01/16/2020

Intelligence and Testing

Study in Intelligence Testing

- Steele, C.M., and Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology,* 69 (5)
    - What they observed was that minority groups tend to perform worse on standardized intelligence tests in comparison to other students

Graduate Record Examination (GRE)

- Similar to LSAT, MCAT tests
- 8-8 hours, “high stakes”
- High stake exams tend to be:
    - They are typically a full day test
    - Typically need to pay to be able to take them
    - These are aptitude tests meaning that they are less about what we know and more about what we are capable of learning

Steele and Aronson: 1st Experiment

- They used aspects of “high stakes” testing to make the questions for their experiments
- 114 students with subtly different instructions:
- Diagnostic:
    - “Personal factors involved in performance on problems”
    - These questions involved personal factors involved in performance on problems
- Non-diagnostic:
    - “Factors involved in solving problems”
    - These instructions were identical to the diagnostic excepts they phrased it slightly different
- Challenge:
    - “Mental challenge in solving problems”
    - These instructions state that these questions involved a mental challenge in solving the test problems
- Half of the students in the study were African American and half were white
- They gave ALL students a set of instructions before they were to complete the test
- There were three versions of these instructions (diagnostic, non-diagnostic, challenge)

Results

- They found that in both the challenge and non-diagnostic instructions, the students tended to score the same
- In the non-diagnostic group, the African American students scored significantly lower than the white students

Steele and Aronson: 4th Experiment

- In this experiment, all instructions were identical
- Asked demographic questions such as age, year in school, major, siblings, parents' education
- Only difference in this experiment: half the group were asked about their race and half were not
- They then answered GRE questions

Results

- Found that students not asked about race scored about the same
- And the group asked about race showed a significantly lower score for African American students in comparison to white students

Conclusions

- The results demonstrated that there is something known as a stereotype threat that minority groups exhibit
- **Stereotype Threat:** risk of conforming negative stereotype about one's group
- Danger of IQ and other tests

Are You Smart?

- APA defines "smart":
    - Understand complex ideas
    - Adapt effectively to the environment
    - Learn from experience
    - Engage in various forms of reasoning
    - Overcome obstacles

What is Intelligence?

- "Intelligence is the ability to adapt to change" - Stephen Hawking
- "The true sign of intelligence is not knowledge but imagination" -Albert Einstein
- **Operational definition**: it is what intelligence tests measure

History of Intelligence Testing

- We have a long history of trying to measure intelligence in some form
- 4000 years ago they tried a formal test in China (2200 BCE)
- They were trying to determine who would be the best fit for a civil servant
- What they did was tested individuals for their ability in what they thought was important (music, archery, horsemanship, arithmetic, writing, rituals, and ceremonies)

- In more recent years, Sir Francis Gaulton did a similar test (late 1800s)
    - Simple sensory, perceptual, and motor processes
- He studied family trees and found that success and eminence appeared consistently in some families over generations
- He concluded that success runs in families because great intelligence is passed from generation to generation through genetic inheritance

- Research eventually showed that the sensory processes that he measured were largely unrelated to other criteria of mental ability that he was trying to predict, such as success in school or in a professional life
- Although his work wasn't accurate, it was an important starting point for intelligence testing

Intelligence Testing

- Alfred Binet (1857-1911)
- Instigated by crowned Paris schools
- Schools in Paris were having class sizes that were too big
- Binet designed a test to see which students wouldn't benefit from an education in an attempt to lower class sized
- First modern intelligence test
- Collected norms by testing non-intellectually disabled children aged 3 to 11 years old
- Mental age: mental development relative to others
    - Intellectually disabled children like normal children of a younger age
    - This was the idea that maybe a child who had an intellectual disability had a mental age that was lower than their chronological age

Norms

- When talking about norms, we are talking about the distribution of values on tests
- They allow us to compare our test scores against their peers
- If normally distributed:
    - 68% of values within 1 standard deviation from the mean
    - 95% of values within 2 standard deviations
    - 99.7% within 3 standard deviations
        - 68-95-99 rule

Standard Deviations

- These are numbers that represent how spread out the results are
- Standard deviations measure how spread out a set of numbers are

Intelligence Quotient

- William Stern (1912) compared mental age with chronological age which would give us our IQ score
- $IQ = Mental\ Age/Chronological\ Age\ x\ 100$

Intelligence Testing

- Lewis Terman revised Binet's test, standardizing instructions and additional norms
- Stanford-Binet test
    - Age two through adulthood
    - Verbal reasoning
    - Quantitative reasoning
    - abstract/visual reasoning
    - Short-term memory

- This test allowed us to use the normal distribution and allowed us to determine what an individual should be scoring on these tests

Intelligence Testing

- Wechsler (1939) adult intelligence test
- 3rd edition, verbal vs non-verbal
    - Wechsler Adult Intelligence Scale (WAIS)
    - Wechsler Intelligence Scale for Children - children 6 to 16 (WISC)
    - Wechsler Preschool and Primary Scale of Intelligence - children 4 to 6 (WPPSI)

Intelligence Testing

- Stanford-Binet and Wechsler were intended to be distributed individually
- They found that they needed to accommodate large numbers of people in a short amount of time so group testing became a lot more common
    - US Army Alpha Test
    - Scholastic Aptitude Test (SAT)
    - Canadian Achievement Tests (CAT)
    - Canadian Test of Cognitive Skills (CTCS)
- Group tests save money but may fail to accommodate nervousness and other factors

Aptitude vs Achievement

- **Aptitude** tests our ability to learn
    - SAT
    - CTCS
- **Achievement** tests what has been learned
    - Tests in PSYC1002
    - CAT
    - EQAO

Key Issues in Psychological Testing

- Standardization
    - Test norms
        - Do we know norms such as how well should a 12-year-old score on a test like this, etc
    - Standardization group
- Reliability
    - Correlation coefficient
- Validity
    - Content validity
    - Criterion-related validity
    - Construct validity
- Race, language, genetics, and culture

Validity of IQ Tests

- Content validity: about intelligence?

        - This asks the question about whether the questions asked in the test will actually test our intelligence
- Criterion-related validity: correlated with other measures?
    - academic/verbal intelligence
    - IQ tests are positively correlated with school success (.4,.5,.7)
    - IQ tests are positively correlated with the number of years in school (.6,.8)
    - Modestly predictive of occupational attainment
- Construct validity: evidence measures “intelligence”?
    - This concept asked if there is evidence that IQ tests can actually measure our intelligence

Phrenology

- Franz Gall (1800s)
- Gall noticed that when you touch your head, you will find bumps
- He suggested that these bumps are associated with certain intellectual capabilities
    - Determined 27 characteristics he believed you had depending on where bumps on your head were placed
    - These characteristics included: reproduction, love of offspring, affection, friendship, self-defence, tendency to murder, etc
- Justifies racism
- Phrenology was considered a pseudoscience since there was no proof to back it up but it was a precursor to modern intelligence testing

Culture-Fair Tests

- Goal of all these tests is to make them culturally unbiased
- 2 types of culture-fair tests:
    - Questions familiar to all socioeconomic and ethnic backgrounds
    - Tests with no verbal questions

Culture-Fair Tests

- These tests are difficult to create because:
    - If time is limited, biased against those less concerned with time
    - If translated, words may have different meanings for different language groups
    - Some cultures have less experience with drawings, photographs, tests
    - Subtle social influences

Intelligence Tests

- Tests designed to eliminate biases from subjective judgements
- Should not be relied on as the sole indicator of intelligence

Theories of Multiple Intelligences

- Factor analysis
    - Statistical procedure identifies items correlated with each other
    - Divide intelligence into different components or elements

Spearman's Two-Factor Theory

- Derived from factor analysis of intelligence tests
- **G** general intelligence and
- **S** specific abilities

Gardner's Multiple Intelligences

1. Verbal like journalists
2. Math like accountants
3. Spatial like architects
4. Musical like composers
5. Bodily-kinesthetic like surgeons
6. Interpersonal like teachers
7. Intrapersonal like psychologists
8. Naturalistic like botanists
9. existential/spiritual intelligence

Sternberg's Triarchic Theory

- Analytic (measured by IQ tests)
- Creative (creativity and insight)
    - This included creativity, imagination and insight
- Practical (street smarts)
    - Most tasks require all three
    - Schools favour analytic ability
- Sub-theories of each as well

Emotional Intelligence (EI)

- It consists of the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion
- Perceiving emotion (facial expressions)
- Using feelings (when to show how excited you are)
- Understanding emotion (why dad won't cool off about the car)
- Managing feelings (not the time to be mad at the policeman)

Bar-On, Handley and Fund

- There is a lot of research that proves the importance of EI
- 1171 US Air Force recruits;
    - High performers - high EI
    - Low performers - low EI
- 5412 Israeli Defence Force recruits;
    - High performing combatants - high EI
    - Elite flying unit - high EI
    - Officer material? - high EI

Wolff, Druskat, Koman, and Messer

- Team Emotional Intelligence measure?
- 48 MBA student groups evaluated

- They found that there was a high correlation between team effectiveness and team EI:
    - When the teams were good at interpersonal understanding; team self-evaluation; proactive problem-solving; organizational understanding; building relationships it tends to mean you tend to have a high EI

Theories of Multiple Intelligences

Garder	Sternberg	Salovey and Meyer
Verbal Math	Analytical	
Spatial Movement Musical	Creative	
Interpersonal/ Intrapersonal	Practical	Emotional
Naturalistic		

Intellectual DIsability

- Diagnosis based on IQ and adaptive testing
    - IQ is 2 or more standard deviations below the mean
    - Adaptive skill deficits
    - Onset before age 18
- Mild, moderate, severe, profound

Intellectual Disability Per Wechsler IQ

Mild	IQ: 55-70	Learning < or = to grade 6; employable; 85% of people who are ID; intermittent support
Moderate	IQ: 40-55	Learning < or = to grade 2-4; sheltered workshops, 10% of people who are I; limited support
Severe	IQ: 25-40	Trainable in basic health habits; 5% of people who are ID; extensive support
Profound	IQ < 25	May learn limited self-help skills; 1% of people who are ID; pervasive support

ID Statistics

- Prevalence
    - ~1% of the general population
    - 85% are labelled with mild intellectual disability
- Course of ID

- Tends to be chronic
- Prognosis varies greatly from person to person

Causes of Intellectual Disability

- **Organic:** genetic disorder, injury
  - Ex. down syndrome
- **Environmental/ Cultural-familial:** no apparent organic brain damage
  - Mild ID

Organic/Biological Causes of ID

- Down syndrome
  - Maternal age and risk of down syndrome baby
  - 1 in 800, but if the mother > 49 years old the probability goes up to 1 in 11
  - Importance of Amniocentesis and chorionic villus sampling
- Fragile X syndrome
  - An inhibitory control deficit that is caused by a mutation in the inherited gene
- Phenylketonuria
  - Is a metabolic disorder (due to an inherited enzyme deficiency) that can lead to intellectual disability if not caught and treated in infancy
- Hydrocephalus
  - An excessive accumulation of cerebrospinal fluid in the skull which destroys brain tissue and causes intellectual disability

Organic ID

- Genetic-chromosomal factors
- Infections and toxic agents
- Trauma (physical injury)
- Ionizing radiation
- Malnutrition and other biological factors

Organic ID

- Down syndrome
- Fragile X, missing gene leads to inhibitory control problems
- Phenylketonuria (PKU) - missing enzyme, toxic accumulation in blood damages the brain
- Cranial anomalies

Cultural-Familial ID

- 50% of ID cases
- Least understood
- Associated with
  - Mild levels of intellectual disability on IQ tests
  - Good adaptive skills

Extremes: Giftedness

- **Identification**

        - IQ is 2 standard deviations above the mean (130+)
        - Creativity, leadership, special talent?
            - We have an understanding that these individuals are extremely gifted creatively, etc, however, this is not always the case
- **Stereotype**: weak, socially inept, emotionally troubled
    - Terman (1925) contradicted stereotypes
    - Winner (1997) - moderate vs profoundly gifted
        - Her research suggested that there are people profoundly gifted that support the stereotypes
- **Giftedness and high achieving** - beyond IQ
    - Renzulli (2002) - IQ x motivation x creativity
    - Simonton (2001) - drudge theory vs inborn talent

Giftedness

- Probably a product of both heredity and environment
- Relatively few gifted children become gifted adults
    - They tend to lose motivation

Types of Thinking

- **Convergent thinking:** 1 correct answer
    - Conventional IQ tests
- **Divergent thinking:** many answers
    - Creative people tend to be divergent thinkers
- Most creative people are intelligent, but intelligence does not necessarily mean you are creative

Creative Process

1. Preparation - get immersed
2. Incubation - churn ideas
3. Insight - “aha!” - time
4. Evaluation - is it good?
5. Elaboration - perspiration

Will Smarts Make You Rich and Famous?

- Richard St. John
- Interviewed 500 successful people about what was required for success

Conclusions

- There are 8 characteristics of success, none of them had anything to do with smarts, beauty, or luck
- Most important: hard work

Are You Born Smart?

- Human Genome Project (2003)
- Genetic markers for intelligence on chromosome 4, 6, and 22

    - Marker on chromosome 6 is carried by ⅓ of the people with a high IQ and ⅛ people with an average IQ
    - At least 150 genes related to human cognition
- Genetic influence on intelligence is complex

Genetic Influences

- Heritability
    - Variability of IQ in a population caused by variability in genetic effects
- Heritability of intelligence increases from childhood (35%) to adulthood (75%)

Genetic Influences

- Adoptive studies
    - Stronger correlation between IQs of adopted children and biological parents than adoptive parents
    - But, the environment also has an effect because if we are placed in a better (more enriched) environment, IQ increases

Nature vs Nurture

- Doug Wahlsten
    - Heredity and the environment interact in effects on intelligence
    - Importance is like height and width to a rectangle

Pseudoscience

	Male	Female
“Caucasoid”	1,462 cm3	1,259 cm3
“Mongoloid”	1,486 cm3	1,319 cm3
“Negroid”	1,441 cm3	1,250 cm3

- Philippe Ruston (1992) cranial capacity
    - He was trying to show that different racial groups might have different brain sizes
    - This is not correct
- Similar to Arthur Jensen

Environmental Influences

- Heredity does not determine IQ to the extent that Jensen and Rushton claim
- Ex. socioeconomic differences in intelligence and how much parents talk with their children
- Even with all the advantages the environment has to offer, some children lack motivation to learn

Environmental Influences

- Flynn Effect (James Flynn 1999)
    - Worldwide increase in IQ scores over the last few years

- Cannot be due to heredity
- No answers have been found yet, but some suggestions have been made:
- Increasing levels of education? Nutrition?

Environmental Influences

- TV and computer games making us smarter?
- Different theories about why there was been such an increase of IQ scores in the past few years
    - Steven Johnson (2004) Flynn effect explained by increasing complexity of pop culture
    - Shows that have a lot of knowledge or that are engaging might motivate young people to do good in school to get there these TV show characters are in their role
    - Ex. “Grey’s Anatomy” or “How to get away with murder”; Linear, simple storyline vs complex, multi-dimensional plotline
    - “PacMan” vs Grand Theft Auto

Environmental Influences

- Craig Ramey et al (1984, 1998)
- A study
- They divided these children into two groups
- The first group was given access to good daycare where they had access to learning activities and free healthcare
- The second group was just given free healthcare
- 111 children: low-income, poorly educated
    - **Intervention**: year-round daycare (learning activities) plus medical, social services
    - **Control**: medical, social services, no daycare
- Results? Intervention IQ > Control
    - Age 3: 17 point IQ advantage
        - Found that the intervention group had an IQ advantage over the controlled group
    - Age 15: 5 point IQ advantage
    - Greatest advantage if mothers’ IQ is below 70

Early Intervention Programs?

- Carolina Abecedarian Project
    - This project showed that not only did this intervention have a noticeable effect on children, but it actually extended to people in their 20s
- Promote motor, cognitive, language, and social skills

Intelligence Across Cultures

- Reasoning and thinking skills
    - Western culture
    - Our IQ tests are a product of western culture

    - Western culture puts more priority on reasoning and thinking skills over factors such as social life or recognition skills
- Responsible participation in social life
    - Kenyan villagers
- Visual pattern recognition skills
    - James Bay Cree

Ethnic Comparisons

- Compared with white norms
    - Students from indigenous groups score 20 points lower on verbal scales, but 5 points higher on performance scales
    - They score higher on the performance scale because it is seen as a bigger priority to these groups over verbal scales

Ethnic Comparisons

- Racial differences in heredity of IQ depends on how ethnicity is defined
    - Race is oversimplified
    - There is a myth of “black” vs “white”
- The gap narrows between groups with improved environment

Gender Comparisons

- Overlap in scores of males and females
    - Males: higher on some nonverbal areas
    - Females: higher in some verbal areas
- Perhaps men and women achieve similar levels of intelligence via different brain organization

Intelligence: Heredity or Environment

- Heredity
    - Family and twin studies
    - Heritability estimates
- Environment
    - Adoption studies
    - Flynn effect
- Interaction: reaction range
    - This is the idea that what heredity does for us is that the moment we are born, we already have a range of potential IQ that we are capable of
    - The way we are raised and the opportunities we are given aids in us reaching our maximum potential, but it is believed that we cannot reach an IQ score over our potential regardless of opportunities

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Motivation and Emotion

Chapter 10: A

Basic Concepts

- Motives:
    - Needs, wants, and desires leading to goal-directed behaviour (biological and social)
- Drives
    - Internal tension that pushes us to reduce tension and achieve homeostasis
- Incentive
    - External goal that pulls behaviour

Biological and Social Motives

Biological	Social
Hunger	Achievement
Thirst	Affiliation
Sex	Autonomy
Temperature	Nurturance
Excretion	Dominance
Sleep	Exhibition
Activity	Order
Aggression	Play

Intrinsic vs Extrinsic Motivation

- intrinsic:
    - Internal factors such as self-determination, curiosity, challenge, effort
    - Something inherently interesting or enjoyable
    - Provided by you
- Extrinsic:
    - Incentives such as rewards and punishments
    - Done to achieve some other goal
    - Provided by others

Intrinsic vs Extrinsic Motivation

- Intrinsic motivation - greater achievement than extrinsic alone
- Add extrinsic reward (money, prizes) - enhances motivation
- When extrinsic reward consists of praise - enhances motivation

Evolutionary Approach to Motivation

- Goal: maximize reproductive success
- Instinct: not learned, universal
- Just label behaviour rather than explain it?
- Some motivation is learned and some are not

- But, evolutionary approach suggests we should all be similarly motivated

Maslow's Hierarchy of Needs

- Abraham Maslow believed we have a hierarchy of needs
- We need to meet the needs at the bottom of the hierarchy before we can satisfy the needs above them
- Basic human needs must be satisfied before higher needs can be met
- It is influential
- Although we know the hierarchy doesn't work quite like this, it is a rough outline of how we satisfy biological needs

Chapter 10: B

Gastric Signals

- Walter Cannon observed that when we are hungry our stomachs growl
- This is because our stomachs contract when it's empty
- Cannon wanted to know how our hunger influences
- What he did was get a student, Washburn, and inserted a balloon into his stomach
- When he was hungry, he had to push a button which would expand his stomach
- He concluded that it is only when our stomachs contract that our brains tell us we are hungry
- Though this research was not 100%
- He failed to realize that our stomach also reacts when it is full, not just empty
- Even in individuals who don't have a stomach, they still explained that they felt feelings of hunger

Gastric Signals

- Gastric activity signals both hunger and being full
- Cannon and Washburn's conclusion: gastric activity is the basis for hunger

Blood Chemistry

- **Glucose** (blood sugar) receptors in the brain and liver: hunger is low
- **Insulin** from pancreas causes excess sugar to be stored as fat and carbohydrates: more insulin leads to beings more hungry
- **Leptin** secreted by fat cells; when high hunger diminishes when low hunger increases
- **Ghrelin** secreted by the stomach when hungry and promotes feelings of hunger through the hypothalamus
- **CCK** secreted by intestine after eating and promotes satiety

Hypothalamus

- Lateral hypothalamus:
    - Increases hunger when stimulated
- Ventromedial hypothalamus:
    - Reduces hunger
- Arcuate nucleus, paraventricular nucleus

- Neural circuitry is more important
- Neurotransmitters such as serotonin also have a role

Environmental Factors of Eating

- Palatability
    - When it tastes better, we eat more
- Availability
    - When you have a bigger serving, we eat more
- Variety
    - When there is a greater variety of food, we eat more
- Others
    - We eat 44% more when we eat with others
- Stress
    - We eat more or we make poorer food choices when stressed
    - 40-50% of people increase their food consumption when stresses

Other Factors of Eating

- Evolution
    - We have a sugar preference when we are born
    - Fat is an evolutionary advantage
- Food-related cues
    - Appearance, smell
    - Advertising
- Learning
    - Preferences
    - Social aspects of eating

Chapter 10: C

Statistics Canada

- < 20-year high-risk waist
    - Males: 14% to 31%
    - Females: 14% to 25%
- 20-39 year high-risk waist
    - Males: 5% to 21%
    - Females: 6% to 31%
- 38% of adults are a healthy weight
    - 1% is underweight
    - 37% is overweight
    - 24% are obese

Canadian Physical Activity Levels

- 83.6 of Canadians 18-79 are not meeting physical activity guidelines in 2017

Obesity

- 33% of Canadians are overweight enough to be at risk of health problems
- Obesity is increasing

    - Increased 8% during the 1990s
- More common with age
    - Especially women

Eating and Weight: Roots of Obesity

- BMI = [weight/height2] in kilograms and meters

Twins and BMI

- The correlation between BMI in identical twins is pretty high
- The correlation between BMI in fraternal twins is not that high
- What we can determine is that when looking at identical twins who live in different households who have a different BMI then we can determine that the environment is playing a big role
- When looking at a household of fraternal twins who live in the same house and have the same BMI then it is biological factors that play a bigger role

SetPoint

- Setpoint: constant weight range maintained even when effort to gain or lose weight
- When losing weight, there is a high possibility that a person who lost a bunch of weight will go back to the weight they started at
- Determined by the number of fat cells
    - 30 to 40 billion fat cells in a person of normal weight
    - Obese: 80 to 120 billion

Restrained and Unrestrained Eaters

- Polivy and Herman, 1995
- Restrained eaters: individuals who are almost constantly dieting or are almost constantly paying attention to what they eat
- Unrestrained: individuals who have little or no concern for their diet
- They performed a study
- They told the people in the study that **in a week** they will be conducting a study which forced them to eat a very strict diet
- At the back of the room, there was a table of cookies
- What they noticed was that the restrained eaters ate a lot of cookies because they told themselves they were starting a diet next week
- The unrestrained eaters didn't care as much

Anorexia Nervosa

- Weigh <85% standard
- Intense fear of gaining weight
- Distorted body image
- Typically begins in teens
- 10x more common in females
- 1-2% of adolescent women; 3% of women
- Recovery rate of 70% over approximately 6-7 years

Bulimia Nervosa

- Possible cause of chronic dieting
- Weigh within a normal range
- Typically begins in late adolescence to early adulthood
- 90% are females (2% of the female population)

Psychology of Eating

- Eating behaviour in response to physiological, psychological, social, and cultural cues
- Cultural impact
    - Social norms can dictate what and when we eat
    - Financial costs to healthy eating behaviour
    - North American “culture of eating”

Cross-Cultural Judgements of Ideal SIze

Ideal Female?	Female Judges	Male Judges
US	4.8	4.9
Ghana	5.8	6.1

Ideal Male?	Female Judges	Male Judges
US	5.1	5.5
Ghana	5.2	5.6

- The study asked a group of people from the US and from Ghana what they thought was the ideal body type based on a chart

Chapter 10: D

Sex?

- We lie about it
- It is difficult to talk about
- It is a great lie detector

Biology

- Hypothalamus and limbic system
    - Electrical stimulation: sexual behaviour
    - Surgical removal: sexual inhibition
- Temporal lobes
    - Moderate sexual arousal
    - Direct to appropriate goal objects

Hormones and Sexual Desires

- **Regulates:** hypothalamus and pituitary gland

- **Estrogens:** primarily females but also males
- **Androgens:** from adrenal glands in both sexes as well as male testes
- Higher androgens (particularly testosterone) associated with sexual desire in both males and females

Other Determinants of Sexual Desire

- **Aphrodisiacs?** No
- **Pheromones**
    - Synchronized ovulation
- **Erotic materials**
    - Visual stimulation in males, touch in females
- Pornography elevates sexual desire for a short term but may influence attitudes over a long period of time

Female and Male Differences

- Males desire 3x more sexual partners as females
- Males masturbate more and extramarital relations more

4 Step Sexual Response

1. **Excitement:** minutes to hours, blood flow, vaginal lubrication and partial erection of both the penis and clitoris
    - In this phase, the level of physical arousal escalates quickly
    - In both genders, muscle tension, heart rate, respiration rate, and blood pressure increase quickly
    - **Vasocongestion** - engorgement of blood vessels - produces penile erection and swollen testes in males
    - In females, it leads to swelling of the clitoris, expansion of the vaginal lips, and vaginal lubricant
2. **Plateau:** breathing, pulse, blood pressure, vaginal lubrication and erection
    - In this phase, physiological arousal continues to build, but at a much slower pace
3. **Orgasm:** 3-15 seconds, pelvic contractions, explosive discharge, intense pleasure
    - Occurs when sexual arousal reaches its peak intensity and is discharged in a series of muscular contractions that pulsate through the pelvic area
4. **Resolution:** return to normal
    - After orgasm, men experience a **refractory period** which is a time following orgasm during which they are largely unresponsive to further stimulation

Orgasm Consistency

- When asked if they always experience orgasm; male response was 78% while females were 28%
- “Last experience” gap narrows

	Biology	Evolutionary Significance	Behaviour
Male	- Reproductio	- Maximize	- More interest

	n involves minimal time, energy and risk	reproductive success by seeking more sexual partners with more reproductive potential	in uncommitted sex, and a greater number of sexual partners in their lifetime; look for youth and attractiveness in a partner
Female	- Reproduction involves substantial investments in time, energy and risk	- Maximize reproductive success by seeking partners willing to invest resources in offspring	- Less interest in uncommitted sex, smaller number of sexual partners in their lifetime; look for income, status, and ambition in partners

- This theory suggests why we may see as many differences between male and female sexual behaviour

Chapter 10: E

<u>Sexual Orientation</u>

- Heterosexual - Sexual - Homosexual
    - Continuum
- Theories of homosexuality
    - Environmental
    - Biological
    - Interactionist

<u>Continuum of Sexual Orientation</u>

0	1	2	3	4	5	6
Exclusively heterosexual behaviour	Largely heterosexual, but incidental homosexual	Largely heterosexual, but more than incidental homosexu	Equal amounts of heterosexual and homosexu	Largely homosexual, but more than incidental heterosex	Largely homosexual, but incidental heterosexual	exclusively homosexual behaviour

	behaviour	al behaviour	al behaviour	ual behaviour	behaviour	

- Sexual orientation is considered a continuum as it is not strictly one way or another
- People can fall in the middle and be attracted to more than one gender

Same-Sex Partners

- See chart

Genetics and Sexual Orientation

- See chart
- This chart studies the secual orientation between fraternal twins and identical twins to see if there is a correlation
- In cases of identical twins, we see that if one twin is homosexual, there is a high probability that the other twin also is
- In cases of fraternal twins, we see that there is not a high correlation between the sexuality of two fraternal twins

Sexual Orientation

- Cerebral asymmetry
    - McCormick and Witelson, 1994
    - Homosexuals are more likely left-handed
    - This suggests that there must be something about brain orientation that is involved with sexual orientation
- Older siblings
    - Bogaert, 2005 (Brock University):
    - Homesexual men often have more older brothers than heterosexual men
    - Though there is no real explanation for this, it points to the idea that this is a biological human behaviour (it is not a choice; it is in their biology)

Female/Male DIfferences

- Female sexuality is more plastic
    - In females, sexual orientation can change a bit through the course of a lifetime
- Females are less likely to trace sexual preferences back to childhood
- This means that men tend to know they are homosexual in their childhood, while it might take women longer to know this

Sexual Orientation

- Combination of: genes + hormones + cognition + environment
    - Relative weight of each factor varies across people
    - A factor such as culture is an example of a factor
    - In cultures where being homosexual is seen as wrong, individuals might try to hide this to avoid punishment/persecution

Biological Motives: Interim Conclusions

- Multiple determinants of eating and sexual behaviour
    - Multifactorial cognition: the idea that even though it may be convenient to try to explain why someone behaves the way they do, it is never a simple black or white answer; our behaviour is influenced by multiple factors
- Cannot trust self-report data about either one

Chapter 10: F

Emotional Experience

1. Physiological
    - Bodily (autonomic) arousal
2. Cognitive
    - Subjective conscious experience
3. Bahavioural
    - Characteristic overt expressions

Autonomic Nervous System

- This is comprised of two pieces:
    1. Sympathetic nervous system
        - Fight or flight
        - The portion of the autonomic system that kicks in when our bodies think we need to fight or run from a situation
        - During these times, our pupils dilate, our breath increases, heart rate goes up, etc
        - During this time, our digestive system stops what it is doing as an attempt to hold our resources incase we need the energy for fight or flight
    2. Parasympathetic nervous system
        - Rest and digest system
        - This system kicks in after our sympathetic system
        - It calms us down and allows our digestive system to start back up again

Theories of Emotion

- James-Lange
    - We feel afraid because our pulse is racing
- Cannon-Bard
    - Thalamus signals to the cortex and autonomic nervous system
- Schacter's Two-Factor Theory
    - Use external cues to decide what to feel
- Evolutionary Theories
    - Innate reactions, little cognitive interpretation
- Plutchik Emotion Wheel
    - Emotional combinations; intensity

James-Lange Theory of Emotion

- Stimulus produces arousal then arousal produces emotion
- Something makes us cry and makes us sad

Support for James-Lange Theory

- Facial feedback hypothesis
    - The idea is that we are smiling, we must be happy or if we are sad, we must be frowning
- Muscle movements involved in facial expressions produce corresponding emotion
- Ekman (1983) research
    - Asked professional actors to mimic certain emotions
    - What he found was that when he asked actors to do this, after, they exhibit that emotion

Cannon-Bard Theory of Emotion

- Stimulus produces arousal AND emotion
- Something makes us sad AND makes us cry
- If something makes us sad, then it also makes us cry
- If something makes us happy, then it also makes us smile

Schacter and Singer Theory

- Cognitive labelling AND physiological response result in “emotion”
- This one says that if we see something we find scary, there are two things that happen in parallel
- Cognitive labelling AND physiological response result in emotion
    1. A physiological response kicks in
    2. A cognitive response kicks in

Emotion: the Mechanism

- Support for Schachter and Singer
    - Participants injected with epinephrine
        - Half were told the true effects of the drugs they were taking and half were not
        - They were put in a room with a researcher
        - If the research is sad, the participant acted sad, etc
    - This research suggests that people will act in the same way as the researcher
- Results:
    - Subjects exhibited the same emotion as confederate, but only if they were not told the true effects of drugs
    - We look for external cues to interpret our emotions

Errors in Emotion

- Fear misinterpreted as sexual desire
    - Researcher asked men to write a story about a picture but in different conditions
        - On a scary or scary bridge
- They also asked the men to rate their researcher

- On the scary bridge:
    - Rated research assistant as more attractive
    - Stories were more sexually oriented
- Fear (autonomic nervous system response to a high bridge) was misinterpreted “I’m aroused, that’s a women”

Schacter and Singer Theory

- This theory suggests that there may be situations in which we mislabel what;s happening
    - Ie. in a situation that is scary, we might become sexually aroused instead and vice versa
- This was shown in Dutton and Aron’s experiment

Dutton and Aron’s Hypothesis

- If Schacter and SInger is correct, then fear is sometimes mislabelled as sexual arousal
    - ie. in this experiment, a professor viciously criticizes students for poor test performance - they found that a students sexual arousal toward the teacher increased

Dutton and Aron’s Research Methods

- In BC they got a group of males; some of who were crossing a dangerous bridge in BC and the other half who were not
- 80 males across scary or non-scary bridge then were tested by attractive men and women researchers
- Manipulated type of bridge and sex of assistant (independent variables)

Independent variables	Female Assistant	Male Assistant
Experimental group (scary bridge)	20 males	20 males
Control group (non-scary bridge)	20 males	20 males

Dependent Variables

- **Sexual imagery:** “write a short story describing a scene”
    - Story rated for sexual content by trained judges unaware of study purpose
- **Callback:** “if you want more information, here’s my number and you can call me later”
    - Found that the men who had more sexual imagery in there story would try to call back their research assistant

Operational Definitions (Dutton and Aron)

- **High fear:** cross a high swinging bridge
- **Low fear:** cross low, solid bridge

- **Sexual arousal:** sexual references in a short story written by subjects and callback to attractive female assistants after the study

Dutton and Aron's Data

Experimental group

Female assistant	Sexual imagery	Call-backs
Experimental scary	2.47	9
Control non-scary	1.41	2

Control group

Male assistant	Sexual imagery	Call-backs
Experimental scary	0.80	2
Control non-scary	0.61	1

Dutton and Aron's Conclusions

- Fear seemed to be misspelled and incorrectly expressed as sexual arousal

But

- Different people (ie. thrill seekers) take scary bridge versus those who take the non-scary bridge
    - They thought that maybe their sample was biased
- They performed a second study
    - They randomly selected males who were still on the scary bridge and compared it to men who crossed the scary bridge 10 minutes prior
- They believed that even if the bridge crossers are different, waiting 10 minutes, should subside arousal

Experiment 2 Data

	Sexual Imagery	Callbacks
Experimental Scary	2.99	13
Control 10 min after Scary	1.92	7

But

- After experiment 2, they still believed there was some bias
    - Maybe the female research assistant acted differently with the experimental and control participants; confounding variable
        - A confounding variable is an extra variable that alters results and takes away from the validity of these results
- They realized they needed to ensure better control over how participants interact with assistants

Experiment 3

- 80 males were tested with as attractive female research assistant
- "You will receive strong or weak electric shock then test learning"

- They didn't tell the female research assistant which men would be getting the high or low electric shock
- She has no way of subconsciously, or otherwise, altering her behaviour because of this
- After the shock, the men were sent to separate cubicles to answer questions
- These men were actually never shocked; they were just told they were going to receive a high or low level shock
- They were then sent to answer a question, which just asked them to circle if they were supposed to receive a high or low level shock

Experiment 3 Results

	Assistant Attractive?	Sexual Imagery
Strong Shock	3.70	2.27
Weak Shock	2.90	1.52

- What was found was that the men who were told they were going to receive a high level shock found the assistant more attractive and had more sexual imagery
- The men who were told they were getting a lower level shock didn't find the assistant as attractive

Dutton and Aron

- Hypothesis:
- Operational definition of fear:
- Operational definition of sexual arousal:
- Independent variables:
- Dependant variables: sexual imagery and callbacks
- Experimental groups: people on the scary bridge
- Controlled groups: people on the lower, less scary bridge
- Sampling bias (experiment 1): personality of participants

Dutton and Aron also…

- Double-blind: the idea that the female research assistant had no idea which men were to get the high and low level shocks
- Systematically controlled extraneous or confounding variables:

Plutchik's Emotion Wheel

- "Shades"
- Complex combinations of emotions
- It's easier to say which emotion we are supposed to exhibit in a scenario, as opposed to what we are actually feeling
    - ie. your friend may be getting married, a time in which you are supposed to be happy, but you know wh0 she is marrying is not a good person, so you are angry/worried instead of happy

Sociocultural Factors in Emotion

- Darwin (1872)
    - Human facial expressions innate, same in all cultures
    - Darwin concluded that human emotions are innate and were common in all cultures around the world that we travelled to
- Children who are blind from birth smile/frown the same as sighted children
- Ekman cross-cultural research
    - US, Chile, Japan, Brazil, Borneo, Fore of New Guinea
    - Went to many different countries showed people pictures of other individuals/cultures
    - All recognize emotional photographs even if they were faces of unfamiliar races

Display Rules

- Cultural rules dictate how emotions are expressed
    - Japanese do not display negative emotions in public
    - North American girls smile even when they receive a present they do not like (starting around the age of 3)
    - Male to male kissing
- We learn from parents and others around us what emotions to exhibit through social referencing

Chapter 10: G

Social Motives: Affiliation and Achievement

- **Affiliation motive:** need for social bonds
    - Time for interpersonal activities
    - Acceptance
- **Achievement motive:** need to excel
    - We are motivated to work harder and more persistently
    - Delay gratification

Determinants of Achievement

- Some stable determinants of achievements are our need for achievement and fear of failure
- Some situational determinants include an incentive value of success or incentive value of failure
    - Ie. our incentive value of failure is probably higher for school, as opposed to a video game
- Determinants in the middle are the probability of success and failure

Applications of Achievement Research

- industrial/organizational psychology: motivating employees, teamwork
- Dr. Janet Mantler studies the effect of employment uncertainty and effects on overall health

What Makes Us Happy?

- Common sense view generally is incorrect
    - Income, age, parenthood, intelligence, and attractiveness is largely uncorrelated with happiness
    - Physical health, good social relationships, religious faith, and culture are modestly correlated
    - Love, marriage, work satisfaction, and personality are strongly correlated

Procrastination

- Procrastination: intention to act versus actual performance, “degenerated intentions”
- More procrastination when projects are
    - Falsely self-attributed,
        - Ie. if in your head you are telling yourself you want to be an A+ student, but your parents want it more for you than you do
    - Self-generated and low self-efficacy (judgement of the ability to succeed)

Personal Projects

- Little, B. R. Personal Projects
- Little was studying an individual’s personal goals/achievements and how likely they are to achieve them
- Little’s research concludes if you want to accomplish something…
    1. Write it down
    2. Identify what will help and hinder success
    3. Identify subgoals
    4. Regularly track your progress