
Dr David Stillwell
The Psychometrics Centre
University of Cambridge
The first examinations
Measuring candidates’ ability in order to determine their position in court. Xun Zi, 310BC - 289BC
School examinations 1890
Scholastic Aptitude (11+, SAT) (1926-1950)
Meritocracy (1950-1990)
‘Mental Age’ Binet, Paris, 1904
‘Mental Tests’
US Army Alpha, WW1
Herrnstein and Murray
The Bell Curve (1994)
IQ testing
Ellis Island 1912-1954
Ellis Island Test Results
Sterilisation, Race and IQ, USA

6. (W) - Resident Buncombe County

Proceedings instituted by George H. Lawrence, SPW

Medical history by H. C. Whems, M. D.

Sterilization recommended by Dr. Whems

Social history:
Married woman, __ years of age, who is the mother of 3 children ranging in ages from ___ to ___ years. On a psychological examination given by Dorothy Hamilton she was found to have an I. Q. of 56. The family has been financially dependent for many years and there is a history of inter-marriage with Indian and Negro.

Diagnosis: Feeblemindedness

Operation will be performed by surgeon on staff of Biltmore Hospital at time of delivery.

Consents: Consent is signed by __________, patient, and by __________, husband.
Scientific Racism (Racial Hygiene)

• Virginia (1924) “Sterilization Act” for the "feebleminded"
• Germany (1933) “Law for the Prevention of Genetically Diseased Offspring” (sterilization for feeblemindedness, mental illness, blindness, deafness, physical deformity)
• Germany (1937) ‘Commission Number 3” compulsory sterilization of children of mixed-race origins.
• Germany (1939) Euthanasia introduced in psychiatric hospitals for those with disabilities (broadly defined, this included homosexuality and “social deviancy”)
• Soviet Union (1949), Incarceration on psychiatric diagnosis of “philosophical intoxication”, “sluggish schizophrenia” (poor social adaptation), etc.
# The Flynn Effect

**Table 16. Raven’s and Vocabulary: sensitivity to environment over time.**

<table>
<thead>
<tr>
<th>Locale</th>
<th>Age</th>
<th>Dates</th>
<th>Gain IQ points</th>
<th>Rate per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotland</td>
<td>77</td>
<td>1921-1936*</td>
<td>16.50</td>
<td>1.100</td>
</tr>
<tr>
<td>Belgium (Flemish)</td>
<td>18+</td>
<td>1958-1967</td>
<td>7.82</td>
<td>0.869</td>
</tr>
<tr>
<td>La Plata (Argentina)</td>
<td>19-24</td>
<td>1964-1998</td>
<td>27.66</td>
<td>0.814</td>
</tr>
<tr>
<td>Belgium (Walloon)</td>
<td>18+</td>
<td>1958-67</td>
<td>6.47</td>
<td>0.719</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>18</td>
<td>1952-1982</td>
<td>20.10</td>
<td>0.667</td>
</tr>
<tr>
<td>Israel (female)</td>
<td>17.5</td>
<td>1976-1984</td>
<td>5.09</td>
<td>0.637</td>
</tr>
<tr>
<td>Norway</td>
<td>19-20</td>
<td>1954-1968</td>
<td>8.80</td>
<td>0.629</td>
</tr>
<tr>
<td>Israel (male)</td>
<td>17.5</td>
<td>1971-1984</td>
<td>7.35</td>
<td>0.565</td>
</tr>
<tr>
<td>Great Britain</td>
<td>18-67</td>
<td>1942-1992</td>
<td>27.00</td>
<td>0.540</td>
</tr>
<tr>
<td>Raven’s Matrices</td>
<td>Adults</td>
<td>Circa 1940-1984</td>
<td>------</td>
<td>0.727</td>
</tr>
<tr>
<td>Wechsler Vocab.</td>
<td>20-74</td>
<td>1953.5-2007</td>
<td>17.0</td>
<td>0.318</td>
</tr>
</tbody>
</table>
The Flynn Effect: 50 years = 36 IQ points

B = White in 1960; A = Black in 1960; but C = Black in 2010
## Magic Tests

### The Big Five Personality Questionnaire

Below, there are phrases describing people's behaviours. Please use the rating scale to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Rate yourself as honestly as you see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. If you are unsure of which response to choose (e.g., you act one way in a certain situation, and another way in a different situation), choose the response which feels most "natural" to you.

So that you can describe yourself in an honest manner, your answers to individual questions cannot be seen by others, only the overall calculation of your personality traits.

Answer: 20 (2 minutes) questions (The more you answer, the more accurate your results will be. But you can always answer more later.)

<table>
<thead>
<tr>
<th>Phrase:</th>
<th>Very Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Neither Inaccurate nor Accurate</th>
<th>Moderately Accurate</th>
<th>Very Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Have a vivid imagination.</td>
<td></td>
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<tr>
<td>Hold a grudge.</td>
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<tr>
<td>Do not mind being the centre of attention.</td>
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<tr>
<td>Do not like poetry.</td>
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<tr>
<td>Complete tasks successfully.</td>
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<tr>
<td>Believe that others have good intentions.</td>
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<tr>
<td>Avoid philosophical discussions.</td>
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<tr>
<td>Need a push to get started.</td>
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<tr>
<td>Cut others to pieces.</td>
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<tr>
<td>Make friends easily.</td>
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<tr>
<td>Feel comfortable with myself.</td>
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<tr>
<td>Often feel blue.</td>
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<tr>
<td>Am easy to satisfy.</td>
<td></td>
<td></td>
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<tr>
<td>Keep in the background.</td>
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<td></td>
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<tr>
<td>Am always prepared.</td>
<td></td>
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<tr>
<td>Enjoy wild flights of fantasy.</td>
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<tr>
<td>Get stressed out easily.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Avoid contact with others.</td>
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<td></td>
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<tr>
<td>Am not easily bothered by things.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Shirk my duties.</td>
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</tr>
</tbody>
</table>
Magic Tests
Magic Tests

• Personality tests give you an opportunity to describe yourself. They help you to tell the things you already know.

• In most tests, each question measures one trait, e.g. “I avoid contact with others” and “I do not mind being the centre of attention” both measure Extroversion.

• Your answers are compared to others who have taken the test (the norm group). Then your results are given in comparison to theirs.

• If you take a test, you should really get feedback on your results.

• It is acceptable for you to disagree with the feedback.

• Some tests can be used for selection. Many popular tests should only be used for personal development (e.g. MBTI, Belbin Team Roles).
Two possible tomorrows for psychology

Neuropsychology

Computational social psychology
Your digital footprint

• Demonstrates your habits, lifestyle & desires
• Analysed psychometrically this can tell us:
  • What sort of person you are
  • Who are your friends
  • Your needs, hopes and expectations
  • What you are likely to do (or not do)
• How?
  • Every keystroke you make is recorded
  • Algorithms identify patterns in these records
  • Your unique pattern creates a model of you
  • Your Avatar in cyberspace
How accurate did you say (2013)?
How accurate did you say (2015)?
How accurate did you say (201X)?

<table>
<thead>
<tr>
<th>Trait</th>
<th>Big 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness</td>
<td>0.77</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.68</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.71</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.72</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.58</td>
</tr>
</tbody>
</table>
Extraverts (High Extraversion)
Introverts (Low Extraversion)
Emotionally stable (Low Neuroticism)
Emotionally unstable (High Neuroticism)
The Psychometrician’s Dilemma

• We can predict the psychological traits of billions of people in milliseconds.
• What should it be used for?
• ...And under what conditions?
The Psychometrician’s Dilemma

• A dating app already connects to users’ Facebook accounts and downloads their pictures so that users can decide whether they want to talk further to someone else based on their photos.

• What if we use psychology to improve that matching, by measuring users’ personalities and then prioritising the best matches?
The Psychometrician’s Dilemma

• A bank already analyses the e-mail correspondence of its employees to look for fraudsters. Employees are aware of this. It searches for keywords such as “steal” and then looks into more detail.

• What if we use psychology to improve that targeting, by automatically measuring the personality of bank employees, to search for those high in narcissism or psychoticism?
The Psychometrician’s Dilemma

• A graduate employer already does a web search for information on applicants. As part of this, a HR specialist might see a user’s social network account.

• What if we use psychology to reduce the HR specialist’s bias and stereotypes, by automatically measuring the personality of job applicants, and recommending those with the best personality for the job?
The Psychometrician’s Dilemma

• A social network already targets ads based on behaviour of its users on and off the network. For example, if you view a holiday website, then you’re more likely to see ads for flights.

• What if we use psychology to improve that advertising, by showing extroverts ‘exciting’ holidays and introverts ‘relaxing’ holidays?
The Psychometrician’s Dilemma

• A car insurance company prices its insurance partly on the basis of demographic characteristics such as age and geography

• What if we use psychology to improve that pricing, by taking into account the personality of the buyer.
The Psychometrician’s Dilemma

- A government provides national healthcare to its citizens. Costs could be drastically reduced if citizens did not engage in behaviour that’s associated with preventable diseases.

- What if we use psychology to encourage healthy behaviour by identifying psychological risk factors for unhealthy behaviour, and then intervening; the earlier the better.
The Psychometrician’s Dilemma

• A government already collects data on its citizens’ web habits, in order to search for terrorist behaviour.

• What if we use psychology to improve our understanding of terrorism, by automatically assessing who are the ‘influencers’ in a terrorist cell.

• What if we use psychology to nudge at-risk people away from terrorism; the earlier the better?
The Psychometrician’s Dilemma

- Do we want the computer to decide:
  - What you are sold?
  - How you are sold it?
  - The premium for your insurance or loan?
  - Who you date?
  - Whether you’re likely to engage in illegal behaviour?
  - Whether you require an intervention to stop your unhealthy habits?
  - Whether you require an intervention to stop your potential future terrorism?