
Individual Differences

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Overview

- Personality and Intelligence
 - Theories
 - History
 - Measurement
 - Role of heredity and environment
 - Problems
 - Contemporary theory of autism
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Why important?

- “Every man is in certain respects
 - (a) like all other men,
 - (b) like some other men,
 - (c) like no other man”
(Murray & Kluckhohn, 1953).
 - Not working with ‘consistent’ phenomena
e.g. human vs litre of hydrogen
 - Averaging
e.g. metabolic rate
 - What does this mean for medicine?
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What Is Personality?

- Personality: the distinctive and relatively enduring ways of thinking, feeling, and acting that characterise a person’s responses to life situations
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The Psychodynamic Perspective

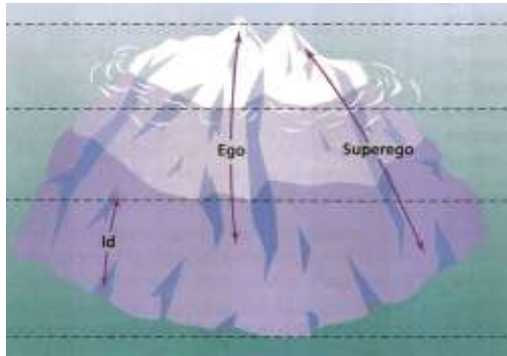
- Freud's Psychoanalytic Theory:
 - Studied 'hysteria' with Jean Charcot
 - Believed that symptoms were related to repressed memories and feelings
 - Personality is an energy system
 - Instinctual drives generate *psychic energy*, which constantly seeks release
 - Influenced by hydraulics models of the time

The Structure of Personality

- Id
 - the only structure present at birth
 - Exists totally within the unconscious mind
 - Pleasure Principle: seeks immediate gratification and release, regardless of rational considerations and environmental realities
- Ego
 - Operates primarily at the conscious level
 - Reality Principle: tests reality to decide when and under what conditions the id can safely satisfy its needs
- Superego
 - Last to develop
 - Contains the traditional values and ideals of family and society
 - Morality Principle

Psychoanalytic Theory

Freud's Model of Personality



Conscious Immediate awareness of current environment

Preconscious Available to awareness (e.g., names of friends, home address)

Unconscious Unavailable to awareness (infantile memories, repressed wishes and conflicts)

Constant Struggle in Psyche

- Watch how the **ID** defeats the **SUPEREGO** in a battle to control the **EGO**

Object Relations Theories

- Object Relations Theories: focus on the images or mental representations that people form of themselves and other people as a result of early experiences with caregivers
 - Forms working models through which later social interactions are interpreted
 - Often create self-fulfilling prophecies

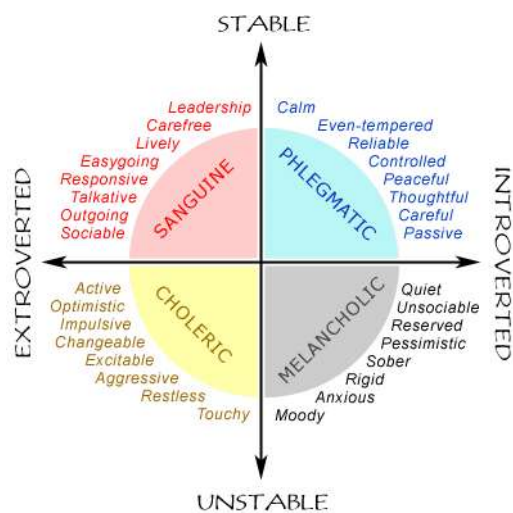
The Trait Perspective

- Personality Traits: relatively stable cognitive, emotional, and behavioural characteristics of people that help establish their individual identities and distinguish them from others
- A trait is a continuum along which individuals vary, like nervousness or speed of reaction.
- We can't observe traits but infer from behaviour

Eysenck's Two Factor Model

- Hans Eysenck (1916-1997)
- British psychologist, who, at the time of his death, was the most frequently cited psychologist alive
- Personality theory had two main factors:
 - Neuroticism** or stability – the tendency to experience negative emotions
 - Extraversion** – the degree to which a person is outgoing and seeks stimulation

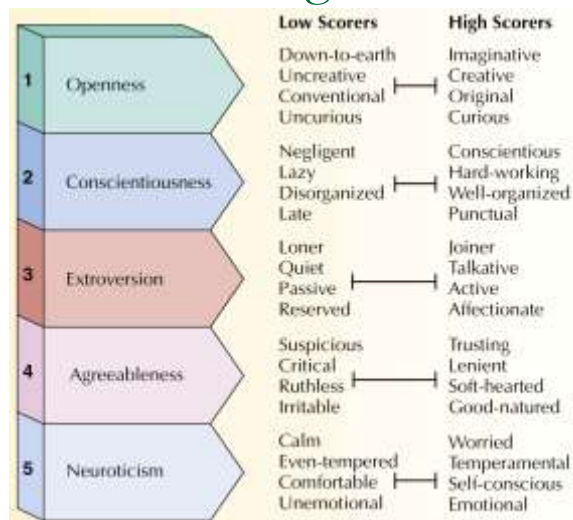
Eysenck's Two Factor Model



The Five-Factor Model of Personality

- The big five factors of personality (“supertraits”) are thought to describe the main dimensions of personality—specifically, neuroticism (emotional instability), extraversion, openness to experience, agreeableness, and conscientiousness.
- Use the acronym OCEAN to remember the big five personality factors:

Overview of the Big “5”



Personality Test Example

- Openness e.g. “I enjoy philosophical discussions”
- Conscientiousness e.g. “I am usually well prepared”
- Extraversion e.g. “I am the life of the party”
- Agreeableness e.g. “I put other people down”
- Neuroticism e.g. “I seldom feel blue”

Strongly
Disagree

Somewhat
Disagree

Neutral

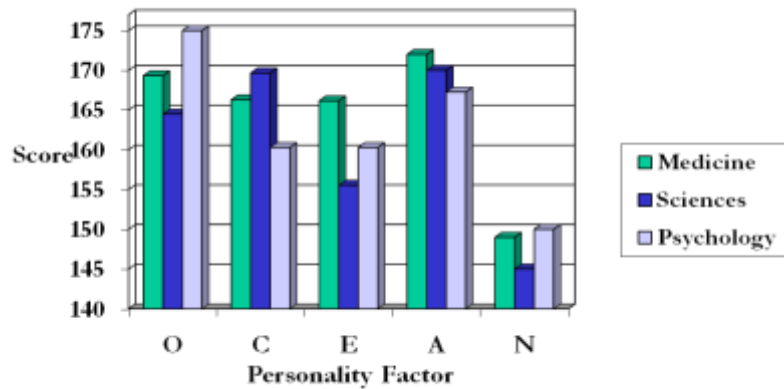
Somewhat
Agree

Strongly
Agree

Personality types of medical students

- Study compared 631 medical students across five universities (3:2 Female to Male ratio) with 914 students studying other subjects (including law, economics, sciences, psychology, engineering and philosophy)
- The study also looked at how personality factors affected academic performance in pre-clinical years

Personality types of undergraduate students



Personality types of medical students

- Compared to other students, medical students scored highest on *extraversion* and *agreeableness*
- Medical students scoring high on *conscientiousness* were more likely to succeed in pre-clinical years
- *Extraversion* was a negative predictor of examination results in Year 1 only

The Trait Perspective

- Some personality dimensions tend to be more stable over the lifespan than others
 - Introversion-extraversion remains relatively stable
 - Openness and extraversion tend to decline with age
 - Agreeableness and conscientiousness tend to increase with age
 - Females tend to decrease in neuroticism
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Evaluation

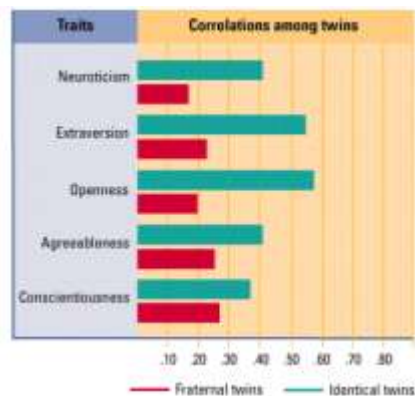
- Focuses attention on the value of identifying, classifying, and measuring stable, enduring personality dispositions
 - Need to focus on how traits interact with each other
 - Focuses only on description, not explanation
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Biological Foundations

- Eysenck proposed a biological, genetic basis for personality traits
 - Differences in customary levels of cortical arousal
 - Introverts are overaroused; extraverts are underaroused
 - Suddenness of shifts in arousal
 - Unstable (neurotic) people show large and sudden shifts in limbic system arousal; stable people do not

Genetic Influences on Personality

- 123 pairs of identical twins and 127 pairs of fraternal twins
- Measured on “Big Five” personality dimensions
- Results suggest that personality differences in the population are 40 - 50% genetically determined.



Social-Cognitive Theories: Bandura's Key Terms

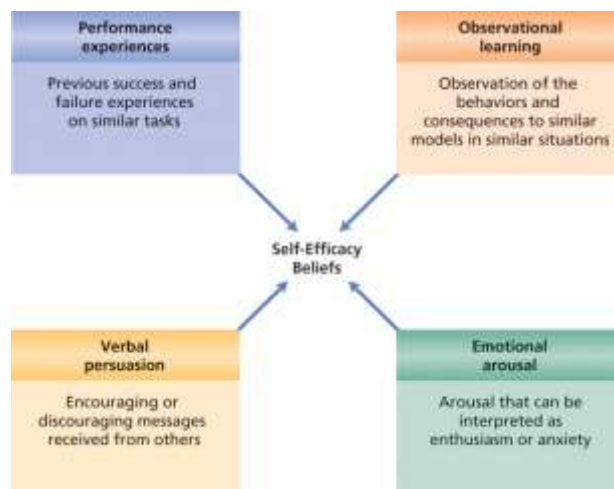
Reciprocal Determinism

(cognitions, behaviours, and the environment interact to produce personality)

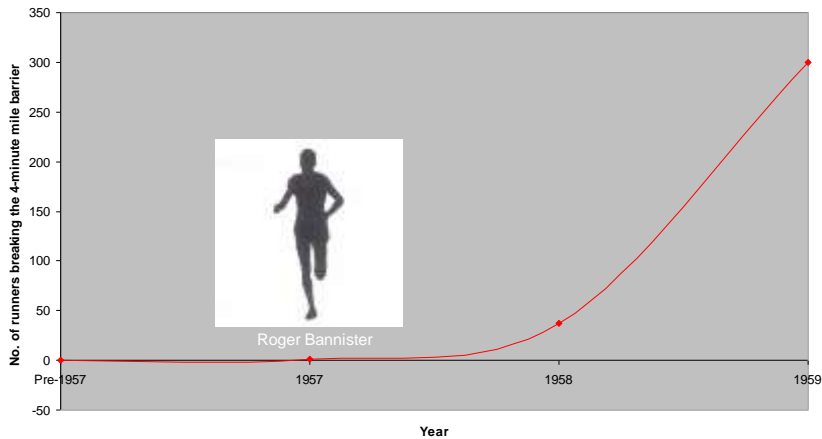


Self-Efficacy (person's expectation of success)

Four sources of Self Efficacy



Self-efficacy in practice



Social-Cognitive Theories

- **Locus of Control:** an expectancy concerning the degree of personal control we have in our lives
 - *Internal:* life outcomes are under personal control
 - *External:* outcomes have less to do with one's own efforts than with the influence of external factors
 - In the 1960's, African-Americans who actively participated in the civil rights movement scored higher on Internal than those who did not (Rotter, 1966)

Personality & Intelligence

- Which of the 'big five' personality traits correlate with intelligence?
- Openness, Conscientiousness, Extroversion, Agreeableness, Neuroticism
- **Openness** positively correlates with measures of verbal intelligence
- **Conscientiousness** negatively correlates with intelligence test scores

Intelligence

- Intelligence: the ability to acquire knowledge, to think and reason effectively, and to deal adaptively with the environment
- "Intelligence is what intelligence tests measure" (Boring, 1923)

Intelligence Tests

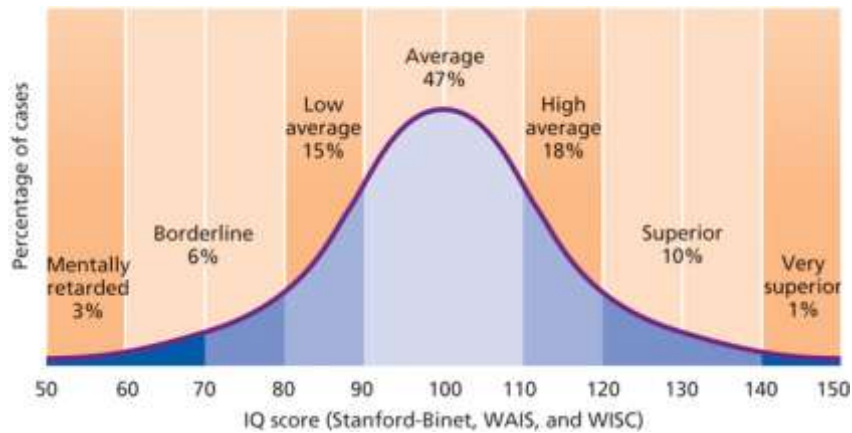
- Alfred Binet and Théodore Simon
 - Develop first intelligence test to identify French children that might have difficulty in school
 - All children follow the same course of mental development, but at different paces
 - Binet-Simon scale measures mental age

Intelligence Tests

$$\text{IQ} = \frac{\text{mental age}}{\text{chronological age}} \times 100$$

- Lewis Terman
 - Converts the Binet-Simon scale to suit California children (Stanford-Binet scale)
 - Introduced the IQ score (intelligence quotient)
 - Term coined by William Stern
 - A score of 100 is considered average
 - Test-taker's performance relative to average performance of other's the same age

The Normal Distribution of IQ Scores



Early Theories of Intelligence

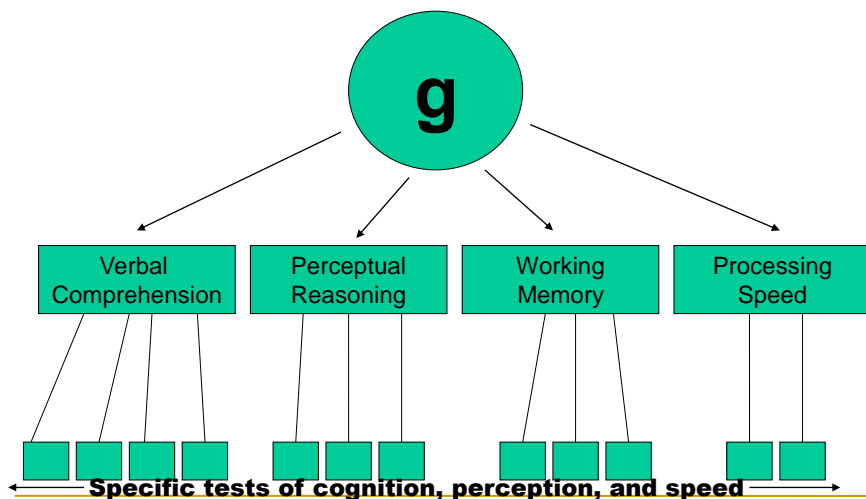
- Charles Spearman
 - Believed intellectual activity involves a general factor (g) and specific factor

 - Develops factor analysis
 - People who excel in one area often excel in other areas
 - Statistical procedure which examines inter-correlations between different tests of mental ability

The Psychometric Approach

- Cattell and Horn (1971, 1985) broke down Spearman's 'g' into two distinct but related subtypes (with a correlation of about .50)
- Crystallized Intelligence (gc): the ability to apply previously acquired knowledge to current problems. Will commonly improve with age.
- Fluid Intelligence (gf): the ability to deal with novel problem-solving situations for which personal experience does not provide a solution. Shows pattern of decline in aging.

Factor structure of the WAIS-IV



Sample Items from the Wechsler Test

VERBAL

General Information

What day of the year is Independence Day?

Similarities

In what way are *wood* and *error* alike?

Arithmetic Reasoning

If eggs cost 60 cents a dozen, what does 1 egg cost?

Vocabulary

Tell me the meaning of *corrupt*.

Comprehension

Why do people buy fire insurance?

Digit Span

Listen carefully, and when I am through, say the numbers right after me.

7 3 4 1 8 6

Now I am going to say some more numbers, but I want you to say them backward.

3 8 4 1 6

PERFORMANCE

Picture Completion

I am going to show you a picture with an important part missing. Tell me what is missing.

75						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Picture Arrangement

The pictures below tell a story. Put them in the right order to tell the story.



Block Design

Using the four blocks, make one just like this.



Object Assembly

If these pieces are put together correctly, they will make something. Go ahead and put them together as quickly as you can.



Digit-Symbol Substitution

Code

△	○	◇	×	◇
1	2	3	4	5

Test

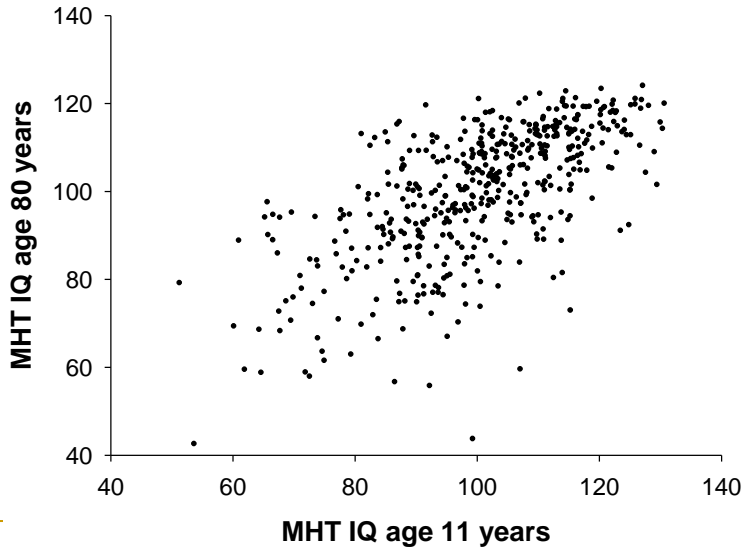
1	5	4	2	1	3	5	4	1	5

The utility of IQ scores

- This criticism is especially relevant for clinical applications of such tests e.g. Stroke pts
- Consider a doctor who devises a limb strength quotient or LQ by totalling the strength of all four limbs, again with a mean of 100.
- Now consider a tennis player who sprains his left ankle reducing his left leg score to 50, but his right leg scores 140 and his right and left arms score 160 and 130 respectively.
- His LQ would be 120 – well above average, so no problem, right? (Lezak, 1988)

Stability of Intelligence

Taking the same IQ test at age 11 & age 80: Scottish Mental Survey 1932



Deary et al. (2004) *Journal of Personality and Social Psychology*, 86, 130-147.

Who is the most intelligent?



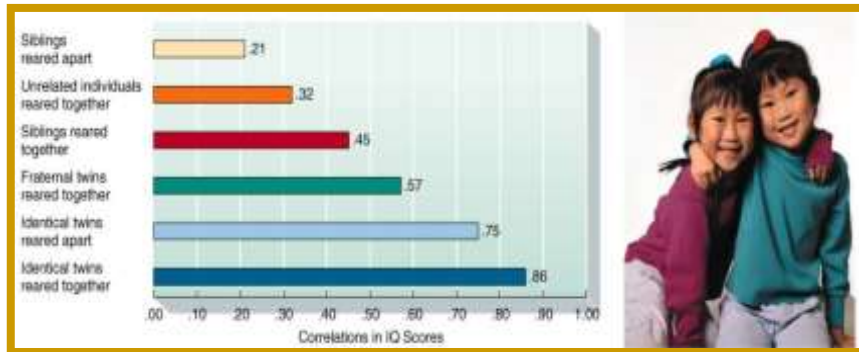
Gardner's Multiple Intelligences

- **Linguistic Intelligence:** e.g. Shakespeare
- **Logical-Mathematic Intelligence:** e.g. Einstein
- **Spatial Intelligence:** e.g. Gaudi
- **Musical Intelligence:** e.g. Lennon.
Furthermore, Gardner believes cardiologists may have this kind of intelligence in abundance as they make diagnoses on the careful listening to patterns of sounds.
- **Bodily-Kinaesthetic Intelligence:** e.g. Messi
- **Intrapersonal Intelligence:** e.g. Socrates
- **Interpersonal functioning:** e.g. Freud
- More recently he proposed **Naturalistic Intelligence**, the ability to understand and work effectively in the natural world (Gardner, 1999) e.g. Ray Mears, and **Existential Intelligence** (Gardner, 2000), the philosophical ability to ponder questions about one's existence e.g. Sartre.

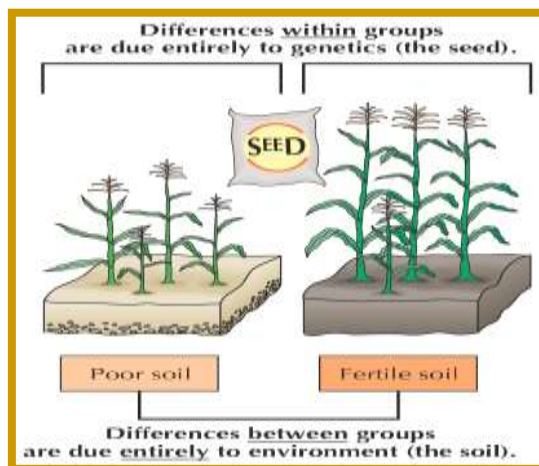
Heredity and Environment

- Genetic factors can influence the effects produced by the environment
 - Accounts for 1/2 to 2/3 of the variation in IQ
 - No single "intelligence gene"
- Environment can influence how genes express themselves
 - Accounts for 1/3 to 1/2 of the variation in IQ
 - Both shared and unshared environmental factors are involved
 - Educational experiences are very important

An Example of “Genetic Vs. Environmental” Influences on Intelligence (Plomin et al. 2007)



The Intelligence Controversy: Are IQ Tests Culturally Biased?



Gender Differences in Intelligence

- Gender differences in performance on certain types of intellectual tasks, *not* general intelligence
- Men generally outperform women on spatial tasks, tests of target-directed skills, and mathematical reasoning
- Women generally outperform men on tests of perceptual speed, verbal fluency, mathematical calculation, and precise manual tasks

Autism Research

- Autism and Asperger's syndrome share three core diagnostic features
 - Difficulties in social development
 - Difficulties in development of communication
 - Narrow interests and repetitive behaviour
- They are distinguished by Asperger's syndrome requiring at least average IQ and that the child spoke on time
- There is a normal distribution of autistic traits in the general population

Sex differences – Extreme Male Brain

- Classic autism has a 4:1 male: female ratio
- Asperger's syndrome has a 9:1 male: female ratio
- Baron-Cohen (2002) explains the social and communication difficulties in autism and Asperger's syndrome by delays or deficits in *empathy* whilst explaining the narrow interests with reference to skills in *systemising*

Sex differences

- *Empathising* consists of both being able to infer the thoughts and feelings of others ('Theory of Mind') and having an appropriate emotional reaction
- *Systemising* is the drive to analyse or construct any kind of system i.e. identifying the rules that govern a system, in order to predict how that system will behave (Baron-Cohen, 2006)

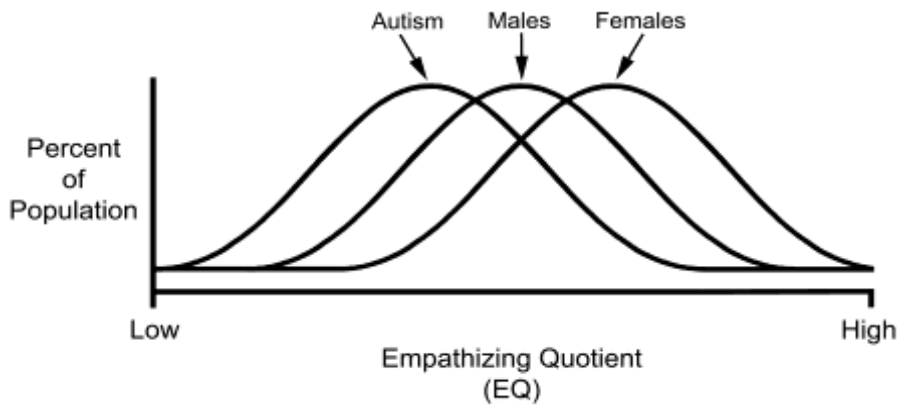
Empathy Quotient Examples

- I get upset if I see people suffering on news programmes.
 - I can pick up quickly if someone says one thing but means another
 - I can't always see why someone should have felt offended by a remark
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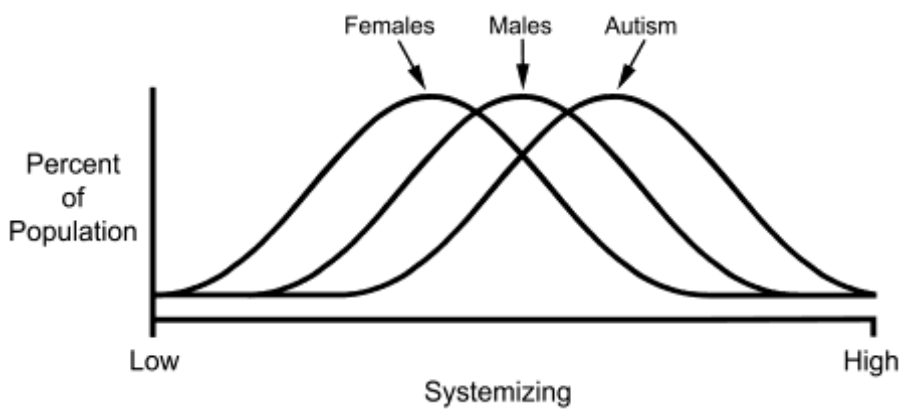
Systemising Quotient Examples

- I am fascinated by how machines work
 - I find it very easy to use train timetables, even if this involves several connections
 - I do not keep careful records of my household bills.
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Empathizing

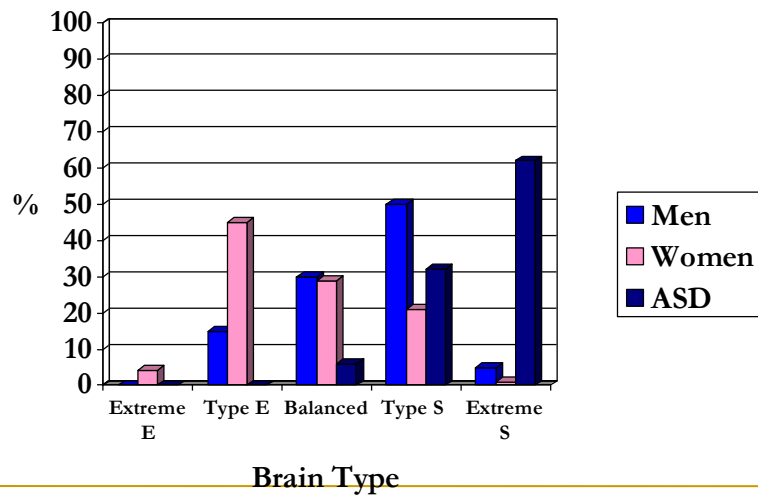


Systemizing



E&S in Males, Females and Autism

Goldenfield, Baron-Cohen & Wheelwright (2005)



‘Neurosexism’?

- Fine (2010) argues that impossible to exclude contribution of environment and culture
- Findings of sex differences reflect bias in gender roles
- Science meets politics?