

PERSONALITY AND INDIVIDUAL DIFFERENCES

INTELLIGENCE

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LECTURE OUTLINE

- Definitions of intelligence
- Major approaches:
 - Psychometric
 - Cognitive processes
- Define Emotional Intelligence (EI/EQ)
- Main theoretical models of EI
- Measurement of IQ and EQ

INTELLIGENCE

Definitions of intelligence
are hotly contested –
many different theories
of intelligence



The capacity to learn
from experience and
adapt to one's
environment

THEORIES OF INTELLIGENCE



Psychometric Approach

Underlies most definitions of intelligence

‘Mapping’ the structure of intellect

Identifying mental competencies that underlie test performance

Analysis of scores on intelligence tests



Cognitive Processes (or Information Processing) Approach

Focus on specific thought processes underlying mental competencies

‘Intelligence’: the steps or processes involved in solving problems

PSYCHOMETRIC APPROACH



GENERAL INTELLIGENCE

Spearman's General Intelligence (g)

1900's

Binet and Simon
First intelligence test
with school children

Questions asked
appeared dissimilar,
but argued that all
assessed basic
abilities to
understand, reason,
and make
judgements

Spearman (1923)
believed that there
must be a single
underlying construct

General Intelligence
Factor (g)



GENERAL INTELLIGENCE

Widely accepted that intellectual performance is determined partly by a general intelligence factor; the 'g' factor

'g' constitutes core intelligence

Noted as important predictor of both academic and job performance



Also determined partly by whatever special abilities might be required to perform a particular task

PRIMARY MENTAL ABILITIES

Thurstone's Primary Mental Abilities (1938)

- Challenged Spearman's 'g' factor – not outright rejection, but intelligence = both general and specific ability
 - Only moderate correlations between different mental tasks
- Proposed that human mental performance depends on seven distinct – **primary** – mental abilities

PRIMARY MENTAL ABILITIES

Thurstone's Primary Mental Abilities (1938)

Thurstone's Primary Mental Abilities	
Ability name	Description
M – Memory	Memorisation
N – Numerical ability	Dealing with numbers
P – Perceptual speed	Recognising visual patterns
R – Reasoning	Dealing with novel problems
S – Spatial	Reasoning about visual scenes
V – Verbal Comprehension	Understanding verbal statements
W – Word fluency	Producing verbal statements

FLUID / CRYSTALLISED INTELLIGENCE

Cattell (1963)

General intelligence consists of **fluid** and **crystallised** intelligence

Fluid intelligence:

- Comprehension, reasoning, problem solving

Crystallised intelligence:

- Recalling stored knowledge and past experiences

FLUID INTELLIGENCE

Cattell (1963)

Involves deductive reasoning

Requires ability to reason abstractly, think logically, and manage information within working memory

Correlated with comprehension and learning



Fluid intelligence declines as people enter later adulthood



Solving puzzles,
seeing patterns in
statistical data,
engaging in
philosophical
reasoning
(Unsworth et al.,
2014).

FLUID INTELLIGENCE

Cattell (1963)

- Horn (1969) – Fluid intelligence is formless; relies minimally on prior learning
 - Includes both formal and informal education
- Fluid intelligence peaks during late 20's before gradually declining (Cacioppo & Freberg, 2012)
 - Deteriorating neurological function? Or less use as we age?

CRYSTALLISED INTELLIGENCE

Cattell (1963)

Applying previously acquired knowledge to current problems

Based on ability to retrieve previously learned information from long-term memory



Recalling events and dates, remembering geographical locations, reciting texts (Horn, 1968)



Crystallised intelligence rises gradually and remains stable throughout adulthood until it begins to decline after age 60 (Cavanaugh & Blanchard-Fields, 2006)



CRYSTALLISED INTELLIGENCE

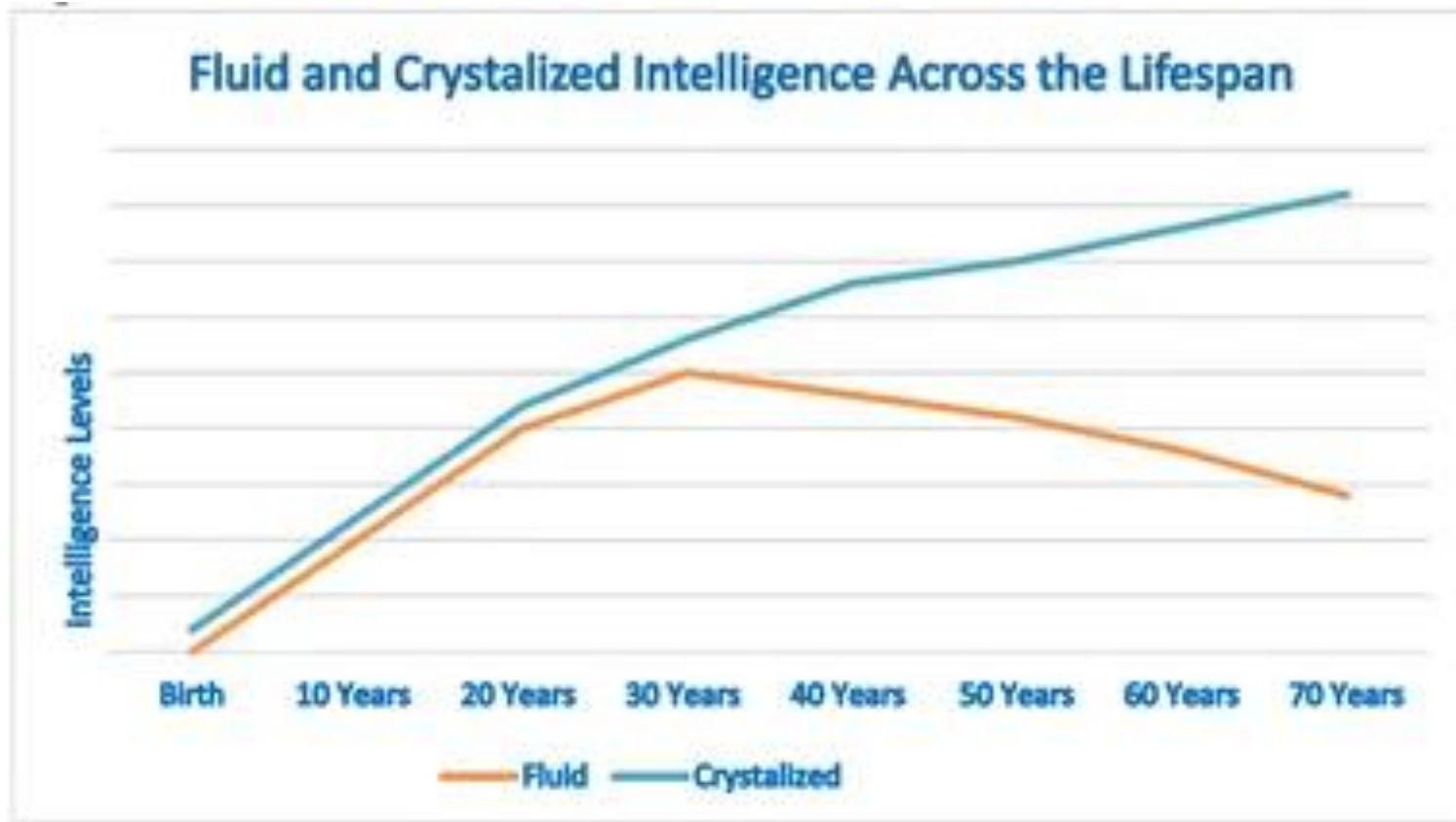
Cattell (1963)

- Horn (1969) – Crystallised intelligence results from accumulated knowledge of reasoning, language abilities and understanding technology, etc.
- Linked to education and experience; can be measured by tests of general information

FLUID AND CRYSTALLISED INTELLIGENCE

- Not entirely distinct entities
 - Both required to work together
 - E.g., situation that requires utilising fluid intelligence to construct a strategy and using crystallised intelligence to recall previous situations
- Crystallised intelligence is **not** fluid intelligence that has crystallised over time

PSYCHOMETRIC APPROACH



General
intelligence
(g)

Fluid
intelligence -
solving new
problems

Crystallised
intelligence -
use of
existing
knowledge

MEASURING INTELLIGENCE

Stanford Binet Test

- Stanford-Binet Test measures intelligence through **five** factors of cognitive ability and generates a single (combined) score indicating IQ.
 - Fluid reasoning
 - Knowledge
 - Quantitative reasoning
 - Visual-spatial processing
 - Working memory
 - Both verbal and non-verbal responses are measured

MEASURING INTELLIGENCE

Achievement and Aptitude Testing



Aptitude tests

- Measure ability to perform a task or ability to learn a skill/subject
- Assesses potential for future learning
- E.g., education, undergraduate, post-graduate, etc

Achievement tests

- Assess knowledge in certain academic areas
- Based upon mastery of content
- Focus on previous learning

IMPORTANCE OF IQ SCORES

- Challenged in recent years
 - Abilities tested by IQ tests bear little relation to real-life success
 - 'Misses the point' in conceptualising cognitive abilities

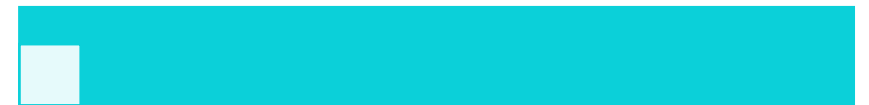
Cool



- ☐ Abilities involving perceptual processing and logical reasoning

- Alternative / novel abilities considered:
 - E.g., social, practical and emotional intelligence
 - Encompass abilities that involve emotionally-salient information
 - 'cool' and 'hot' intelligences

Hot



- ☐ Abilities involving emotionally-salient information