicts net of 56 other variables

<table>
<thead>
<tr>
<th>Australian veterans followed to age 40</th>
<th>Death rate per 10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ: above 115</td>
<td>51.3</td>
</tr>
<tr>
<td>100-115</td>
<td>51.5</td>
</tr>
<tr>
<td>85-100</td>
<td>92.2</td>
</tr>
<tr>
<td>80- 85</td>
<td>146.7</td>
</tr>
</tbody>
</table>

Life requires “defensive driving”
Dealing with the unexpected

“Say ... what's a mountain goat doing way up here in a cloud bank?”
## Complexity of Accident Prevention

Complex jobs require workers to:  
*(Arvey, 1986)*

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Correlation with overall job complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn and recall relevant information (symptoms)</td>
<td>.75</td>
</tr>
<tr>
<td>Reason and make judgments (timely preventive care)</td>
<td>.71</td>
</tr>
<tr>
<td>Deal with unexpected situations (meal delayed)</td>
<td>.69</td>
</tr>
<tr>
<td>Identify problem situations quickly (hazards)</td>
<td>.69</td>
</tr>
<tr>
<td>React swiftly when unexpected problems occur (injuries, asthma attack)</td>
<td>.67</td>
</tr>
<tr>
<td>Apply common sense to solve problems</td>
<td>.66</td>
</tr>
<tr>
<td>Learn new procedures quickly (treatment regimens)</td>
<td>.66</td>
</tr>
<tr>
<td>Be alert &amp; quick to understand things (feverish child)</td>
<td>.55</td>
</tr>
</tbody>
</table>
Chronic Illnesses as Demanding “Careers”
Example: Diabetic’s Job

- **Learn about diabetes in general** *(At “entry’)*
  - Physiological process
  - Interdependence of diet, exercise, meds
  - Symptoms & corrective action
  - Consequences of poor control

- **Apply knowledge to own case** *(Daily, Hourly)*
  - Implement appropriate regimen
  - Continuously monitor physical signs
  - Diagnose problems in timely manner
  - Adjust food, exercise, meds in timely and appropriate manner

- **Coordinate with relevant parties** *(Frequently)*
  - Negotiate changes in activities with family, friends, job
  - Enlist/capitalize on social support
  - Communicate status and needs to HCPs

- **Update knowledge & adjust regimen** *(Occasionally)*
  - When other chronic conditions or disabilities develop
  - When new treatments available
  - When life circumstances change
Good Performance

- **IT IS NOT** mechanically following a recipe
- **IT IS** keeping a complex system under control in often unpredictable circumstances
  - Coordinate a regimen having multiple interacting elements
  - Adjust parts as needed to maintain good control of system buffeted by many other factors
  - Anticipate lag time between (in)action and system response
  - Monitor advance “hidden” indicators (blood glucose) to prevent system veering badly out of control
  - Decide appropriate type and timing of corrective action if system veering off-track
  - Monitor/control other shocks to system (infection, emotional stress)
  - Coordinate regimen with other daily activities
  - Plan ahead (meals, meds, etc.)
    - For the expected
    - For the unexpected and unpredictable
  - Prioritize conflicting demands on time and behavior

Extremely Complex
**Error Rates Among Diabetics**  
(insulin dependent)

<table>
<thead>
<tr>
<th>Urban hospital outpatients:</th>
<th>Health literacy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>% diabetics not knowing that:</td>
<td>V-low</td>
</tr>
<tr>
<td><strong>Signal:</strong> Thirsty/tired/weak usually means blood sugar too high</td>
<td>40</td>
</tr>
<tr>
<td><strong>Action:</strong> Exercise lowers blood sugar</td>
<td>60</td>
</tr>
<tr>
<td><strong>Signal:</strong> Suddenly sweaty/shaky/hungry usually means blood sugar too low</td>
<td>50</td>
</tr>
<tr>
<td><strong>Action:</strong> Eat some form of sugar</td>
<td>62</td>
</tr>
</tbody>
</table>
Treatment regimens becoming more complex

- Heart attacks
  - 1960’s—just “good luck”
  - Now often includes:
    - regimen of aspirin, β-blocker, angiotensin-converting enzyme inhibitor
    - low-salt and low-cholesterol diet
    - Medicine to control hypertension, diabetes, & hypercholesterolemia

Brighter individuals can better capitalize on medical advances
Smart people make life more complex for the rest of us

Look! I just invented writing!

Thanks a lot!... You just made everybody else in the world illiterate!
Increasing Complexity Favors the Young

Raw mental horsepower (ability to learn and reason) rises into early adulthood, then falls.

Average profile only

Score relative to age mates (“IQ”) is stable from adolescence on
"Okay your father managed to get a mouse. Now how do we use it?"
Opportunities for Intervention

True, we cannot change intelligence ($g$)

BUT

Lots of opportunities to help clients and providers
Can Reduce Risk of Error

1. Mind the gap
2. Provide cognitive assistance
3. Reduce task complexity
Matrix of Cognitive Risk
(error rates)

Can predict error if we know:

Distribution of $g$ in groups of patients:
- race
- age
- locale

Distribution of $g$ loadings in sets of tasks:
- preventive care
- chronic disease

• Some errors more dangerous
• But all cumulate

Triage
Audit cognitive resources
Patients’ own & supplementary

- Patient differences in $g$
  - Train providers
    - Size, nature, distribution, practical meaning of differences
    - Recognize/communicate across large IQ gaps
  - Create short unobtrusive measure of “literacy”
  - Target pockets of high error
  - Identify options for cognitive scaffolding
    - Tailored instruction, comprehension checks
    - Feedback, monitoring, retraining, reminders, hotlines
    - Auxiliary staff, family

Schools do it, military and employers do it
Audit complexity of patients’ “jobs”

- Task differences in complexity
  - Audit complexity in:
    - Information & instructions
    - Individual treatments, diseases
    - Clinic layout, patient interface
  - Target tasks with:
    - High expected error rates
    - Needless complexity
  - Write job descriptions for chronic diseases
    - Biggest cognitive barriers to adherence
    - Touch-points for intervention to surmount barriers
    - Set priorities for triage

Badly neglected, everywhere
Thank you.