

Final Exam Review Sheet

Lecture 9

Cognitive Development

Gray ch.11

HTMW 5 pp 314-333

Altricial – Young require post-natal rearing (ie – mice, rabbits); Humans are “*secondarily altricial*”

Precocial – Young does not require much post-natal rearing (ie – apes)

Critical Periods – a “sensitive period” during which a particular learning process best occurs (imprinting in birds, language?)

Piaget (vs. William James) – Schemes

- The child is a scientist that analyzes information and builds hypotheses which cross cut modalities (**domain generality**).
- A child’s own actions provide the basis for cognitive development. Control of novel stimuli dictates development.
- Social cues (joint visual attention, social referencing) guide exploration

Assimilation: new experiences incorporated into existing schemes, **Accommodation:** Changing existing schemes to accommodate this new information

Piaget’s Stages of Cognitive Development

Sensorimotor (Birth-2yrs): Emphasis on senses and actions.

Object permanence, Stranger Anxiety

Preoperational (2-6yrs): Word and image representation. No logical reasoning

Pretending, Egocentrism

Cannot perform conservation tasks (ie – which container has more water)

Concrete operational (7-11yrs): Logical reasoning of concrete operations.

Conservation, Mathematical transformations

Cannot perform abstract deductions (ie – if everything in Joe’s house is plastic, is his oven plastic?)

Formal operational (12- adult): Abstract reasoning

Potential for mature moral reasoning

Limitations to Piaget theory:

- Overestimation of age differences in ways of thinking–Age boundaries too strict. Even adults use concrete analogies
- Vagueness about process of change
- Underestimation of the role of social environment – Interaction with others. Vgotsky & Sociocultural perspective

Alternative thoughts:

Information processing perspective

- Domain Specificity – Modules of thought (ie – space, number). Core principles (innate?) + acquired knowledge
- Increase in the capacity of working memory (*M space*) and *speed of processing* account for stages of development.
 - Largely physical maturation
- Ability to transform explicit to implicit (proceduralization) or implicit to explicit (explication) knowledge develops with age

Habituation technique – Infant is repeatedly shown a physical event that leads to boredom. Child’s reaction to a new event determines how they perceive it. A child will look longer at an impossible event than at a possible event.

Development of **Intuitive Physics** – Innate or learned? Do infants have a sense of core physical principles? As early as 3 months

Does a rolling ball stop at a barrier?, Does a stationary object remain stationary without force?

Object permanence – Develops with age (simple hiding problem, change hiding-place problem, invisible displacement)

Development of a “theory of mind” (**Intuitive Psychology**) – Do infants have a sense of others’ beliefs? 3 vs.4 yr. olds

False belief tasks: Container test, Sallie Anne test

Autism – a disorder with severe deficits in social interaction, no pretend play, fail false-belief but not false photo tasks

Language development – See review sheet: Lecture 2

Alan Alda film: (and Gray)

Self-produced locomotion and wariness of heights –Stepping innate? Walking learned? Reinforcement of actions

An innate tendency to fear heights only after children begin self produced locomotion

Card sorting – Learn divide by color, then divide by shape (vice versa). Ability to switch tasks develops with age

Sticker picking (deceit) – Which sticker is your favorite? Deceit develops ~ 4 yrs

EMOTIONS: Lecture 2

Gray: p 72-82, 130-138, 217-227.

Species typical behaviors (STBs): behavior patterns that are so characteristic of a species they can be used to help identify that species.

- Human facial expressions – are these universal? (hint: eyebrow flash)
 - Examples of biological preparedness for STB (for humans): strong hind legs → upright walking; tongue → speech
 - the environment plays little role in the development of STBs
- Evolution of STBs: homology – a similarity between species due to common ancestry; analogy – similarity due to convergent evolution (ex. wings can be found on birds, butterflies and bats) (Gray p77)
- Ecology of STB patterns: STBs are a combination of inherited behavioral tendencies and the inherited means to modify these tendencies. The latter are called specialized learning mechanisms, and develop according to the animal's experience.
- Examples:
- food aversion/disgust: usually disgust develops after age of 2, and generally disgust is a reaction to almost all animal parts. Why disgust? An animal will avoid a food if it is associated with feeling sick, as well as animal foods that are *not* eaten by other members of the group (which may have a high likelihood of contamination) so food aversion is an adaptive mechanism to keep animals. (Gray p134) Food preference learning allows the animals (and humans) to choose foods that are nutritious and necessary for good health.
 - fear: fear can be conditioned (little boy who was conditioned to be scared of white animals), but also has an innate component. This is demonstrated by preparedness to fear certain classes of stimuli, lack of specific conditioning event in the animal's past, and the universality of fear stimuli. Fear is irrational – we don't necessarily fear what is dangerous. How do we cure fears/phobias?
 - depression: characterized by sadness, sense of worthlessness, loss of pleasure, etc. Any adaptive value? possibly it causes people to think realistically and it is a signal that they need help from others. How do we treat depression?

Emotions:

- How are these brain regions involved in forming emotions? Amygdala, Frontal Lobe (Gray, p225)
 - evidence from prefrontal lobotomy, EEG, animal lesion studies.
- Emotional state is correlated with arousal state. There is a level of arousal that optimizes the quality of a person's performance on a given task – this is called the Yerkes-Dodson law.
 - According to James, arousal causes emotion. This is the peripheral feedback theory. What is the evidence for this?
 - Schachter's theory states that emotions are both physical arousal and mental perception. (p221) This is the cognition-plus-feedback theory.
 - The facial feedback theory is a variation of James's idea. Example: smiling actually makes you feel happier.
- What is the evidence that certain human emotions are universal?
- Darwin's Three Principles of Emotions
 - serviceable habits: signals to others – communication
 - antithesis: opposite emotions (i.e. happy v. sad) have nearly opposite physical expressions
 - direct action of nervous system – sympathetic nervous system controls fight or flight reflex

9.00 Final Exam Review --- RECIPROCITY

Review ways in which organisms can behave toward each other:

- Symbiosis or Mutualism (both gain)
- Predation, parasitism, aggression (other loses)
- Altruism (other wins)

We treat mostly Altruism in this lecture.

Biological altruism – review strict definition.

Why is Altruism a puzzle?

- If other wins, the how is the given organism better off? (contradiction)
- If not better off, will not replicate and pass on genes more.
- Thus the genes will be selected against and disappear.
- How could we have currently evolved organisms still acting altruistically?

Question: Is there truly altruism?

- Strategies for gaining from “Altruism”
- Are these behaviors truly altruistic?
- What behaviors might be true altruism?
(review all of these well)

What does it take to maintain strategies for gain from Altruism?

- Cheater Detectors
- Face Recognition (cf Nancy Kanwisher and the Fusiform Face Area)
- Emotions related to these strategies are how it occurs for ourselves or others to break the strategy and therefore incur cost to the others: Guilt, anger, dislike, mistrust, shame – these form the incentive structure to maintain the necessary contributions for altruistic strategies to have mutual benefit.
- Cognitive Abilities – all this requires advance brain/mind. *Be comfortable with this idea and repercussions*

Trivers theory, prisoner’s dilemma, * Iterated prisoner’s dilemma, Tit for tat -- *review all of these*

So, how do we explain evolution of Altruism?

- Jump the level:
 - Human beings are not the fundamental unit of evolution (nor any sexually reproducing animal)
 - We don’t bud off or clone ourselves
 - Therefore we needn’t look at individuals as unit of selection, and therefore behavior of the organism may not be what determines whether fitness is increased.

- Group Selection -- Jump one level up!
 - Individual behavior contributes to group survival
 - Group does better so by 'trickle-down' theory the individuals do better
 - Review all examples: lemmings, stags, etc.
 - Problems with theory:
 - Individuals replicate faster than groups
 - Selfish individuals will take over unselfish groups
 - Therefore group selection may fail
- Gene-level Selection – jump one (or more) levels down!
 - Genes as fundamental unit of evolution
 - Selfish Gene
 - Altruism exists at the individual level. This level of behavior is irrelevant if it helps propagate the genes.
 - The whole gene set stands to propagate so any behavior that increases likelihood of successful mating, or quality care given to offspring will benefit genes.
 - The genes can be “selfish” in acting only for their own propagation, but lead to individual or group-level behavior that appears “altruistic”

Review these dynamic and be comfortable defending in writing, with good clear examples from lecture, how selfish genes could give rise to altruistic individuals, and how strategies of individual or group level altruism can lead to benefit to the genes. Also, review true cases of biological altruism.

Beware naturalistic fallacy, namely that “natural” is “good.” Just because we may show something to be natural or evolutionarily selected for, such as selfishness or the categorizational urge and out-group hostility underlying racism, does not mean these things are morally acceptable. We can impose morals on ourselves and modulate our behavior. Also, just because we have a natural propensity to do something, doesn't mean it is inescapable and we have no choice but to 'serve out our genes' and act that way. For instance the desire to eat has to be one of the most pre-programmed and hardest to avert “natural” propensities. If people can literally starve themselves to death, then there should be nothing in us (particularly not as subtle as selfish propensities) which we cannot consciously avoid. It is our moral sense and ability to influence our behavior that destroy arguments based on the “naturalistic fallacy.”

1 Things from the textbook that should ring a bell

- cooperation, altruism, kinship selection theory, reciprocity theory (Gray: 89-90)
- Erikson's stages of psychosocial development (Gray: 445)
- Bronfenbrenner's model of social ecology (Gray: 446)
- Vygotsky - concepts like 'right' / 'wrong' acquired from social environment
- strange-situation test, quality of attachment (Gray: 449ff)
- evidence that children enjoy giving, learning restraint, compliance, negotiation (Gray: 455ff)
- styles of parenting - Hoffman, Baumrind (Gray: 459-460)
- play - vehicle for skill development, learning about rules and roles, age-mixed play (Gray: 460ff)
- girl-boy-differences (Gray: 463ff)
- adolescence (Gray: 467f)
- trait theories, personality, biological foundations of traits, twin studies (Gray: 563ff)
- personality as adaptation to life conditions - advantages of being different from one another, adapting to family environment (e.g. birth order)(Gray: 574-580)

2 The puzzle about kin solidarity

- why should we help others if natural selection selects for selfish genes ?
- explanation: altruism towards kin - Hamilton's rule, genetic relatedness

3 Kin relations, parent-offspring, personality

- familial love is a universal phenomenon (inter-cultural differences though: matrilocal, patrilocal families)
- kinship and hostility - Daly & Wilson, step-relations (more abuse, homicide in step-relations)
- parent-offspring conflict
- why children get parental love (cuteness, crying, etc)
- personality and how to measure it (MMPI)
- "big five" personality dimensions

4 Is personality in the genes ?

- twin method, adoption method
- effects of shared and nonshared environment
- personality differences: 50% heritability, 0-5% shared environment
- the remaining 45-50%: biological, social accidents, peers, sibling conflicts etc
- sibling conflicts, differences between first- and laterborns

Why do sexes behave differently?

Darwin - Sexual selection, ability to reproduce successfully. Male to Male competition, Female choice

Trivers – Differences in **parental investment**. Women have more investment (9 months pregnancy, nutrients for baby, 2-4 year lactation) and are more competed for (Single male can fertilize several females, other males go mateless, causes male-male fighting, resource gathering and beauty contests) and more choosy (want best genes, one willing to feed and protect offspring, one others prefer). In species, i.e. jicana, with reverse investment, females fight and men are choosy.

Polygyny – High female investment, males have more partners, males fight (become larger), females choose. **Polyandry** – High male investment, females have more partners, females fight (and become larger). **Monogamy** – Related to equal male and female investment, needed when chance of offspring survival increase with two parents. Both sexes compete, males for fertile and willing females, females for resource-laden males willing to invest. *Social Monogamy* (pairing to raise young) not necessarily the same as *Sexual Monogamy* (fidelity in copulation), in some species. **Polygynandry** – (chimps and bonobos), colony of 24-36 males, females and their offspring. Females mate with most of the males in colony, males don't kill the young because they may be father.

Are sexual emotions adapted to ancestral environment? Men interested in more partners?

Buss: both sexes equally seeking spouse, men more strongly seeking one night stand. Men wanting more sexual partners in next month, next 2 years and lifetime. Women willing to wait for sex much longer than men.

Hatfield: will you [go out, come over to my apartment, go to bed with me] tonight? men, women, equally willing to date, men, much more willing to have sex.

Bem – male homosexuals have many more partners than females.

*** **Modern facts of life different that what we evolved with.** contraception, artificial insemination, substitutes of lactation, equal opportunities for women .

Gender differences in Personality: In Big-Five dimensions, women more agreeable, men more antagonistic (p. 581, Gray). Women higher on *neuroticism* (higher anxiety) and *conscientiousness*. Men higher on *sensation seeking*. Evolutionary explanation: women usually cared for children, could select nurturance, men's competition could select for competitiveness and aggression.

Case of Rape

Brownmiller, trauma of rape, casual attitudes in legal system, putting victim on trial, commonness in wartime. Conclusion: rape is act of power not sex, tactic of male dominance.

Thornhill & Palmer. A natural history of rape. rape as a reproductive tactic, used when benefits exceed costs, rape victims sexually desirable. Women resist rape because it cuts off choice.

Romantic love as Adult attachment (p. 476, Gray) – similar to infant's attachment to mothers, can be secure, anxious or avoidant.

Marital Success – Partners like each other as friends, constructive arguments, listen to each other.

Love and Sex—Part Two

BEAUTY & ATTRACTION

-Beauty is not in the eye of the beholder

- there is agreement across individuals about who is more attractive
- infants will look longer at faces that adults rate more attractive, suggesting that the attractiveness is innate rather than cultural

-agreement across cultures?

-Beauty people are considered more:

- wealthy
- intelligent
- honest
- just about any positive character trait

These

-One hypothesis to account for the above points posits that beauty is an indicator of reproductive fitness. This is bolstered by some of the cross-cultural criteria for beauty, which include health, cleanliness, symmetry, average size and shaped facial features, and the absence of deformities.

-There are some differences between male and female facial attractiveness. Attractive male faces have larger bones and brow ridges—both are effects of testosterone. Attractive female faces have more youthful qualities such as large eyes, forehead, and lips. The ideal waist to hip ratio also differs—0.7 for females and 0.9 for males.

-It is hypothesized that males and females have different strategies in selecting mates, and that both sexes have different strategies depending upon whether they are selecting long term or short term mates.

Male short term: any willing female

long term: young, faithful partner

Female short term: good genes and resources

long term: partner able and willing to invest in offspring

All of the strategies involve mating with someone fertile.

-David Buss performed a study in 37 countries to explore sex differences in mating strategies. He found:

- intelligence and kindness were important to both sexes
- wealth and emotional stability were more important to females
- youth and appearance were more important to males
- personal ads and marriage statistics supported the above findings

JEALOUSY

-There is evidence again from David Buss that men and women experience different kinds of jealousy, with males experiencing more fears of sexual infidelity and women more fears of emotional infidelity.

-Male jealousy may explain the “ownership” of women in many traditional societies.

KISSES, INFATUATION, ROMANCE, LOVE

-Romantic love may be a way of letting the other party know that you are committed, by making your course of action involuntary (analogous to a protester handcuffing themselves to a railroad track to stop a train). This does not mean this is the conscious strategy of the person in love

-Lasting love may exist when there is a confluence of interest between both parties of a relationship. I.e. if both parties look after the well-being of the other the same as the do for themselves. Indeed the biological fates of husband and wife are both monogamous, favor their children (who will be the same for both) over their other relatives (who will not be the same for both)

Aggression I, Harm without Malice: Obedience

Aggression

- Territorial aggression

- Dominance

Social Pressure

- Group Polarization

 - Circumstances

 - Consequences

 - Causes

 - Informational

 - Normative

 - Groupthink

Compliance

- Through *Cognitive Dissonance*

- Reciprocity norm

- Avert psychological reactance

- Obedience to authority

 - Stanley Milgram's Experiments

 - Hypothesis/Question

 - Prediction

 - Results/Findings

 - Explanations

 - Factors affecting obedience

 - Major

 - Proximity and authority of experimenter

 - Proximity of victim

 - Solitude of subject

 - Minor

 - Prestige of institution

 - Appearance of experimenter & victim

 - Nonfactors – *Fundamental Attribution Error*

 - Sadism

 - Gender

 - Personality

 - Criticisms/Critiques of Milgram's Experiments

 - Ethics

 - Real world relevance

 - Psychological Issues

 - Tension & absence of malice/sadism

 - Dissociation of thought/language/emotion from behavior

 - Fundamental Attribution Error

 - Effectiveness of signs of dominance

 - Diffusion of responsibility as enabler of mass murder

 - Denigrating the victim (Rationalization)

Harm with Malice

Lecture 20. Gray ch. 3: 87-89; ch. 14: 555-559. HTMW ch. 7: 493-498, 502-520.

Territorial aggression

- Between groups
- Fighting over *territory*—a resource that keeps away competitors and protects food
- *Territorial signaling* (auditory, olfactory) reduces conflict when no acute overpopulation or food shortage
- *Defender advantage*

Dominance-related aggression

- Between individuals within a group
- Fighting over resources including *food, mates, and location* in group
- *Submissive signals* (visual) maintain group as well as dominance
- *Memory* of dominance hierarchies

Collective aggression

- Restricted to dolphins, chimpanzees, ants, humans
 - Rarity of *intelligence* required for cheater-detection
 - Rarity of *related males* living together
- Myth of the peaceful savage (Rousseau)
 - *Incidence* of primitive warfare (e.g. Yanomano)
 - *Characteristics* of primitive warfare (mobilization, frequency, casualties, prisoners, deadlines)
 - *External enforcement* in modern society actually reduces incidence
- Three causes (Hobbes)
 - *Resources*: women as well as food, territory
 - *Safety*: the “Hobbesian trap”
 - *Reputation*: as honorable and vengeful (i.e. serious and capable of fulfilling threats)

Group aggression

- Causes
 - Kin selection: between families as well as ethnic groups (extended kin or reciprocators?)
 - Safety in remote areas (“cultures of honor”)
 - Collective reputation or vengeance
- *Phases* observed experimentally (Sherif, Tajfel)
 - Intra-group dynamics (I): spontaneous *identity* markers, desire for *competition* even if groups initially equivalent
 - Competition (II): within-group *solidarity, prejudice* and *hostile* between-group interactions even when both groups suffer
 - Conflict resolution (III): only via *superordinate goal*, implied enemy

The self

“Appear to be the person you wish you were.”

The motive to present yourself as beneficent: Reciprocal altruism

The motive to present yourself as effective: Dominance, Status

The best way to seem these things, even if you're not: Self-deception.

[Why status?

- good for survival: more mates, more resources, more offspring
- handicap principle
- conspicuous consumption]

The self-serving bias

- think of yourself as beneficent and effective.
- actor observer discrepancy in attribution.
- the better-better-than-average phenomenon (Lake-Wobegon effect).
- The importance of reference groups.

Cognitive Dissonance:

- (1) Revise any belief that portrays you as less beneficent or effective.
- (2) One way to do so (cf. Attribution theory): change your beliefs about the role of the situation in causing your behaviour.

Consequences of cognitive dissonance:

- firming an attitude to be consistent with an action
- changing an attitude to justify an action.
- The insufficient-justification effect
- Blaming the victim.

The 3 step process to changing someone's belief:

- (1) induce a person to behave in a way that contradicts the old attitude
- (2) minimise and obviate incentive for the behaviour
- (3) maximise the appearance of free choice.

Fundamental attribution error in understanding the causes of action:

- person bias in attribution – tend to attribute behaviour to permanent characteristics of the person.
 - NB differs between cultures, depends on task goals.
- actor-observer discrepancy. Cf. The self-serving bias

Effects of Prior information on personality judgements:

- attractiveness bias: beautiful = good. NB interaction with fundamental attribution error.
- Facial maturity bias: more naïve, honest, and warm. NB interaction with gender stereotypes.

The effects of personality judgements:

- self-fulfilling prophecies and the Pygmalion effect
- the looking-glass self.

Psychology & Life I: Happiness and Humor

“But, O! how bitter a thing it is to look into happiness through another man’s eyes!”

-William Shakespeare (*As You Like It*, V, ii)

Topic 1: Happiness

Happiness as a fitness indicator

In what circumstances are people happy?

Relative rewards

-across history

-across cultures

Gains, losses, and steady states

Money and happiness

-within industrialized societies vs. 3rd world societies

-across countries

-necessity and sufficiency of wealth for happiness

Other factors

-friends, family, religion, etc...

How can we measure happiness?

Ratings scales

Misery vs. Happiness

Study Question: Lottery winners often return to baseline levels of happiness or even become less happy a year or so after their big win. What are three factors that might account for this phenomenon?

Topic 2: Humor

Features of laughter

-Involuntary

-Contagious

-In other primates

Laughter and aggression

Anatomy of a joke

Incongruity

Resolution

Indignity

Experiments with humor

Convivial humor

Study Question: During the recent presidential campaign, George W. Bush was often lampooned in the popular media. Soon even he was making fun of himself at public events. Based on what you know about humor, what differs in terms of effect between the media telling a Bush joke and George Bush telling the same joke?

Lecture 11: Art & Religion

I. Art

1. Art is a human universal.
 - a. Common features characterize art of most cultures (see lecture notes).
2. Art is biologically useless, so why do we have it?
 - a. Art conveys status. Suggests you have resources to spare (remember other conspicuous displays of waste -- peacock's tail, chieftans who burn food & furs).
 - b. Pleasure. Art as "cheesecake" analogy -- concentration of pleasure cues.
 - c. Art for sexual selection. Artistic proficiency as fitness indicator.
 - d. Conflation of aesthetics with morality (see HTMW 493)
3. How does (visual) art work?
 - a. Patterns that are analyzed easily by our visual system are satisfying (HTMW 527).
 - b. Elements of scene in information-rich arrangement HTMW 527-528)
 - c. Art as virtual reality -- devices such as perspective trick brain into perceiving characteristics of 3-D world on 2-D surface.
4. Why do we like what we like?
 - a. We just do! (This is true, but it begs the question of the psychology of art.)
 - b. Aesthetics of representational art: Content is important. Frequent subjects include people (potential mates, children), animals, flowers (signifying of future fruit), optimal landscapes (see lecture notes for habitat selection hypothesis).
 - c. Aesthetics of nonrepresentational art: Patterns can be predictable, information-rich, indicators of a functioning visual system.
 - d. Question: how do you account for the appeal of avant garde, highly abstract nonrepresentational art (blotches and smears on canvas)? Hint: consider 2a, above.

II. Religion

1. Definition (after Mencken): "passionate belief in the palpably not true." (HTMW 554)
2. Why is religion a human universal, even in modern times?
 - a. Religion is a "technique for success." (HTMW 556)
 - b. Religious beliefs are slight emendations of universal human characteristics (HTMW 557).
 - c. Religious beliefs offer explanations for phenomena not well explained before modern science (e.g. dreams, shadows, reflections, etc.). (HTMW 557)
 - d. Religion offers a *kind* of explanation for phenomena still unexplained (e.g. What is sentience? Why is it morally wrong to murder an unhappy, bad person?). (HTMW 559)
 - e. Religion has societal benefits: food taboos = safety; rites of passage eliminate fuzzy social boundaries; ancestor worship is self-serving for the future-ancestor.
 - f. Overapplication of Theory of Mind (see lecture notes and HTMW 329-333).