



Intelligence 1



One Definition of Intelligence

- “Intelligence is judgment or common sense, initiative, the ability to adapt oneself” and again “to judge well, understand well, reason well —these are the essentials of intelligence.”
- Alfred Binet (1857-1911)
 - Our own perceptions of intelligence are an important aspect of our everyday life (Sternberg, 2001).
 - Why is this?
 - Everyday decisions
 - Long-term decisions with regard to ourselves, loved ones and family.
 - e.g. Academic decisions...Children...Romantic Relationships...Work...
 - Can influence everyday conversations

Cultural Perspective

Papadopoulos (2004)

Western View of Intelligence.

- Cognitive and Memory skills refer only to the individual.
- Individualist cultures

Eastern Cultures.

- Social, historical and spiritual aspects of everyday interaction.
- Collectivist cultures

Indian Culture

Baral and Das (2004)

- High levels of thinking, judgement and decision making all important in intelligence
- How these aspects work is critical
 - Harmony of thought, self-awareness and consciousness
- Appreciation of others
 - Politeness, interest in others, modesty

Taiwanese Chinese

Yang and Sternberg (1997) - Five Factors

1. **A general cognitive factor of intelligence.**

- Practical problem solving
- Processing speed

2. **Interpersonal Intelligence.**

- Relating to others.
- Empathy and Politeness.

3. **Intrapersonal Intelligence.**

- Knowledge about the self and to view objectively. e.g. meaning and purpose of his/her life.

4. **Intellectual self assertion.**

- Process for individual who are confident and aware of their intellect.

5. **Intellectual self-effacement.**

- Refers to modesty or humility surrounding intellect.
- Talking at length, but only about the topics that interest him/her.

Intelligence

The ability to acquire knowledge, to think and reason effectively, and to deal adaptively with the environment (Passer, 2009):

‘Intelligence is what intelligence tests measure’ (Boring, 1923)

So... what DO intelligence tests measure?

Is intelligence a single aptitude or many specific abilities?



Is intelligence an innate mental capacity or a product of our upbringing?



What kinds of brain processes underlie mental skills?



Are there actually multiple intelligences?

History of Intelligence

Galton (1865).

- Inspired by the work of Darwin.
- Higher intelligence due to superior qualities passed down to children through hereditary.

Biological approach

Galton estimated from his field observations in Africa that the African people were 'two grades' below Anglo-Saxons' position in the normal frequency distribution of general mental ability, which gave claim to the scientific validation of Africans' mental inferiority compared with Anglo-Saxons (Jensen, 2002)

Intelligence is quantifiable and normally distributed -we can assign a score to intelligence where the majority of people fall in the average range and the percentage of the population decreases the farther from the middle their score gets.

His work sparked the formative years of the eugenics movement, which called for methods of improving the biological make-up of the human species through selective parenthood.

He advocated human breeding restrictions to curtail the breeding of 'feeble-minded' (Irvine, 1986; Clayes, 2001).

"superior mental and behavioral capacities, as well as physical health, are advantageous, not only to an individual but for the well-being of society as a whole" (Jensen, 2002).

Theories of Intelligence

Charles Spearman G factor

Thurstone's 7 Factors

Howard Gardner Multiple Intelligences

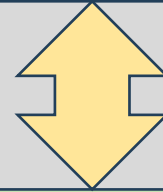
Robert Sternberg Triarchic Theory

Daniel Goleman EQ

Charles Spearman (1863 - 1945)

Using statistical factor analysis Spearman identified **g**, a single underlying intelligence factor he believed accounted for the variety of observable abilities.

Spearman noticed that children's grades across all school subjects tended to be highly correlated.



He used a mathematical approach to measure human intelligence.

If a child did well in one subject, they generally also did well in another subject, and vice versa.

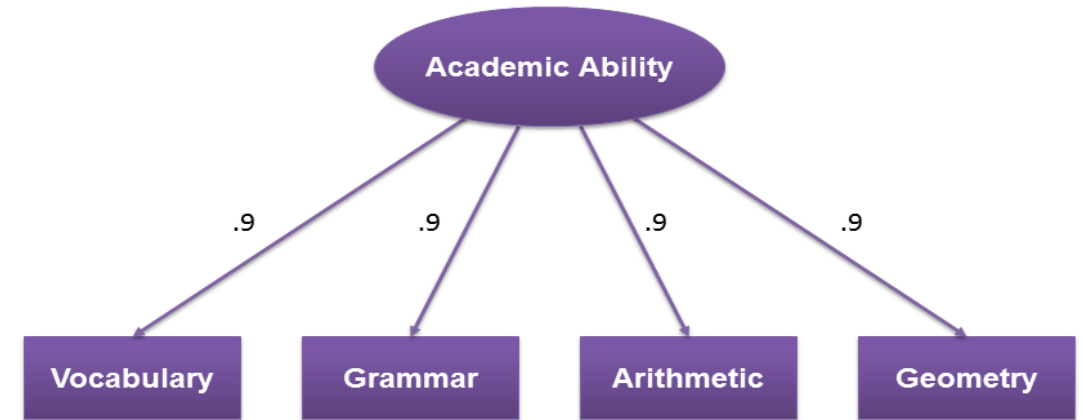
Charles Spearman

He devised factor analysis to measure the relationships between seemingly varied cognitive abilities and account for the correlations he saw between scores on different tests.

Result was Spearman's two-factor theory which attempted to show that all cognitive performance can be explained by two variables: one *general* ability (*g*) and the many *specific* abilities (*s*) it gave rise to.

General Factor

	Vocabulary	Grammar	Arithmetic	Geometry
Vocabulary				
Grammar	.81			
Arithmetic	.81	.81		
Geometry	.81	.81	.81	



However, further analysis showed that *g* alone was enough to explain the correlations between different tests. When people talk about IQ or intelligence, it's usually this general mental ability that they are referring to.

Today, almost all IQ tests are factor models inspired by Spearman's work on g . As an example, consider the Stanford-Binet test, which measures different areas of performance that contribute to general intelligence, like working memory and visual-spatial reasoning.

Crystallized intelligence - a kind of cemented knowledge bank acquired over time, the ability to utilize information, skills, knowledge, and experience in a way that could be measured on a standardized test

Criticism - Cattell, who thought that intelligence could be understood as *two* main capacities: "fluid" (G_f) and "crystallized" (G_c).

Fluid intelligence - the ability to acquire that knowledge in the first place, i.e. to learn in the moment (think logically and solve problems in novel situations)

He saw g as more accurately G_c , and that tests focusing only on g would omit an important developmental factor in human intelligence.

Thurstone's 7 Factors

(Thurstone, 1938).

Thurstone argued that g was a statistical artifact resulting from the mathematical procedures used to study it.

Intelligent behaviour does not arise from a general factor, but rather emerges from seven independent factors that he called primary abilities

word fluency

verbal
comprehension

spatial
visualization

number facility

associative
memory

reasoning

perceptual
speed

Thurstone's 7 Factors

He analyzed mental test data from samples comprised of people with similar overall IQ scores, he found that they had different profiles of primary mental abilities, further supporting his model and suggesting that his work had more clinical utility than Spearman's unitary theory.

However, when he administered his tests to an intellectually heterogeneous group of children, he failed to find that the seven primary abilities were entirely separate; rather he found evidence of g.

Thurstone managed a mathematical solution that resolved the contradictory results, and the final version of his theory was a compromise that accounted for the presence of both a general factor and the seven specific abilities.

This compromise helped lay the groundwork for future researchers who proposed hierarchical theories and theories of multiple intelligences (Ruzgis, 1994).

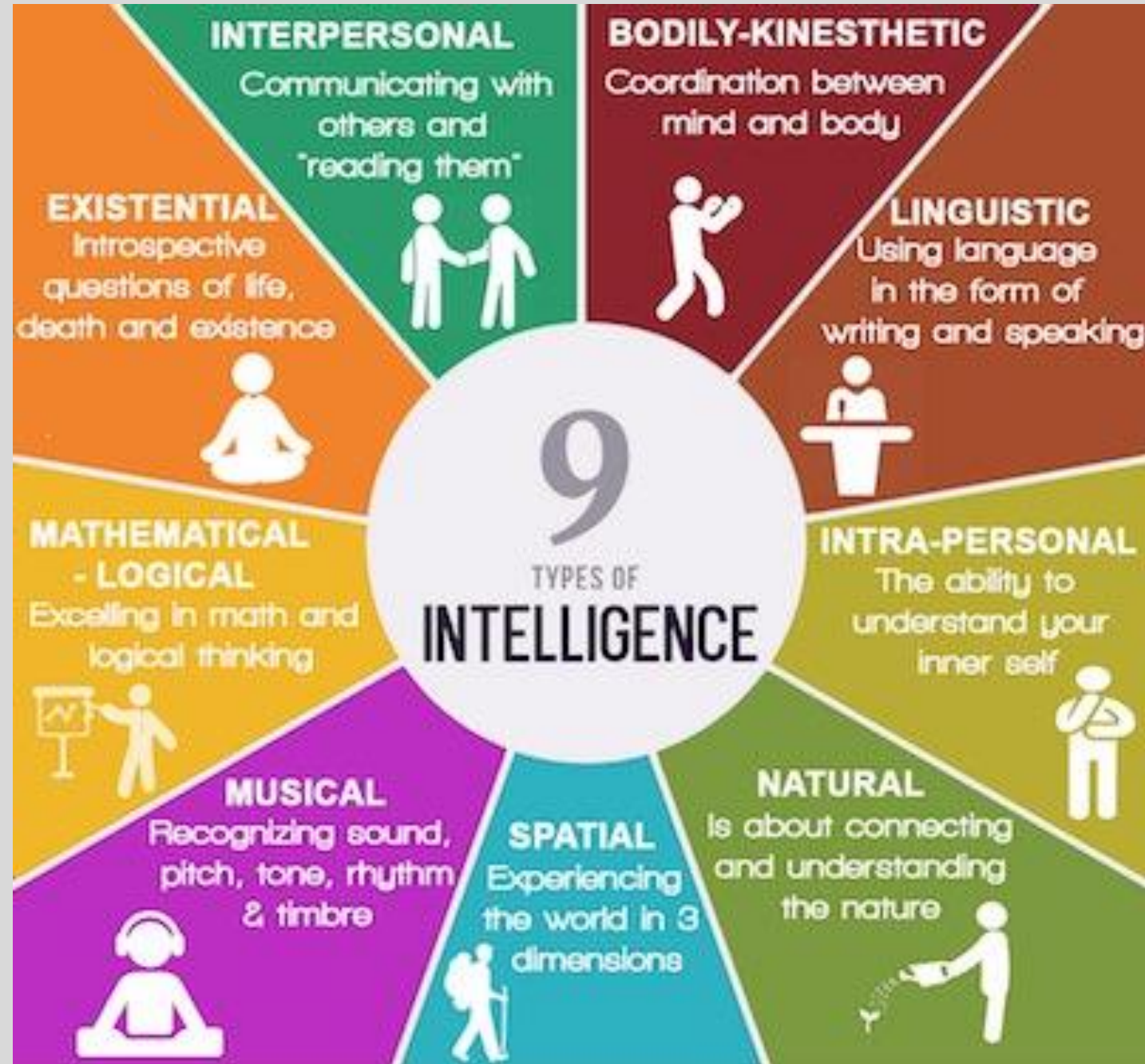
Howard Gardener:

Traditional psychometric views of intelligence are too limited

Howard Gardner's theory proposes that people are not born with all of the intelligence they will ever have.

Intelligence can be learned throughout life.

Everyone is intelligent in at least eight / nine different ways and can develop each aspect of intelligence to an average level of competency.



Many teachers utilize multiple intelligences in their teaching.

Too broad and that his eight different "intelligences" simply represent talents, personality traits, and abilities.

Gardner's theory also suffers from a lack of supporting empirical research.

Gardner's theory does not take a stand whether knowledge is important to intelligence or not.

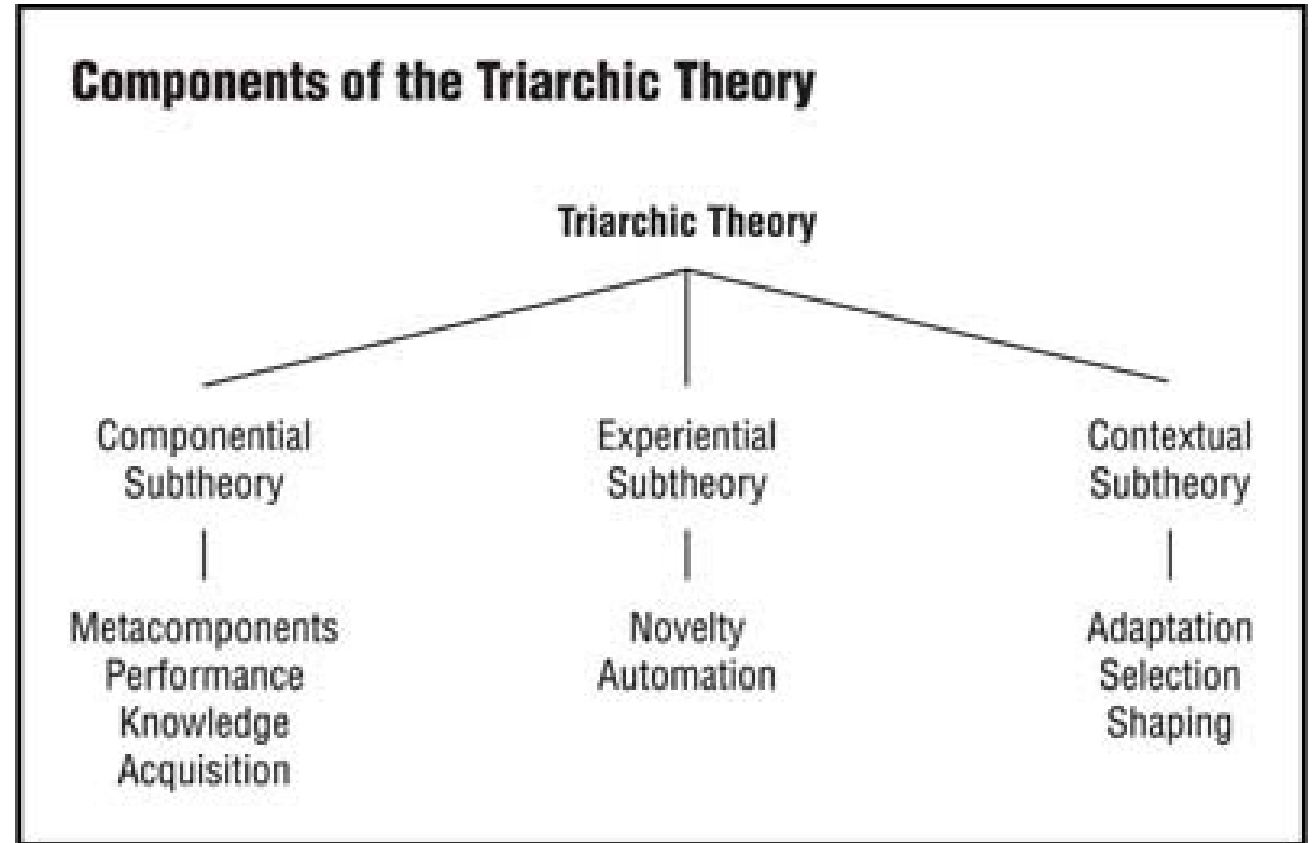
Criticisms

Gardner is a neurophysiologist and hence has studied individuals who suffered a brain damage and were unable to perform on one specific area. Frequent criticism is that his theories emerged from his own intuitions and reasoning and not from comprehensive empirical research. (Waterhouse, 2006).

Anderson points out that Gardner's intelligence types are ill-defined - they are "sometimes a behaviour, sometimes a cognitive process and sometimes a structure in the brain" (1992, p. 67).

Robert Sternberg: Triarchic Theory

“the cognitive ability to learn from experience, to reason well, to remember important information, and to cope with the demands of daily living.”



Componential – Analytic Intelligence

e.g., being book smart.

More in terms with the traditional definitions of IQ and academic achievement.

Meta-components – recognise a problem, develop strategies to solve it

Performance components – the processes involved in problem solving

Knowledge-acquisition components – processes that acquire and learn new material (sifting out relevant and irrelevant material)

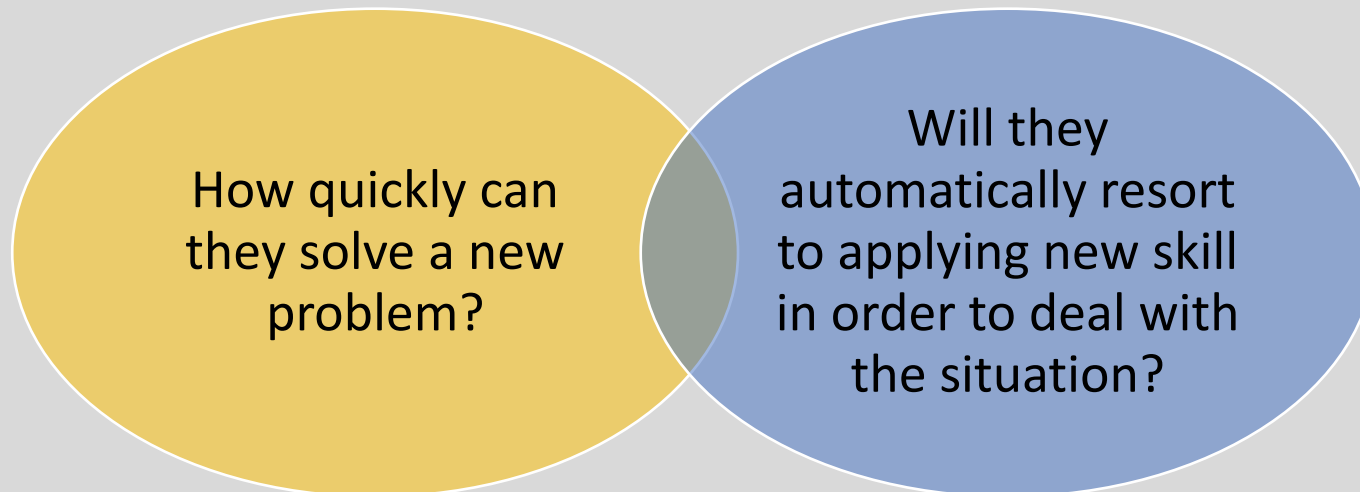
Such people are generally more able to see the solutions not normally seen, because of their abstract thinking and evaluation skills.

Emma always scores high on standardized tests. It's because of her ability to evaluate and analyze materials using abstract thinking in order to achieve solutions.

Experiential – Creative Intelligence

The ability to invent new ideas and solutions when dealing with new situations is regarded as creative intelligence. It's associated with using existing knowledge and skills in order to deal with new problems or situations.

Analyzing someone's creative intelligence level can be done by few general questions like...



Creative intelligence can be further divided into two categories.



Novelty - This concerns the ability of a person to deal with the problem for the first time.



Automation - This concerns the ability of a person to automatically perform the repeated tasks.

The fictional James Bond is a person high in creative intelligence because of his ability to use his knowledge and skills to deal with new problems every time.

Contextual Intelligence (practical)

- Defined as street-smart. Common sense.
- Dealing with the everyday tasks in the best possible manner shows the person's intelligence.
- Adaptation: The ability of a person to adapt in an environment or change it accordingly to best suit the personal needs.
- Shaping: adapting the environment to the individual, not the other way around.
- Selection: choosing one environment over another , eg – choosing qual or quant report – which best suits your intelligence (maths or English)

Analysing someone's practical intelligence level can be done by few general questions like...

Would the person be taken advantage of easily?

Do they adjust well to the world around them?

Are they comfortable with the daily adventures?

Sam is considering buying a second hand motorbike. A salesman, being a salesman, would obviously try to con the buyer, but Johnny is already prepared with price comparisons and has made up his mind to say no to unnecessary extras.

Critical Evaluation

- Unempirical nature.
- Gottfredson (2003) - it's not accurate to assume traditional IQ tests do not measure practical intelligences.
- Researchers have shown people with high IQ to have reached higher in their career, have higher income.
- Traditional analytical intelligence also showed correlation with staying alive and out of jail, which is generally categorized as practical intelligence or street smarts.

Daniel Goleman: Emotional Intelligence

Five components of emotional intelligence

“the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships”

(Daniel Goleman, 1998)

Emotional self-awareness — knowing what one is feeling at any given time and understanding the impact those moods have on others

Self-regulation — controlling or redirecting one’s emotions; anticipating consequences before acting on impulse

Motivation — utilizing emotional factors to achieve goals, enjoy the learning process and persevere in the face of obstacles

Empathy — sensing the emotions of others

Social skills — managing relationships, inspiring others and inducing desired responses from them

Applications for educators

Goleman: Bullying, disciplinary problems, violence and drug abuse are reduced in schools with a high EQ.

With a solid basis in emotional intelligence, academic performance — as well as behaviour — improves.

There is an obvious connection to Goleman's third, motivational component: learning stimulates curiosity and promotes feelings of satisfaction, even joy, when students immerse themselves in the process of assimilating new information.

2002, UNESCO launched an international campaign to promote emotional learning in the classroom.

A statement of 10 basic EQ principles to education ministries throughout the world. These drew heavily from Goleman's exposition of emotional intelligence.

The EQ of children starts developing long before they ever enter a classroom.

But EQ levels will vary widely, depending on each child's home environment.

Thus teachers must be able to recognize those children whose emotional literacy needs a boost.

Teachers should be ready to talk about feelings in the classroom. The message is that no emotion is "wrong," but certain ways of expressing those emotions or acting on them are indeed inappropriate.

Critique of Goleman's EI

He makes unsupported claims about the power and predictive ability of emotional intelligence.

He implies that anyone can learn emotional intelligence and fails to acknowledge either the relatively fixed nature of the personality traits he includes in his definition of EI or the differences in innate potential among individuals.

His personal beliefs about what is "appropriate" contradict the academic theory concerning the value of our emotions. He still seems to regard emotions as largely something to be controlled and restrained, rather than something to be value

Online Seminar

Individual presentation (PowerPoint) Choose one of the following questions:

1. Critically consider TWO intelligence theories.
2. Using theory and/or empirical evidence, evaluate how psychologists measure intelligence.

Question one is asking you to select TWO intelligence theories, and critically evaluate them. Do not simply describe the theories and remember that critique can be both positive and negative. You may want to consider how they compare, are there better explanations/theories? You may want to bring in empirical research to support the theories.

Question two is asking you to focus upon the different ways in which psychologists measure intelligence.

During the module, you will have studied difference measurements of IQ, draw upon this information to structure your presentation. However, do not simply use the information from the lectures. I am expecting you to look beyond these to the literature. The question asks you to evaluate the measurements so do not simply describe the measurements. You may want to consider how they compare, are there better measurements, are these measurements appropriate for everyone? You may want to bring in empirical research to support the measurements.

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