Might $g$ explain the “remarkably general” relation between social class and health?

Linda S. Gottfredson
University of Delaware
ISSID 2003
Graz, Austria
Prepare to answer this:

- Linda sees her dentist at 1:00 today
- Here is a vial of prescription medicine she needs to take
- What does the vial tell her to do?
Correlation of $g$ With Different Life Outcomes

- 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: $r = 0.2$
## Functional Literacy (NALS)

<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)

<table>
<thead>
<tr>
<th>NALS Level</th>
<th>% pop. (white)</th>
<th>Simulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4%</td>
<td>- Use calculator to calculate miles per gallon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Use table of information to determine intersection</td>
</tr>
<tr>
<td>4</td>
<td>25%</td>
<td>- Use eligibility panel to determine eligibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Explain difference between population and level of inference</td>
</tr>
<tr>
<td>3</td>
<td>36%</td>
<td>- Calculate miles per gallon to determine eligibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Write brief letter to explain difference</td>
</tr>
<tr>
<td>2</td>
<td>25%</td>
<td>- Determine difference between population and level of inference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Locate intersection on map to determine eligibility</td>
</tr>
<tr>
<td>1</td>
<td>14%</td>
<td>- Total bank deposit to determine eligibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Locate expiration date on bank statement to determine eligibility</td>
</tr>
</tbody>
</table>

### Difficulty based on “process complexity”

- level of inference
- abstractness of info
- distracting information
IQ and Motor Vehicle Fatalities

- IQ is best predictor

<table>
<thead>
<tr>
<th>IQ: above 115</th>
<th>Death rate per 10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>51.3</td>
<td>2x</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>

“People with lower IQ may have a poorer ability to assess risks and, consequently, may take more risks in their driving.”
SES-Health Gradient

- Higher social class (education, occupation, income) associated with:
  - Lower morbidity
  - Lower mortality
  - Better health behaviors
  - More health knowledge
Puzzling Generality

- Virtually all major diseases/causes of death
- All demographic groups
- All nations
- All decades
Puzzling Generality

- Virtually all major diseases/causes of death
- All demographic groups
- All nations
- All decades
- Regardless of the disease’s treatability
- Even when health care free
- Even when treatments identical
Example (odds ratios): Same for all sex/race (B/W) groups

| Cum. probability of onset by age 63 for persons aged 51 without the disease | Years of Education |
|---|---|---|
| **Diabetes**, Chronic obstructive pulmonary disease | 2.0 | 1.0 | 0.5 |
| **Stroke, heart, hypertension** | 1.5 | 1.0 | 0.7 |
| Cancer | 0.7 | 1.0 | 1.4 |

Red = prevalence rates higher for black M and F
Behavioral Differences

- When free, lower social classes seek:
  - Less information
  - Less preventive care
  - More—but less appropriate—curative care

- Perform worse:
  - Know, understand less
  - Less healthy behavior (e.g., smoking)
  - Adhere less to treatment regimens
Puzzling Linearity

- Health is *increasingly* better at higher SES levels, even beyond point where resources are more than sufficient
- “Finely graded”
Puzzling Increases in Health Inequalities

- When health care made more widely available
- When health information made more widely available
Level of Explanation

- Mean group differences (social class)
- Not individual differences
Epidemiologists’ Conclusion

- A mysterious “fundamental cause”
- Candidates
  - **Cannot** be material resources
  - Psychic mediators of SES?
    - Social support, connectedness, anxiety, stress
    - Sense of control, mastery, esteem, stigma
    - Capacities in coping, resistance, problem-solving
  - Inequality itself? (relative deprivation)
  - **Not** IQ!!
# Social Class Differences in IQ

<table>
<thead>
<tr>
<th>Education (yrs.)</th>
<th>IQ</th>
<th>Occupation</th>
<th>IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>16+</td>
<td>115</td>
<td>Prof/technical</td>
<td>111</td>
</tr>
<tr>
<td>12-15</td>
<td>107</td>
<td>Mang/cler/sales</td>
<td>104</td>
</tr>
<tr>
<td>12 (HS diploma)</td>
<td>100</td>
<td>Skilled</td>
<td>99</td>
</tr>
<tr>
<td>9-11</td>
<td>96</td>
<td>Semiskilled</td>
<td>93</td>
</tr>
<tr>
<td>8</td>
<td>91</td>
<td>Unskilled</td>
<td>89</td>
</tr>
<tr>
<td>0-7</td>
<td>82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**2 SD** | **1.5 SD**
Is $g$ A Plausible Candidate?

- SES-health gradient steeper when SES scale is a better surrogate for $g$
  - education +++
  - occupation ++
  - income +
- New IQ-health studies (e.g., Deary et al.)
- "Job" of patient like other ($g$-loaded) jobs
Jobs’ Demands for $g$

- Dominant distinction among jobs: Arvey’s “Judgment and Reasoning” Factor
  - Deal with unexpected situations
  - Learn and recall job-related information
  - Reason and make judgments
  - Identify problem situations quickly
  - React swiftly to unexpected problems

Complexity of information processing ($g$ loading)
Key Task: Chronic Illnesses

- “Slow-acting, long-term killers that can be treated but not cured”
- Self-care is as important as medical care
- Require continued need “to learn,” “reason,” and “solve problems”

Chronic illnesses are demanding, long-term “careers.”
Chronic Illnesses Require Foresight & Prevention

- Keep informed
- Live healthy lifestyle
- Get preventive checkups
- Detect signs and symptoms
- Seek timely, appropriate medical attention

All are less frequent in lower social classes
Chronic Illnesses Require Self-Regulation/Treatment

- 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

All are less frequent in lower social classes
Chronic Illnesses Require Self-Regulation to Limit Damage

<table>
<thead>
<tr>
<th>Urban hospital outpatients:</th>
<th>Health literacy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>% diabetics <em>not</em> 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>
Your answer re Linda’s pills?

What does the vial tell her to do for her appointment?

- How many pills does she take?
- When does she take them?
Literacy Researchers’ Conclusion

- Non-compliance a huge problem
- Often due to failure to “learn, reason, & problem-solve”
- Can be a matter of life & death

“Ability to learn and correctly follow the treatment regimen for a heart attack will determine a trajectory toward recovery or a downward path to recurrent myocardial infarction, disability, and death.”
In Summary—

- You are your own “primary health care” provider
In Summary—

- You are your own “primary health care” provider
- $g$ is only one factor producing individual differences in health
In Summary—

- You are your own “primary health care” provider
- $g$ is only one factor producing individual differences in health
- But $g$ may be the major factor producing SES differences in health
Thank You

www.udel.edu/educ/gottfredson/reprints