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IB Psychology Notes

These notes were written based on my revision for May 2019 exams. They may not reflect syllabus updates for later exam sessions.

Key Acronyms

S: Participant (Ss: Participants, Ss': Participants', etc.)
R: Researcher (Rs: Researchers, Rs': Researchers', etc.)
E: Experimenter (Es: Experimenters, Es': Experimenters', etc.)
I: Interviewer (Is: Interviewers, Es': Interviewers', etc.)
Exp: Experiment
+ve/-ve: Positive/Negative
BIO: Biological Approach
SCTRL: Sociocultural Approach
COG: Cognitive Approach
HR: Human Relationships Option
ABN: Abnormal Psychology Option

Research Methods

Ethical Considerations

Researchers must always seek approval from their supervising ethics board before any study. Researchers & the ethics board must:

- Ensure that all ethics requirements satisfied to greatest extent possible
- Perform a *cost-benefit analysis* to determine if benefits of study/exp procedure outweigh any ethical concerns

Research on Humans:

- 4 main ethical guidelines to satisfy for any experiment/research involving humans:
    - **Informed Consent:** Ss should know general aim of study & their rights to agree to participate
    - **Withdrawal:** Ss should be allowed to leave experiment & ask for data to be removed at any time without punishment or loss of reward
    - **Harm:** Ss should not be subjected to any long-term and/or undue physical & mental harm (e.g. emotional distress, pain, etc.)
    - **Debriefing:** At end of study, Ss should be told full details of study including any deception necessary for experimental purpose & Rs should ensure Ss health & comfort

Research on Animals:

- Some ethical considerations necessary for humans unnecessary (e.g. informed consent impossible to obtain from animals) or relaxed (e.g. animals may be subjected to invasive surgery, isolated, killed, etc. if necessary) for animals
- However, animals still should not be subject to undue stress, harm & pain
    - A cost-benefit analysis should still be performed, weighing the benefit of the findings you might obtain to the cost of any stress, harm, or pain caused to the animals in the process.
- The '*Three Rs*' guide ethics in animal research:
    - **Replace:** Where possible, replace testing on animals with other forms of experimentation.
    - **Reduce:** If it is necessary to use animal testing, reduce the number of animals used to the minimum necessary to complete the research.
    - **Refine:** Refine techniques used in animal testing to the point where minimal stress, harm & pain are caused, if any.

Sampling Methods

The process of recruiting Ss for a study. There are 2 types of sampling methods:

Probabilistic Techniques: Selecting people in such a way that all members of a population have a (theoretically) equal chance of being part of the sample.

Name	What is it?	Strengths	Weaknesses
Random	Randomly selecting members of population (each member has equal chance of being part of sample)	with sufficient sample size, individual characteristics should be evenly distributed, negating effects on results	Time consuming, expensive, very difficult to truly achieve
Stratified	Splitting a group/population into its sub-groups, then randomly sampling Ss from specific categories ('strata') of population to form sample	Helps ensure distribution of sample is representative to population	Time consuming & difficult (esp. when many strata are present within population), subject to R's knowledge of population

Cluster	Randomly selecting Ss from a subset of the larger population to represent the larger population.	Easier & more convenient	Generalizability impacted if subset is different from broader population

Non-Probabilistic Techniques: Selecting ppl with specific characteristics desirable to the study. Not all members of the population have an equal chance of being selected. Common in qualitative research.

Name	What is it?	Strengths	Weaknesses
Purposive	Selecting specifically Ss likely to give relevant info based on study's characteristics (i.e. what's being studied)	Allows Rs to investigate more specific aspects (behaviors, phenomena, etc.)	R's bias/prejudice may influence sampling
Quota	Splitting a group/population into its sub-groups, then selecting Ss from those sub-groups to best fit the population and/or needs of the experiment	Allows representative sampling of populations matching needs of experiment	Extremely time consuming & difficult, subject to R's knowledge of population
Snowball	Using existing Ss to help recruit additional Ss through own social networks	Allows Rs to sample from otherwise-difficult to access target populations	Ss found may not be representative of group being studied (ppl tend to be friends with like-minded ppl)
Convenience	Choosing Ss who are easily available to Rs for study (e.g. Psych undergrads)	Quick, easy, convenient	High potential for sampling bias; sample may be diff from population

Haphazard	Any other non-systematic method of sampling (e.g. anyone passing by a grocery store)	Extremely easy, quick, cheap	Extremely vulnerable to sampling bias, esp. as characteristics of sample not known (unable to compare with broader population)

Quantitative Research

Used to derive universally-applicable, objective rules for behavior of broader populations through experiments.

Variables

Quantitative research is based on **variables**, i.e. any characteristic objectively quantified through operationalization (expression in terms of observable characteristics).

Independent Variable [IV]: The variable that's changed in order to test a hypothesis.

Dependent Variable [DV]: The variable that's observed/measured, in order to support or disprove a hypothesis.

Controlled Variable [CV]: Variables which the researchers control in order to reduce unwanted changes or effects to the DV.

Extraneous Variable [EV]: Variables which may adversely impact the manipulation of the IV, and/or the measurement of the DV.

- Also known as *confounding variables*, if they interfere with ability to determine causative relationship between IV & DV
- May include (but not limited to) researcher or participant biases
- Main types are:
    - *Situational Variables:* Factors in the environment (e.g. temperature, lighting, etc.)
    - *Ss Variables:* Characteristics of the sample or individual S (e.g. age, gender, SES, etc.) that may influence (bias) how they perform on experimental tasks
    - *Demand Characteristics:* Ss changing the way they act, because of what they perceive the experiment's purpose to be; for example:
        - Halo Effect — Trying to 'help' the experiment succeed by acting in a way that meets researchers' expectations

        - 'Screw You' Effect — Trying to sabotage the experiment
        - Social Desirability Bias — See Biases
    - *Investigator Effects:* Researchers/experimenters unintentionally influencing the way Ss behave (through leading questions, observer effects, etc.)

Validity

The truth/accuracy of the experiment & its elements (sampling, measures, etc.)

Two types:

INTERNAL VALIDITY	EXTERNAL VALIDITY

How much does the experiment's procedure or findings *actually allow* you to draw conclusions about the effect of the IV on the DV?
• E.g. Does an intelligence test actually measure intelligence?
  ○ This is *construct validity*, a type of internal validity which looks specifically at whether something actually measures what it's intended to measure
• The presence of extraneous/confounding variables may decrease internal validity
	How much can the experiment's findings be generalized beyond the experiment itself?
	• E.g. Are findings like "cramming for 40 hours straight increases your performance on an IQ test" really applicable to the behavior and needs of the general public?
	  ○ This is *ecological validity*, a type of external validity which looks specifically at how much a study's findings can be applied to the real world
	• Other types of external validity include:
	  ○ *Population validity*: How well a study's findings can be generalized to the population it studies (linked with sampling/sampling bias)
	  ○ *Historical validity* (how well a study's findings can be generalized across time periods)
	  ○ Etc.

Methods

Quantitative research uses *non-probabilistic* sampling methods to recruit Ss from the population being researched, avoiding *sampling bias* (see Biases) as much as possible so that the findings of the study can be generalized to that population.

There are 4 types of experimental methods used in quantitative research:

<table>
<tr><th colspan="2">LABORATORY (Lab) EXPERIMENTS</th></tr>
<tr><td colspan="2">An experiment conducted in a controlled environment. The researcher manipulates the IV to (hopefully) cause a change on the DV.</td></tr>
<tr><td>Strengths</td><td>Weaknesses</td></tr>
<tr><td>• Causation can be easily established between the IV & DV, since Rs can tightly control the environment to eliminate extraneous variables and their unwanted effects.</td><td>• Controlled lab tests are rarely similar to real-life environments & situations
○ Ss' cognition (thinking) or behavior may be different to if they were in a real situation (i.e. low realism) in a natural environment (i.e. low ecological validity)</td></tr>
<tr><th colspan="2">FIELD EXPERIMENTS</th></tr>
<tr><td colspan="2">An experiment that is conducted in a natural environment, where the researcher manipulates the IV.</td></tr>
<tr><td>Strengths</td><td>Weaknesses</td></tr>
<tr><td>• The natural environments of such studies may be closer to the environments a person would encounter in real life
○ Thus, Ss' cognition & behavior are likely more similar to real life (i.e. ecological validity tends to be stronger)
• As the researcher directly manipulates the IV, strong</td><td>• Natural environments are much harder to control for extraneous variables, at least not without introducing unnatural elements
○ If the researcher doesn't control many aspects of the environment, they risk having weak causation
○ If the researcher heavily controls their environment, they risk having lower</td></tr>
</table>

causation can still be established in such experiments	realism & ecological validity
NATURAL EXPERIMENTS	
An experiment conducted in a natural environment, where the researcher observes naturally occurring changes in an IV, and measures their effect on the DV. The researcher does not manipulate any variables.	
Strengths	*Weaknesses*
• Since the researcher is simply observing a natural situation developing as it would naturally develop, and is not intervening in any way, the ecological validity of such studies is often very strong • It may be possible to study certain phenomena that researchers cannot feasibly, or ethically, study otherwise[1]	• Often difficult (even impossible) to replicate, because the natural situations in question can be very rare, making it difficult to confirm the findings of such studies • Possible low generalizability ○ It's difficult to tell if certain extraneous variables specific to the natural environment or situation, rather than the researchers' chosen IV, were responsible for the change (or lack of change) in the DV.
QUASI-EXPERIMENTS	
Comparing Ss based on differences in pre-existing variables (e.g. gender, age).	
Strengths	*Weaknesses*
• Such studies allow for comparisons between pre-existing groups.	• More difficult for researchers to control for extraneous variables ○ No control over how the group was formed; thus, no way to ensure that both groups are equal in all ways except for the IV • Correlation ≠ Causation — All a quasi-experiment tells you is that two naturally-occurring groups

[1]E.g. *Charlton et al., 2000* (not included in these notes) took advantage of a rare situation—the introduction of TV to an isolated island—to allow researchers to study the effect of TV on childrens' behavior. It'd be extremely difficult, not to mention arguably unethical, to deprive a large group of children access to TV from birth just to test a hypothesis. However, since the lack of TV naturally existed, and its introduction was going to happen anyway, the researchers were able to simply observe a sample of children before & after the change as it happened.

	are different from each other, or perform differently to each other, in certain ways. There's not enough information to say for sure why they are different in those ways, or whether difference A caused difference B[2]

Design

Experiments may either use:

- **Independent Measures:** Allocating Ss into diff groups (usually randomly), then exposing each group to a different condition; cancels out confounding variables. Subtypes include:
    - *Matched Pairs:* Rs match 2 Ss with similar characteristics into a pair, then assign the 2 Ss done with all Ss such that groups are equivalent
- **Repeated Measures:** Same Ss exposed to multiple conditions; Ss's own performance between conditions compared.
    - Also often requires *counterbalancing*: Equal no. of Ss should perform all possible orders measures could come in, negating order effects

Analyzing Data

Statistical Significance: The likelihood that an experiment's results (a correlation, a difference between groups, etc.) indicate a *causal relationship,* as opposed to simply having happened by chance.

- *Causal relationship:* The change in the IV caused the change in the DV
- Researchers work with 2 hypotheses:
    - The **null hypothesis** says that there is *no relationship* between the IV and DV.
    - The **research hypothesis** (or 'alternate hypothesis') is a prediction, usually based on existing evidence & theories, that there *is* a relationship between the IV & DV.

[2]For example: In Maguire et al. (2000), the brains of London taxi drivers were found to have (on average) more volume in some areas of their brain than non-taxi drivers. It's possible that taxi driving caused a change in the taxi drivers' brain structure, helping them remember routes and navigate around the city more easily. It's also possible that the people who pass the tests to become a licensed taxi driver tend to already have different brain structures, in ways that allow them to naturally remember routes better. Since the study didn't investigate if the differences in brain structure between the two groups existed before the taxi drivers became taxi drivers (which would've made it a natural experiment), there's no way to tell which explanation is true (and it's possible both are true at once!).

    - If the results of an experiment were extremely unlikely to happen if there was no relationship between your IV & DV (i.e. assuming your null hypothesis was true)...
    - Then the results are statistically significant and the researcher can *reject* the null hypothesis.
- *How do you check this?* **Inferential statistics** — these give the probability (p) that a result is due to random chance, assuming that the null hypothesis is true.
    - **p < 0.05** — The probability that the results occurred by chance, if the null hypothesis was true, is less than 5% (i.e. findings *are significant)*
    - **p > 0.05** (or p = n.s.) — The probability that the results occurred by chance, if the null hypothesis was true, is greater than 5% (i.e. findings are *not significant)*
    - There are 2 types of inferential stats: *parametric* (i.e. assumes the result data belongs to a specific type of mathematical distribution, like a normal distribution) and *non-parametric* (i.e. doesn't require the result data to have any kind of distribution)[3]

CORRELATIONAL ANALYSES investigate the presence of a linear relationship between 2 variables (in a study, this'll usually be your IV & DV).

- A **linear relationship** means that when X changes, Y changes proportionally to it. On a 2D graph, this'll look like a straight line.
    - *Positive Relationship:* As A increases, B increases linearly & vice versa
      Negative Relationship: As A increases, B decreases linearly & vice versa
    - In psychology, it's standard practice to make the *x*-axis (horizontal) your IV, and the *y*-axis (vertical) your DV.
- If a relationship isn't linear, you may be able to *linearize* it by applying a mathematical transformation to one of the variables (e.g. taking its square root), allowing the relationship to be investigated linearly.

The strength of a linear relationship may be measured by its *correlation coefficient* (represented by *r*), a number which ranges 1 to -1. To understand what different values of *r* mean:

	Absolute Value of *r* (i.e. ignore the negative sign, if there is one)
Strong	1 to 0.8
Moderate	0.8 to 0.5
Weak	0.5 to 0.3

[3] You generally don't need to know this for the exam papers, since you won't be expected to memorize studies in so much detail that you know the stat tests they used. This can be helpful for IAs, though.

Very Weak (essentially no correlation)	0.3 to 0

Qualitative Research

Used to acquire an in-depth understanding of particular cases, situations, phenomena, etc. of human experiences, interpretations, or meaning.

Credibility

The qualitative 'version' of internal validity—i.e. do findings reflect reality of Ss's experiences or the situation being studied? (if they do, the study is credible)

This can be ensured in various ways:

Triangulation: Combining diff approaches of investigation. Four types:

- *Methodological:* Using diff methods (e.g. interviews & observation)
- *Data:* Studying data from diff sources (e.g. interviewing Ss & reading Ss' journals)
- *Researcher:* Using diff Rs/Es (e.g. using 2 observers & comparing their notes)
- *Theoretical:* Using diff theoretical approaches to address a situation (e.g. diff models, psychological approaches, etc.)

Rapport: Having a good relationship with Ss, ensuring their responses are *voluntary* (unforced) & *honest* (true: no lying, demand characteristics, social desirability bias, etc.)

Iterative Questioning: Rephrasing then re-asking questions later to prevent Ss from distorting data intentionally/unintentionally. (Esp. useful if anomalous/ambiguous answers given 1st time round and/or if questions relate to personal/sensitive topics)

Reflexivity: Rs reflecting on how subjectivity/bias might influence their findings. Two main types:

- *Epistemological:* Reflecting on strengths, limitations, biases arising from method of study used
- *Personal:* Reflecting on influence of personal background, beliefs, expectations, etc. on collection & interpretation of data

Credibility Checks: Ensuring interpretations are correct by sharing data, observations, transcripts, etc. with Ss & asking if accurate

Biases

Biases may influence Rs/Ss in ways that decrease the credibility of quantitative findings. Some examples include:

Participant	Researcher
Acquiescence bias: Tendency to give +ve answers, regardless of the question ● Some ppl may do this by nature ● Rs should not ask leading questions, but instead should ask open-ended, neutral questions focused on Ss' opinion **Social desirability bias:** When Ss respond in a socially acceptable way, rather than giving actual, honest responses ● Research on sensitive & controversial topics (e.g. politics) is especially vulnerable, as Ss may fear judgment for saying their true beliefs/thoughts ● Questions should be phrased non-judgmentally & neutrally **Dominant respondent bias:** In group setting, when one Ss influences behavior/responses of others, e.g. hijacking talking time, intimidating others, etc. ● Rs should keep dominant responders in check & make sure all Ss have equal opportunities to speak in a safe & comfortable environment **Sensitivity bias:** Tendency of Ss to distort responses on questions with sensitive subjects, giving incorrect info to hide secrets ● Rs should build rapport & trust with Ss, behave professionally & ethically (esp. in terms of maintaining confidentiality), & only gradually increase the sensitivity of any questioning	**Confirmation bias:** When Rs have prior beliefs & uses research unintentionally to confirm it; may influence question wording, Rs's behavioral nuances ● Solution: *Reflexivity* (see Credibility). Rs should be trained to recognize confirmation bias in themselves & adjust their procedures to reduce it as much as possible. **Leading questions:** When Rs/E's wording of a question unconsciously encourages Ss to answer a certain way ● Rs/Es should be trained to ask open-ended, neutral questions & not paraphrase Ss' responses **Order effects:** When responses to an earlier question influence Ss responses to later questions ● General questions should be asked before specific ones, +ve ones before -ve ones, behavior ones before attitude ones **Sampling bias:** When sample isn't adequate for research's aims (e.g. due to convenience sampling, 'professional Ss') ● Rs should consider what kind of sampling would best allow for a appropriate & useful sample of Ss to be chosen **Biased reporting:** When some findings of study aren't equally reported (e.g. Rs only briefly mentioning evidence that doesn't fit their conclusion) ● Reflexivity & integrity training can help counteract this

Methods

Qualitative research uses *non-probabilistic* sampling methods to find Ss who are most suitable/fit best the aims of the research (allow for study of situation/phenomenon being studied).

3 main methods used in qualitative research:

Observations

Watching & recording Ss' actions.

4 'dimensions' defining the nature of the observation (R must decide what to do on each dimension to satisfy research/ethical requirements):

Laboratory vs Naturalistic
Essentially, whether behaviors occur naturally or not.

Laboratory: R manipulates IV directly causing S's behavior to change (from an outside influence) (NOTE: can be conducted in lab or natural setting)

- Strong control over extraneous variables, environment; behavior likely to occur
- Can determine causation through isolation & manipulation of IV
- Tend to have lower ecological validity; behaviors may be unnatural
- Some topics/behaviors difficult to study in lab with observation (e.g. altruism)

Naturalistic: Observing of situations where behaviors naturally occur without outside influence (i.e. no R manipulation)

- Tend to have high ecological validity—takes place in Ss's natural environment, assumed Ss behave as they usually do
- Can be used to collect data in cases where otherwise impossible/unethical (e.g. Alzheimer's patients)
- Risk that Ss may react to being observed (if overt), thus reactivity
- Poor control over behavior & factors affecting behavior, behavior of interest may not even occur during observation

Overt vs Covert
Overt: Ss aware they're being observed

- Informed consent easy to obtain, ethical guidelines strongly followed
- Susceptible to reactivity/demand char, Ss may behave unnaturally when observed (audience effects, SDB, etc.)

Covert: Ss not aware they're being observed

- Ss's natural behavior preserved, free of influence of observation
- Following ethical guidelines difficult; informed consent/use of data must be

obtained after fact
(NOTE: Both natural & lab experiments can be overt/covert!)

Participant vs Non-Participant
Participant observations are carried out within-group where researchers becomes participating member

- Provides detailed & in-depth knowledge of topic which can't be gained by other methods
- Best way to avoid researcher bias bc Rs seek to understand how & why social processes are the way they are (vs imposing own reality)
- Provides holistic interpretation of topic as views of group integrated deeply in observation (1st person acct)
- Difficult to record data promptly & in organized/structured way
- Time consuming & demanding—becoming member of group takes time & commitment
- Risk that R loses objectivity, adopting group norms/values
- R's involvement may change Ss behavior in unnatural ways

Non-S observations are carried out as an 'outsider' for the group with little-no interaction btw group & R

- Influence of R minimized (esp if covert)
- R bias may be pronounced as S input & interpretations will not be included as much

(**NOTE:** These can be overt or covert!)

Structured vs Unstructured
Structured: Observations recorded in systematic & standardized way, e.g. using checklists of behavior, frequency of specific pre-determined behaviors recorded

- Stronger reliability btw repeated measures & raters/observers
- Quantitative data: easy to process & analyze
- May limit range of behaviors receiving attention; may miss relevant behaviors
- Creating checklist reliant on expectations/prior knowledge of researcher

Unstructured: R records any 'noteworthy' behavior, often descriptions of behavior vs quantitative data

- Open-ended structure can capture all possible behaviors; suitable for exploratory/initial investigation into new topics & behaviors
- May have poor inter-rater reliability, inconsistent observations btw repeated observations
- Susceptible to R biases (e.g. attentional biases, confirmation bias, etc.)
- Extremely time-consuming in processing & data analysis

Case Studies

In-depth observation of a human experience (a 'case') through multiple methods

- Not itself a 'method', strictly speaking, just a term used for applying a collection of them to a single human experience
- Useful for studying sensitive & unique issues (e.g. poverty, health, domestic violence), may generate entirely new knowledge & challenge existing theories
- However, cost & time intensive, susceptible to R bias & S effects due to long periods both spend together, generalization not always possible

Interviews

Meetings between Rs and Ss with a specific purpose (e.g. answer a research question, initial investigation, diagnosis, etc.) & defined roles, producing a transcript to be analyzed

Types:
Structured Interviews: Asking Ss fixed list of questions asked in a specific order

- Allows for standardization of procedure & comparison btw observers
- However, doesn't accommodate for individual circumstances/characteristics of Ss

Semi-Structured Interviews: Exploring 'themes' with a guide (checklist of info to ask Ss)

- Flexibility present in what to ask, open- & closed-ended questions used, informal & conversational (usually one-on-one, face-to-face)
- Allows Ss to elaborate on answers & for detailed knowledge to be obtained, better for addressing sensitive/private issues (private environment)

Focus Groups: Variant of semi-structured interview exploring group's understanding of issue

- Usually groups of 6-10ppl used. Ss interact with each other as if IRL, discussing & responding to each other; facilitator present who introduces everyone, establishes tone, asks questions, & leads interactions
- Allows quick collection of rich, dynamic data from group in a more natural setting
- However, Ss may be susceptible to group dynamics (conformity) & not want to reveal private info

Unstructured/Narrative Interviews: Individual interviews where Ss take more of a leading role in ('driving') the interview. Questions mostly determined ad-hoc by S's responses with minimal interviewer influence.

- Useful for gaining in-depth understanding of situations' meaning in Ss' own words
- However, time consuming to analyze (extremely rich data; some might be irrelevant), ethical concerns in asking about traumatic experiences

Analyzing Data

Analysis of dense qualitative data (e.g. observation reports, interviews, etc.) done through **Inductive Content Analysis [ICA]**

- *Aka:* Thematic Content Analysis [TCA], Inductive Analysis, Grounded Theory [GT], Interpretive Phenomenological Analysis [IPA], Idiographic Approach (if used for study of individual cases)
- Takes a *phenomenological* approach—focusing on direct experience of Ss (phenomenological=perception), in contrast to positivism (idea that there is an objective reality/objective data)

Analyzes data collected qualitatively to interpret it (opposite direction of scientific method) to gain insider's view of how individual makes sense of world.

Steps:

1. **Read & reread transcripts**—Become familiar with Ss's account, look for key phrases, preliminary interpretations, connections, contradictions, language use, summary statements
2. **Identify emergent themes**—Find low-level/raw themes present in text that capture sth essential abt study (doesn't have to use psychological terminology)
3. **Structure emergent themes**—List all above themes & find how they relate to each other in higher-level clusters/hierarchies; label clusters based on essence of themes
    a. E.g. 'Childhood cluster' consisting of themes 'relationships with friends' & 'relationships with family'
4. **Re-read**—Analyze data further until can't find any more info
5. **Write interpretation of data**—Use high level themes to organize data, giving examples

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Generalizability

3 types of generalizability (extending findings beyond study) for both quantitative & qualitative research:

- **Sample-to-population generalizability:** Applying findings to a wider population
    - Requires a representative sample; often weak in qualitative research due to non-probabilistic sampling used

- **Case-to-case generalizability (transferability):** Applying findings to other situations/contexts (esp similar ones)
- **Theoretical generalizability:** Applying findings to broader theories

Biological Approach

Core Concepts

- **There are biological correlates of behavior.**
    - i.e. We can & have observed links between biological elements, e.g. neurotransmission, hormones, regions of brain, etc. and various behaviors, e.g. ability to perform tasks, reactions to life events, etc.
- **Behaviors can be inherited.**
    - Behaviors can be passed on from parents to offspring through *genetic inheritance* (passing on of genetic material)
- **As we know more about the human genome, we will/should eventually know how specific genes relate to specific behaviors.**
    - *Genome:* Complete genetic material
    - Genes may influence likelihood/risk of expression of various traits, including behavior, though they don't function in isolation
        - Multiple genes may together influence likelihood combined with other, e.g. environmental, factors
- **Animal research can provide insight into human behaviors.**
    - Some animals (e.g. monkeys, rats, etc.) have very similar brains to humans; thus, it is assumed links observed between their biological & behavioral aspects apply to humans too
    - Not necessarily always true, though—not all such links observed in animals are present in humans!

The Brain & Behavior

Methods of Studying the Brain

Techniques often used to study the brain are:

- **Autopsies:** Examining the brains of corpses (animal or human, especially with neurological disorders) for structural differences from the norm
    - If lots of Ss/animals with common behavioral symptoms all exhibit the same structural differences, a correlation may be drawn between that difference & that behavior
    - Correlation =/= causation, though...
- **Selective Destruction:** Destroying specific parts of brains of live patients & seeing resulting behavioral effects
    - Obviously unethical in humans to do this experimentally...

    - If someone otherwise experiences damage/has part of brain altered (e.g. to cure seizures), they can be studied to correlate damaged/altered part with behavioral characteristics
- **Brain Imaging:** Scanning the brain using technology to determine its structure or function; 2 main types:
    - *Structural:* Can see the physical structure of the brain in great detail but not the brain's functioning/activity
    - *Functional:* Can see the activity of the brain but doesn't show physical structure in great detail

MRI (Magnetic Resonance Imaging)
● Structural brain imaging technology ● Uses magnetic fields to cause nuclei in brain to emit varying radio waves (detected & processed) ● Produces 2D/3D static representation of brain structure; can 'slice' open brain digitally to see internal structure **Advantages:** ● Non-invasive & little-no risk of harm ● High resolution (detailed) images produced **Limitations:** ● Doesn't indicate function—structural differences can't be linked causatively to behaviors
fMRI (Functional Magnetic Resonance Imaging)
● Functional brain imaging technology ● Uses magnetic fields to cause nuclei to emit radio waves, takes multiple snapshots & observes difference between regions with high vs low oxygen-rich blood flow ● Produces 2D/3D video representation of brain activity over time. **Advantages:** ● Non-invasive, little risk of harm, easy to carry out ● Can causatively indicate links between thinking & activity in brain **Limitations:** ● Unnatural setting (behaviors/cognition may be artificial, not ecologically valid)

Localization of Function

The assertion that different parts of the brain have different functions.

3 main perspectives/arguments on this issue:

- **Strict Localization:** Specific parts of the brain are solely responsible for specific functions

- **Holism (distributed functioning):** Functions of the brain are the result of the brain working as a whole, not specific regions
    - 2 key concepts:
        - *Principle of Mass Action:* Proportion of brain damaged directly proportional to decreased cognitive ability
        - *Principle of Equipotentiality:* Ability of intact parts of brain to carry out functions of lost/destroyed parts
- **Relative Localization:** Specific parts may be responsible for certain functions but not exclusively; other parts may also assist in the functioning

Research supports instances of strict localization in some cases but counters it in others; some functions appear localized but others not quite (*relative localization* supported)

- The *temporal lobe* of the cerebrum appears to be associated with memory recall
    - Maguire et al. (2000)'s findings suggest *hippocampus* (part of temporal lobe) responsible for (spatial) memory, posterior for storage & anterior for creation, though only correlation—no causation
    - Draganski et al. (2004)'s findings indicate *mid-temporal lobe* responsible for memory creation
- These findings support a degree of *weak localization* of the cognitive process memory to the temporal lobe, though exact areas of temporal lobe (quite big part of brain) involved are unclear (may differ between types of memory)
    - Also unclear if other parts of brain may be involved in memory function even if not primarily and/or not changing physically in response to demand
    - Essentially supports relative localization (no one part of the temporal lobe is entirely responsible for memory)

Neuroplasticity

Ability of brain to adapt/change due to experience (environmental changes, learning, practice, etc.) physically, e.g. through changes in neural connections (grey matter/density of synaptic connections, strengthening/weakening of synapses, etc.), and functionally (changes in activity, changing ability).

Research extensively supports presence of neuroplasticity:

- Rosenzweig et al. (1972)'s findings indicate (in rats, at least) that brain structure & activity (esp relating to neurotransmitter ACh) does change with experience (though unclear if environmental or social)

    - Indicates activity changes in *animals*, what about in *humans*? Do humans demonstrate neuroplasticity & changes in brain function/activity based on demand?
- Maguire et al. (2000) & Draganski et al. (2004)'s findings indicate that in humans, brain structure of relevant parts of brain does change with experience depending on demands (learning/memory creation, memory recall, etc.), though no clear conclusion on activity
    - But these 2 studies only indicate *structural* changes—no confirmation of functional diffs, e.g. in ability/skill (implied in Maguire et al., indicated in Draganski et al. by learning of new skill), brain activity, etc.

Neurotransmitters & Behavior

Neurotransmitters [NTs]: Chemical 'messengers' made by body, sent between *neurons* (through synaptic cleft) allowing *neurotransmission* to occur.

- *Neurons:* Cells which transmit electrical signals throughout body
- *Neurotransmission:* Chemical communication between neurons, passing on impulses (signals)

How Neurotransmission Works

1. NT secreted by presynaptic (1st) neuron
2. NT floats across synaptic cleft, binds to receptor on postsynaptic (2nd) neuron
3. NT then either excites (makes action potential, i.e. change of potential assoc with passage of impulse, more likely) or inhibits (makes action potential less likely) post-synaptic neuron
    a. The more NTs excite/inhibit postsynaptic neuron, the more/less likely an action potential is
4. NT then released & either:
    a. Reabsorbed by presynaptic neuron for future use (reuptake)
    b. Diffuses away (may lead to reuptake by or activation in neighboring neuron)
    c. Floats back to postsynaptic neuron to be activated again
    d. Broken down by enzymes

NTs, in affecting transmission of impulses, may *affect behavior*; changes in levels (thus synaptic activation) of NTs may thus affect behavior differently

- However, difficult to establish causation as often many other biological (and non-biological, e.g. sociocultural) factors simultaneously influence behavior

One example of a NT is **serotonin**, an *inhibitory* NT; has been linked to depressive behavior (may inhibit depressive reactions).

- Caspi et al. (2003) found variations (presence of short allele) in 5-HTT transporter gene of serotonin linked more -ve reactions to events, implying serotonin may play a role in depressive behavior
    - See Genes & Behavior for more info on function of genes
    - However, link between serotonin itself & reactions to events unclear as *no measures of serotonin given!* Only weak/implied support, at best; 5-HTT may have other regulatory functions linked to depression
- Delgado et al. (1990) found that decreased TRP levels, linked to decreased serotonin levels in brain in animal research (TRP involved in serotonin synthesis), caused increase in depressive symptoms in previously-depressed (but in remission) patients
- The TADS study (March et al., 2007) found SSRI-based drug therapy (inhibits serotonin reuptake, increasing serotonin activation) reduces depressive symptoms in depressed patients

Evaluating research into serotonin & depressive behavior

- Empirical evidence (research) indicates serotonin may, to some extent, plays role in +vely influencing cognition & cognitive thinking processes
    - However, other factors (e.g. genes [5-HTT gene] with other influences beyond serotonin reuptake, other metabolic processes, etc.) may also play role
    - Ethical concern with lowering serotonin level in humans (undue stress/harm)
- Other factors may also cause vulnerability beyond NT serotonin
    - E.g. Biased cognition (*Beck*'s Cognitive Theory of Depression; proposes -ve cognitive beliefs about self, world & future, -ve self-schemata, faulty thinking patterns lead to depression), sociocultural risk factors for depression, etc.
    - To consider NT of serotonin as *only* cause of depressive behavior overly reductionist

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Hormones & Pheromones

Hormones & Behavior

Hormones: Chemicals released by glands in the body to regulate medium & long term changes in the body (e.g. mood, attention, etc.)

- *NOTE:* Some hormones (e.g. oxytocin) may *also* act as neurotransmitters; diff lies in whether they're made/act within **nervous** system or made in **endocrine** system (glands in body that produce hormones) & act on other parts of body via blood

One example of a hormone is **oxytocin**, a hormone linked to cooperative behavior (trust, sacrifice, etc.)

- Kosfeld et al. (2005) found increasing oxytocin levels intranasally resulted in increased trust in social contexts in males
- Morhenn et al. (2008) found that massages increased oxytocin levels but only after an act of trust & that oxytocin levels from massage predicted higher sacrifice but not trust
    - Seems to oppose Kosfeld et al.; why? Natural levels of oxytocin acting differently? Mixed-gender sample
- Thus, seems oxytocin has effects on cooperative behavior, though exact effect still unclear (may/may not have effect on trust, may have further effect on sacrifice, etc.)

Pheromones & Behavior

Pheromones: From Greek *phero* (I carry) & *hormon* (stimulating): broad term for chemical communication between members of a species, for example for the purpose of mating

- Form of *ectohormones* (i.e. hormones secreted & acting outside of an organism's body in other organisms)
- Generally accepted to occur in animals, including mammals; e.g. A male rhesus monkey will ignore a female if he can't sense pheromones signalling fertility from her **(Herz, 2009)**
- Effect in humans though…? Inconclusive (some research supporting, some opposing)
    - Most mammals use *vomeronasal organ [VNO]* to **detect**, *accessory olfactory bulb* to **process** pheromones, but adult humans lack accessory olfactory bulb, minority of humans have non-functional VNOs (not linked to nervous system, therefore non-functional)
        - Do humans process pheromones some other way then?

    - Humans have ~400 different kinds of odour receptors, all with genetic variants; different variants of receptors may react differently to suspected pheromones
        - Any exp would hypothetically need to test with all possible genetic variations to reach a conclusive answer (if one exists)

Research on influence of pheromones on human behavior has mixed findings; some chemicals (e.g. Androstadienone [AND] produced by males; Estratetraenol [EST] produced by females) found to have pheromone-esque characteristics but other studies find otherwise

- Lundstrom & Olsson (2005) found that AND appears to increase mood & psychological arousal but not attention/attractiveness perception
    - *Some apparent* pheromone-esque effects, but many non-pheromone chemicals can lift mood (no chemical communication demonstrated…)
    - *Much higher* concentration of AND used than naturally present
- Hare et al. (2017) found AND & EST have *no influence* on attractiveness perception & gender signalling; do not support argument for pheromones in humans
    - As with Lundstrom & Olsson, much higher concentration of AND used than naturally present...
- Both Lundstrom & Olsson & Hare et al. are lab experiments, though; some field experiments support pheromones in naturalistic situations/environments, but these are often funded by companies or run by Rs with vested interests
    - E.g. *Cutler, Friedmann & McCoy (1998)* found pheromones increased sociosexual behavior (i.e. behaviors involving female partner; not including personal behaviors e.g. masturbation) in heterosexual men in natural setting (exposed via perfumes, actual romantic/sexual partners used)
    - But *Cutler et al.* work in business of selling (supposedly) pheromone-containing perfumes (Athena Institute); potential for bias in publication & reporting findings (excluding null results?) must be considered
- Much research seems to be focused on presence of *sex* pheromones impacting mate behaviors; what about non-sex pheromones? Can findings re: sex pheromones be generalized to potential presence of non-sex pheromones?

Genetics & Behavior

Genes & Behavior

Gene: Part of DNA responsible for the synthesis of particular proteins that may result in a specific trait or behavior

- **Genotype:** Specific set of variants of a gene present in one's DNA

Phenotype: Individuals characteristics like traits, appearance, or behavior

- Genes/genotypes are considered to be somewhat responsible for the expression of phenotypes
- However, a single gene is usually not responsible for a phenotype but may lead to increased likelihood of it (combined with environmental factors, other genes, etc.)

Research has implicated the function of specific genes (through *molecular genetic* studies studying structure/function of genes @ molecular level) in various behaviors

- Caspi et al. (2003) linked 5-HTT (serotonin transporter gene) to -ve reactions to life events; implied to be as variations in 5-HTT influence levels of neurotransmitter serotonin, thus causing more -ve thinking/cognition
- Further explanations may come from evolution (see ToE); Wedekind et al. (1995) found that MHC genes seem to influence attraction
- Thus, genes/genotype appear to influence behavior, implicitly by modulating specific biological characteristics e.g. levels of chemicals like NTs & hormones
    - However, studies in area all quasi-experimental (manipulation of genes in live humans widely considered unethical, tech still in infancy); causal link between specific genes & behaviors unclear (only *likelihood/risk* increases at any rate)
    - Other factors demonstrably still affect behavior; genes not only factor (e.g. in Wedekind et al., use of oral contraceptives reversed odor preference; possibly as they mimicked steroids females produce during pregnancy)

Genetic Similarity

Humans share a degree of *genetic similarity* with related family members:

- **Monozygotic [MZ] twins** share 100% of their genotype with each other
- **Offspring** share 50% of their genotype with their **parents** (& vice versa)
- **Siblings** and **dizygotic [DZ] twins** (effectively same thing; DZ twins come from diff eggs & sperm, like normal siblings) share ~50% (average) genotype with each other

Thus, studies may utilize genetic similarities between related family to study *extent* of influence of genes on behavior (versus other factors e.g. environment, upbringing, etc.)

- This is done by looking at & comparing *concordance rates* (% of pairs that both display a trait within a population) between diff degrees of relation & genetic similarity (e.g. MZ vs DZ twins)
- **Twin studies** compare behavior of twins with each other to determine degree of similarity
    - If twins behave similarly in some respect, due to genetic similarity, implies that similar behavior due in some part to genetics
    - However, environmental factors may still play a role in this, esp if twins raised together in same environment (thus influenced equally by same env factors)
- **Adoption studies** are a type of twin study comparing twins adopted & thus raised in diff environments with diff upbringings
    - However, *selective placement* (when adoption agencies place children in environments similar to biological parents, often to reduce stress on children during adoptive process) may still cause environmental similarities
        - i.e. Shared characteristics between environments may influence similarity/relationship; genotype not fully isolated from environmental confounding variables

Behaviors such as *homosexuality* (sexual/romantic attraction to members of same sex) have been investigated with such studies:

- Bailey & Pillard (1991) found that MZ twins had much higher overt (self-identified) homosexuality concordance rates than DZ & non-twin siblings, indicating potential genetic component to homosexuality
    - However, this was only for *self-identifying* homosexual twins; possible that one might be homosexual/display homosexual behaviors witho self-identifying as gay
    - No specific genes identified though, only a *statistical link/implication*
- Santilla et al. (2008) found that MZ twins had much greater homosexual behavior (both potential/hypothetical & overt/actual) than DZ twins
    - Indicates homosexual behavior in general, whether one identifies as homosexual, appears to be influenced by genetics
    - Again, no specific genes identified though… Only a *statistical link/implication*
- *Why* might homosexuality be genetically transmitted?
    - Hypothesized due to *increased attraction*—men with more feminine faces more attractive to women during points in menstrual cycle

        - *Zietsch et al. (2008)* found that those with more sex-atypical gender-identity (those who felt more like opposite sex) had more heterosexual partners, especially if they had a homosexual twin
    - Implied that inheriting genes influencing homosexuality also thus makes one more likely to inherit traits of opposite sex; thus, research suggests homosexual traits may be genetically transmitted for reproductive benefit

Evolutionary Explanations for Behavior

Theory of Evolution [ToE] *(Darwin, 1859)* posits organisms driven by need to *survive* & *reproduce*

- Organisms best-adapted/fit to their environments survive, passing on traits which allowed them to survive thru genes; lesser-adapted/fit organisms die off faster/reproduce less, disappearing altogether (**natural selection**)
- Organisms also thus driven to reproduce as much as possible & ensure greatest odds of survival for offspring, ensuring species survival & own (good) traits passed on, selecting mates which ensure this (**sexual selection**; subset of natural selection)

Various human behaviors, notably *mating behaviors* (finding partner to mate with & produce offspring/next generation), exhibit characteristics supporting evolutionary explanations.

- Buss (1989) found mate selection preferences across cultures match ToE predictions re: sexual selection (preference for characteristics allowing greater reproduction & offspring survival, e.g. mate wealth, youth/fertility, age/experience, etc.)
    - No specific genes found though, only preferences found which *appear to support* ToE
- Wedekind et al. (1995) found attractiveness appears to be influenced by diverse MHC genes, a characteristic which aids survival, supporting ToE explanations re: sexual selection (better odds of survival for offspring)
- Neither study, though, actually demonstrates ToE in action (only demonstrating effects supporting presence of evolution)
    - Obviously very difficult/impossible to observe evolution in action...maybe animal studies over several generations could provide insight? (Possibility for future research)

(HL) Animal Research

Studies using the technique of experimenting on animals (animal testing/research) may provide valuable insight into human behaviors.

- Human physiology & genetics similar to animals, so assumed that animal research is to some extent generalizable to humans

Animal testing has various advantages/downsides—

Advantages	Limitations

• **Humans & animals are biologically & behaviorally similar**
  ○ E.g. Rats 99% genetically similar to humans
  ○ Many findings can be & have been generalized to humans with useful outcomes
  ○ Rosenzweig et al. (1972)'s findings re: neuroplasticity have been observed in humans too (e.g. Maguire et al. (2000), Draganski et al. (2004))
• **Rs can investigate animals over entire lifespans/generations**
  ○ Humans live on avg close to a century, can only be investigated for fraction of lifespan
  ○ Animals (e.g. rats) have much shorter lifespans (few years); Rs can observe entire lifetimes & even several generations
• **Variables can be controlled & manipulated (e.g. genetic similarity, entire living environment) in ways methodologically/ethically impossible in humans**
  ○ Rats inbred by geneticists to produce genetically similar lines of lab rats
	• **Similarity =/= same; animal research can't necessarily be generalized to humans**
	  ○ Animals, while similar, still have biological & psychological/behavioral diffs to humans
	  ○ Brady (1958)'s findings re: responsibility causing stress not wholly supported by human research, e.g. **Rose & Marmot** (also due to sociocultural factors absent in animals)
	• **Animals may behave differently to humans (psychological differences) despite biological similarities**
	  ○ Studies on humans must still be conducted to support findings
	• **Animals can't communicate their responses; we can only observe them**
	  ○ Insight into cognitive processes only implied
	• **Ethical considerations must still be considered for animals**
	  ○ Can't just do anything to animals
	  ○ Animal testing has its own ethical considerations (requirements relaxed vs humans but still must be

○ Rs can ensure animals live in identical environments with only one/few variables manipulated, switch on/off genes in DNA sequence, etc. ○ Procedures may be used that'd be unethical on humans (e.g. surgery, isolation, etc.)	considered); see Ethical Considerations (esp 3 Rs). ○ Experiments with signf cost/harm not justified by benefit still unethical ■ See Brady (1958)

Cognitive Approach

Core Concepts

- **Mental processes can be studied scientifically.**
    - Rs can manipulate stimuli/cognitive IVs and observe behavioral responses (DVs) to study a relationship between such an IV/DV.
- **Mental representations guide behavior.**
    - There are cognitive mediators between what happens in the environment (input) and what is delivered as output (behavior); i.e. *Input -> Mediational Processes -> Output*
    - Humans always view reality with a certain lens/way of thinking dictated by our mental representations (e.g. schemas, biases, etc.)
        - These may originate from prior knowledge/experience or innate characteristics/biases
    - 'Black box' models/theories (not investigating *exactly how* mind functions but rather *describing* processes in mind; treating inner processes of mind as if hidden in a 'black box') are created by researchers to study cognition
- **Cognitive processes do not function in isolation.**
    - Different cognitive processes are constantly interacting with each other; many cognitive processes may react to certain stimuli, hard to isolate one
    - Rs must be aware of this while studying.
- **Biases in cognition can be systematic and predictable.**
    - Humans appear to have certain 'tendencies' or 'habits' in processing information, aka *biases in processing*
    - Evidence of these biases extensive, allow us to make predictions about human behavior and it reveals how underlying cognitive processes may work

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Cognitive Processing

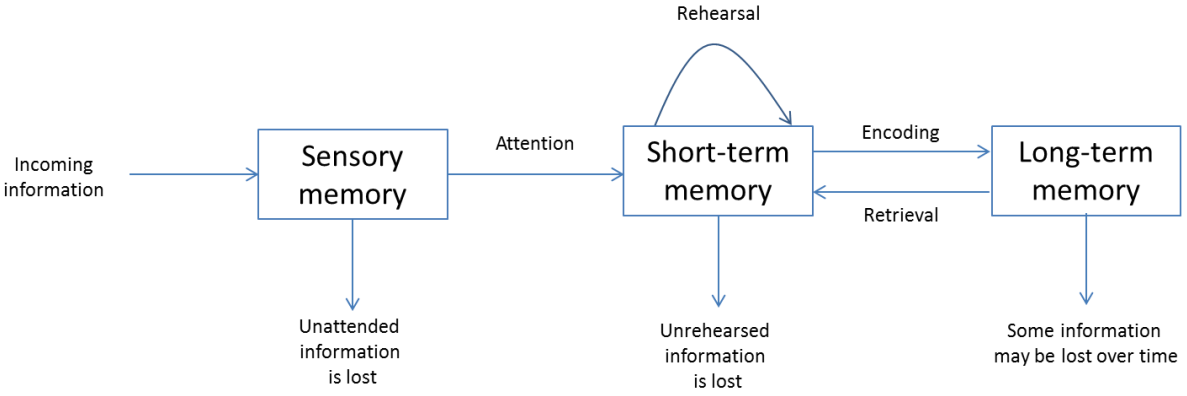
Models of Memory

Various models proposed to model the nature of memory in human mind (not just one unitary store of 'memory'); two important ones are:

Multi-Store Model of Memory [MSM] *(Atkinson & Shiffrin)*

- Inspired by computer science, sees brain as an 'info processing unit' (input -> processing -> output; like a computer)

- Modular information processing model of encoding, storage, & retrieval of memory
    - i.e. Process of memory broken into distinct parts that interact with each other



- 3 stages (stores of memory): **sensory memory [SM]**, **short-term memory [STM]**, and **long-term memory [LTM]**
    - **SM:** Unlimited capacity, very short duration (<1s)
    - **STM:** Limited capacity (~7 ±2 items), short duration (<1min)
    - **LTM:** Unlimited capacity & duration
    - All *modalities* (types) of memory stored in the same store of memory ('location') regardless of modality
- Memory stores interact via *control processes*:
    - **Attention (sensory -> STM):** SM info selected thru attention, transferred to STM for processing
    - **Rehearsal (STM -> STM/LTM):** STM info information repeated (rehearsed) to maintain in STM; transferred to LTM if rehearsed enough
    - **Retrieval (LTM -> STM):** when information is recalled from LTM to STM

MSM's core assertions have been supported by a variety of research:

- Glanzer & Cunitz (1966)'s findings support the concept of separate short-term & long-term memory stores, the short term store having limited duration
- Peterson & Peterson (1959)'s findings suggest a distinct short-term memory store with duration of short-term memory was no greater than 18s (for remembering consonant triplets—language, aka echoic memory)

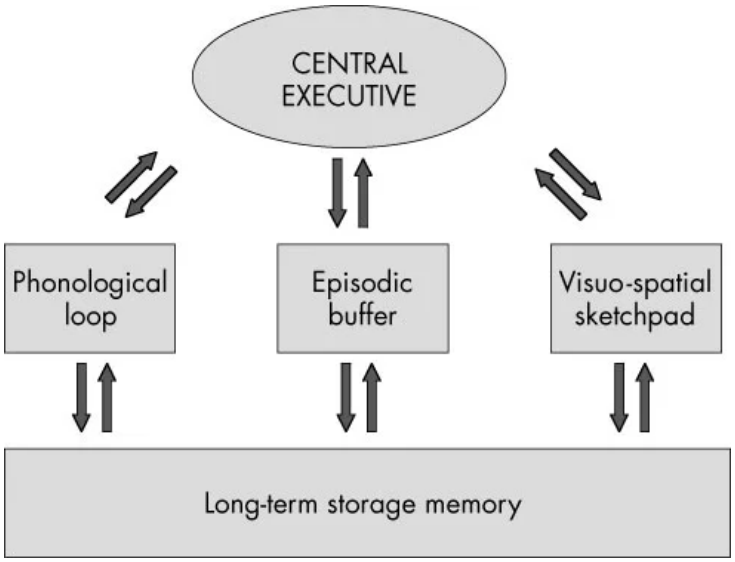
Evaluating the theory:

- One of the first memory models proposed
- Has predictive power
- Core assertions are testable; in fact, research supports core assertions (separate stores of memory, STM having limited duration/capacity, etc.)
- However, in many respects, MSM could be considered overly reductionist

- Research (e.g. Quinn & McConnel (1996)) indicates presence of different, separate memory stores for diff types of memory, not just one unitary store of 'short-term memory'
- Assumes all memory is equally easy/difficult to recall & involves same mechanisms in same ways (may not be, e.g. FMs)
- Doesn't account for human ability to 'chunk' memory (e.g. considering "51" as a single 'item' rather than two, as some animals have demonstrated in exps)
- Assumes memory is a passive process of storage & recall & that info in memory stores not impacted by other mental processes/representations (e.g. emotion, schemas, etc.)
  - Assumes info in LTM is 'untouchable' (no degradation/loss/modification); research indicates otherwise (that long-term memories degrade too over time, e.g. Talarico & Rubin (2003))
  - Assumes memory not affected by any mental representations, cognitive processes, etc. when research has proven they are (e.g. Loftus & Palmer (1974))
  - Doesn't explain confabulated memory, i.e. memories believed to be true based on fabricated, distorted, or misinterpreted knowledge of events (e.g. Shaw & Porter (2015))
- All in all, reflects understanding of memory in psychological research in mid-20th century, but psychology has moved on since then

Working Memory Model [WMM] *(Baddeley & Hitch)*

Proposed as a response to MSM; challenges assertion of unitary stores of memory.



Develops concept of 'short-term memory' to include *diff modalities of storage* (i.e. different types of info processed/stored differently) with concept of **Working**

Memory [WM] consisting of several stores/mechanisms all *interacting with each other*:

- **Central Executive:** 'Manager' of WM; responsible for controlling attention & resource allocation between all other components of WM
- **Visuospatial Sketchpad:** Stores visual and spatial info
- **Phonological Loop:** Stores auditory info; consists of—
    - *Phonological Store ('Inner ear'):* Passively stores sound for short duration
    - *Articulatory Rehearsal Component ('Inner voice'):* Repeats auditory info & can change modality of info (e.g. visual speech info to auditory info by subvocally 'saying' words to oneself as one read them)
- **Episodic Buffer:** Integrates info from visuospatial sketchpad and phonological loop into episodic memories for storage in LTM (like a video editor); added in a later version of WMM (not in original)
- All stores interact with **long-term memory** (similarly to MSM; not modeled explicitly in WMM)

Research supports assertions of WMM (in contrast to MSM):

- Baddeley & Hitch (1976) found that performance on tasks decreased with presence of a difficult suppression task; R asserts this supports presence of CE
    - However, unclear if CE was present or if humans have limited info processing capability
- Quinn & McConnel (1996) found that visual & auditory memory were separately influenced by modality-specific distractors, implying separate mechanisms for them

Evaluating the theory:

- Re: STM, more comprehensive than MSM; research supports some of its elements/assertions (e.g. modality-specific memory stores)
    - However, research on other elements remains unclear (e.g. CE); in fact, existence & nature of CE as a component has been debated extensively (some argue that it's an overly vague/untestable concept)
- However, *only* models STM & not SM/LTM; not comprehensive in that regard
- Somewhat predictive, but unclear/vague; exact function of each component (esp CE) in given situations still unclear, model has been criticized for emphasizing structure over processing
- Still doesn't/only vaguely accounts for various aspects of memory, e.g. confabulated
- memory (might be CE overloaded therefore mistaken?), long-term memory decay, different types of memory (e.g. FMs) being easier to recall, etc.

Schema Theory *(Bartlett)*

Attempts to explain how humans actively process info in relation to existing knowledge.

2 forms of info processing in cognitive psych:

- **Top-Down:** Using existing knowledge to interpret/process info thru our own 'cognitive lens'; *schemas* play a role in this
- **Bottom-Up:** 'Pure' info processing based on the info as-is witho bias or influence

Schemas: Cognitive structures derived from past experiences that provide a framework for organizing info.

- Used to organize info in memory, regulate behavior & increase info processing efficiency
- Fairly stable/resistant to change
    - Ensures continuity in our actions
    - But may lead to errors in processing if in unfamiliar situations requiring novel approaches or if wrong schema(s) activated

Research has supported the influence of schemas on cognition/cognitive processes:

- Bartlett (1932) demonstrated the effect of cultural schemas on memory of a culturally unfamiliar story
- Loftus & Palmer (1974)'s findings indicated schemas of violent car crashes activated with leading questions influenced memory of a video shown of a car crash

Evaluating the theory:

- Useful for explaining many cognitive processes, phenomena in cognition e.g. reconstructive memory, stereotyping, etc.
- Lacks predictive power; only *explains* what schemas are, not *how exactly* they influence cognition in specific situations or *how they form*
    - *Cohen (1993)* argues that schema theory is too vague to be useful, never truly explains where they come from
    - Still useful as a concept in cognitive psych regarding mental representations present in one's mind, but as a theory still rather vague
- Research (empirical evidence) supports influence of schemas (mental representations in general) on cognition & thus behavior

Thinking & Decision-Making

Thinking: Using information & processing it somehow (e.g. making a decision)

Decision Making: Cognitive process of choosing a belief or action/behavior from multiple possible choices based on the preferences of the decision maker

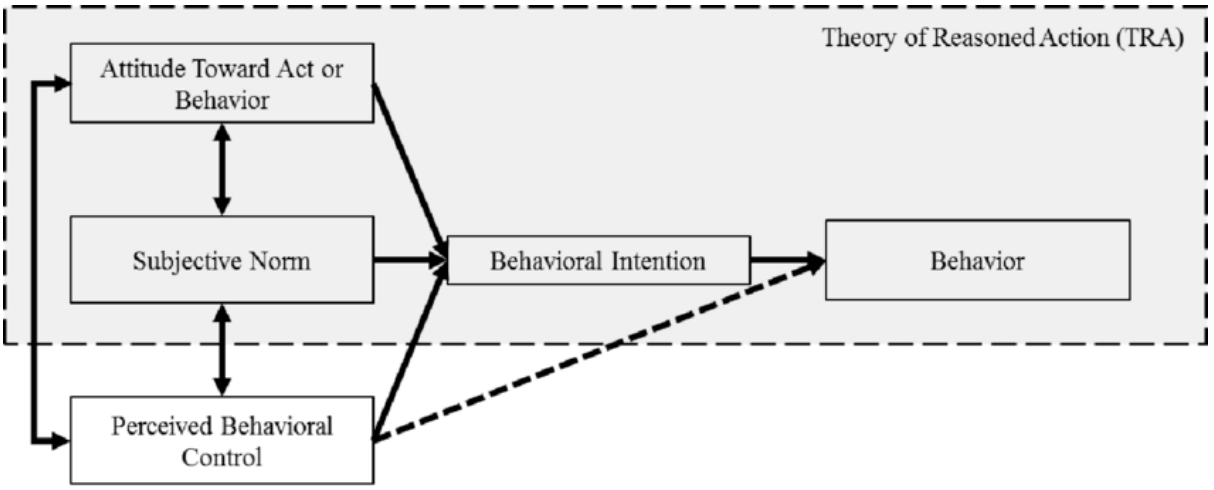
2 types of decision making models:

- *Normative* (ideal models, what thinking should be; formal logic/syllogisms)
- *Descriptive* (realistic models of human decision making/thinking processes)

Theory of Reasoned Action/Planned Behavior [TRA/TPB] *(Fishbein)*

A *descriptive* model of decision making looking at how **behavioral choice** is influenced by one's **attitudes**.

- Originally proposed as *Theory of Reasoned Action [TRA]*; *Theory of Planned Behavior [TPB]* proposed later as expansion/development of TRA



Asserts that to carry out a behavior, we must have **behavioral intent**—predisposition towards behaviors based on beliefs that it will lead to a desired outcome. Behavioral intent determined by 3 factors:

- **Attitude:** One's individual/own perception of a behavior (+ve or -ve)
- **Subjective Norms:** One's perception of how socially acceptable the behavior is (+ve or -ve)
- **Perceived Behavioral Control:** Whether or not one believes they are capable of carrying out a behavior *(added by TPB)*

Further implied that by influencing above factors, behavioral intent & thus behavior may be influenced/changed; potential societal implications.

Research somewhat supports TRA/TPB:

- Albarracin et al. (2001), meta-analyzing studies on TRA/TPB re: condom use, found moderate correlations (stat signf, even when intent measured before the fact) between *3 factors & behavioral intent* and *behavior intent & behavior*
    - Supports assertion that intent causes behavior & that 3 factors cause intent
    - However, correlations not perfect; possible additional factors/influences?
- Kothe et al. (2011) found that 3 cognitive variables influencing TRA/TPB predict not only intent but also future behavior (eating breakfast)
    - Furthermore, changes in cognitive variables predicted changes in behavior, though interventions targeting attitude & PBC didn't cause changes in variables
    - Predictions/associations not perfect (~40% between 3 factors & intent, ~30% between intent & future behavior); as with Albarracin et al, possible additional factors/influences not accounted for

Evaluating the theory:

- Has predictive power; allows one to predict behavior based on given factors/cognitive variables
- Doesn't explain how the process of coming to a decision actually works, only what factors influence said process
    - Extent of each of the factors/variables unclear & not explained
    - Doesn't account for/explain delay between having intent & performing behavior (e.g. procrastination)
- Somewhat supported by research that indicate behavioral intent is influenced by TRA/TPB's 3 factors & that behavior is influenced by behavioral intent; but *caused?* Still unclear
    - Research has correlated these variables, but correlation =/= causation; third/confounding variables which may cause behavioral intent & which are *correlated with* but *are not* the 3 factors not accounted for
    - Links & correlations in research (both Kothe et al. & Albarracin et al.) not perfect, suggesting further influences (environmental? social?)

Reliability of Cognitive Processes

Reconstructive Memory

Memory is an **active reconstructive process**, not passive storage & recall.

- i.e. Instead of passively recording/recalling memory like adding to & reading from a library, we actively reconstruct/re-encode memories each time we recall them, like a game of telephone

- Active reconstruction done with reference to existing knowledge/mental representations (e.g. schemas) and may be influenced by cognitive processes; this may lead to memory alteration, distortion, implantation, etc.
    - Thus, memory may be *confabulated* (memories believed true based on fabricated, altered, distorted, or misinterpreted knowledge of events)

Variety of research supports the concept that memory is an active reconstructive process and can be influenced during the process of constructing/reconstructing memories (storage & recall):

- Loftus & Palmer (1974)'s findings indicated schemas of violent car crashes influenced encoding/recall of memory of a video shown of a car crash
- Shaw & Porter (2015)'s findings indicated through the use of suggestive interviewing/questioning techniques, wholly false yet rich (detailed) memories could be implanted within Ss
    - Rs argue use of existing prior knowledge in suggesting false memories indicates they served as a foundation/starting point for suggestion; implies that *prior knowledge/representations influence process of memory recall*
    - *Trust & legitimacy* important components; in situations one feels comfortable in, process of memory recall may be manipulated more easily to 'reconstruct' false memories that one believes/trusts own belief in
    - Tactics used in study similar to those present in various IRL situations (e.g. police interrogations); can be generalized to those)
- Thus, findings of studies appear to support assertion that memory is an active reconstructive process that may be influenced by schemas & manipulated to the point of constructing false memories based on prior knowledge

Biases in Thinking & Decision Making

Cognitive biases: Systematic deviations from normative/rational thinking.

- Humans have limited processing capacity (limited attention, can't pay attention to all info/analyze entire situation), so we form **heuristics** (mental shortcuts/rules for making decisions) to help us process info faster; these may lead to cognitive biases

Kahneman proposes that humans use 2 cognitive systems to process info:

- **System 1**—Intuitive thinking; fast, intuitive, emotional, common for everyday tasks, leads to biases

- **System 2**—Analytical thinking; slow, logical, conscious, used for more complex decisions

Cognitive biases may arise from the mind's tendency to *only focus on a limited portion of available info*. 2 examples of this are:

- **Framing Effect (Prospect Theory):** When options are proposed with no logical difference, how they are *framed* (described based on a reference point) influences choice made between them (e.g. whether options described as loss or gain)
    - Aka "Avoid risks, but take risks to avoid losses" *(Baron)*
    - *Kahneman & Tversky (1979)* proposed this as **Prospect Theory**; Tversky & Kahneman (1981)'s findings supported presence of Framing Effect/assertions of Prospect Theory
- **Asymmetric Dominance:** Tendency to focus on an option that clearly dominates an decoy *despite* fact that decoy should have no impact on the 'actual best' option
    - Huber et al. (1982) demonstrated tendency to choose options dominated by a clearly-inferior decoy (weakest in all attributes but made to be obviously inferior to one of the choices)

Emotion & Cognition

The Influence of Emotion on Cognition

Cognitive processes (e.g. memory) may be influenced by emotion; memories formed of highly emotional events appear to have different characteristics than normal memories.

Flashbulb Memory Theory [FMT] *(Brown & Kulik, 1977)* posits that a unique type of *episodic memory* (memory about an event; combines various sensory elements e.g. visual & auditory), **flashbulb memories [FMs]**, are:

- Formed from surprising & highly emotionally arousing info
- Maintained through overt (public; with others) & covert (internal) rehearsal
- Are more vivid & more reliable/accurate (last longer) than other memories
- Use a specialized neural mechanism in the brain (separate system of memory)

Ppl tend to recall 6 major features of FMs *(Brown & Kulik, 1997)*:

- **Place:** Where event occurred
- **Ongoing Activity:** What one was doing at the time
- **Informant:** How one learned about the event

- **Own Effect:** How one felt about the event
- **Effect on Others:** How others felt about the event
- **Aftermath:** What happened immediately after the event

Research has supported some but not all aspects of FMT:

- McGaugh & Cahill (1995) indicated that memories of emotional stories appear to have higher short-term accuracy/reliability
    - Follow-up study using beta-blockers to reduce amygdala activation found increased accuracy/reliability of emotional story nullified
    - Thus, study as a whole supports assertion of FMT that FMs are more reliable/accurate & use a specialized neural mechanism
- Talarico & Rubin (2003) indicated natural FMs formed of 9/11 attacks appear to have much higher vividness but little diff in accuracy compared to normal memories

Thus, it appears that:

- Emotion appears to have a distinct effect on the cognitive process of memory
- Unique type of memory (FMs/FMT) appears to be formed from highly emotional info with high vividness & confidence in memory; reliability vs normal memories unclear
    - FMT is highly testable & has predictive power but doesn't appear to be fully (only partially) supported by empirical evidence (research)

(HL) Cognitive Processing in the Digital World

Developments in tech & resulting modern-day digital environment means humanity carries out *more* & *diff* tasks daily, e.g.:

- Digital gaming with *spatial elements*, e.g. first-person shooters/FPSs, simulation software, etc.
- *Induced media multitasking* (switching between various tasks constantly rather than focusing on one at a time; recent phenomenon induced by digital media)
- Etc.

Effects of digital tech on cognition seems mixed; some +ve, some -ve.

- Interaction with digital tech may have **+ve effects on cognitive processing** relating to spatial awareness/ability
    - Rosser et al. (2007) found surgeons who played more video games & self-reported more experience on them did better on surgical drills

    - Sanchez (2012) found that playing a spatial game (a FPS; Halo) increased spatial understanding in broader contexts (understanding plate tectonics)
- However, excessive exposure to digital tech (e.g. through induced media multitasking) also appears to have **-ve effects on other cognitive processes** (e.g. memory) by diverting attention
    - MSM asserts humans have limited attention… More tasks -> attention divided between tasks -> (implied) performance decrease on each
    - Rosen et al. (2011) found induced media multitasking (texting during a lecture) decreased memory recall efficacy
    - Sparrow et al. (2011) found that the 'Google Effect' (having tech to store info for you leading to decreased memory recall) decreased recall of given statements
        - Though this may not be applicable to digital tech in general; arguably counterable with metacognitive strategies (e.g. forcing self to remember)

Effects of digital tech on cognitive processing can be studied with:

- **Lab experiments** that directly manipulate presence of tech & observe resulting effects on cognition/observed behavior, e.g. Rosen et al. (2011) & Sanchez (2012)
- **Quasi-experimental/correlational studies** that observe natural links between tech & cognition/observed behavior & measure (correlate, for correlational studies) diffs, e.g. Rosser et al. (2007)

Sociocultural Approach

Core Concepts

- **Our behavior as humans is influenced by others, even unconsciously.**
- **We have both an individual and social identity that influence our behavior**
  - *Identity:* Who we believe we are
  - *Individual:* Relating to oneself
  - *Social:* Relating to other individuals in one's life
- **One can learn/take on certain behaviors through interaction with & observation of others.**
  - Aka *observational learning*—may play a key role in behaviors/processes such as enculturation, survival, etc.
- **Elements of culture may influence behavior.**
  - Not all cultures are equal—diff cultures have diff characteristics & thus their members behave differently
  - This may influence enculturative processes, individual vs group behaviors (e.g. conformity), etc.

The Individual & The Group

Social Identity Theory [SIT] *(Tajfel & Turner)*

Asserts *social categorization* (act of grouping people) influences one's identity & thus one's behaviors.

Posits social behaviors influenced by 4 connected concepts:

Social Categorization →	**Social Identification** →	**Social Comparison** →	**Positive Distinctiveness**
Act of grouping others into: *In-groups* (groups one identifies as member of) *Out-groups* (groups one doesn't identify as member of); "us vs them"	Group membership aspects of one's *self-image* (who one sees self as an individual) are activated & brought to forefront of one's mind.	Comparing in-groups & out-groups. Not always fair—for in-groups, similarities may be exaggerated & differences minimized (vice versa for out-groups), i.e. *category accentuation effect*	Motivation to show in-group > out-group to create +ve association with in-group, enhancing *self-esteem* May be *successful*, resulting in more value placed on membership to in-group, more +ve social identity &

			higher self-esteem. May be *unsuccessful* (in-group perceived inferior to out-group), leading to lower self-esteem & one possibly trying to leave in-group (if possible)

SIT & its key assertions has been supported by a wide variety of research:

- Tajfel et al. (1971)'s findings indicate social categorization causes competitive, arguably discriminatory (though latter is a point of contention) behavior
- Abrams et al. (1990)'s findings suggest social identity has effect on social behaviors, e.g. normative conformity
    - **Conformity:** Individuals changing their *attitudes/behavior* to adhere to existing *social norms* (agreed-upon ideas, standards, rules, or ways of thinking within groups/societies).
        - May originate from a *normative influence* (i.e. normative conformity)
    - **Normative influence:** Conforming to behavior of a group, even if group is obviously wrong, to avoid rejection/judgement ("Don't rock the boat")

Evaluating the theory based on above research:

- Somewhat testable; social categorization easy to induce & social comparison can be measured, but may be difficult to measure activation of social identity itself (maybe self-report, questionnaire, etc. could work?)
    - Above research indicates that social categorization does influence behavior, supporting SIT
- Strong predictive ability; defined criteria lead to positive distinction
- May be overly reductionist; other variables may also be present/influencing identity & behavior beyond merely social identity
    - E.g. studies like Sherif (1954; 1958; 1961) have demonstrated interdependence/compatibility of goals may also affect social behaviors, supporting alternative theories like Realistic Group Conflict Theory

Social Cognitive Theory [SCT] *(Bandura)*

Asserts that humans don't need to experience things personally to learn them and can learn through observational learning from models:

- i.e. A learner can watch another person (model) carry out a behavior & learn to either imitate or avoid said behavior depending on whether model is rewarded or punished
- Saves time when thinking, helps with survival

4 conditions required for such learning:

- **Attention:** Observers must attend to modeled behavior
- **Retention:** Observers must be able to remember the behavior
- **Motivation:** Observers must want to reproduce & expect a certain outcome from the behavior
- **Potential:** Observers must believe themselves to be capable of carrying out the behavior

Research (both lab & naturalistic) appears to support observational learning in various contexts, supporting SCT

- Bandura et al. (1961) demonstrated (short-term) observational learning of aggressive behavior in children
- Odden & Rochat (2004) demonstrated Samoan children used observational learning primarily to learn social/cultural norms, behaviors, etc.

Evaluating the theory based on above research:

- Testable; observational learning & SCT's conditions for it can be induced &/or observed
- Highly predictive in nature; with factors present/absent (can be measured), observational learning occurs
- Range of research appears to support presence of observational learning both in controlled & in naturalistic situations (e.g. in enculturation)
    - However, research given focuses mostly on children; further research needed on observational learning in adults (do adults also do it? Diff mechanism?)
    - Research indicates observational learning in cultures with *high Power Distance* (see Cultural Dimensions) & from (implied) figures of authority (adult > child in both Bandura et al. and Odden & Rochat); observational learning with *low Power Distance* or from someone equal in social status needs further study

    - Neither Bandura et al. nor Odden & Rochat explicitly looks @ 4 requirements of observational learning—further research needed to confirm 4 requirements of SCT itself

Stereotypes

Stereotypes: Generalized, fixed mental representations/social categorization of a group & its members (may be +ve or -ve)

- As our social world is very complex, it needs to be simplified—we look for 'trends' to make info processing easier via mental shortcuts (heuristics)
- Thus, we may form *biases in our cognition* which cause *prejudice* (-ve attitudes/beliefs regarding groups) influencing our *social behaviors* (e.g. discriminatory behavior, i.e. -ve behaviors towards groups)

Formation of Stereotypes

- SIT posits stereotypes & resulting discriminatory behavior are formed as a result of social categorization
    - Esp the **category accentuation effect** (i.e. tendency in social comparison to minimize similarities/exaggerate diffs in out-group & vice-versa to elevate in-group)
    - Tajfel et al. (1971) demonstrated social categorization caused apparent discriminatory behavior
        - Though actual formation of stereotypes wasn't demonstrated or measured; only implied they were present by way of discriminatory behavior of Ss)
        - Chicken & egg problem: do *stereotypes* lead to *discriminatory behavior*, or does *discriminatory behavior* eventually lead to *formation of stereotypes*?
- May be formed due to **illusory correlation**—cognitive bias where ppl see a relationship between 2 variables when there is none)
    - Hamilton & Gifford (1976) found illusory correlations are formed btw -ve behaviors being infrequent & a resulting -ve perception of group as a whole
    - Suggests a source for formation of stereotypes
        - Though, again, actual presence of stereotypes wasn't measured, only that humans may see trends in infrequent behaviors which explains reasoning behind formation of irrational stereotypes)

Effect of Stereotypes

Stereotype Threat (theory on effect of stereotypes) posits stereotypes affect behaviors of *stereotyped group* (& its members). Asserts 'stereotype threat' occurs when members of a group are aware of a stereotype and inadvertently adjust their behavior to match it.

- Steele & Aronson (1995) found activating/reminding of stereotype activation affects performance via self-doubt & self-handicapping (but not thru anxiety), causing behavior fitting stereotype not otherwise present, supporting Stereotype Threat
- Evaluating the theory:
    - Concept is sound & testable, also backed up by empirical evidence (Steele & Aronson)
    - However, also rather vague & lacks nuance; extent of effect unclear
    - Also seems rather focused on -ve behavior; wb ostensibly +ve stereotypes (e.g. Asians good at math)? Can stereotype threat be generalized to them?

Cultural Origins of Behavior & Cognition

What is 'culture'?

Multiple definitions for 'culture' have been proposed; two are:

Matsumato & Juang (2007)	Hofstede
"A dynamic system of rules, explicit and implicit, transmitted across generations, that allows the group to meet needs of survival, pursue well being, and derive meaning from life." i.e. • **Dynamic:** Changes over time • **Explicit & implicit**: Both openly spoken about & implied • **Transmitted across generations**: Passed on from one generation to the next (i.e. enculturation) • **Allows the group to meet needs of survival, pursue wellbeing,**	*"Collective programming of the mind distinguishing members of one group from another."* i.e. • Cultures & their members have shared mental concepts (ideas, norms, beliefs, etc.) that guide their thinking • Diff cultures have different shared mental concepts; these distinguish them from each other

and derive meaning from life: Basically, function/survive & thrive	

Researchers studying culture (esp from outsider POV, e.g. if taking etic approach) may be subject to **WEIRD** biases (**W**estern, **E**ducated researchers from **I**ndustrialized, **R**ich, **D**emocratic societies).

- i.e. They may be biased (consciously or unconsciously) towards applying norms from their own Western, developed, well-off backgrounds onto their study of other cultures not Western, developed, or well-off

The Cultural Dimensions

Hofstede, with his original questionnaire of IBM employees (see Hofstede (1973)) found 6 *cultural dimensions* (4 initially; 2 added later), i.e. common types of cultural norms/values where cultures are similar/differ that influence behavior of cultures' members

- **Power Distance:** How individuals relate to power & authority (preferring a hierarchical order vs equality of power)
- **Individualism vs Collectivism:** Whether individuals see themselves as dependent or independent of a social group
- **Long-Term vs Short-Term Orientation:** How a society thinks about its past, present, future & how it organizes itself based on this (maintaining traditions & being suspicious of change vs taking a pragmatic approach to change)
- **Masculinity vs Femininity:** Preference for 'masculine' (e.g. competition, glory, etc.) vs 'feminine' (e.g. cooperation, friendship) values
- **Uncertainty Avoidance:** Degree of comfort with uncertain/ambiguous situations
- **Indulgence vs Restraint:** How much individuals in a society control their desires/impulses (allowing vs suppressing gratification)

Effect of Culture on Behavior

The cultural dimension of *individualism vs collectivism* appears to influence the behavior of conformity to group norms (from normative influence).

- **Conformity:** Individuals changing their attitudes/behavior to adhere to existing social norms (agreed-upon ideas, standards, rules, or ways of thinking within groups/societies).

    - May originate from normative influence (i.e. normative conformity; see below)
- **Normative influence:** Conforming to behavior of a group, even if group is obviously wrong, to avoid rejection/judgement ("Don't rock the boat")

Research often finds that more *collectivist* cultures generally conform more often than more *individualist* cultures. See:

- Berry (1967)—When comparing individualist (Canadian Inuits) culture with collectivist (African Temne tribe) culture on Asch line paradigm measuring conformity to group norm, collectivist culture conformed at much higher rate than individualist culture
- Bond & Smith (1996)—Meta-analysis of Asch line paradigm replications worldwide found similar findings to Berry (that individualist cultures conform less than collectivist ones)
- Also relevant to discuss Hofstede (1973)'s original research & what it found the cultural dimensions are (especially Individualism vs Collectivism itself)

Enculturation & Acculturation

Enculturation

The process by which people learn the norms of their culture via **cultural transmission** ('teaching' of norms).

May occur via:

- **Active learning** (i.e. learner participating actively in activities of the culture)
    - Trainor et al. (2012) found that infants in active participatory music class with parents learned preferences for tonality of music
- **Observational learning** (i.e. observing members of culture perform a norm/behavior witho participating in cultural activities directly)
    - Supported by theories such as Social Cognitive Theory that assert ppl can learn to do/not to do behaviors by observing models perform it & the outcome the model experiences as a result
    - Odden & Rochat (2004) found that Samoan children tended to learn cultural behaviors, norms, etc. observationally from adults witho participating together with them
- Whether active or observational learning is used may depend on the culture in question, age of person, etc.
    - Trainor et al. showed active learning seems to be prevalent in a *Western* cultural context with lower Power Distance (see Cultural Dimensions)

        - However, infants used as Ss; also questionable if Ss were influenced by Western culture or merely behaving naturally (degree of enculturation not likely to be high)
    - Odden & Rochat showed observational learning seems to be prevalent in some *non-Western* cultural contexts and/or cultures with higher Power Distance
        - Possible that in cultures where consulting authority is frowned upon, ppl may be pushed towards learning observationally vs via active participatory learning

Acculturation

Berry (2005) defines **acculturation** as "the dual process of cultural and psychological change that takes place as a result of contact between two or more cultural groups and their individual members".

Berry (2008) asserts 4 acculturative strategies individuals take when faced with a new culture:

		Open to Change & Interaction with Other Cultures	
		Yes	**No**
Maintenance of Own Culture	**Yes**	Integration	Separation
	No	Assimilation	Marginalization

Acculturation may result in *stress* (aka **acculturative stress**): psychological, somatic & social difficulties that may result in mental & physical stress, e.g. anxiety, depression, etc.

- *Berry* asserts individuals who take integrative strategies experience the least amount of acculturative stress

Research has identified various factors influencing acculturative stress.

- Miranda & Matheny (2000) found in Latino immigrants to US coping strategies for stress, proficiency in the new culture/region's native language, and strong social support from one's family reduce levels of acculturative stress
    - Partly supports Berry's assertion that integrative acculturative strategies cause least stress—proficiency in region's native language indicates openness to change & interaction with new culture (but maintenance of own culture not displayed, i.e. integrative strategy not fully demonstrated)

- Lueck & Wilson (2010) found in Asian-Americans that acculturative stress is common in immigrants & that bilingual language preferences, prevalence of discrimination, socioeconomic status [SES], satisfaction with immigration reduce acculturative stress
    - Supports Berry's assertion that integrative acculturative strategies cause least stress—bilingual preference indicates interaction with new culture (using new native language) *while* maintaining old culture (continuing to use old native language)
- *Evaluative Note:* Both these studies look @ acculturation to US culture; possible that acculturation works differently with other target cultures

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(HL) Globalization

Globalization: The process of increasing interconnectedness across the world.

As humanity is increasingly able to interact with each other globally, our identity & behavior are influenced accordingly.

- Some, like *Giddens (1991)*, claim we are headed to a "global social identity" with a "cosmopolitan" (diverse) individual for whom humankind is a "we" (in-group) and there are no others (i.e. no out-groups)
    - Globalization/global influence -> +ve influence on behavior of local groups
- *Rosenmann et al. (2015)* argues that globalization is merely the spread of typical Western values/content
    - Globalization/global influence 'overtaking' norms, customs, etc. of local cultures

Research indicates a variety of effects resulting from globalization & related interactions between global & local influences

- Buchan et al. (2011) shows that those with higher GSI appear to cooperate & act in benefit of public (global) good more, demonstrating +ve influence of globalization/global influences on behavior
- However, globalization & global influences may also -vely influence behavior (e.g. body image, promoting eating disorders, etc.), countering +ve influence of local influences
    - Becker et al. (2002) suggests that increasing interconnectedness appears to increase vulnerability to symptoms of eating disorders, induce changes in body image ideal & anxiety, etc.
    - Findings could be attributed to *acculturation* via TV (e.g. to Western culture, given popularity of Western programs), not *globalization*

        - But if acculturation *is* spread of Western values (see *Rosenmann et al.*'s argument), then maybe it *does* comment on the actual nature/phenomenon of globalization…

Methods used to study globalization mostly consist of:

- **Naturalistic studies** which observe changes in behavior of members of a population as they & their culture (norms, attitudes, etc.) become increasingly globalized, e.g. Becker et al. (2002)
- **Quasi-experimental studies** which compare diffs between pre-existing globalized & less-globalized individuals (e.g. those with more/less GSI), e.g. Buchan et al. (2011)

Option: Human Relationships

Personal Relationships

Personal Relationships: Interpersonal relationships between individuals, including but not limited to romantic/sexual relationships, familial relationships, etc.

Origins & Formation of Personal Relationships

Attraction, an integral part of mate selection (forming personal romantic/sexual relationships for reproduction), has been explained via a **biological approach** with **evolutionary explanations**.

See earlier outline of *Darwin*'s ToE.

Research appears to support idea that evolution guides attraction/mate selection preferences:

- Buss (1989) found mate selection preferences across cultures match ToE predictions re: sexual selection (preference for characteristics allowing greater reproduction & offspring survival, e.g. mate wealth, youth/fertility, age/experience, etc.)
    - No specific genes found though, only preferences found which *appear to support* ToE explanations for mate selection
    - Cultural/globalized elements not precluded either
- Wedekind et al. (1995) found attractiveness appears to be influenced by diverse MHC genes, a characteristic which aids survival, supporting ToE explanations re: sexual selection (better odds of survival for offspring)
- Neither study, though, actually demonstrates ToE in action developing preferences, only demonstrating effects supporting presence of evolution

Evaluating the theory:

- Explanations seem to match human behaviors found in research
    - Human mating behaviors/preferences demonstrate desire to reproduce & ensure offspring survival
    - Genetic element to attraction (maximal survival odds with best genes) also demonstrated, supporting modern genetic/evolutionary explanations
    - Global nature of similarities in mating behaviors imply underlying universal biological influence
- Only one type of personal relationship (romantic/sexual) explained; generalizable to other relationships (e.g. friend/platonic)?

    - Wedekind et al. *suggests* additional factors explaining potential familial attraction preference, but only implied from findings/explanation; further research needed
- Hard to eliminate other (e.g. environmental, sociocultural, etc.) factors
    - Nature vs nurture—socialization (how attitudes, behaviors, etc. are shaped by social influences) could also explain mate selection
    - Globalization might explain worldwide similarities
- Impossible to experimentally confirm in humans (human lifespan too long)
    - Could investigate in animals, but animals don't mate same way as humans do
- Potential ad-hoc fallacy (trying to 'fit' evidence that doesn't necessarily support ToE to 'supporting' ToE)
    - However, evolution is complex; too simplistic to just consider it as only "survive & reproduce", just bc something's an *exception* doesn't make it *false*

Communication in Personal Relationships

Constructive communication plays a key role in the maintenance of interpersonal relationships; *Canary & Dainton* liken communication to a "centrifugal force" (pulling towards center) which, in absence, leads to relationships pulling apart.

Socio-cognitive approach to understand this may be seen in *Heider*'s **Attribution Theory** which asserts ppl attribute event causes to either *situational* (outside of one's control) or *dispositional* (caused by oneself) factors.

- **Attribution styles:** Ways which we tend to attribute outcomes to factors (some styles beneficial to relationships, some harmful)
- **Adaptive Attribution Style:** Attributing +ve behaviors to dispositional factors, -ve behaviors to situational factors
- **Maladaptive Attribution Style:** Attributing +ve behaviors to situational factors, -ve behaviors to dispositional factors

In interpersonal relationships, how attributions are made & communicated allows maintenance of relationship satisfaction & trust (healthy relationships -> *adaptive attribution styles* towards other member(s)); research supports this:

- Stratton (2003) found that *maladaptive attribution styles* were common in parents to children but not to self (blaming child but not self for -ve behaviors) in troubled family relationships
- Fletcher et al. (1987) found romantic couples with *adaptive attribution styles* regarding themselves & their partner had more love, were more satisfied, etc.

& couples who attributed relationship maintenance to *situational* factors were less satisfied

Evaluating the theory:

- Attributions/attribution styles clearly defined & observable/testable
- Generalizable to many types of interpersonal relationships; supported by variety of research into various types of said interpersonal relationships
- Doesn't consider social factors; assumes only factors are cognition & behaviors of those involved witho considering actual influence of external factors
    - Essentially assumes *perceiving* external factors in certain way results in distress/weak relationships/non-constructive communication (implying to an extent they don't truly affect relationship on their own)
    - Might attributions merely reflect truth of situation (e.g. relationship *really is* only being maintained due to external reasons) rather than patterns in cognition? Overly reductionist?
- Doesn't explain basis behind attribution styles (why do ppl choose certain attribution styles?)
- Predictive power rather weak; can make vague predictions but not specifics, esp as basis of attributions & extent of effect of attributional styles not explained (lacks nuance arguably)
- Directionality unclear—do maladaptive attributional styles result in distress/weak relationships or other way round?

Change & End in Relationships

Canary & Dainton say that relationships (witho maintenance) are destined to *pull apart* (break down).

Rollie & Duck's **5-Stage Model of Relationship Breakdown** provides a sociocultural explanation for this; stages (sequential; stages can't be skipped) of breakdown are:

- **Intrapsychic:** Dissatisfaction experienced by one/both partners but not openly expressed
    - Boundary to move to next stage is *"I can't stand this anymore"*
- **Dyadic:** Dissatisfaction expressed & discussed openly by both partners (doesn't always lead to next stage; may lead to conflict resolution or worsening)
    - Boundary to move to next stage is *"I would be justified in withdrawing"*
- **Social:** Partners seek support/help from others; normative social influence begins to impact relationship & influence partners; often leads to relationship breakdown

    - Boundary to move to next stage is *"I mean it"*
- **Grave Dressing:** Partners break up & seek to defend/justify decision to do so; both partners experience distress (e.g. anxiety, depression, etc.), attempt to minimize own fault & attribute breakdown cause to other factors (e.g. environmental, partner, etc.)
    - Boundary to move to next stage is *"It's time to start a new life"*
- **Resurrection:** Final recovery; self-development, new understanding of self in relation to former partner & community

Research supports various aspects of the 5-Stage Model:

- LeFebvre et al. (2014) found online behaviors corresponding to social, grave dressing, & resurrection phases (e.g. seeking social network support, removing presence of partner from own social media, withdrawing from them, virtually reconciling with them, etc.)
- Tashiro & Frazier (2003) found behaviors supporting nature of grave dressing (e.g. distress, attributing cause to other factors) & resurrection stages (personal growth)

Evaluating the theory:

- Comprehensively models relationship breakdown; predictively, though, somewhat vague (why & how boundary to move to next stage is reached unclear)
- Focused on romantic relationships; difficult to generalize to other forms of interpersonal relationships (e.g. family)
- Various stages supported by research; howevers, others not so much (esp as difficult to test; difficult to recruit Ss in intrapsychic/dyadic stages given by nature they don't share issues publicly)
    - Longitudinal studies could be conducted (future research)

Group Dynamics

Cooperation & Competition

In context of *intergroup dynamics* (processes occurring within & between groups, aka intra-group & inter-group respectively):

- **Cooperation:** Intergroup behavior benefiting interests of another group (either while also benefiting own group or at cost of own group)
    - Aka either *"I win, you win"* (both other & own benefiting) or *"I lose, you win"* (benefiting other but not own)
- **Competition:** Interpersonal or intergroup behavior benefiting interests of own group at cost of other group

    - Aka *"I win, you lose"*

Sociocultural Explanations: **Social identity Theory** & **Realistic Group Conflict Theory**.

Social Identity Theory [SIT] *(Tajfel et al.)*

See earlier outline & evaluation of SIT as supported by Tajfel et al. (1971)—demonstrates effect of social categorization on causing competitive behavior between groups (though concerns with artificiality of situation present).

Realistic Group Conflict Theory [RGCT] *(Campbell)*

Attempts to explain conditions from which conflict/competition and cooperation (also conflict resolution) between groups originate.

- **Conflict/Competition:**
    - Arises from *incompatible goals* (i.e. negative interdependence—only one side can succeed)
    - Results in ingroup favoritism, discriminatory social norms/behavior against out-group, etc.
- **Cooperation:**
    - Arises from *superordinate goals* (i.e. positive interdependence—shared goals + working together required for success)
    - Results in reduction/elimination of conflict (stereotypes, prejudice/discrimination, conflict, etc.)

Supported by Sherif (1954; 1958; 1961)'s Robber's Cave studies.

Evaluating the theory:

- Acknowledges further variables beyond SIT
- Highly predictive & testable; supported by empirical evidence (research)
    - However, Sherif's studies were conducted on children; concern re: generalizability?
    - Theory could be generalized to youths/adolescents but adults, further study may be needed to see if diffs exist

Prejudice & Discrimination

- **Prejudice:** -ve attitudes towards individuals/groups
- **Discrimination:** -ve behaviors towards groups/individuals based on group membership (result of prejudice)

How do we explain the origins & effects of prejudice & discrimination?

SIT & RGCT

SIT & RGCT provide a *sociocultural* framework for understanding the origins of prejudice & discrimination (see earlier outlines + research).

- SIT asserts prejudice & discriminatory behaviors originate from social categorization
- RGCT asserts prejudice & competitive inter-group discriminatory behaviors arise from incompatible goals/-ve interdependence.

Implicit Bias

Prejudice (which leads to discrimination) may arise from **cognitive biases** (see earlier definition/explanation). May not be *explicit* (openly stated) & may be *implicit* (present but not openly stated.

Where do these biases originate from?

Bartlett's Schema Theory has been used as a framework for understanding prejudice & discrimination.

- Asserts that activation of social schemas about others influences cognitive processes (e.g. memory), leading to prejudice & discriminatory behavior
- E.g. Levinson (2007) found in a sample of volunteers that their memory of (otherwise-identical) stories was biased against African-Americans & Hawaiians in favor of Caucasians (& that these biases were unrelated to explicit racial preferences)
    - Implied that prior knowledge/cognitive structures biased their cognition given memory is an active reconstructive process & stories were identical
    - Also indicates such implicit biases are *separate* from explicit biases

How do we measure implicit biases?

Given we can't 'observe' mental processes, knowledge, schemas, etc., how can we measure presence & extent of implicit prejudicial biases?

Greenwald et al. developed the **Implicit Association Test [IAT]** as a technique to measure such implicit biases.

- Based on idea that if someone has strong automatic associations between 2 mental concepts, reaction time to associate them will be shorter than if weak association present
    - i.e. The stronger the mental association , the less conscious processing needed to link them
- Test is digital; on screen, 2 words indicating concepts (e.g. Black & unpleasant) are shown on left & 2 on right, word flashes up in middle, Ss use

keyboard to indicate if it's associated with either of the concepts on the *left* or either on the *right*
    - If 2 concepts on a side have strong mental assoc (feel naturally related to Ss already), Ss will take less time to associate them
    - If 2 concepts on a side have weak mental assoc (feel contradictory/unrelated to Ss), Ss will take longer to associate them

Levinson et al. (2010) conducted study using IATs to determine effect of implicit biases on decision making in a legal context; found that:

- Implicit biases against African-Americans are linked with more harsh judgment but *regardless of race*
- Implicit biases appear to be correlated with explicit racial biases but *inversely* correlated with explicit (emotional) racial *preferences*
- Possible metacognitive strategies at play? Human bias for desiring consistency in action?

Evaluating implicit bias research:

- Main assertions supported by evidence; implicit biases do appear to be present in form of existing knowledge/representations, biasing cognition prejudicially
- Effect can & has been observed; however, actual effect on behavior unclear (may not actually lead to discriminatory behavior)
    - Levinson et al. found that implicit biases don't seem to influence decision making in a biased manner (though they do make it more harsh)
- Most research quasi-experimental/correlational; can't establish causation (do racial attitudes/beliefs cause implicit bias or other way round?)
    - Much research also focused on Western, namely US, racial dynamics; wb implicit racial bias in other races with diff dynamics (e.g. Asian cultures)?
    - Further research needed in other contexts (diff legal domains, other cultural contexts, etc.) to determine more fully nature & influence of implicit biases

Biological Correlates (Amygdala, mPFC, Insula)

Research has found biological correlates in brain areas to certain reactions/cognitive processes (significant element of inter-group conflict):

- **Medial Prefrontal Cortex [mPFC]:** Region of brain at very front of forward lobe; assoc with processing social info about people
- **Insula:** Region of brain within cerebral cortex associated with disgust
- **Amygdala:** Associated with emotion & emotional reactions (especially fear)

Activation/lack of activation of these may indicate elements of how we viewithreact to prejudiced groups & thus origins of prejudice and resulting discriminatory behavior.

- Harris & Fiske (2006)'s initial study found prejudicial reactions of disgust to those of low ability & warmth/closeness relative to self were linked to reactions of fear, disgust, & dehumanization indicated by brain activity
- Harris & Fiske (2006)'s follow-up study found that dehumanizing reactions could be reversed ('rehumanizing') with tasks requiring personalization

Evaluating these explanations/research:

- Correlation, not causation; does brain activation cause prejudice/discrimination or other way round?
- Only implies elements of prejudice; discriminatory behavior & conflict between groups not demonstrated
    - One could hold prejudices witho inciting conflict or performing discriminatory behavior (metacognitive strategies?)

Origins of Conflict & Conflict Resolution

- **Conflict:** Explicit competition between groups; a continuum starting from prejudice to overt discriminatory behavior & bias
- **Conflict Resolution:** Strategies to reduce conflict.

How is conflict caused & how do we reduce it?

- Sociocultural explanation: SIT & RGCT (+Allport's Contact Theory)
- Biological explanation: Biological correlates of prejudice (+Allport's Contact Theory)

SIT & RGCT

SIT & RGCT provide a *sociocultural* framework for understanding the origins of conflict & conflict resolution (see earlier outlines + research).

- SIT asserts conflict (prejudice & discriminatory behavior against out-groups) originate from social categorization
- RGCT asserts conflict (discriminatory behavior against outgroups) arises from incompatible goals/-ve interdependence & conflict can be reduced in situations with shared goals/+ve interdependence

Biological Correlates

Biological correlates (see earlier outline + research) have been linked to prejudicial attitudes & their resolution which cause discrimination, a key element of conflict *(NOTE: Conflict itself not observed/measured!)*

Contact Theory

Originally proposed by *Allport (1954)*; further contributions by *Dovidio et al. (2003)*. Asserts following conditions necessary in mutual contact for reduction of conflict between groups:

- Equal status
- Shared goals
- Intergroup cooperation
- Support of societal/institutional authorities
- Personal acquaintance with outgroup members, considering other member as an individual
- Inter-group friendships

First 4 supported by research into RGCT (e.g. Sherif (1954; 1958; 1961)); 2nd-last one supported by biological research into correlates of prejudice (dehumanization/rehumanization).

Option: Abnormal Psychology

Disorder to be looked at:

Major Depressive Disorder [MDD]

Characterized by DSM-5 as having the following symptoms (ABCDE):

- **A**ffective symptoms (e.g. insomnia/hypersomnia, depressed mood, suicidal thoughts, etc.); 5+ of them for >2 weeks
- Causing **B**ehavioral impact on social, occupational, etc. areas of functioning
- Not caused by other medical **C**onditions/**C**hemicals (substances)
- Not explained by other **D**isorders (e.g. delusional, schizophrenic, etc.)
- Without manic/hypomanic **E**pisodes

DSM-5 gives 12-month prevalence rate of 7%, 3x more 18-29 y/os than >60y/os, 1.5-3x more females than males.

Etiologies of Disorders

Etiologies

Biological: Serotonin Hypothesis

Asserts that low activation of *serotonin* causes depressive symptoms/behavior. See earlier outline of serotonin as a neurotransmitter.

Cognitive: Cognitive Theory of Depression *(Beck, 1967)*

Identifies 3 cognitive elements of depression:

- **Cognitive Triad:** -ve beliefs about self, world, & future (leading to each other in that order); deeply rooted, influence automatic thoughts to be irrationally pessimistic
- **-ve Self-Schemata:** Generalized -ve beliefs about self; individuals see own fault in everything that happens to them (even if out of their control)
- **Faulty Thinking Patterns:** Irrational/illogical thinking (e.g. logical fallacies, irrational conclusions, etc.) resulting from biased info processing arising from first 2 elements

Research has been conducted into CTD as an explanation for depression, both in terms of the *elements causing depression* and *treatment based on the elements*.

- Alloy et al. (1999), investigating cognitive elements causing depression, found those with -vely biased & pessimistic cognition about world & self were more likely to develop MDD & suicidal tendencies

- Reverse logic may be used in that if treatment *based on/'fixing'* the elements of CTD is successful, *therefore* CTD must be the cause of depression
    - Hollon et al. (2005) found that treatment based on CTD was more effective in preventing relapse; implies CTD is 'true' cause of depression (as treatments based on it actually cure cause vs symptom)
    - The TADS study (March et al., 2007) found that CTD had similar long-term remission rates to drug therapy & combined treatment & lower suicide rates to drug therapy BUT drug & combined therapy had better short-term efficacy
        - Indicates bio factors must also be considered

Evaluating CTD:

- Difficult to test for; can't 'observe' cognitive elements, only can be reported & effects on behavior observed
    - Thus, difficult to investigate & predict in own right; can investigate cognition in general but hard to isolate variables
    - Backwards logic may be faulty; may just *counteract effectively* the 'true' cause without revealing it (3rd variable?)
- However, empirical evidence appears to support in various contexts, plus has been used to develop effective diagnostic tools & treatments e.g. CBT

Sociocultural: Risk & Protective Factors

Sociocultural factors relating to social environment may play a role in *protecting against* (protective factors) or *causing vulnerability to* (risk factors) depression.

US National Institute for Mental Health [NIMH] identifies several risk & protective factors for various stages of life, e.g.:

- **Risk:** Parental drug abuse, marital conflict/divorce, poverty, etc.
- **Protective:** Good peer relationships, extended family support, +ve teacher expectations, etc.

Research supports presence of sociocultural risk & protective factors:

- Brown & Harris (1978) found that a variety of risk & protective factors along with provoking agents (severe life events) contributed to development of depression in UK women
- Kivela et al. (1996) found a variety of societal factors predicting the development of depression in elderly Finnish ppl

Evaluation:

- Only risk/protective factors but not direct causes; possible further biological/cognitive vulnerabilities
    - Research into sociocultural factors does generally acknowledge this
    - Any perspective taking these into account must also consider other bio/cog factors then; only considering one would be overly reductionist
- Diffs between cultures, social groups, age groups, etc. (as shown by research) indicate further research necessary to establish factors for many diff groups
    - Can't generalize research on one to all (other than, at most, basic trends)
    - As such, may not be very predictive in nature, more descriptive of situations than anything

Prevalence Rates

Prevalence Rate: Proportion of a population found to be affected by a disorder.

Various factors may influence the prevalence rate of disorders, e.g.:

- **Sociocultural Change:** Societal/cultural change may impact prevalence rates within populations, both by changing reporting of disorder and actual likelihood/vulnerability of disorder
    - *Twenge (2015)* argues that recent increases in prevalence of depression in youth is bc of destigmatization of depression (more awareness+ppl willing to come forward/seek help, not necessarily increased actual prevalence).
    - Recent phenomena of *globalization* (increasing global connectedness worldwide means where previously local influences may have protected against disorders/abnormal behaviors, global influences might override them & not protect against them to same degree
    - Becker et al. (2002) found that after TV's intro to Fiji, presence of indicators of eating disorders increased
        - Unclear if due to a Western cultural shift (prevalence/popularity of Western TV programs) or globalization caused this
        - *Rosenmann et al. (2015)* argues that actual phenomenon of globalization *is* the spread of Western cultural values, norms, etc. (Western influence) though, so answer could be both
- **Validity of Diagnosis:** If validity of diagnosis is low (e.g. flawed diagnostic system, biases in diagnosis, etc.), higher/lower prevalence rates may be observed from diagnosis rate than actually present in a population
    - Rosenhan (1973) found flaws in validity of diagnoses in variety of US mental institutions; these might impact prevalence rate as if diagnoses

invalid, reported prevalence rate of disorders in population would differ from actual prevalence rates
    - Brings up question of normality vs abnormality; diagnostic systems determining boundaries/characteristics of abnormal disorders & behaviors are written by humans, changing them (e.g. widening/narrowing bounds for disorders) may change disorder prevalence rates
        - Abnormal behaviors still observable & do exist, but how do we recognize & classify them properly?
        - Design of diagnostic systems must consider various factors (behavioral, somatic, etc.) in defining rigorous & valid definitions to ensure that diagnoses, thus resulting prevalence rates, are accurate

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Treatment of Disorders

Biological & Psychological Treatments

Two main approaches: **biological** (chemical; drug therapy, focusing on changing biological aspects influencing depression) and **psychological** (CBT; focusing on changing cognitive aspects influencing depression)

- **Drug Therapy:** Based on theories/models like Serotonin Hypothesis; using drugs to manipulate effect of neurotransmitters, inhibiting -ve responses/increasing +ve ones
- **Cognitive Behavioral Therapy [CBT]:** Based on Cognitive Theory of Depression; patients work with therapists, performing activities (e.g. socratic questioning, keeping records of own thoughts, etc.) to correct -ve cognition. 3 main components:
    - *Behavioral Activation:* Learning alternative problem-solving strategies & engaging in behaviors in line with new thinking
    - *Modifying Automatic Thoughts:* Learning how to identify automatic thoughts leading to depression & analyze their rationality
    - *Modification of Core Schemas:* Changing deeply-held beliefs about self, world, & future
- Drug therapy & CBT can be combined; this is known as **combined therapy** (an 'eclectic' approach to treatment)
    - However, this requires more effort on the part of patient & therapist/psychiatrist

Effectiveness of Treatments

How do we measure the effectiveness of a treatment?

- **Response Rate:** % of population who, after treatment, show *reduction* in symptoms
- **Remission Rate:** % of population who, after treatment, show *near-elimination* of symptoms
- **Relapse Rate:** % of population whose past condition/symptoms reoccur

Which treatment is more effective: drug therapy or CBT (or both combined)?

- *Kirsch et al. (2002)* found considering published & unpublished studies ~80% of effect of SSRIs could be attributed to placebo; casts doubt on drug therapy
    - But even if placebo, better than nothing; other studies show +ve effect
- The TADS study (March et al., 2007) found that combination therapy had highest short- & long-term remission rates, that effectiveness of all treatments increased over time, and that drug therapy alone had higher short-term but not long-term remission rates than CBT alone
- Hollon et al. (2005) found that CBT had a more long-lasting effect (enduring even after treatment ended) than medication, indicating medication may only be effective when one is taking it

Culture-Specific Treatment

Cultural factors may influence the effectiveness & appropriateness of treatment; adapting existing treatments to certain cultures may not always be the best course of action (sometimes may work, sometimes may not)

- *Hodges & Oei (2007)* conducted literature review of studies of CBT in China, found that various aspects of CBT might allow it to be especially compatible with Chinese cultural attributes but possible problematic areas
    - Arguments formed in relation to Hofstede's Cultural Dimensions
    - High **Long-Term Orientation** of Chinese culture (tendency to take a pragmatic approach to change) allows greater acceptance of CBT activities as "necessary aspect of change"; "Confucian work ethic" cited as factor among other things
    - High **Power Distance** (hierarchical; significant power gap between those of high & low social status) of Chinese culture means authorities, e.g. doctors, highly respected & thus their instructions will be followed
        - But might also lead to patients hiding own feelings/beliefs to pretend as if treatment is working, possibly to avoid embarrassment/shame
        - Kinzie et al. (1987) found tendency in SE Asian patients undergoing drug therapy not to take medicine (but compliance

with treatment increased after discussion); possible support of this tendency?

- Sometimes it may be more effective to *adapt the treatment to the culture*
    - *Naeem et al. (2012)* developed a culturally-sensitive version of CBT for Pakistanis via interviews, acknowledging local elements of depression (e.g. higher prevalence of somatic vs mental symptoms)
        - An example of a 'bottom-up' approach to adapting treatment, changing the treatment & its delivery itself
    - Griner & Smith (2006) found that cultural adaptations to treatment were more effective, esp if they were adapted for specific sub-populations (e.g. run on same-race clients, therapist spoke same language, etc.)
        - Demonstrates both 'top-down' (superficial changes, e.g. language of delivery) & bottom-up adaptations may make treatments more effective in diff cultures

Relevant Research

Maguire et al. (2000): London Taxi Drivers

Relevant to: Localization [BIO], Neuroplasticity [BIO]

Aim: Investigate differences in brain structure in London taxi drivers
Ss: Right handed males

- 1 group of certified London taxi drivers with >1.5yrs experience
- 1 control (non-taxi drivers)

Background Info: London taxi drivers, to become certified, must pass an extremely difficult prerequisite exam known as 'The Knowledge' where they must use only their mental map of London to verbally describe directions to/from any places in London
Procedure: Quasi-experimental study; Ss underwent MRI scans; scans of taxi drivers & control compared
Findings:

- Taxi drivers had *larger* posterior (rear) hippocampi & *smaller* anterior (forward) hippocampi than control
- In taxi drivers, volume of *right posterior* hippocampus +vely correlated with experience (years spent) as taxi driver
- Otherwise, no signf diffs

Conclusions:

- Differences in/characteristics of brain structure between taxi drivers & control indicates hippocampus changes in response to environmental demands
    - Differences in volume between taxi drivers & control indicates differences in brain structure to fit diff demands (taxi drivers using spatial recall more)
    - Correlation between volume & experience of right posterior hippocampus of taxi drivers suggests that the brain changes more over time to fit long-term demands
- Hippocampus (part of temporal lobe) appears to be linked with memory
    - *Posterior hippocampus* appears associated with recall of existing spatial knowledge (larger in taxi drivers as used more/demands higher)
    - *Anterior hippocampus* appears associated with learning of new spatial knowledge (taxi drivers already know London streets, thus used less & smaller to suit lower demand)

Evaluation:

- Study only used structural scanning (MRI) with correlation & comparing

diffs; causation can't be established, only suggested/implied

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Draganski et al. (2004): Learning Juggling

Relevant to: Localization [BIO], Neuroplasticity [BIO]

Aim: Investigate whether brain changes structurally in response to learning/practice
Ss: Didn't have juggling experience before study (self-attested)
Procedure: Experiment (mix of lab & field)

1. All Ss underwent initial MRI scans
2. Ss divided into 2 groups: *juggler* & *control*
    a. Juggler group spent 3 months practicing juggling, then 3 months not practicing juggling (6 months total)
    b. Control group spent all 6 months not practicing juggling
3. At 3-month & 6-month mark, Ss in both groups had MRI scans

Findings:

- *Initial scan:* No differences in brain structure between groups
- *After 3 months:* Jugglers had significantly greater density of neural connections (grey matter) in *mid-temporal area* than control
- *After 6 months:* Difference between jugglers' & control Ss' grey matter in mid-temporal area decreased (but still present)

Conclusions:

- Mid-temporal area (middle of temporal lobe) appears to be associated with memory creation (as necessary when learning juggling)
- Learning/practice leads to changes in brain structure (greater neural connections/grey area)
    - Lack of learning results in reversal of changes

Evaluation:

- Study only used structural MRI scans; link between *structural* changes & *activity/functional* changes unclear, difference in ability merely implied by IV manipulation

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Rosenzweig et al. (1972): Brain Change in Response to Experience

Relevant to: Neuroplasticity [BIO], Animal Research [BIO HL]

Aim: Investigate if environmental stimulation causes physical changes in the brain
Ss: Lab rats (animal study)

Procedure: Lab experiment method (between groups design) using animals
('Litter' = Rats born @ same time from same parents)

1. 3 adult rats from same litter randomly allocated (with adequate food/water) to:
    a. *Control Condition [CC]:* Rat placed with 2 others (3 total) together in cage witho stimulus objects
    b. *Enriched Condition [EC]:* Rat placed with many others (10-12 total) placed together in cage with stimulus objects (e.g. toys) to interact with
    c. *Impoverished Condition [IC]:* Rat placed alone in cage witho stimulus objects
2. After 30-60 days, rats killed, brains studied (autopsy)

Findings:

- Rats in EC has thicker & heavier cerebral cortices
- Testing of nerve cells in brain revealed greater neural activity in cortex in neurons associated with transfer of acetylcholine (ACh; associated with memory)

Conclusion: Brain structure appears to be influenced by environmental factors e.g. living environment

Evaluation:

Methodological

- Animal study; on its own, unclear if generalizable to humans
    - However, Maguire et al. & Draganski et al., two studies on humans investigating neuroplasticity in naturalistic setting (latter with experimental manipulation) found same
    - Thus, appears/assumed that findings generalizable to humans (esp. re: neurotransmitter ACh); further study in humans needed to verify, but possibility/likelihood present given generalizability of other findings
- Unclear if findings due to environmental or social factors (multiple rats a confounding variable in this regard; Rs tried putting a rat alone in EC but it only sat there grooming witho interacting with stimulus objects)

Ethical

- Concern re: isolating rats & killing them to study brain; not entirely ethically sound
- However, benefit of findings outweighs costs (significant, generalizable findings found), plus rats not subjected to undue stress/harm in their environments
    - Isolation doesn't cause permanent harm (not in the same way Brady (1958)'s rats dying for sake of investigating health does)

    - Lab rats generally killed after exp anyway
    - Benefits of killing+autopsy are justifiable in insight allowed to produce findings; while brain scan could've been performed instead, difficult & very costly for animals (must train to stay still/sedate, scan for long time, etc.)

Caspi et al. (2003): 5-HTT & Reactions to Life Events

Relevant to: Neurotransmitters & Behavior [BIO], Genes & Behavior [BIO], Serotonin Hypothesis (Biological Etiologies) [ABN]

Aim: Investigate relationships between stressful life events & depressive behavior given variations in the gene 5-HTT & resulting (implied) decreased serotonin levels
Background Info: 5-HTT is a transporter gene of serotonin with both *short* and *long* variations (latter most common). Research has linked different variants to differences in serotonin reuptake
Ss: Representative sample of New Zealand children with either:

- 2 short 5-HTT alleles (s/s)
- 1 short & 1 long 5-HTT allele (s/l)
- 2 long 5-HTT alleles (l/l)

Procedure: Longitudinal quasi-experimental study *(NOTE: No measure of serotonin levels themselves at any point in study!)*

1. Followed up with Ss from age 3-25 every 2 years
    a. At ages 21 & 25, gave Ss a 'life history calendar' assessing stressful life events (e.g. employment, health, relationship stressors)
2. At age 25, Ss assessed for past-year depression based on DSM-IV from S interviews & reports from Ss-nominated informants

Findings:

- No difference in number of stressful life events experienced Ss regardless of alleles
- Ss who had short alleles of 5-HTT (either one or two; i.e. s/s or s/l) reacted to stressful life events with more depressive symptoms; Ss with *only* long alleles (l/l) had no change in depressive symptoms

Conclusion: Variations in the 5-HTT serotonin transporter gene (presence of short allele) linked with more -ve reactions to events

- Presence of short allele implies decreased activation, cause more -ve reactions

Evaluation:

- Quasi-experimental study, no actual manipulation of any DV (only comparing pre-existing groups, i.e. alleles of 5-HTT)

- No actual measure of serotonin; any link between supposed changes in serotonin activation & behavior from this study *not conclusive* and *only suggested/implied* by other research
    - Not conclusive support for the Serotonin Deficiency Hypothesis (though it does lend it some plausibility)
    - Could suggest a *genetic* component to MDD, if anything
- Naturalistic situation/environment -> High realism, ecological validity
    - But given sample was only from New Zealand, there's some possible concern about generalizability to the broader population, especially other racial/ethnic groups with different genetic makeups

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Delgado et al. (1990): Serotonin, Tryptophan & Depression

Relevant to: Neurotransmission [BIO], Serotonin Hypothesis (Biological Etiologies) [ABN]

Aim: Investigate influence of serotonin levels on depressive behavior.
Ss: 21 patients in clinical remission for depression (diagnosed with DSM-III-R)
Background Info: The amino acid *tryptophan* (TRP) forms key part of process of synthesizing serotonin; Rs cite various pieces of animal research indicating decreased dietary intake of TRP -> decreased serotonin levels in lab animals' brains (e.g. monkeys)
Procedure: Lab exp; repeated measures design

1. For 24h, Ss ate a low-TRP diet either **supplemented by TRP** (*control condition*; to maintain normal TRP levels) or **not supplemented** *(low TRP condition)*
2. Next morning, Ss further drank an amino acid drink—low-TRP Ss' drink **did not** contain TRP; control Ss' drink **did** (again, to maintain normal TRP levels)
3. Ss then performed behavioral ratings & had levels of TRP in blood plasma measured @ various points throughout day
4. Ss performed both control & low-TRP conditions separated by several days; order counterbalanced, double blind used

Findings:

- Ss in low-TRP condition had significant increase in ratings of depressive symptoms
- Amt of TRP in blood was correlated -vely with ratings of depressive symptoms (lower TRP -> higher rating)

Conclusion: Low TRP levels (linked to low serotonin levels) appear to cause depressive symptoms, indicating serotonin plays a role in depressive symptoms
Evaluation:

- No actual measure of serotonin; only implied from prior research on animals
    - Concern with generalizing such animal research to humans; does TRP cause changes in serotonin level in same way in humans?
    - Likely; same molecule, synthesized same way from same base molecules, but further biological study needed to verify in humans
    - Rs themselves acknowledge other metabolic effects may have influenced/been confounding variable on serotonin levels
- Small sample size of already clinically depressed patients; may have already had some pre-existing vulnerability to depression
    - Does serotonin cause depressive symptoms in *all* situations or only in presence of an existing vulnerability?
    - Are all ppl's serotonin levels affected same way by TRP? Do all ppl react same way to lack of serotonin?

Ethical

- Undue stress/harm on Ss; giving chemical substances to cause depressive symptoms ethically questionable (causing further distress & potentially causing relapse given Ss were already depressed)
    - Rs did take steps to prevent undue stress/harm; initially, procedure involved giving Ss in low-TRP condition a drink containing TRP, but after first S felt unwell post-drink, Rs suspended procedure

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Kosfeld et al. (2005): Oxytocin & Trust with Money

Relevant to: Hormones & Behavior [BIO]

Aim: Investigate effect of oxytocin on trust
Ss: Male uni students
Procedure:
(P: Procedure; F: Findings)
Exp 1 ('Trust')
P:

1. Ss given oxytocin solution OR placebo intranasally
2. Ss then played a trust game; given 12 'monetary units' [MU], told they could transfer 0, 4, 8, or 12 MU to a trustee (fellow anonymous S) who would receive 3x what Ss chose to give & could send back as many/little MUs as they wanted
    a. Trust indicated by how many MUs SS gave; the more they gave, the more they trusted uncertainty of trustee's behavior (that they'd give back more money)

F: Ss given oxytocin far more trusting (gave more to trustee & more often gave all 1 MU); unclear if due to *general willingness to take risks* or the *social risk of the trustee's response*

Exp 2 ('Risk')

P: Replication of exp 1, but Ss invested MU in a *project* (not a trustee/person)

F: No diff in risk-taking between oxytocin & placebo Ss

Conclusion: Oxytocin appears to positively influence trust in a social context (not just a willingness to take risks)

Evaluation:

- Sampling bias, concern with generalizability—Ss were all males, perhaps hormone influences females differently, thus can't be generalized to them
- While situation somewhat grounded in reality (money transfers, investments, etc. do occur IRL), thus has some ecological validity, can situation be generalized to all interpersonal contact?
    - Concern with generalizability to other interpersonal contexts with more social elements, e.g. getting to know other
    - Oxytocin administration unnatural; does oxytocin influence behavior same way with natural levels?

Morhenn et al. (2008): Oxytocin from Touch & Trust

Relevant to: Hormones & Behavior [BIO]

Aim: Investigate influence of oxytocin levels on cooperative behaviors (trust & sacrifice) as induced by interpersonal touch

Ss: UCLA students (mixed-gender)

Procedure: Lab experiment method; repeated measures design

1. Ss first had blood drawn to measure baseline oxytocin levels
2. Ss then either:
    a. Had a 15 min message, then played a trust game
    b. Had a 15 min massage only
    c. Rested for 15 mins (in same room as where massages took place), then played trust game
    d. Trust game conducted at computer, Ss partitioned off & couldn't communicate:
        i. 2 Ss randomly assigned to role of Decision Maker 1 [DM1] & Decision Maker 2 [DM2], both got $10
        ii. DM1 then prompted to send some of their $10 to DM2; amount they sent was tripled then deposited in DM2's account (act of trust)

iii. DM2 then informed of the amt deposited in own acct, asked if they'd like to send money back (act of sacrifice)

3. Ss then had 2nd blood draw to measure oxytocin levels

Findings:

- Massages increased oxytocin levels but only if followed by an act of trust (playing the trust game)
- Ss who received massage sacrificed more (but didn't trust more); sacrifice predicted by oxytocin levels

Conclusion: Oxytocin, induced through human touch, appears to have a role on cooperative behaviors (though not necessary trust)

Evaluation:

- Findings re: trust appear to contradict Kosfeld et al. (2005)
  - Perhaps in more natural setting (massage vs intranasal administration), oxytocin has diff effects on behavior
- Similar ecological validity concern; while massage & money transfers have grounding in reality, Ss never saw other DM; concern with generalizability to other interpersonal contexts with more social elements (e.g. getting to know other)

Lundstrom & Olsson (2005): AND & Mood in Women

Relevant to: Pheromones & Behavior [BIO]

Aim: Investigate if the suspected pheromone AND can act as a sex pheromone
Ss: Adult women
Procedure: Lab experiment method; repeated measures design

1. Ss interacted with either a male or a female E (not both; double blind used) for two identical sessions to perform several tasks with AND either present or absent
   a. *Tasks:* Rated attractiveness of male faces, performed measures of mood, sustained attention, psychological arousal
   b. AND solution or control solution applied by swabbing on upper lip; order of AND present vs AND absent counterbalanced

Findings:

- *Female E:* AND had no effect at all vs control
- *Male E:* AND increased mood & arousal; no diff to attention or attractiveness ratings

Conclusions: Mixed...

- AND appears to have some pheromone-esque effects (intensifying female reactions in presence of males)

- But lack of effect on attention & attractiveness ratings calls into question if AND has influence on behaviors, esp sexual ones

Evaluation:

- Only demonstrates apparent pheromone-esque effect of one chemical on females; can't conclude pheromones present/have effect on males or that other pheromone-esque chemicals exist
- No control for attractiveness of E (only one female/one male E used) & attractiveness is highly situational
    - Artificial environment; effect of pheromones may have been 'counterbalanced' by discomfort/artificiality of situation
- Concentration of AND used much higher than natural levels, not generalizable to natural situation (but maybe to artificial products)
- No chemical communication demonstrated in procedure; many chemicals can influence *mood* but that doesn't indicate any *chemical communication* (no actual behavior induced)

Hare et al. (2017): Pheromones & Attraction/Gender Signalling

Relevant to: Pheromones & Behavior [BIO]

Aim: Investigate if gender-specific pheromones can signal gender & increase attraction
Ss: 24 males, 22 females
Procedure: Lab experiment method; repeated measures design

1. Ss exposed to solution either consisting of a suspected sex pheromone secreted by the opposite sex+clove oil or only clove oil (control)
    a. Males were exposed to EST, females to AND
    b. Exposed by taping cotton with solution under nose
    c. Repeated measures used; Ss exposed to both in separate days, order counterbalanced
2. Ss then carried out 2 tasks:
    a. **Facial Morphs Task:** Ss shown composite androgynous morphs of human faces, asked to guess what sex the 'person' was
    b. **Attractiveness Rating Task:** Ss shown faces of ppl from opposite sex, asked to rate attractiveness from 1-10

Findings: Null results; no differences in either task between sex pheromone vs control
Conclusion: AND & EST don't appear to be sex pheromones—they don't signal or improve attraction to opposite sex
Evaluation:

- AND/EST not pheromones doesn't necessarily imply no human pheromones exist *at all*
- Androgynous facial morphs highly artificial, low ecological validity (deliberately unclear, other factors present in real-life environment e.g. full body, behavioral cues, voice, etc.)
- Exposure to AND/EST artificial; effect of pheromones on behavior may have been negated by artificial task and/or exposure method (cotton under nose)
    - Concentration of AND/EST used much higher than natural levels, not generalizable to natural situation (but maybe to artificial products)

Wedekind et al. (1995): Smelly T-Shirts

Relevant to: Genes & Behavior [BIO], Evolutionary Explanations for Behavior [BIO], Origins & Formation of Personal Relationships [HR]

Aim: Investigate influence of MHC genes on mate selection in females
Ss: Female (F) & male (M) Ss, selected for wide variety of MHC genes in sample
Background Info:

- *Major histocompatibility complex* (MHC) genes influence one's immune system
- Offspring inheriting diverse MHC genes from parents with diff MHC genes results in offspring having strong immune systems & better odds of survival

Procedure: Quasi-experimental study

1. F Ss were:
    a. Asked to report if using oral contraceptives
    b. Given nose spray to ensure nasal health (support regeneration of nasal mucous)
    c. Given copy of book 'Perfume' to sensitize smell perception
2. M Ss were:
    a. Asked to wear a T-shirt for 2 nights & to keep the T-shirt in an open plastic bag during the day (between nights)
    b. Given scent-free detergent & soap to use (ensuring how they smelled was entirely natural)
    c. Asked not to smoke tobacco, drink alcohol, eat spicy food, engage in sexual activity, or use deodorants/perfumes
3. Later, when F Ss were in 2nd week after starting menstruation (Fs appear most sensitive to odor during that time), F Ss asked to rate odor of 7 T-shirts on intensity (0-10) and pleasantness and sexiness:
    a. 3 T-shirts from M Ss with **similar MHC** to F Ss
    b. 3 T-shirts from M Ss with **dissimilar MHC** to F Ss

    c. 1 **unworn** (control) T-shirt
    d. All T-shirts placed in cardboard boxes with smelling holes, double blind used

Findings:

- F Ss not on oral contraceptives scored odor of T-shirt as more pleasant if M Ss's MHC was more dissimilar to their own
- Difference in odor assessment was reversed if F Ss were taking oral contraceptives (i.e. odor was found more pleasant if M Ss had similar MHC)
- No diffs in ratings of intensity between men with similar/dissimilar MHC genes & presence/absence of oral contraceptives
- Odors of MHC-dissimilar men reminded women of their own current/former mates

Conclusions:

- MHC diversity appears to influence mate selection, supporting ToE explanations (sexual selection of mates with characteristics aiding offspring survival)
- As oral contraceptives imitate steroids naturally released in pregnancy, Rs posit reversal in order preferences may be to prefer relatives who may help take care of offspring

Evaluation:

- Highly replicable
- Findings support evolutionary explanations for human mate selection
    - More diverse genes allow for greater odds that beneficial genes/mutations are inherited (re: MHC—more diverse MHC = stronger immune system)
    - Thus, breeding for gene diversity (as demonstrated) increases offspring survival odds
    - Reversal of oral preferences & given argument re: oral contraceptives mimicking steroids in pregnancy indicates actions favoring survival of offspring
- Attractiveness =/= mate selection; other factors as well, experiment arguably too reductionist, ignoring cognitive & sociocultural factors in mate selection (e.g. Matching Hypothesis)

Bailey & Pillard (1991): Gay-Identifying Twins

Relevant to: Genetic Similarity [BIO]

Aim: Determine concordance (% of twin pairs who both display a particular trait in a population) rates of homosexuality between twins

Ss: Males; MZ twins, DZ twins & non-related adopted brothers raised together with at least one twin/member of sibling pair self-identifying as gay; recruited via gay publications
Procedure: Quasi-experimental correlational study

1. Sexual orientation of Ss assessed either by asking relatives or (only when impossible) asking the Ss themselves
2. Ss filled out questionnaires to assess *childhood gender nonconformity [CGN]* (i.e. phenomenon where prepubescent children don't conform to expected gender patterns and/or identify with opposite gender)

Findings:

- ~50% of MZ twins were both homosexuals vs ~20% of DZ twins
- 11% of non-related adopted brothers were both self-ID homosexuals
- 9% of related non-twin siblings were both homosexuals
- CGN not correlated with homosexuality in any sample

Conclusions:

- The more closely genetically linked a pair are, the more likely they are to both exhibit heterosexual/homosexual tendencies
    - However, concordance rate not 100% for MZ twins (despite 100% genetic similarity) & not 0% for adopted brothers; environmental factors implied to also influence presence of homosexual tendencies
    - Similarities in DZ twins possibly attributable to greater environmental similarity
- Gender nonconforming behavior in childhood is not related to homosexuality

Evaluation:

- Recruitment method may have resulted in sampling bias (twins unsure of or closeted/not open about sexuality may not have been recruited)
- No actual genes found responsible, only statistical link/implication (and exact source of imperfect concordance rate unclear/not found)
- Gender nonconforming behavior subjective & influenced by sociocultural norms; gender norms may differ between cultures

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Santilla et al. (2008): Homosexual Behavior Between Twins

Relevant to: Genetic Similarity [BIO]

Aim: Determine the concordance rate of potential homosexual behavior vs overt homosexual behavior in twins
Ss: Female & male MZ & DZ twins
Procedure: Ss completed a questionnaire to establish sexual orientation, namely

both *potential* (hypothetical) and *overt* (actual/past incidences) homosexual behavior

Findings:

- Potential for homosexual responses far higher than reported incidences of homosexual behavior
- Concordance rates for both potential responses & overt behavior 2x higher for MZ twins than DZ twins

Conclusions:

- Genes do appear to have a role in determining homosexual behavior to a certain extent
- Previous research (see Bailey & Pillard (1991)) that use overt measures (e.g. self-reported sexuality) probably underestimate rates of homosexuality

Evaluation:

- No actual genes found responsible, only statistical link/implication (and exact source of imperfect concordance rate unclear/not found)

Buss (1989): Cross-Cultural Mate Preferences

Relevant to: Evolutionary Explanations for Behavior [BIO], Origins & Formation of Personal Relationships [HR]

Aim: Investigate cross-cultural similarities in mate preferences worldwide
Ss: >10,000 ppl (33 countries; 6 continents)
Procedure: Quasi experimental study; Ss given questionnaires asking:

1. When they preferred to get married
2. Desired age diff between self & spouse
3. Desired no. of children
4. To rate various characteristics of a potential mate as undesirable/desirable, e.g. financial prospects, physical attractiveness, chastity, etc.

Findings: Consistently across all countries/continents/cultures—

- Female Ss preferred older mates with good financial prospects
- Male Ss preferred younger, physically attractive mates

Conclusions: ToE (principle of sexual selection) supported—

- Males valuing physical attractiveness & youth (assuming former indicates youth/fertility; chars like muscle tone, healthy skin, etc. represent youth & females are most fertile in early 20s) consistent with ToE asserting organisms driven to reproduce as much as possible
- Females valuing good financial prospects & older (presumably more experienced/mature, esp given male fertility doesn't change dramatically over much of life) mates consistent with ToE asserting organisms driven to

increase survival odds of offspring as much as possible (ensure resources & protection/care)
- Also demonstrates (in humans) that males driven to maximize offspring/increase reproductive rate, females driven to care for/maximize survival rate of offspring

Evaluation:
- Rs themselves acknowledge sample not fully representative; sample size varied signf between countries, rural/less-educated under-represented

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Brady (1958): Stress & Responsibility in Monkeys

Relevant to: Animal Research [BIO HL]

Aim: Study effect of responsibility on stress.
Ss: Monkeys
Procedure: Lab experiment method; animal testing
1. Monkeys given electric shocks every 20s, conditioned to pull a lever to stop the shocks
2. Monkeys then paired together; the monkey which had learned faster to pull the lever in step 1 assigned **executive** role, other monkey **yoked** role
3. Both monkeys then continued to receive shocks:
    a. Yoked monkey couldn't do anything but receive shocks
    b. Executive monkeys could pull the lever to stop shocks for both themself & yoked monkey, thus having responsibility for both monkeys' suffering

Findings:
- Executive monkeys developed ulcers & died, found to have high levels of stomach acid
- Yoked monkeys demonstrated no -ve health effects

Conclusion: Stress of having responsibility over decision making -vely affects health
Evaluation:
Methodological
- May not be generalizable to humans; humans may react to stress differently than animals (also assumes that responsibility -> stress
    - **Rose & Marmot** found ppl with lower social class (witho chance to make decisions) have more health problems e.g. heart disease (though also partially due to societal risk factors e.g. smoking)

Ethical—Many ethical concerns...

- Monkeys not allocated randomly, thus undue stress/harm on monkeys which demonstrated better learning ability (arbitrary suffering)
- Degree of suffering wholly unnecessary, benefit of findings don't justify cost of monkeys' death due to procedure (monkeys didn't have to die to judge stress & effects on health)
    - Study should've been stopped as soon as monkeys exhibited ill health as that would've shown sufficient findings witho killing them

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Glanzer & Cunitz (1966): Separate Stores of Memory

Relevant to: Multi-Store Model of Memory [COG]

Aim: Investigate the presence of separate short- and long-term stores of memory and thus the characteristics of short-term memory.
Ss: Enlisted army men
Procedure: 2nd exp of study. Lab experiment method; repeated measures design

1. Ss shown several 15-word lists, each word shown sequentially in a slideshow & read out by E
    a. Ss were shown a series of 5-word 'practice lists' before this to familiarize them with the procedure
2. After being shown each word list, Ss randomly either attempted:
    a. **Free Recall:** Immediate recall of all words in list in any order
    b. **Delayed Recall:** Performed a distractor task (counting up from a single-digit number for 10s or 30s) preventing rehearsal of words in list, then attempted recall of all words in list in any order

Findings:

- Ss in *both conditions* demonstrated much better recall of words at **beginning** of list than middle (primacy effect)
- Ss in *free recall* condition demonstrated much better recall of words at **end** of list than middle (recency effect)
- Ss in *delayed recall condition* did **not** demonstrate the recency effect
    - 10s delay with distractor removed most trace of recency effect; only marginal diff with words in middle
    - 30s delay removed recency effect entirely

Conclusions:

- MSM supported; there appear to be two separate stores of memory, one long-term and one-short term with limited duration
- According to MSM:
    - *Primacy effect* due to Ss having more time to rehearse words @ beginning of list; thus, words were transferred to LTM

    - *Recency effect* in free recall condition due to fact that given words were only shown very recently, words were still in STM
    - Delayed recall with distractor preventing rehearsal caused words to decay from STM, being lost/forgotten

Evaluation:

- Lab experiment—procedure replicable, controlled, causation can be established
- Study sample might not be representative—enlisted males in military might have some differences in memory characteristics either by nature or due to their training/vocation
- Difficult to confirm if distractor task really did prevent rehearsal or not in Ss
- Concern with ecological validity—memorizing random words isn't a realistic task, not representative of behavior of STS in a realistic situation

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Peterson & Peterson (1959): Duration of STM

Relevant to: Multi-Store Model of Memory [COG]

Aim: Investigate the duration of memory storage in STM
Procedure: Lab experiment

1. Ss presented with triplets of consonants (e.g. TGH, CLS, etc.), had to recall them after a delay of either 3, 6, 9, 12, 15, or 18 seconds
    a. During delay, had to count backwards out loud in threes from a given number (e.g. 526, 523, 520, etc.) to prevent rehearsal

Findings: As delay increased, recall of words dramatically decreased—

- *3s delay:* Recall of consonant triplets was ~80%
- *6s delay:* Recall was 50%
- *18s delay:* Recall only ~10%

Conclusion: STM has a limited duration of ~18s given no rehearsal
Evaluation:

- Lab experiment; replicable, controlled, causation can be established BUT concern with ecological validity due to realism of task
- Concern with generalizability—demonstrates recall duration of *consonants* (language; echoic memory), possible that other types of memory might interact with STM differently (e.g. diff duration); MSM doesn't predict this but still possible

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Baddeley & Hitch (1976): Presence of the Central Executive

Relevant to: Working Memory Model [COG]

Aim: Investigate the existence & function of a CE under certain types of load
Procedure:

1. Ss asked true/false questions of increasing difficulty about letter combos (e.g. does B come after A, does X come after P, etc.); time taken to answer measured
2. Ss then repeated Step 1 but while simultaneously performing an articulatory suppression task (preventing verbal rehearsal) where they either:
    a. Repeated the word "the"
    b. Repeated numbers 1-6 in increasing order
    c. Repeated a given sequence of random numbers

Findings:

- *Questions only:* Ss' response times increased as question difficulty increased
- *Questions with suppression task:* Ss who repeated sequence of random numbers had highest response times vs both other conditions

Conclusion: There is a CE that manages memory processes with limited processing ability which may be overloaded

- Rs argue increased response time caused by CE being overloaded with tasks of high difficulty

Evaluation:

- Lab experiment; replicable, controlled, causation can be established BUT concern with ecological validity due to realism of task
- Arguably doesn't inherently establish an *active manager* of memory, only that humans have *limited cognitive processing ability* (our minds may be overloaded by difficult tasks)
    - No resource allocation actually demonstrated, only implied

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Quinn & McConnel (1996): Separate Stores of WM

Relevant to: Working Memory Model [COG]

Aim: Investigate the presence of separate stores of WM for different modalities (types) of information
Procedure: Lab experiment method; between-groups design

1. Ss asked to memorize a list of words through either imagery or verbal rehearsal with either:
    a. No interference *(control)*
    b. *Visual noise* (changing pattern of dots)

    c. *Auditory noise* (speech in a foreign language)
2. Ss' memory of words in list then tested

Findings:

- Ss who practiced with imagery performed worse than control with visual noise but equally well as control with verbal noise
- Ss who practiced with verbal rehearsal performed worse than control with verbal noise but equally well as control with visual noise

Conclusion: There are separate phonological (auditory) & visual stores of WM which work & are/can be affected independently

Evaluation:

- Concern with ecological validity/mundane realism; IRL distinctions between modalities aren't perfectly clear, many more distractions than just one modality-specific targeted distraction
    - E.g. Visual distractions consisting of words converted into auditory info via articulatory rehearsal component of the phonological loop; according to WMM, would interfere with performance of the phonological loop on auditory tasks
    - Procedure forced Ss into memorizing using one modality only; IRL, rehearsal may take place with many (e.g. visual & auditory) components (e.g. watching instructional video), requiring diff interactions between stores

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Bartlett (1932): War of the Ghosts

Relevant to: Schema Theory [COG]

Aim: Investigate how memory recall is influenced by prior knowledge
Ss: British volunteers
Procedure:

1. Ss told a Native American legend ('The War of the Ghosts')
2. Ss then asked to recall the story using either:
    a. **Repeated Reproduction**—Same S repeatedly recalling the story over a period of time
    b. **Serial Reproduction**—One S tells story to a second S, who tells it to a third, & so forth
    c. Intervals between Ss being told story & recalling story ranged from 15m to several yrs

Findings:

- Overall, main themes of story recalled, but Ss changed/distorted various elements/details as they recalled it in 3 distinct ways:

- **Assimilation:** Ss modified story details to match own culture (e.g. seal hunting -> fishing, canoes -> boats, etc.)
- **Leveling:** Ss shortened story with each retelling, omitting info judged 'unimportant'
- **Sharpening:** Ss changed order of events in story & added terms familiar to them (e.g. adding emotions)

Conclusion: Memory formation/recall is an active reconstructive process influenced by existing mental representations (schemas)

Loftus & Palmer (1974): Car Crash Experiments

Relevant to: Schema Theory [COG], Reconstructive Memory [COG]

Aim: Investigate the effect of schemas on altering memory
Ss: Students (45 for 1st exp, 150 for 2nd)
Procedure: Lab experiment; between-groups design. 2 experiments
(*P:* Procedure; *F:* Findings)
Exp 1
P:

1. All Ss shown video of a car crash
2. Ss then asked a series of distractor questions about the crash before being asked "How fast were the cars going when they [verb]?" (responding with a speed estimate in mph)
    a. Five different verbs were used when asking question, each more violent than the other—'contacted', 'hit', 'bumped', 'collided', 'smashed'

F: Ss asked with verb 'smashed' (very violent verb) had highest speed estimates; Ss asked with verb 'contacted' (neutral verb) had lowest speed estimates

- Could be because memories themselves altered by activation of schemas (mental representations about severe car crashes) induced by verb used
- Also could be due to response bias (leading questions induced by verb)

Exp 2
P:

1. All Ss shown video of a car crash; then, Ss either:
    a. Asked "How fast were the cars going when they [verb] each other?" (responding with mph estimate); verb was either 'hit' or 'smashed';
    b. Not asked any question; i.e. control
2. One week later, Ss then asked if they saw any broken glass in the video of the car crash (none was actually present in the video)

F: Ss who were asked with "smashed into" verb reported seeing glass at a much

higher rate than either of the other groups
Overall Conclusions:

- Leading questions may distort/change the functioning of memories formed related to them (rather than resulting in response bias)
    - Schemas of violent crashes (incl. broken glass) activated in the process of memory formation or recall, distorting the memory to include details related to those schemas
    - Unclear in which stage of the experiment was memory distorted to add features from schemas; could've been during initial formation or during recall (when prompted by Rs)
    - In any case, some degree of distortion in initial formation indicated (if not the addition of violent features, then at least the attachment of some form of violent perception/bias when thinking of crash)

Evaluation:

- Not realistic; Ss viewed video of car crash, not actually present (possible diffs if actually present)
    - Leading question effect might be generalizable to other situations? E.g. courtroom, police interview, etc.

Shaw & Porter (2015): Rich False Memories of Crimes

Relevant to: Reconstructive Memory [COG]

Aim: To explore whether false memories of committing a crime involving police could be generated in memory.
Ss: 60 Canadian undergrad students
Procedure: Lab exp; between groups design

1. Ss underwent structured interviews over 3 separate sessions, asked by I to recall details of a series of prior life events
    a. Various actual life events & their details had been provided & confirmed prior by a family member
2. During interviews, along with measuring recall of true memories, I attempted to generate a *criminal* (e.g. assault) or *non-criminal* (e.g. loss of dog) **false emotional memory** of a fictional event using **suggestive memory retrieval techniques**
    a. For both true & false memories Is provided various contextual cues suggesting details of event to Ss to aid their recall/implant false memories (e.g. S's age at supposed time of event)
        i. For true events, cues given were entirely true (coming from details of Ss' life events reported by family member)

ii. For false events, some cues given were false/made up, but some were true (e.g. where S lived at time, a friend S had at the time) as reported by family member

b. I established rapport (trust/+ve relationship) & own legitimacy with Ss in various ways (e.g. asking about S's well-being, having bookshelf full of visible memory retrieval books, etc.)

Findings:

- In 1st interview session, Ss were able to recall various details of true memories accurate to reality (as reported prior by family member) but not the false ones (indicating the false ones hadn't actually occurred)
- By last interview session, after suggestive memory retrieval techniques, vast majority (70%) of Ss had accepted & generated false memories
    - Acceptance rate for criminal & non-criminal events was similar
    - Ss gave detailed accounts of false memories with considerable detail/richness (including details not originally suggested/cued) comparable to detail of real memories

Conclusion: Ppl can readily be led to generate & accept detailed false memories of crimes given contextualization, suggestiveness, and trust/legitimacy of the suggestor/situation

Evaluation:

- Implied that contextualization may have activated existing mental representations (e.g. schemas) & prior knowledge of such events
    - Rs argue that the use of true cues from Ss' existing/prior knowledge (memory) gave Ss a foundation upon which to build false memories
- I had extensive training in police interview tactics & was extroverted (*Porter et al. (2000)* linked this characteristic to high success rate in false memory implantation); might partially account for high success rate (unrealistic; difficult to generalize)
    - However, still indicates cognitive process of memory may be manipulated to the point of implantation of false memory by a skilled-enough manipulator
- Various techniques in study were similar to tactics used IRL to suggest/prompt memory recall (e.g. in police interviews/interrogations); may be generalizable to such situations

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Albarracin et al. (2001): Meta-Analyzing Intent & Condom Use

Relevant to: Thinking & Decision Making (TRA/TPB) [COG]

Aim: Investigate the relationship between intent and actual behavior.

Procedure: Meta-analysis of published & unpublished studies of TRA/TPB on condom use correlating reported intent (to use a condom or not) and actual behavior (using a condom or not)
Findings:

- Avg. 0.51 correlation between intent & behavior overall
- Signf correlations between behavioral intent & norms, attitudes, PBC
- Also found differences in retrospective (after the event) & prospective (before the event) assessments of intent & behavior
    - *Retrospective* assessments had 0.57 correlation
    - *Prospective* assessment had 0.45 correlation; lower but still statistically significant

Conclusion: Intent to carry out a behavior appears to be a factor in determining behavior choice
Evaluation:

- Correlation =/= causation; possible explanation is that behavior determines intent after the fact
    - Correlation in prospective assessments does still suggest that intent does cause behavior (though third/confounding variables not accounted for)
- Imperfect correlation indicates presence of additional variables (emotion? Social pressure?)
- Findings re: condom use may not be generalizable to all decisions—sexual intercourse highly intense/emotional, in heat of moment, ppl might act more impulsively than usual/disregard prior intent

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Kothe et al. (2011): TPB-Based Breakfast Consumption Interventions

Relevant to: Thinking & Decision Making (TRA/TPB) [COG]

Aim: Test the efficacy of interventions based on TPB promoting regular consumption of breakfast.
Ss: Students taking 1st year uni Psych course
Procedure: Exp; between-groups design

1. Initially, Ss completed a *online questionnaire* measuring their baseline of:
    a. Own attitudes towards eating breakfast daily
    b. Subjective norms related to ppl close to Ss (e.g. parents) regarding eating breakfast daily, along with Ss' own motivation to comply with them
    c. PBC, namely Ss ability, confidence, and controllability of the behavior of eating breakfast daily

   d. Intention to perform behavior in future (*will* eat breakfast daily)
   e. Self-reported behavior (no. of times Ss *had* eaten breakfast in past week)
2. Ss then exposed to 'interventions' (motivational messages) focusing on either:
   a. **Perceived behavioral control (PBC)**—Persuading Ss that they have the ability to eat breakfast every morning and so to make a firm decision to
   b. **+ve framing**—Conveying +ve attitudes about eating breakfast (e.g. +ve consequences of eating breakfast, like having lots of energy) to Ss
   c. **-ve framing**—Conveying -ve attitudes about not eating breakfast (e.g. -ve consequences of not eating breakfast, like having less energy) to Ss
   d. ...or Ss exposed to **control task** (distractor questions, e.g. asking about difficulty of questionnaire)
3. 4 weeks later, Ss completed same online questionnaire again as a follow-up

Findings:

- *None* of the interventions resulted in increases in behavior or changes to attitude, subjective norm, or PBC
- Baseline attitude, subjective norm, & PBC *moderately predicted (~40%)* baseline intention, which also *somewhat predicted (~30%)* self-reported breakfast consumption in follow-up questionnaire
  - Not perfect but stat signf
- Change in behavior frequency between baseline & 4-week questionnaire *was predicted* by changes in attitudes, subjective norms, & PBC between baseline & follow-up questionnaire
  - **NOTE:** This does *not* contradict 1st finding; 1st finding demonstrated the *interventions* had no effect, but *changes in 3 elements of TPB unrelated to the interventions* still influenced behavior!

Conclusions:

- TPB is able to model the influence of cognitive variables (attitude, subjective norms, PBC) on real-life behaviors
- Short-term interventions appear to be unable to influence said cognitive variables

Evaluation:

- Short-term interventions not working =/= all interventions won't work; interventions may have been too short
  - Further investigation needed into long-term interventions with greater degree of Ss involvement to induce actual changes in cognitive variables

- Only moderate links between variables & intent and intent & behavior; possible further cognitive influences/variables present? Environmental factors?
    - On-the-spot influences/factors negating original/baseline levels of cognitive variables, perhaps?

Tversky & Kahneman (1981): Asian Disease

Relevant to: Biases in Thinking & Decision Making (Framing Effect) [COG]

Aim: Demonstrate that people assess a situation from a reference point.
Ss: Americans
Procedure: Lab exp; between-groups design

1. Ss told to imagine that the US is preparing for an outbreak of a foreign (Asian) disease expected to kill 600 people, with two programs being proposed to combat it
2. Ss then told about program in terms of either:
    a. **Potential Gain:** Option A is guaranteed to save 200 people, Option B has a ⅓ chance of saving all 600 people but a ⅔ chance of saving nobody
    b. **Potential Loss:** Option C is guaranteed to result in 400 people dying, Option D has a ⅓ chance of no one dying but a ⅔ chance of all 600 dying

Findings:

- When programs framed in terms of potential gain (lives saved), majority of Ss chose the 'safe' option (Option A; guaranteed to save people)
- When programs framed in potential loss (lives lost), majority of Ss chose the 'risky' option (Option B; chance of saving more people/less dying)

Conclusion: The way a situation is framed/described (as gain or loss) affects how people make decisions—

- When gains are described, people tend to avoid risks
- When losses are described, people tend to take risks
- Supports *Tversky & Kahneman's* 'Prospect Theory' (states the above conclusions as assertions)

Huber et al. (1982): Asymmetrically Dominated Decoy

Relevant to: Biases in Thinking & Decision Making (Asymmetric Dominance) [COG]

Aim: Investigate the effect of choice bias in the presence of an asymmetrically dominated decoy
Procedure: Lab exp

1. Ss asked to decide between 2 choices measured on two attributes (2 axes on a graph); each choice strong in one attribute & weak in the other (thus logically equal)
    a. Various categories of decisions trialed, e.g. Vacation destination based on cost vs skiing opportunity
2. Ss then shown a second graph with a third choice added—an **asymmetrically dominated decoy** (choice *weak in all attributes*, thus logically the worst, but which is *obviously superior* to one of the choices in particular in one attribute)
3. Ss then asked if they'd switch their choice or not

Finding: Ss, once presented with decoy, tended to switch their choice to the one which obviously dominated ('beat') the decoy choice
Conclusion: When presented with an asymmetrically dominated decoy when making a decision, people tend to be biased towards the choice which clearly dominates the decoy
Evaluation:

- Lab experiment—replicable, controlled, causation can be established
- Concern with ecological validity—real situations/decisions will have far more than just two aspects
    - Thus, suggests bias in decision making due to asymmetric dominance, but full effect with many variables (as IRL) to be determined
    - Cultural factor not precluded; are members of diff cultures influenced differently by biases when making decisions?

McGaugh & Cahill (1995): Emotional Stories

Relevant to: Influence of Emotion on Cognition [COG]

Aim: Investigate the influence of emotion on the formation of memories & a neural basis for said influence
Procedure: Lab exp; between-groups design. 2 studies:
Initial Study

1. Ss shown either:
    a. **Boring story** about a boy & his mother going to visit boy's father @ hospital & witnessing a disaster drill of simulated victim
    b. **Emotionally arousing story** about boy getting into horrific car crash,

losing feet; surgeons reattached feet & boy stayed with mother for several weeks
2. 2 weeks later, Ss then given MCQ questionnaire to measurement andure memory of story's details

Follow-up Study: Same as initial, but Ss shown emotionally arousing story also injected with **propranolol** (beta blocker which decreases amygdala activation)

Findings:

- *Initial study:* Ss shown emotionally arousing story had higher recall of story's details than Ss shown boring story
- *Follow-up Study:* Ss shown emotionally arousing story didn't have higher recall of story's details

Conclusions:

- Emotional memories (FMs?) appear to have greater short-term accuracy than normal ones
- Appears to be due to a neural mechanism involving the amygdala

Evaluation:

- Lab experiment—replicable, controlled, causation can be established
- Only short-term accuracy established, not long-term
- No control of Ss' rehearsal of memory between being shown memory & recalling
    - Difficult to control though; practically impossible to ask a person to 'stop thinking' about sth
- Concern with ecological validity; Ss only shown an emotional *story* in a highly artificial environment, might not behave/think in same way as if experiencing an emotionally arousing event *themselves*
    - Unclear if memories formed from procedure truly FMs or just memories that happened to be somewhat more emotional
- No actual measure of amygdala activation; only implied from beta-blocker use that amygdala activation decreased
    - Also considering above note about whether memories were truly FMs or not, can findings re: amygdala be generalized to natural FMs?
    - *Sharot et al. (2007)* conducted study of 9/11 memories using fMRI though & found amygdala was activated for those natural FMs, though, so it seems assertion is supported

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Talarico & Rubin (2003): 9/11 Memories vs Normal Ones

Relevant to: Influence of Emotion on Cognition [COG]

Aim: Determine accuracy & consistency of FMs relative to normal memories

Ss: Duke University students
Procedure: Naturalistic study

1. 1 day after 9/11 terrorist attacks in NYC, Ss asked thru open-ended questionnaires to recall personal circumstances (e.g. location, what they were doing, etc.) surrounding:
    a. 9/11 attacks (FM)
    b. 1 recent everyday (control) memory
2. Then, either 7, 42, or 224 days after the attack, Ss asked to recall again personal circumstances & everyday memory w same questionnaire; responses compared to originals

Findings:

- Accuracy of recall of both 9/11 FMs & normal control memories decreased @ similar rate (i.e. FMs weren't more reliable/accurate & degraded similarly to normal memories)
- Reported confidence & vividness of 9/11 FMs much higher than normal control memories though; remained same for FMs whereas decreased over time for normal memories
- Ss' original emotional response to news of 9/11 attacks was correlated with later reported confidence when asked to recall again but not actual accuracy of recall

Conclusion: FMs don't appear to be unique in terms of *accuracy* but do appear to be unique in terms of *vividness* (as originally proposed) & *perceived confidence* (possible additional characteristic)
Evaluation:

- Naturalistic study; no control for Ss' rehearsal
    - Difficult to control though; practically impossible to ask a person to 'stop thinking' about sth
    - Given FMs were natural, though, any rehearsal behaviors might merely reflect actual overt & covert rehearsal behaviors characteristic of FMs, so not entirely a confounding variable

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Rosser et al. (2007): Surgeon Gamers

Relevant to: Cognitive Processing in the Digital World [COG HL]

Aim: Aim: Investigate the relationship between video game play and cognitive skill @ surgical tasks
Ss: Surgeons (some in-training)
Procedure:
Ss given questionnaires to self-report video game experience

1. Ss's surgical skill measured with a series of standardized surgical drills (that Ss had experienced before as a part of their surgical training)
2. Ss's video game mastery then measured by playing 3 games (e.g. Super Monkey Ball 2) for 25 minutes

Findings:

- Video game mastery measured during game play highly correlated with performing surgical drills faster & with fewer errors
- Ss who reported playing video games for >3h a week performed surgical drills faster & with fewer errors than non-playing Ss

Conclusion: Video game play appears to have a positive influence on cognitive processing (spatial awareness) useful in non-digital situations (e.g. surgery)

Evaluation:

- Study is correlational; can't establish causation (could be that better surgeons/people with better motor skills are just inherently better at games due to pre-existing cognitive motor skill/ability)
- Further study needed to identify specific +ve effects on specific skills
- Ss had done surgical drills before (esp as some Ss were surgeons in training who would've likely practiced a lot on them recently)
    - Perhaps Ss who did better on surgical drills were just more familiar with them (though random assignment should've negated this factor)

Sanchez (2012): Halo & Plate Tectonics

Aim: Investigate effect of spatial training video games on spatial ability in broader contexts

Procedure:

1. Ss played either Halo (first person shooter game with spatial elements; *spatial training* condition) or Word Whomp (word matching game; control) respectively
2. Ss then read a complex text (no illustrations) on plate tectonics
    a. Understanding science of plate tectonics requires, to some extent, spatial understanding on movement of tectonic plates
3. Ss then asked to apply learned concepts by writing an essay on what caused Mt. St. Helens to erupt
4. Independent scorers assessed the extent to which Ss's essay demonstrated understanding of concepts of plate tectonics

Findings: Ss who played Halo (spatial training condition) demonstrated better understanding of plate tectonics in their essays

Conclusion: Spatial training through video games may improve spatial ability/understanding in broader contexts

Evaluation:

- Study only demonstrated a short-term effect (Ss wrote essay almost immediately after playing game); any long-term effects remain unclear
- No control for Ss' prior experience on video games (Ss with more experience might've already had advantage; see Rosser et al. (2007)
    - Random assignment should've accounted for this, though

Rosen et al. (2011): Texting During Lectures

Relevant to: Cognitive Processing in the Digital World [COG HL]

Aim: Investigate the impact of digital tech distractions on memory recall
Ss: Students
Procedure: Lab exp; between-groups design

1. Ss watched a video lecture, during which they received either a small, moderate, or large number of text messages that had to be responded to during the lecture (Ss could choose when to respond)
2. After viewing the lecture, Ss were tested on lecture's content

Findings:

- The more text messages the Ss got/had to respond to, the worse they performed on the test
- Ss who chose to respond to many text messages strategically did better than Ss who immediately responded to every single message

Conclusions:

- Distractions resulting from digital tech (e.g. text messages) negatively influence memory recall, possibly by drawing attention away/distracting self
- Appears to be possible to consciously counterbalance -ve effects via *metacognitive strategies* (strategies to self-manage cognition, in this case remaining focused/attentive, e.g. responding strategically to messages at appropriate times)

Evaluation:

- Presence of metacognitive strategies is an assumption only (actual presence of them wasn't measured)
- Concern with ecological validity; extent of induced media multitasking & thus observed effects may have been exaggerated
    - IRL, not all text messages require response within such short period of time, like within duration of lecture; thus, findings generalizable to RL?
    - To some extent, yes, bc some ppl IRL likely still do *choose* to reply during lecture, thus engaging in unforced induced media multitasking

similar to sort induced in procedure

Sparrow et al. (2011): The 'Google Effect'

Relevant to: Cognitive Processing in the Digital World [COG HL]

Aim: Investigate the effect of digital ability to 'save information' on memory recall
Background Info: with digital tech (e.g. internet, digital reminders, etc.) we can save & find info easily & don't always need to remember it ourselves
Procedure:

1. Ss read 40 memorable trivia statements of the type that one would look up online; typed statements into computer
2. ½ believed the computer would *save* what was typed; ½ believed the item would be *erased*; ½ in each condition were asked explicitly to try to remember the information
3. Ss recall then tested; tried to write down as many of the statements as they could remember

Findings:

- Ss told that statements would be erased had better memory recall of statements
- Explicit instruction to recall the info had no effect on recall

Conclusion:

- When ppl believe they will have access to info later, they will not recall it as the same rate as when they believe the opposite
    - Ss didn't make effort to remember/pay attention to statements when they thought they could later look them up

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Tajfel et al. (1971): Minimal Groups Paradigm

Relevant to: Social Identity Theory [SCTRL], Cooperation & Competition (SIT) [HR], Prejudice & Discrimination (SIT) [HR]

Aim: Demonstrate that putting people into groups (i.e. social categorization) is sufficient for ppl to discriminate against out-group in favor of in-group
Ss: British schoolboys
Procedure: Lab experiment method (between-groups design)

1. Ss shown paintings by 2 artists (Klee & Kandinsky) witho being told which painting was from which artist & asked to say which paintings they preferred

2. Ss then *randomly* assigned to 'Klee group' or 'Kandinsky' group, *told* that group assignment was based on which artists' paintings they preferred more
3. Ss given matrices to give 'points' to a boy from their group & a boy from the other group by selecting one column of points awarded; matrices were designed so Ss could take 3 strategies:
    a. **Maximum joint profit:** Largest absolute reward for members of both groups
    b. **Largest reward to in-group:** Largest absolute reward for in-group regardless of reward to out-group
    c. **Maximum difference:** Largest possible relative difference in reward to in-group vs out-group

Findings: Majority of Ss took *maximum difference* strategy, rewarded more to own group than other group to maximize diff btw groups (indicating their priority was to elevate own group own other group)
Conclusion: Social categorization is sufficient for discrimination against out-group in favor of in-group to occur.
Evaluation:

- Lab experiment: easy to observe/analyze results, establish causation, replicate, but may lack ecological validity (artificial in nature)
    - Arbitrary, artificial 'point assignment' unrealistic, may not be applicable IRL
- Ss may have shown demand characteristics, tried to please Rs; may have interpreted this *specific* task as competitive (not indicator of realistic behavior)
- Ss may have been incited to compete by procedure itself—competition isn't necessarily discrimination
- Potential sampling bias; all Ss were schoolboys, possible increased tendency towards such discriminatory behavior in schoolboys/students/boys/males vs other populations

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Abrams et al. (1990): Asch Line Paradigm & Social Identity

Relevant to: Social Identity Theory [SCTRL]

Aim: Investigate effect of social identity (in-group/out-group) on conformity due to a normative influence
Ss: Uni psych students
Procedure: Lab experiment method (repeated measures design); modified Asch line paradigm

1. Ss entered a room with several confederates/actors whom Ss were led to believe were other Ss and either:
    a. Psychology students like them (in-group)
    b. Ancient history students (out-group)
2. All ppl in room shown 2 cards: 1st had 1 line on it; 2nd had several, one of which was obviously the same length as the line on the 1st
3. Ss and confederates then asked which line on the 2nd card matched the line on the 1st card (confederates agreed on what answer to give beforehand)
4. Steps 1-3 above repeated multiple times (trials); confederates deliberately give the wrong answer on some of the trials

Findings:

- Majority of Ss conformed at least once with in-group (psych student) confederates
- Only a minority did so with out-group (history student) confederates

Conclusions:

- One's behavior (conformity; normative influence) is more influenced by one's in-groups vs out-groups
    - Re: SIT—Desire to elevate one's in-group above out-group (Positive Distinction) supersedes 'reasonable' response; demonstrates extent of effect of social categorization on behavior

Evaluation:

- (Also consider evaluative points for Asch (1951) given similar procedure)
- Potential for demand characteristics; Ss being psych students may have already had prior knowledge of (well-known) Asch line paradigm
    - May have deduced aim of experiment or simply known they should answer with the correct line & ignore confederates

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Bandura et al. (1961): Bobo Doll Experiment

Relevant to: Social Cognitive Theory [SCTRL]

Aim: Investigate if social behaviors can be acquired by observation & imitation
Ss: 3-6 y/o boys & girls
Procedure: Lab experiment method (between-groups design)

1. Ss aggression levels measured by asking Ss's teachers to rate their aggression
2. Ss split into groups by matched-pairs design to ensure all variables (e.g. pre-existing levels of aggression) distributed equally
3. Ss entered a room with toys, then told that they could not play with them;

this caused baseline levels of frustration as control for initial frustration level of Ss

4. Then, Ss either:
    a. Shown a male or female aggressive model (i.e. model acted aggressively to Bobo doll)
    b. Shown a male or female non-aggressive model (i.e. model acted neutrally, e.g. assembling toys)
    c. Shown nothing (control)
5. Ss then given the Bobo doll, aggression levels to it (behavior) were recorded

Findings:

- Children shown *aggressive* model acted most aggressively to Bobo doll
- Children shown *no* model were second-most aggressive
- Children shown *non-aggressive* model were least aggressive
- Boys tended to imitate both physical & verbal aggression of model, regardless of model's gender
- Girls tended to imitate only the verbal (not the physical) aggression of the male model BUT both the physical & verbal aggression of female model

Conclusions:

- Social behaviors can be acquired through observation and imitation of a model
- In-group (identification with) models appear to encourage social learning
    - As girls identified more with female models, perhaps they were more motivated to & believed themselves to be more capable of replicating behavior

Evaluation:

- Lab experiment: easy to observe/analyze results, establish causation, replicate, but may lack ecological validity (artificial in nature)
- Subjective operationalization; Rs judged 'aggression' witho defining behaviors considered aggressive, subject to R bias
- Ss were only exposed to models for short amount of time; not indicative of long-term learning
- Ss may have believed that Rs explicitly wanted them to act in a certain way to Bobo doll & thus had artificial motivation; further research needed with naturalistic motivation

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Odden & Rochat (2004): Observational Learning & Enculturation in Samoa

Relevant to: Social Cognitive Theory [SCTRL], Enculturation [SCTRL]

Aim: Investigate the role of observational learning in enculturation in children in

non-Western cultures
Ss: Samoan children
Procedure: Longitudinal study. Naturalistic observations of children + semi-structured interviews with caretakers, teachers, pastors, chiefs + questionnaires. Rs sought to investigate learning of various behaviors, notably looking @:

1. Household chores
2. Fishing
3. Societal hierarchy & cultural rituals (the 'Chief' system)

One R spent 25 months in Samoa, 20 in a single rural village
Findings:

- Samoan culture observed to have high distance to authority (power distance; see Cultural Dimensions); questioning discouraged & shown as disrespectful, children largely left to learn by themselves with observing & listening to elders
- Children would watch adults fishing (but not participate/ask for help), then try it themselves; by age 12, most children were skilled fishermen
- Children began learning wide range of chores when young; by 15, spent signf amt of time doing chores, yet interviews + observations indicated parents didn't teach children said chores
- Same for societal hierarchy/cultural rituals—adults never taught norms/behaviors but children learned them anyway

Conclusion: Observational learning appears to be key to enculturation (learning of cultural behaviors, norms, etc.), at least in some cultures (e.g. those with high power distance)
Evaluation:

- Rich data collected; highly representative of actual situation/experience esp with method triangulation, indicative of true nature of enculturation in rural Samoa
- However, generalizability to broader populations limited; perhaps only applicable to Samoa?
    - Might be applicable to other cultures with high power distance
    - Rs note that some observed aspects of Samoan behavior were akin to those observed in prior enculturation/observational learning research on non-Western cultures

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Hamilton & Gifford (1976): Illusory Correlations

Relevant to: Stereotypes

Aim: Investigate illusory correlation between frequency of behaviors in groups & perceptions of groups
Procedure: Lab experimental design (but no manipulation)

1. Ss shown series of statements in quick (8s each) succession about members belonging to 2 groups, Group A & Group B, performing either *+ve* or *-ve* behaviors
    - Both groups had same *proportion* of +ve/-ve behavior but Group B had *less* behaviors than Group A
        - A had 8 +ve/16 -ve; B had 4+ve/8 -ve
    - No mention made of how many members either group had
2. Ss asked to estimate how often +ve or -ve statements occurred for members of each group

Findings:

- Ss overestimated the frequency of -ve statements for Group B members

Conclusion: -ve stereotypes may arise from illusory correlations being drawn from more infrequent events appearing more distinctive

- As Group B was smaller, its traits (esp -ve ones) appeared more distinct & representative of the group as a whole

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Steele & Aronson (1995): Stereotype Threat

Relevant to: Stereotypes

Aim: Investigate the existence & consequences of stereotype threat
Ss: African-American (AA) & White (W) US college students
Procedure/Findings: Lab experimental method (between-groups design); 4 experiments conducted
(*P:* Procedure; *F:* Findings)

Exp 1
P: Ss took difficult verbal test (GRE); before test, told that test was either:

1. *Indicative* of Ss's intelligence (threat condition), or:
2. *Not indicative* of Ss's intelligence (non-threat condition)

F:

- W Ss performed equally well in both conditions
- AA Ss in threat condition had lower test scores than W Ss
- AA Ss in non-threat condition performed equally well as W Ss

Exp 2
P: Replication of exp. 1, but at end of test, R measured Ss anxiety levels thru

self-report
F: No diff in anxiety btw W & A Ss

<u>Exp 3</u>
P: Replication of exp. 1, but after being told test was/wasn't indicative of intelligence & before test itself, Ss completed questionnaires asking (optional) demographic info & with measures of:

1. **Stereotype Activation:** Word completion task, e.g. _ _ CE, _ _ A C K, etc.
2. **Self-Doubt:** Word completion task, e.g. DU _ _
3. **Stereotype Avoidance** *(degree of avoiding perception of appearing like stereotype)***:** Questions asked like "How much do you enjoy rap music/classical music/basketball/etc.?)
4. **Self-Handicapping** *(degree of giving excuses for performance)***:** Questions asked like "How fair do you think standardized tests are?" or "How much stress have you been under lately?"

F: AA Ss in threat condition displayed…

- **Heightened awareness of own racial identity**—Filled in words with racial connotations more often, e.g. RACE & BLACK instead of, say, MACE or SHACK
- **More self-doubt**—Filled in words indicating self-doubt, e.g. DUMB instead of, say, DUCK
- **More avoidance of stereotypes**—Answered less +vely than non-threat AA Ss when asked how much they enjoyed 'stereotypically Black' things e.g. rap music, basketball
- **More self-handicapping**—Made more excuses for lack of own ability (e.g. tended to say they were under more stress, felt tests were unfair, etc.)
- **Disidentification with their (stereotyped) group:** Less likely to report own race in demographic questions

<u>Exp 4</u>
P: Replication of the non-threat condition only of exp. 1 (i.e. ALL Ss were told that the test wasn't indicative of intelligence); ½ of Ss asked to report their race before the test
F: If asked to report race, AA Ss performed worse than W Ss; no difference if not asked

Overall Conclusions:

- Making stereotypes about ability salient (obvious) can lead to:
    - Disruptions in performance (all exps)
    - Doubt in one's ability (exp 3)
    - Disidentification with a stereotyped group (exp 3)

- Anxiety is not a factor in the disruptions of performance caused by stereotype threat (exp 2)
- Even reminding people of their *identity itself* (without mentioning a specific stereotype) before performing a tasked stereotyped with their identity can lead to stereotype threat (exp 4)

Hofstede (1973): The Questionnaire

Relevant to: Cultural Dimensions [SCTRL], Effect of Culture on Behavior [SCTRL]

Aim: Identify & classify behaviors according to cultures worldwide
Ss: IBM employees from various countries worldwide
Procedure: Quasi-experimental method, comparing cultures. From 1967-1973, Ss filled out questionnaires about how they perceived their work environment
Findings/Conclusions:

- Found differences in mental programming (i.e. shared mental concepts, ideas, etc. between cultures; now known as *Hofstede's Cultural Dimensions* (see list & description Cultural Dimensions)
    - Initially, only identified the first 4 specific cultural dimensions; last 2 (Uncertainty Avoidance, Indulgence vs Restraint) only added later

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Berry & Katz (1967): Conformity of Individualist vs Collectivist Cultures

Relevant to: Effect of Culture on Behavior [SCTRL]

Aim: Investigate differences in conformity between individualistic and collectivist societies
(Refer to Hofstede's Cultural Dimensions for clear definition of this)
Ss: 1 group of Inuits from Canada, 1 group from African Temne tribe
Background Info:

- Inuits considered *individualist* (hunt for food individually, must rely on self for long periods of time)
- Temne considered *collectivist* (must communicate & cooperate to harvest crop for entire community)

Procedure: Lab experiment method (repeated measures design); both groups of Ss performed the Asch line paradigm
Asch Line Paradigm

1. Ss entered a room with several confederates/actors whom Ss were led to believe were other Ss

2. All ppl in room shown 2 cards: 1st had 1 line on it; 2nd had several, one of which was obviously the same length as the line on the 1st
3. Ss and confederates then asked which line on the 2nd card matched the line on the 1st card (confederates agreed on what answer to give beforehand)
4. Steps 1-3 above repeated multiple times (trials); confederates deliberately give the wrong answer on some of the trials

Findings:
Ss from Temne tribe conformed to the confederates/group at a much higher rate than those of the Inuits
Conclusion: Culture (individualism vs collectivism) appears to influence conformity—individualist societies have lower rates of normative conformity & vice versa
Evaluation:

- Concern about ecological validity—Asch paradigm not a realistic task, not necessarily representative of natural behavior
- Both cultures present rural/not developed; further investigation needed in more complex, industrialized societies
- Rs may not have fully understood cultures & therefore misunderstood Ss responses (etic approach bias)

Bond & Smith (1996): Meta-Analysis—Individualist vs Collectivist Conformity

Relevant to: Effect of Culture on Behavior [SCTRL]

Aim: Investigate the effect of individualism vs collectivism of a culture on conformity rates of said culture
Procedure: Meta-analysis of various Asch line paradigm replications carried out worldwide
Asch Line Paradigm

1. Ss entered a room with several confederates/actors whom Ss were led to believe were other Ss
2. All ppl in room shown 2 cards: 1st had 1 line on it; 2nd had several, one of which was obviously the same length as the line on the 1st
3. Ss and confederates then asked which line on the 2nd card matched the line on the 1st card (confederates agreed on what answer to give beforehand)
4. Steps 1-3 above repeated multiple times (trials); confederates deliberately give the wrong answer on some of the trials

Findings: Individualist societies (e.g. US, UK) tended to conform @ lower rate than

collectivist societies (e.g. China, Japan)
Conclusion: Individualist societies tend to normatively conform less than collectivist ones

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Trainor et al. (2012): Musical Enculturation in Infants

Relevant to: Enculturation [SCTRL]

Aim: Investigate if enculturation occurs from active learning
Ss: 6-month-old Western infants
Procedure: Lab experiment method; both between-groups and repeated-measures (counterbalanced) design elements

1. Ss, for 6 months, either did:
    a. An *active participatory* music class involving infants & their parents
    b. A class with *passive exposure* to music (while playing with toys)
2. Ss then exposed to a toy which, if looked at, played a classical music piece (if looked away, stopped playing); 2 versions played to all Ss (order counterbalanced):
    a. **Tonal version:** Original, unaltered version
    b. **Atonal version:** Original but with accidentals (wrong notes)
3. Which version Ss preferred measured by how much they looked at the toy for the tonal vs atonal version of the piece

Findings:

- Ss who did the active class preferred the tonal version over the atonal version of the piece
- Ss who did the passive class had no preference for either version

Conclusion: Active learning in a social context promotes enculturation (in this case, sensitivity to cultural tonality)

Miranda & Matheny (2000): Acculturative Stress in Latino Immigrants

Relevant to: Acculturation [SCTRL]

Aim: Investigate factors influencing acculturative stress
Ss: Latino immigrants to US
Procedure: Quasi-experimental study. Ss completed questionnaires & tests measuring:

- Family cohesion
- Level of acculturation

- Level of acculturative stress
- Coping strategies for stress

Findings:

- Ss with good coping strategies, proficiency in English & strong family structures were less likely to experience acculturative stress
- Ss who had spent longer in the US had higher levels of acculturation & were less likely to experience acculturative stress

Conclusion: The use of coping strategies for stress, proficiency in the region's native language & strong social support (e.g. from family) appear to reduce acculturative stress

Evaluation:

- Sample only looked at Latino immigrants to US; possible that acculturation affects ppl of different cultural origins/acculturating to different target cultures differently
    - i.e. Findings may not necessarily be generalizable to all ppl of all cultures undergoing acculturation and/or experiencing acculturative stress

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Lueck & Wilson (2010): Acculturative Stress in Asian-Americans

Relevant to: Acculturation [SCTRL]

Aim: Investigate factors influencing acculturative stress
Ss: Asian-American immigrants to US from various Asian cultures; roughly ½ were 1st-gen immigrants (i.e. original generation in family to immigrate)
Procedure: Ss underwent semi-structured interviews with interviewers of similar cultural & linguistic backgrounds to them exploring various themes, including:

- Levels of acculturative stress
- Impact on acculturative stress of:
    - Language preference
    - Discrimination faced
    - Socioeconomic status [SES] & economic opportunities
    - Satisfaction with immigrating
- And more...

Findings:

- ~¾ of Ss had acculturative stress
- Ss with bilingual preferences had lower acculturative stress; Ss who only preferred to speak English had higher acculturative stress
- Discrimination significantly contributed to acculturative stress
- Ss satisfied with their SES/economic opportunities and/or their choice to

immigrate (i.e. they would choose to do it again) had lower acculturative stress

Conclusions:

- Acculturative stress is common in immigrants
- Bilingual language preferences, prevalence of discrimination, satisfaction with SES, & satisfaction with immigration decrease acculturative stress

Evaluation:

- Sample only looked at Asian immigrants to US; possible that acculturation affects ppl of different cultural origins/acculturating to different target cultures differently
    - i.e. Findings may not necessarily be generalizable to all ppl of all cultures undergoing acculturation and/or experiencing acculturative stress

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Buchan et al. (2011): Global Social Identity & Cooperation

Relevant to: Globalization [SCTRL HL]

Aim: Investigate if identification with a 'global culture' motivates cooperation
Ss: 1122 ppl from various countries (US, Italy, Russia, Argentina, South Africa, Iran)
Procedure:

1. Ss's social identity (local, national, global) & concern for global affairs (e.g. global warming) measured
2. Ss then given money to invest in either a personal, national, or global fund with a certain guaranteed payback (that Ss knew of):
    a. A single S investing into their **personal fund** would get back that exact amount of money from the fund
    b. Several Ss from same country investing into their **national fund** would have total money invested in fund multiplied x2, then total money in fund shared equally between all Ss who invested in it
    c. Several Ss from multiple countries investing into their **global fund** would have total money invested in fund multiplied x3, then total money in fund shared equally between all Ss who invested in it
        i. Global fund mathematically superior but *only if* Ss invest lots into it!

Findings: Ss who identified more with a global community tended to invest more in the global fund (the mathematically superior fund…if everyone invests in it)
Conclusion: Social identification with a global culture/community appears to increase cooperative behaviors contributing to the global public good
Evaluation:

- Difficult to separate identification/cooperation from pragmatism
- Perhaps more 'globalized' Ss (i.e. identified with global community/culture more) simply more pragmatic in nature by way of cultural norms

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Becker et al. (2002)—Eating Behaviors in Fijian Adolescent Girls

Relevant to: Globalization [SCTRL HL], Prevalence Rates [ABN]

Aim: Investigate the effect of introducing media to a previously media-naive population.
Ss: 2 groups of Fijian girls
Background Info:

- Fiji only got TV in mid-1990s
- Fijian body image ideal 'heavier/bigger' in Fiji than Western culture
- FIjian cultural traditions also protective against body image dissatisfaction

Procedure: Quasi-experimental study *(NOTE: Not longitudinal!)*

1. Before TV was intro'd to Fiji, R measured eating attitudes of 1st group (~17y/o) of Ss through interviews
2. 3yrs after TV intro'd to Fiji, R conducted interviews with 2nd group of Ss (also Fijian girls, but ~5yrs older on avg & NOT the same girls as 1st group)

Findings:

- 2nd group had signf increase in indicators of eating disorders
- Interview responses of 2nd group (Fijian girls after intro of TV) showed higher levels of anxiety about weight, changes in attitudes to diet, weight loss & ideal body image

Conclusion: Globalization results in cultural shifts in behavior—in this case, in perception of body image as caused by TV programs
Evaluation:

- Many possible confounding variables
    - Aging/maturing process (esp. as evidenced by avg age gap) could've resulted in the diff shown
    - Can't draw comparison in changes in same Ss; thus, Ss variables possibly concern
- Other studies also point to same conclusion re: shifts in body image—e.g. **Hall (2013)** found worldwide effects on body image perception (ideal skin color) from globalization, resulting in skin bleaching

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Stratton (2003): Attributions in Troubled Families

Relevant to: Communication in Personal Relationships [HR]

Aim: Investigate attributional styles in troubled family relationships
Ss: 8 troubled families with step-parents or adoptive parents attending family therapy

- Assumed that as families sought therapeutic help, they were troubled

Procedure: Qualitative observations (structured, lab, non-S). Rs observed films of family therapy sessions which Ss (all members of family, incl all parents & children) attended; interactions recorded with checklist for attributional behaviors
Findings:

- Nearly 2000 attributions recorded; ~4 attributions/minute; attributions quite common in communication
- Parents often used -ve dispositional attributions against children (i.e. children caused bad outcomes); less often towards self (i.e. self caused bad outcomes)
- -ve behaviors of children described as controllable more often than -ve behaviors of parents

Conclusion: A maladaptive attribution style towards others (blaming other individuals) in behavior (interactions, communication, etc.) appears to result in distress in relationships
Evaluation:

- Supports attribution theory (theoretical generalizability); (somewhat) indicates maladaptive attribution styles towards others in relationships present
- Possible case-to-case generalizability to interpersonal relationships with one member 'socially inferior' (lower position, e.g. younger) than other
    - Maybe not all tho (e.g. relationships with equal status might work differently)
- Has credibility but with caveats:
    - Ss were behaving naturally, though in artificial setting (not at home)
    - Structured nature of observation may have meant some behaviors ignored/lost; however, checklist was comprehensive, data collected still quite rich (many attributions recorded)
- Can't definitively establish causation—did attributional styles cause bad relationship or did deterioration of relationship cause attributional styles?

Fletcher et al. (1987): Attributions in Dating Couples

Relevant to: Communication in Personal Relationships [HR]

Aim: Investigate whether patterns of attributions are related to relationship satisfaction
Ss: Students from a US uni in heteroseuxal relationships not living together *(NOTE: More females than males in sample!)*
Procedure: Quasi-experimental study.

1. Ss completed initial questionnaire measuring relationship characteristics (e.g. happiness, commitment, etc.) & describing relationship (own & partner's role, interactions, external factors, etc.)
2. 2 months later, Ss still in relationship answered abridged version of original questionnaire via phone interview

Findings:

- Ss with high relationship satisfaction attributed +ve behaviors (in general) in relationship as caused by self & partner but not -ve behaviors
- Ss in happier relationships tended to describe relationship in more interpersonal terms ("we"), implying closeness in interactions
- Ss who made more situational attributions for reasons for relationship maintenance had less happiness, commitment, & love

Conclusions: Adaptive attributions in communication in relationships, among other relationship behaviors, results in higher satisfaction & love
Evaluation:

- More females than males were used in the sample of the study, might limit generalization (females might tend to use different maintenance strategies/attributions &/or think of relationships differently)
- Supports attribution theory; indicates adaptive attribution styles in relationship behaviors, including interactions/communication, lead to satisfaction
    - No observations of actual interactions & attribution styles present in them though; relies on self-reports (social desirability bias? Couples may want to report as if they attribute certain ways to appear happier?)
    - Diff between couples still observed tho

LeFebvre et al. (2014): Relationship Breakdown on Facebook

Relevant to: Change & End in Relationships [HR]

Aim: Apply Rollie & Duck's model of relationship breakdown to Facebook users' behavior during & after break-ups
Ss: College students
Procedure: Ss completed online survey asking about romantic relationship that

ended in past 2 years, in which:
- Rated seriousness of relationship
- Stated frequency of face-to-face & online contact with partner
- Reported online communication + behaviors during & after break-up with partner

Survey responses analyzed qualitatively with Inductive Content Analysis.
Findings: Ss performed various behaviors during/after relationship dissolution—
- During relationship dissolution:
  - Minimized FB activity
  - Removed partner from own social media presence (e.g. removing relationship status, untagging/deleting posts, etc.)
  - Sought support from social networks; engaged in 'virtual mourning' of relationship (e.g. posting emotional statuses)
  - Observed/stalked online actions of partners
- After relationship dissolution:
  - Continued removing partner from own social media presence (e.g. deleting posts, etc.)
  - Withdrew & self-regulated from partner (e.g. defriended/blocked partner, avoided viewing partner's profile, etc.)
  - Exhibited impression management behaviors (e.g. +ve online presentation), often to make partner jealous/regretful
  - Virtually reconciled with partner (e.g. sending apology emails), sought new relationship interests

Conclusion: Aspects of Rollie & Duck's 5-stage Model supported:
- *Social*: Removing partner's presence, social network support, etc.
- *Grave Dressing*: Impression management, withdrawing & self-regulating from partner, etc.
- *Resurrection*: Virtual reconciliation, new relationship interests ,etc.

Evaluation:
- Strong credibility; method triangulation (qualitative analysis + quantitative ratings combined) used
- Concern with generalizability; used college students; findings (esp qualitative analysis) may not apply to all relationships between all social groups across all (esp non-verbal) means of communication

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Tashiro & Frazier (2003): Recent Breakups

Relevant to: Change & End in Relationships [HR]

Aim: Investigate prevalence of personal growth and distress following break-ups.

Ss: Undergrads who had recently experienced a romantic break-up
Procedure: Ss given multiple surveys to report/measure:

1. Attribution of blame for end of relationship
2. Cause for end of relationship
3. Distress
4. Growth/learning post-relationship (personal & otherwise)

Findings:

- In terms of *degree* of personal growth, Ss on avg reported ~5 types of personal growth that might improve future relationships
- Female Ss reported more personal growth than male Ss
    - Might be explained by social norms (males 'strong', shouldn't show even implied weakness)
- Ss who attributed cause of break-up to ex-partner & environmental factors experienced greater distress

Conclusion: Rollie & Duck's model, esp grave-dressing & resurrection, supported

- Attributions of cause (e.g. to ex-partner, environmental factors, etc.) suggest degree of justifying break-up, supporting grave-dressing stage
- Ss viewing ex-partner & outside factors (vs own faults) as responsible for ending relationships having distress supports grave-dressing stage (ppl try to attribute cause to ex-partner & outside factors; also indicates trying to justify breakup)
- Personal growth shown, supporting presence of resurrection stage

Evaluation:

- Concern with generalizability; undergrads used, perhaps diff social classes & relationships in them behave differently

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Sherif (1954; 1958; 1961): Robber's Cave Studies

Relevant to: Cooperation & Competition [HR], Prejudice & Discrimination (RGCT) [HR]

Aim: Investigate characteristics of intergroup conflict & cooperation
Ss: White, lower-middle-class boys from Protestant families
Procedure: Field exp. 3 exps conducted (similar with minor variations); longitudinal 3-week study, Es posed as camp leaders observing Ss while parents asked to stay away

1. *Group Formation Stage:* Ss split into 2 matched groups (i.e. groups comparatively similar in characteristics like height, weight, popularity, etc.)
    a. In 2 of 3 exps, Es observed who Ss befriended during 1st few days of

camp then separated Ss such that they were in separate groups
    b. In 1 exp, Ss separated into groups immediately witho any initial contact; groups initially unaware of others' presence but eventually found out
2. *Inter-Group Conflict Stage:* 2 groups engaged in competitions (e.g. tug of war); winning team would receive rewards (trophy, new much-wanted penknife), losers would receive nothing
3. *Conflict Reduction Stage:* Rs attempted to reduce conflict with mere contact (e.g. meals together, watching movies together) and +ve interdependence (e.g. cooperation necessary to bump-start a truck needed by both groups)

Findings:

- *Group Formation Stage:*
    - Both groups developed in-group norms, structure, rituals quickly
    - Ss made comparisons btw own group & other group, own group seen as superior (even before actual competition occurred)
- *Inter-Group Conflict Stage:*
    - Ss displayed in-group favoritism: Became tight-knit group, focused on group's similarities & strengths, stopped socializing with out-group members
    - Ss engaged in out-group discrimination: Ridiculed & belittled out-group, burnt flags & raided cabins of out-group (even when friends were in out-group)
- *Conflict Reduction Stage:*
    - Mere contact strategies ineffective; Ss continued to interact with each other -vely (e.g. food fights)
    - When situations with +ve interdependence set up, Ss collaborated to solve/fix problem; eventually, inter-group conflict reduced (Ss from winning group shared with losing group)

Conclusions:

- Social categorization does result in ingroup favoritism and outgroup discrimination, supporting RGCT and SIT
- -ve interdependence and conflicting goals further results in/increases outgroup discrimination, supporting RGCT
    - However, SIT also supported in that outgroup prejudice (elevation of ingroup vs outgroup) occurred before conflict even started; but prejudice doesn't inherently = discrimination/conflict/competitive behaviors
    - RGCT supported in that -ve interdependence/conflicting goals caused *greater* conflict and overt discriminatory behavior *towards other group*
- Presence of superordinate goals & +ve interdependence decreases

outgroup discrimination, supporting RGCT

Evaluation:

Methodological

- High ecological validity—realistic setting & group situation, Ss didn't know they were being studied & thus behaved authentically
- Rich data—Ss's interactions complex & behaviors diverse, grounded in real interactions
- Sampling bias; Ss variables might impact generalizability (maturity, gender, culture, etc. might have impacted extent of behaviors)
- Possible demand characteristics—camp leaders' overt setting up of competitive situation (competitive games with rewards) might influence Ss into conflict rather than *incompatible goals* themselves resulting in conflict
- Concern re: construct validity—operationalization of hostility/violence measures vague, vulnerable of researcher bias (stage of study might influence Rs'/Es' interpretation of Ss's behavior, e.g. behavior seen as neutral in Stage 3 might have been seen as more discriminatory if seen in Stage 2)

Ethical

- Ethical concern—Ss forced into study with no consent or knowledge of its nature, might've suffered mental distress/harm (esp if on losing team)

Levinson (2007): Memory of Racial Stories

Relevant to: Prejudice & Discrimination (Implicit Bias) [HR]

Aim: Investigate effect of implicit bias in memory recall.

Procedure: Lab experiment, between-groups design.

1. Ss read 2 stories, one about a fistfight and the other about an employee being terminated
    a. *Race of protagonist* of the story was manipulated; was either **Caucasian** [C] man, an **African-American** [AA] man, or a **Hawaiian** [H] man
    b. Otherwise, stories were identical for all Ss
2. Ss then, after a brief distractor task, completed yes/no questionnaire measuring recall of details of story
3. Ss then completed a further test for explicit (openly expressed) racial preferences

Findings:

- Ss' recall of story demonstrated -ve racial biases towards AA and to a lesser extent H characters

    - Ss more likely to remember aggressive facts (e.g. character punching someone from behind) AA & H characters than C character from story
    - Ss more likely to falsely remember +ve facts (e.g. character receiving an award) about C character than AA & H characters
- No relationship found between biases in memory recall & explicit racial preferences

Conclusions:

- Implicit biases about races appear to influence cognitive processes (e.g. memory)
- Implicit biases appear to operate separately from explicit racial preferences

Evaluation:

- Implicit bias/schema activation not actually measured, only implied via biased nature of memory recall of aggressive facts & +ve facts
- Schema activation also not measured, only implied given stories were identical yet bias was present (implying some prior knowledge/mental representation was influencing/biasing cognition)

Levinson et al. (2010): Guilty by Implicit Racial Bias

Relevant to: Prejudice & Discrimination (Implicit Bias) [HR]

Aim: Investigate impact of implicit bias against African-Americans in legal decision-making
Ss: Undergrad students
Procedure: Lab experiment, between-groups design. Ss sat in cubicle with computer, performed following tasks:

1. Ss performed robbery evidence evaluation task: read story of robbery, shown crime scene photos with dark-skinned or light-skinned suspect, then—
    a. Scored each piece of evidence on degree indicating guilt/innocence
    b. Gave verdict on whether suspect was guilty or innocent
2. Ss then completed (random order, avoiding order effects):
    a. Black v White/Guilty v Not Guilty IAT
    b. Black v White/Pleasant v Unpleasant IAT
    c. Modern Racism Scale [MRS] (measuring self-reported explicit racial beliefs)
    d. Feeling Thermometers (measuring explicit racial preferences based on emotion, e.g. “How warm to you feel towards African-Americans?”

Findings:

- On IATs, in general Ss had much higher assoc of Black & guilty/Black & unpleasant than White & guilty/White & unpleasant
- Ss with stronger association of black & guilty/black & unpleasant more likely in robbery evidence evaluation task to judge ambiguous evidence as indicating guilt
    - This, however, was **regardless of the race of the suspect**!
- Higher assoc of Black & unpleasant (but not Black & guilty) correlated with less favorable explicit attitudes & lower warmth towards AAs on MRS & Feeling Thermometers, respectively
- However, higher assoc between Black & guilty on IAT correlated with *higher* warmth towards AAs on Feeling Thermometer(!)

Conclusions:

- Implicit racial biases appear to be linked to explicit racial beliefs but not (emotion-based) explicit racial preferences
    - Explicit racial preference don't indicate implicit racial biases and may even counteract them; possible metacognitive strategies in play (attempting to counteract prejudicial cognition)?
- Guilt v race & pleasantness v race appear to be different mental constructs (given Black & unpleasant appeared to influence explicit attitudes differently, e.g. on MRS, than Black & guilty)
- Implicit racial biases appear to bias ppl towards judgments of guilt *regardless of race*
- Rs state further investigation of implicit bias's influence needed in other legal domains

Evaluation:

- Artificial situation; Ss performed tasks sitting alone in cubicle—lacked social cues, face-to-face interaction, etc.
    - *Carrier et al. (2015)* found that virtual empathy < IRL empathy; emotion might influence cognition differently in realistic scenario (e.g. actual courtroom)
- Sampling bias; Ss were undergrads, diff populations may behave/think differently depending on nature of explicit/implicit racial beliefs
    - Societal progress means now less socially acceptable to express explicit anti-racial preferences; Ss being young might've been influenced by this, but older Ss raised in diff time might think differently

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Harris & Fiske (2006): Outgroup Less Than Human

Relevant to: Biological Correlates (Prejudice & Discrimination) [HR]

Aim: Investigate socioemotional & neurological reactions to outgroup members
Ss: 10 right-handed American undergrads
Background Info: *Stereotype Content Model [SCM]* posits ppl judge others on 2 dimensions—competence (ability) & warmth (closeness to self)

- High competence & high warmth elicits **pride**
- High competence & low warmth elicits **envy**
- Low competence & high warmth elicits **pity**
- Low competence & low warmth elicits **disgust**

Procedure: Ss underwent fMRI scans focusing on mPFC, amygdala, insula, while—

1. First shown pics of control objects
2. Then shown pics of ppl diff social groups (e.g. Olympic athletes, disabled ppl, rich businessmen, homeless ppl, etc.) intended to elicit pride, envy, pity, or disgust (according to SCM)
    a. Pics had been pretested to elicit said reactions

Findings: Ss shown pics of ppl intended to elicit disgust (low competence & warmth, e.g. homeless ppl, drug addicts, etc.) had:

1. High amygdala & insula activation (implying fear & disgust)
2. No mPFC activation (implying Ss didn't consider them socially or as 'human')

Conclusions: Those whom we are not socially close to (low warmth) & perceive as having low competence (ability) (e.g. homeless ppl, drug addicts, etc.) produce emotional (& biological) responses of:

- Dehumanization (no mPFC activation)
- Disgust (left insula activation)
- Fear (right amygdala activation)
- i.e. Ppl view such groups as less than human & no different than objects

Evaluation:

- Very small sample size (due to expense of fMRI usage); concern with generalizability
    - Ss all Americans; US has unique racial dynamics, possibly only applicable to prejudice/discrimination/conflict in US?
- Can't establish directionality (does brain activation cause prejudice/discrimination or other way round?)
- Nature of reactions only implied; no actual measure to confirm if Ss were actually reacting that way
- Only implies elements of prejudice; discriminatory behavior, conflict, etc. not measured/observed in any way

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Harris & Fiske (2006): Follow-Up Study—Rehumanizing the Dehumanized

Relevant to: Biological Correlates (Prejudice & Discrimination) [HR]

Aim: (Follow-up study) Investigate if dehumanizing fearful/disgusted responses to those with low warmth & low competence can be reduced/negated
Ss: 18 right-handed females
Procedure: Ss underwent fMRI scans focusing on mPFC, shown pics of ppl from diff social groups intended to elicit pride, envy, pity, disgust & either—

1. Shown a vegetable before shown pic of person, asked if they thought the person would like the vegetable (yes/no) *(vegetable task)*
    a. Forces Ss to engage in individuation (process of understanding target as a unique human being)
2. Shown pic of person then asked if they thought the person was >35y/o (yes/no) *(age task)*

Findings: Ss in vegetable task shown disgust images had significantly higher mPFC activation than Ss in age task (who similarly had no mPFC activation as in 1st study)
Conclusion: Forcing individuation appears to reduce dehumanizing responses to those eliciting disgust, suggesting decreased prejudice & thus decreased discrimination & conflict
Evaluation: Similar points to original study

Alloy et al. (1999): -ve Cognition & Depression

Relevant to: Cognitive Theory of Depression (Etiologies)

Aim: Investigate if -ve cognition is associated with depressive symptoms
Ss: Non-depressed 1st year college students
Procedure: Quasi-experimental study

1. Ss given questionnaire to establish cognitive thinking patterns; based on responses, assigned to either *low-risk* or *high-risk* group
    a. High-risk Ss believed -ve life events were catastrophic & meant they were worthless
2. Ss followed up longitudinally for several yr thru self-reports & structured interviews

Findings: Ss in high-risk group were considerably more likely to develop MDD & suicidal tendencies
Conclusion: -ve cognition about world & self appears to influence development of depression
Evaluation:

- Possible 3rd/confounding variables; does -ve cognition *directly cause*

depression or do they lead to higher freq of -ve life events *leading to* depression?

Brown & Harris (1978): Sociocultural Risk & Protective Factors

Relevant to: Sociocultural Risk & Protective Factors (Etiologies) [ABN]
Aim: Investigate links between depression, social factors & stressful life events
Ss: South London women
Procedure: Quasi-experimental study

1. Ss surveyed on daily life & depressive episodes with focus on important bibliographic details (particular life events/difficulties faced by Ss)
2. Events later rated in severity by independent judges

Findings:

- Vast majority of Ss who'd become clinically depressed past year (10% of Ss) had experienced an adverse life event or serious difficulty (e.g. loss of loved one, abusive relationship)
- Social class had large effect on depression developing in Ss with children
- 3 major influences identified affecting development of depression:
    - *Protective factors:* Create high self-esteem & sources of meaning in life (e.g. high intimacy with husband)
    - *Vulnerability factors:* Increase risk of depression when combined with provoking agents (e.g. loss of mother @ young age, unemployment, etc.)
    - *Provoking agents:* Severe life events resulting in grief & hopelessness (esp for those witho social support) contributing to acute & ongoing stress

Conclusions:

- Social factors (e.g. serious life events) are linked to depression
- Socioeconomic status is associated with risk for depression (lower social class increases exposure to vulnerability factors & provoking agents; vice versa)

Evaluation:

- Sampling bias (only females); concern with generalizability, esp to men
    - Are men influenced differently by social factors?
    - Broad categories/factors (vulnerability factors, protective factors, etc.) may still be generalizable (no reason males aren't similarly vulnerable/protected) but not specific influences
- Study quasi-experimental, directionality/causation unclear; can't determine if events caused depression or depression caused increased likelihood that events would occur

- No control for other variables (e.g. genetic vulnerability)

Kivela et al. (1996): Social Predictors of Depression in the Elderly

Relevant to: Sociocultural Risk & Protective Factors (Etiologies) [ABN]

Aim: Investigate social factors predicting depression in the elderly
Ss: Elderly Finnish ppl
Procedure: Quasi-experimental longitudinal study

1. From 1984-85, ~1500 Finnish elderly (>61 y/o) were tested for depression with DSM-III criteria in a clinical study
2. From 1989-90, Ss who weren't previously depressed (~700 of original ~1500) were interviewed & examined again
3. Social variables & occurrence of certain life events measured with questionnaires

Findings:

- ~8% of men & ~9% of women not depressed in 1984-85 were depressed in 1989-90
- Comparative analysis between depressed & non-depressed men & women revealed various social factors predicting depression
    - Some shared between males & females (e.g. alcohol problem of close person)
    - Some gender-specific (e.g. males: losing mother under 20 y/o, grandchild's divorce; females: losing father under 20 y/o, lack of religious activity, etc.)
    - Some unique to old age (e.g. males: moving into institutional care)

Conclusion:

- Social factors & changes in them may predict the onset of depression, esp in old age
- There appear to be gender diffs in social factors predicting depression onset
    - May be assoc with societal/cultural norms (e.g. men more 'prideful' esp in Western societies, thus going into institutional care more shameful)

Rosenhan (1973): Sane in Insane Places

Relevant to: Prevalence Rates [ABN]

Aim: Investigate the validity of diagnoses in mental institutions.
Ss: 8 sane ppl (including Rosenhan)
Procedure & Findings:
Experiment 1
Procedure:

1. Ss tried to get admitted to variety of hospitals (12 total), stated that they'd been hearing an unfamiliar voice of same sex saying "empty", "hollow", "thud"
    a. Symptoms chosen as they appeared reasonable & representative of existential self-conflict *but* didn't match any existing disorders in psychiatric/psychological literature (no such thing as 'existential psychosis')
    b. Hospital directors informed but not broader staff; lawyers prepared for removal if necessary
2. If/when admitted, Ss stopped faking symptoms & acted normal, tried to convince staff to release them, observing behavior of staff & their treatment of patients

Findings:

- Ss remained hospitalized for several weeks (avg 19 days); none found to be fake (though fellow patients did suspect that they were faking)
    - All Ss discharged as 'in remission'
- Ss' normal behavior seen as aspects of their disorder (e.g. writing seen as pathological behavior)
- Ss experienced & observed depersonalization & powerlessness, e.g. toilets witho doors, patients treated violently by orderlies, only spent 7min/day with medical staff, etc.

Exp 2
Procedure:

1. Staff in a hospital, aware of 1st exp, told that over next 3 months sane pseudopatients (fake patients) would attempt to be admitted, asked to rate from 1-10 the likelihood that each patient they saw was a pseudopatient
    a. No pseudopatients actually sent

Finding: ~10% of intake judged to be pseudopatients
Conclusion: Flaws in validity of diagnosis demonstrated (at least, at time); 1st exp demonstrates failure to detect sanity (Type 1/false +ve error), 2nd demonstrates failure to detect insanity (Type 2/false -ve error)

- In context of prevalence rates, implies that they'd be affected as hospitals might diagnose more ppl as mentally ill than actually present (or diagnose less, if fearful of misdiagnosis)

Evaluation:

- Unclear if flaws due to *medical incompetence* or *inherent flaws*; still exist tho

- Naturalistic study with realistic conditions—high ecological validity, but withb temporal validity? Mental healthcare has progressed since 1973 with more rigorous diagnostic systems (DSM-II -> DSM-5), may not be as applicable to today
- Ss psychologists/psychiatrists, uniquely positioned to fool hospitals with extensive knowledge/expertise of disorders
    - Might such a situation arise IRL? Less likely
- Discharge diagnosis of 'in remission' was rare at the time; possible proof that psychiatrists recognized Ss' behavior as unusual?

March et al. (2007): Treatment of Adolescents with Depression Study/TADS

Relevant to: Biological & Psychological Treatments [ABN]

Aim: Examine short & long term effectiveness of drug therapy, CBT, & combination therapy (drug therapy + CBT)
Ss: Adolescents aged 12-17 from US diagnosed with MDD; 13 participating clinics, funded by the US National Institute for Mental Health [NIMH]
Procedure: Field exp; longitudinal. 3 stage exp; depression measured @ each stage using Hamilton Depression Rating Scale (HAM-D); response rate defined as % of Ss with >50% decrease in HAM-D score

1. *Acute Treatment Stage (12 weeks):* Ss randomly assigned to one of 4 conditions & treated accordingly:
    a. Drug therapy only condition (the SSRI fluoxetine)
    b. CBT only condition
    c. Combination therapy condition
    d. Placebo condition
2. *Consolidation Stage (6 weeks):* Ss continued to be treated. Ss in placebo group informed that they'd been taking a placebo, allowed to choose to join any of the other 3 conditions (but didn't participate in study any further)
3. *Continuation Stage (18 weeks):* Ss continued to be treated; long-term effectiveness assessed.

Findings:

- *Acute Treatment Stage:* Combination treatment had best response rate (71%), drug therapy second (61%), CBT third (44%), placebo last (35%)
- *Consolidation Stage:* Response rates of all 3 treatments increased. Combination still had highest response rate (85%), CBT only caught up to drug therapy only (two had similar response rates; 65% CBT / 69% drug therapy)
- *Continuation Stage:* All 3 treatments had similar response rates but

combination marginally higher (86% combination vs 81% CBT & drug therapy)
- Ss in all treatments demonstrated decrease in suicidal tendencies, though drug therapy had higher rate (15% vs 8% combination / 6% CBT only)

Conclusion:
- All 3 treatments outperformed placebo, so both drug therapy (biological) & CBT (cognitive/psychological) are effective
- Combination therapy is most effective for treating MDD with highest short & long-term response rates
- Drug therapy only has greater short-term but NOT long-term effectiveness than CBT only
    - Suggests antidepressants may be well-suited for situations where quick response/improvement necessary e.g. suicidal tendencies
    - However, fact that suicidal tendencies were higher in drug therapy than CBT only/combination therapy sugggests caution must be taken with such an approach
    - Only looks at one type of drug therapy (SSRI) though; wb other types & their efficacy?

Hollon et al. (2005): Relapse Rates of CBT vs Drug Therapy

Relevant to: Biological & Psychological Treatments [ABN]

Aim: Determine if CBT has a more enduring effect than drug therapy
Ss: Patients diagnosed with MDD who:
- Responded +vely to CBT over 12 months, then were withdrawn from CBT
- Responded +vely to drug therapy over 12 months, then continued receiving medication
- Responded +vely to drug therapy over 12 months, then received a placebo

Procedure: All Ss' relapse rates measured over a further 12 months
Findings: Ss who responded +vely then were withdrawn from CBT were less likely to relapse (~30%) than Ss continuing drug therapy (~50%) & taking placebo (~80%)
Evaluation:
- No comparison to Ss withdrawn from drug therapy with knowledge of withdrawal; extent of observed effect possibly understated
    - Do Ss withdrawn from drug therapy relapse even more? Less (e.g. they think they're cured/self-fulfilling prophecy)?
- No control for sociocultural factors; possible that those in drug therapy may have experienced social stigma, discrimination, etc. for taking drugs,

affecting behavior
    - However, unconfirmed; another possible argument would be that CBT, in +vely influencing cognition/thinking patterns better equips Ss for dealing with social stressors

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Kinzie et al. (1987): SE Asians Not Taking Antidepressants

Relevant to: Culture-Specific Treatment [ABN]

Aim: Investigate possible phenomenon of SE Asians not taking antidepressants due to social/cultural reasons
Ss: 41 depressed SE Asian patients undergoing drug therapy prescribed by US clinics
Procedure: Quasi-experimental study
1. Ss' blood tested to measure antidepressant levels
2. Ss had doctor-patient discussion about problems & benefits of antidepressants

Findings:
- Majority of Ss (61%) had no detectable medicine levels in blood
- After discussion, Ss compliance rates with treatment signf increased

Conclusion: Ppl from certain cultures may not want to undergo prescribed therapy (e.g. take medication)
- Rs explain this as originating from social stigma of antidepressants + cultural attitudes towards authority influencing patients into pretending they're following prescription so as not to offend doctor
- Open discussions may aid in the effective application of treatments to certain cultures

Evaluation:
- Sampling bias (only Ss seeking treatment at foreign [US] clinics); concern with generalizability—would Ss react same way if treated by member of same culture?
- Generalizability—Treatment in question was *drug therapy*, can findings re: attitude be generalized to all forms of therapy?
    - Depends on culture in question; some may be more open to behavioral therapies than chemical/drug therapies

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Griner & Smith (2006): Culturally Sensitive Treatment

Relevant to: Culture-Specific Treatment [ABN]

Aim: Examine effectiveness of culturally-adapted treatments of mental disorders
Ss: In total ~25000 ppl
Procedure: Meta-analyzed 76 studies with quantitative estimates of effectiveness of cultural adaptations of treatments (e.g. CBT) to disorders
Findings:

- Culturally adapted interventions for treatments had “moderately strong” benefit in treating disorders
- Benefit was 4x stronger for same-race groups of clients than mixed-race
- When therapist spoke client’s language, therapy was more effective than when therapist spoke English

Conclusion: Cultural adaptations of treatments are effective, especially if adapted for specific sub-populations (e.g. races)