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Intelligence across the life span

By

Simon Whitaker

Intelligence

Difficult to define precisely but it is generally agreed that it is:

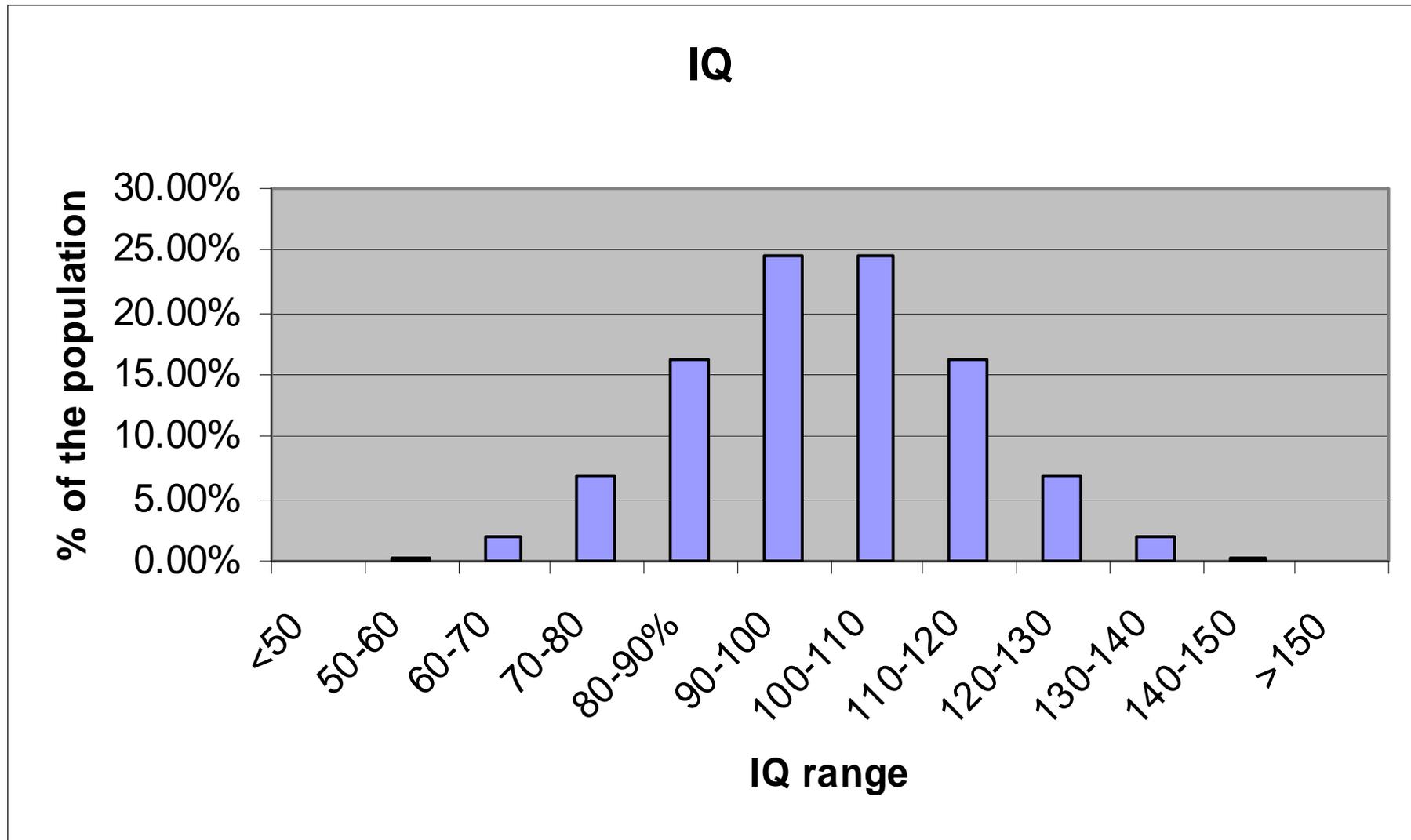
- An individual's overall cognitive ability.
- Can be predictive of his/her ability to succeed in the real world.

Measurement of Intelligence

IQ Tests

Cognitively demanding tasks how well an individual does on a series of cognitively demanding tasks, compared with a representative sample of people of his/her own age.

Distribution of intelligence



The Flynn Effect

Flynn (1984) found that for the US the longer it was since the test was standardised the higher the IQ, the rate of increase being about 3 points a decade.

The implication is that the intellectual ability of the population is increasing by 3 points a decade or about .3 of a point per year.

Flynn (1987) extended his analysis to 14 industrialised countries and found evidence of an increase in IQ in all of them.

For some countries (e.g. Holland, Belgium and France) the data was very strong, being based on the assessment of virtually all 18-year-old men when they report for military service.

Change over the last 100 years

There is evidence that this general increase in intellectual ability has been occurring since the beginning of industrialization.

If the rate of change was .3 of a point a year for the last 100 years the average IQ in 1915 would have been 70.

IQ 70 is the point below which we now regard somebody as having an intellectual disability.

Effect over a life time

- If the average 20 year old in 1972 was given an IQ test standardized in 2015 they would get a measured IQ of about 87, whereas the average 20 year old today would get a measured IQ of about 100.
- It's not that we get dimmer as we get older it just that our children get brighter.

Good evidence the Flynn effect has occurred in the past.

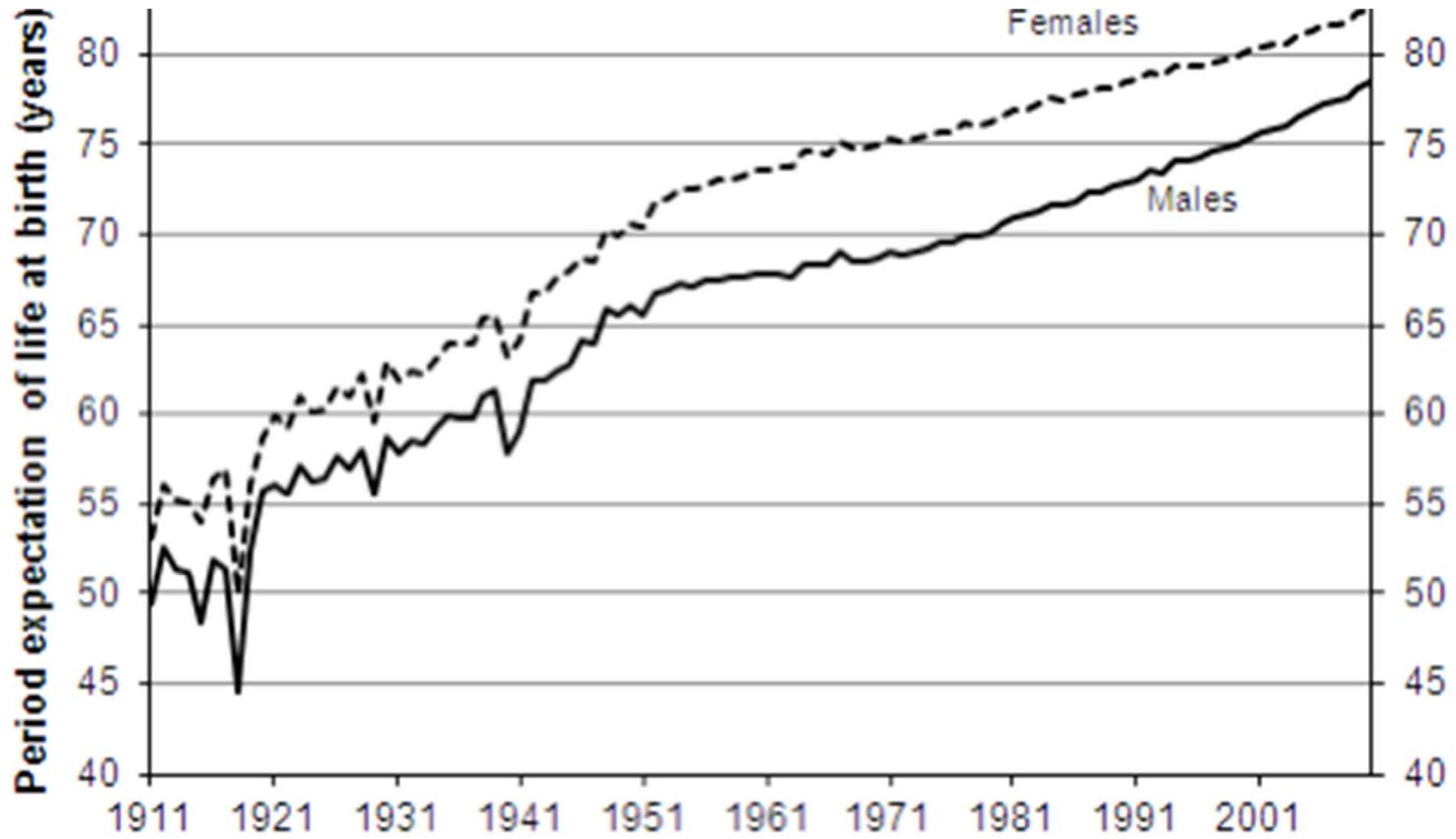
Some evidence it is still occurring in the UK today.

Should we be surprised?

Other things are improving over time

- Longevity
- Health
- Infant mortality
- High
- Weight

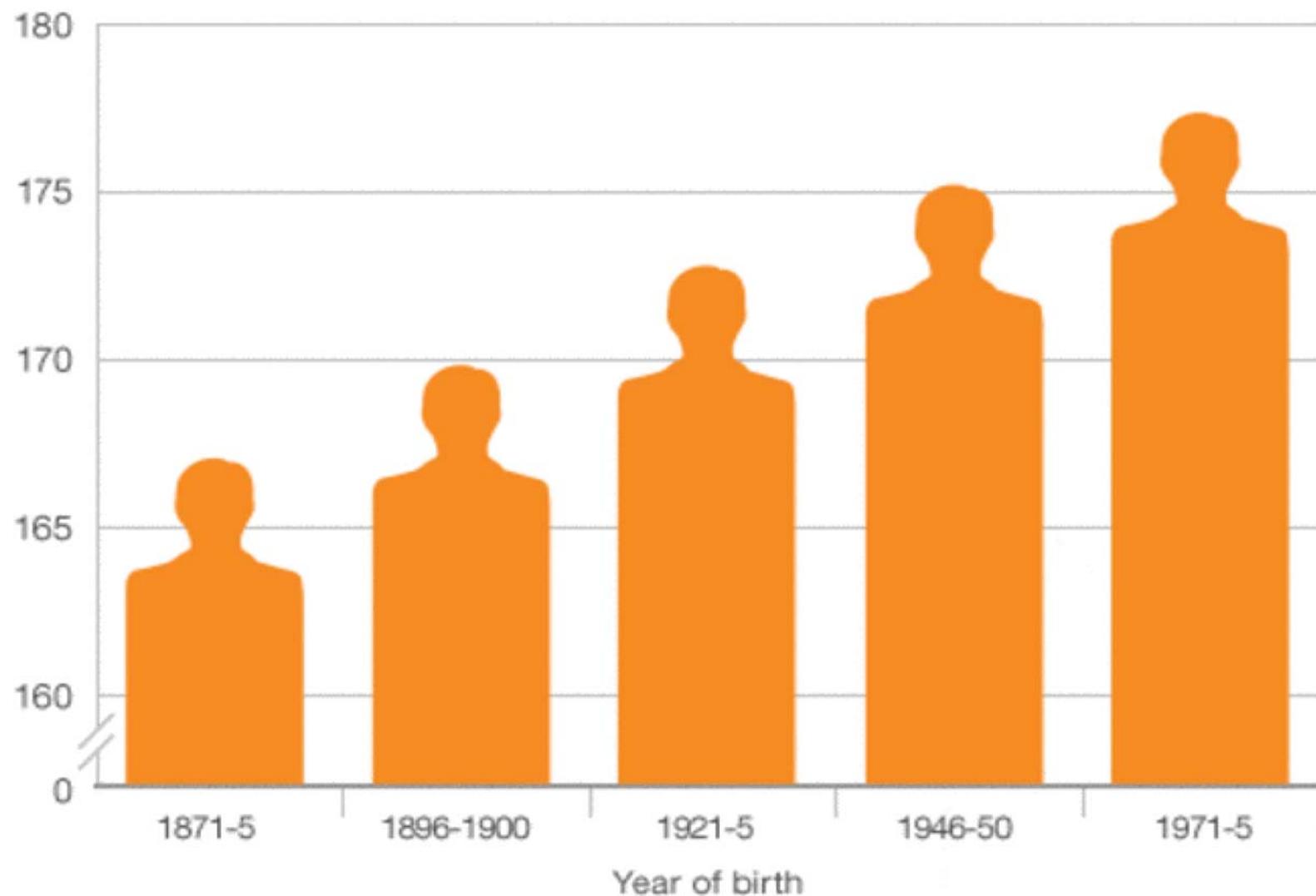
Longevity



A century of growth

British males: Average height at age 21

Height cm



Source: Prof Tim Hatton et al, Oxford Economic Papers

Why is IQ increasing over time?

Is it genuine or are we just getting better at doing IQ tests?

Evidence for genuine increase in intelligence (g)

- Improved diet
- Improved health
- Smaller families
- Better and more education
- More intellectually stimulating leisure?

All this must have some effect

Evidence for improvement in doing tests

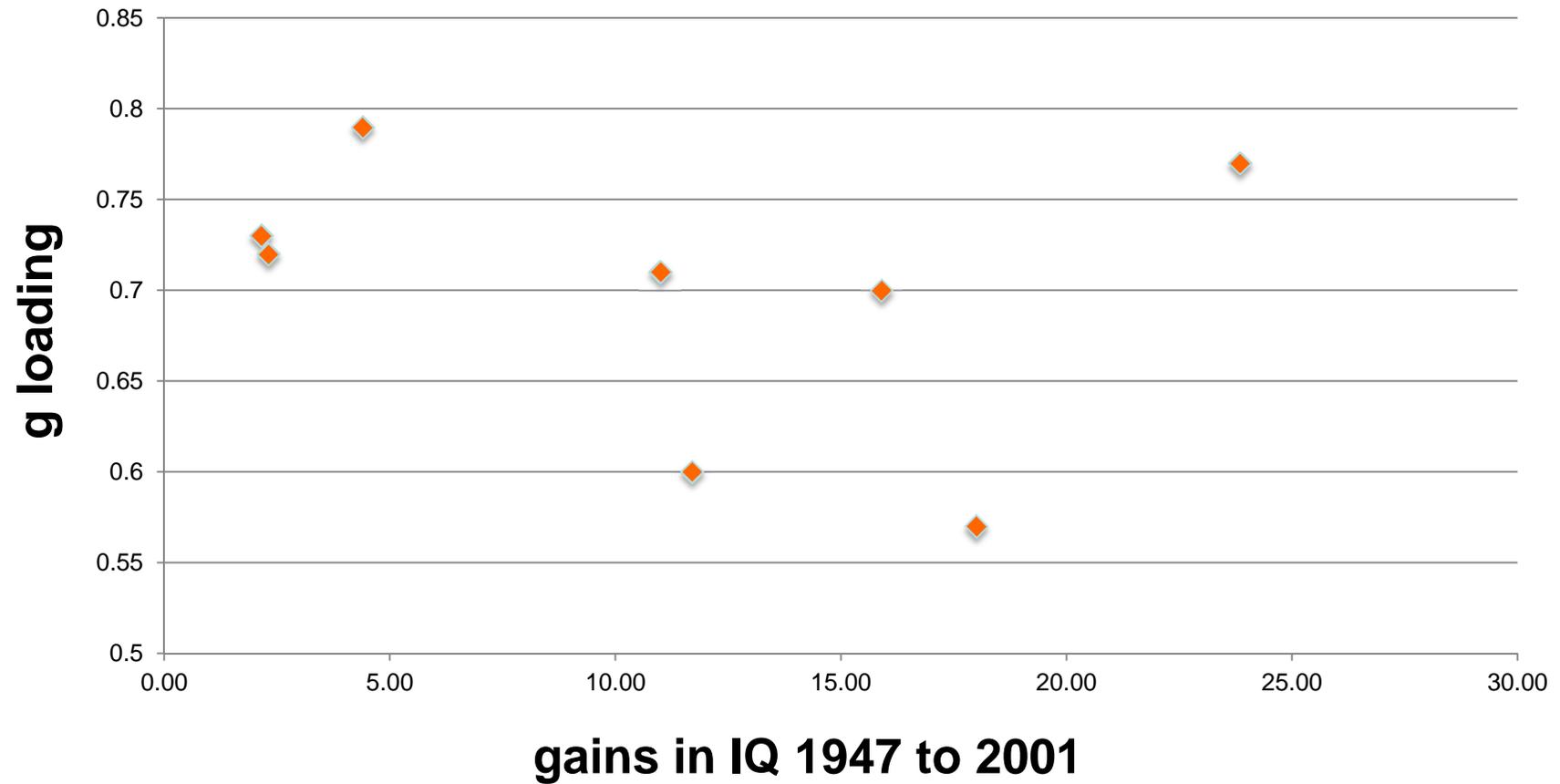
Subtest IQ gains and g loading

Subtest	IQ gains 1947-2001	g loading
Information	2.15	.73
Arithmetic	2.30	.72
Vocabulary	4.40	.79
Comprehension	11.00	.71
Picture completion	11.70	.60
Block Design	15.90	.70
Object Assembly	17.35	
Coding	18.00	.75
Similarities	23.85	.77

$r = -.26$

Scatter plot

Flynn gains and g loading



There is not relationship between g loading and the Flynn effect for subtest which should be the case if g (general intelligence) was increasing.

So what else is happening?

The world had become more intellectually demanding but in specific ways.

The subtest that have shown the least gained are similar to everyday tasks that have not changed over the years or have become less cognitively demanding.

Test that have not moved much

Arithmetic: We use calculators and spread sheets.

Information/digit span: We don't have to remember thing to the same extent as we have them at touch of a button.

Vocabulary: Less emphasis on formal language.

The subtests that have shown the most gain are ones that have things in common with cognitively demanding everyday tasks that have become increasingly common over the years.

More emphasis on on the spot problem solving

- Life now changes and we have constantly have to work out how to cope (e.g. smart phones, TVs, DVDs, computers, change).
- Often visual and abstract.

More emphasis on visual information

The screenshot displays the homepage of the British Psychological Society (BPS). At the top, there are navigation links for 'Sign in' and 'Sign up'. Below this is a header section with the BPS logo, the text 'The British Psychological Society Promoting excellence in psychology', and a search bar. A main navigation menu includes 'Home', 'Psychology & the public', 'News', 'What we do', 'Member networks', 'Careers, education & training', 'Publications', 'Events', and 'Jobs'. The main content area features a large banner for the 'EBMH Journal' with a colorful abstract graphic. To the left of the banner is a text block about psychology and a 'more about what we do' link. Below this is a 'Quicklinks' section with several links. To the right of the banner is a 'Latest News' section with a link to 'EBMH: Expert commentaries on new research in mental health' and a 'Recent News' section with two links. The overall design is clean and professional, with a clear emphasis on visual elements like the banner and graphics.

BPS

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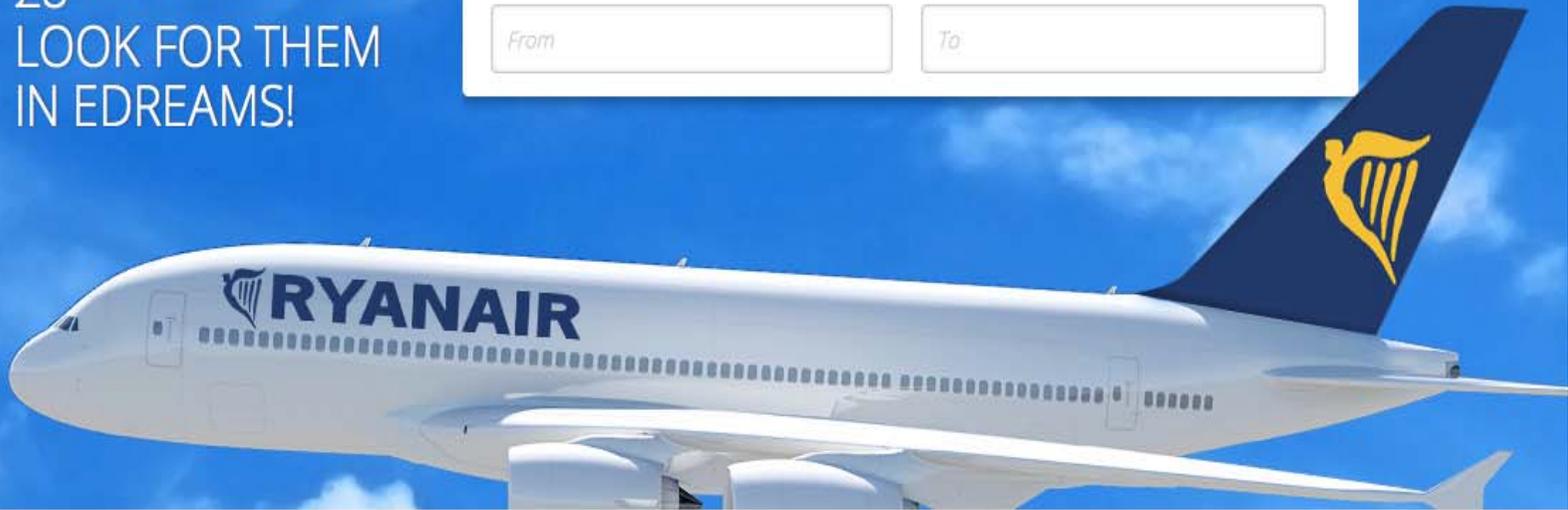
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Most of the subtests that have increased:

- Comprehension
- Picture completion
- Block Design
- Object Assembly
- Similarities

require on the spot problem solving

Most of them are also visual and abstract

- Picture completion
- Block Design
- Object Assembly

IQ subtests that have increased are in effect more familiar to us, hence we do better on them.

Part of the Flynn effect is a generalized practice effect.