PSYC 3420 Textbook Notes
Evolutionary Psychology: The New Science of the Mind

Chapter 1: The Scientific Movements Leading to Evolutionary Psychology

Note: skeletal remains provide clues to us about our evolutionary past; the puzzle of where we came from, the forces that shaped who we are, and the nature of our minds today

- the human brain, in its current form, is approximately 1350 cubic centimetres
- observed as the most complex organic structure in the world

Evolutionary Psychology: its goal is to understand the human mind/brain mechanism
- connects various other disciplines such as brain imaging; learning and memory; attention, emotion, and passion; attraction, jealousy, and sex, etc.

Note: focuses on 4 key questions:

1) Why is the mind designed the way it is
2) How is the human mind designed?
3) What are the functions of the component parts and their organized structure
4) How does input from the current environment interact with the design of the human mind to produce observable behaviour?

Landmarks in the History of Evolutionary Thinking

Evolution before Darwin:

- evolution refers to change over time
- Darwin published his monumental work On the Origin of Species in 1859

Jean Baptiste Lamarck (1744-1829): one of the first scientists to use the word biologie – a word which recognized the study of life as a distinct science

- believed in two major causes of species change:

1) **Natural tendency for species to progress toward a higher form**
2) **Inheritance of acquired characteristics** (useful abilities pass on to subsequent generations)

- animals must struggle to survive and that this struggle causes their nerves to secrete a fluid that enlarges the organs involved in the struggle
- example of a giraffe growing a longer neck to reach higher places for food

Baron Cuvier (1769-1832): proposed a theory known as "Catastrophism"

- species are distinguished periodically by sudden catastrophes and replaced by different ones

Note: the biologists who believed that life forms change over time called themselves "evolutionists"

Darwin's Theory of Natural Selection

- wanted not only to explain why change takes place over time in life forms, but also how
- to find out he set out on the Beagle shortly after graduating from Cambridge University (1831-1836)
- collected dozens of birds and other forms of life from Galapagos islands
- after careful inspection of his finches, he realized that each of the finches from the islands were different from one another
- concluded that they had a common ancestor but differed in the way they looked due to their respective ecological location

Note: with regard to the puzzle of adaption and how it occurs, Darwin took to reading ***Thomas Malthus' "An Essay on the Principle of Population"*** (1798) which stated that organisms exist in far larger numbers than can survive and reproduce

- "struggle for existence" in which favourable variations tend to be preserved and unfavourable ones tend to die out

Note: summarized this in his **theory of Natural Selection - three essential ingredients**:

1) **Variation**: providing "raw" materials for evolution
2) **Inheritance**: the passing or characteristics to the future generations
3) **Differential Reproductive Success**: aka selection – more developed survival characteristics are passed down through that species having more offspring

- eg. finches with sharper beaks will more likely survive past those with dull beaks because they will be able to crack more nuts for food

Darwin's Theory of Sexual Selection: some characteristics in organisms seem to have no use for survival (such as peacock's feathers) so the theory needed to incorporate this

- he also noticed that the different sexes of species were not the same size

Intrasexual Competition: competition between members of one sex

- the outcome of this depends upon who will have access to females
- whatever qualities lead to success in same-sex contest (size/strength), will be passed down to the next generation (due to mating success of winner)

Intersexual Selection: aka preferential mate choice

- individuals of one sex who come to some consensus on what is desirable in the other sex will go for those mates who have those agreed upon qualities
- Darwin also called this 'female choice'

The Role of Natural Selection and Sexual Selection in Evolutionary Theory

Note: these are not the only causes of evolution

Genetic Drift: random changes in the genetic makeup of a population

- these changes occur as a result of:

Mutation: random and hereditary change in the DNA

Founder Effects: occur when a small portion of a population establishes a new colony and the founders of the new colony are not genetically representative of the original population

Genetic Bottlenecks: happens when a population shrinks because of a natural disaster – survivors will only carry a subset of the genes of the original population

Note: Evolution is not a progression and not intentional

- generations evolve through a gradual process which can takes hundreds, thousands, and even millions of generations to be completed

Punctuated Equilibrium: long periods of no change and then a relatively sudden change

Darwin's Theory accounted for the modification of organic structures over time

Note: Human beings and chimpanzees share 98% of their DNA and have a common ancestor dating back to 6-7 million years

- it has also been found that our DNA is within a type of worm species

Note: in Darwin's time, inheritance of traits was widely disputed but he offered that we were the product of both our mother an father's traits combined

Argument from Personal Incredulity: just because we cannot understand something, we deem it to be false (aka argument from ignorance)

The Modern Synthesis: Genes and Particulate Inheritance

Gregor Mendel: Austrian Monk who showed that inheritance was "particulate" and therefore not blended like Darwin thought

- qualities of parents are not blended with each other, but rather are passed down intact to their offspring in packets, known as genes
- parents must have themselves been born with certain genes to pass on – they cannot be acquired through experience

Gene: smallest unit that is inherited by offspring intact (without being broken up)

Genotypes: refer to the entire collection of genes within an individual

- genotypes are broken up with each generation – each of us inherits a random half from our father's genotype and a random half from our mother's genotype

"Modern Synthesis": refers to the unification of Darwin's theory of evolution by natural selection with the discovery of particulate gene inheritance (period around 1930-40)

The Ethology Movement

Note: Darwin envisioned theory of natural selection to be just as applicable to behaviour

- this included social behaviour and physical structures
- example: species can be bred for behavioural characteristics and this has been well documented with aggression in dogs

Ethology: refers to the study of behaviour from an evolutionary perspective

- pioneering example in this field was that of imprinting (baby ducks)
- ducklings imprint on the first moving object they see after birth
- this was known as the critical period of development
- this behaviour is preprogrammed in these ducklings and a part of their biological structure

Note: Konrad Lorenz was the pioneer in this field (although amateur Douglas Spalding discovered this first)

Ethologists primarily focus on 4 issues:

1) **The Immediate Influences on Behaviour** (movement of the ducking's mother)
2) **The Developmental Influences on Behaviour** (lifetime events which cause change)
3) **The Function of Behaviour** (adaptive purposes of the organism)
4) **The Evolutionary or Phylogenetic Origins of Behaviour** (sequence of evolutionary events that led to the origins of an imprinting mechanism in the duck)

The Inclusive Fitness Role

Inclusive Fitness Theory: proposed by then graduate student William D. Hamilton at University College in London (published 1964)

- reasoned that classic fitness – measure of an individual's direct reproductive success in passing on genes through the production of offspring, as too narrow to describe the process of evolution by selection
- proposed that natural selection favours characteristics that cause an organism's genes to be passed on regardless of whether the organism produces offspring directly
- idea is that things like parental care or care for relatives is common because they too have a part of our genes inside them and it helps to preserve them, as well as our own
- inclusive fitness is a property of actions and effects – sum of an individual's own reproductive success plus the effects of the individual's actions on reproductive success for their relatives

Clarifying Adaptation and Natural Selection

George C. Williams: published in 1966 his classic work "Adaptation and Natural Selection"

- book contributed to 3 key shifts in the field of evolutionary theory

1) **Challenged the Prevailing Notion of Group Selection**:
- according to group selection theory, only those species that possessed characteristics beneficial to the group survived
- selection operating on a individual level within a group is a better way to view things
2) **Williams Translated the highly complex work of Hamilton and Delivered a Much More Ready Understanding of the Theory of Inclusive Fitness**:
- this solved the problem of altruism as more scientists began to look into this field
- altruism works – at times at the cost of the individual perishing because if we have a chance to save a relative's life, that relative can go on and reproduce as well
3) **Williams put Perspective on Adaptation**:
- adaptations are evolved solutions to specific problems which will in turn contribute to successful reproduction
- to add to the literature, Williams devised a sort of standard for classifying adaptations
- this took on three stages of classification: reliability/efficiency/economy

Trivers' Seminal Theories

Robert Trivers: graduate student at Harvard University who was inspired after reading Williams' 1966 book, and went on to write 3 seminal papers adding his own ideas

1) **Theory of Reciprocal Altruism Among Non-kin**: outlined the conditions under which mutually beneficial exchange relationships or transactions could evolve (1971)
2) **Parental Investment Theory**: provided the conditions under which sexual selection would occur for each sex (1972)
3) **Theory of Parent-Offspring Conflict**: notion that even parents and their progeny will get into conflict solely du to the fact that they only have 50% of their genes in common (1974)

The Sociobiology Controversy

Edward O. Wilson: contributed to science his *700 page book called Sociobiology: The New Synthesis (1975)*– offered a unison of cellular biology, integrative neurophysiology, ethology, comparative psychology, population biology, and behavioural ecology

- much of the controversy caused by his work surrounded the fact that he said that sociobiology would cannibalize psychology
- Wilson attempted to explain human nature itself and it worried many people

Common Misunderstanding about Evolutionary Theory

1) **Human Behaviour is Genetically Determined**: from this stems the argument of genetic determinism which states that we are controlled by our genes (with no influence from environment) – fact is that evolution works in tandem with environment and evolved adaptations
2) **If It's Evolutionary, We Cannot Change It**: dictates that human behaviour cannot be changed – false because knowledge of our evolved social psychological adaptations along with the social inputs that activate them gives us power to alter social behaviour – the more knowledge we have about ourselves, the more power we have to change
3) **Current Mechanisms Are Optimally Designed**: in no way are our function designed-upon further inspection of ourselves – we will see that there are many things which could be improved in us – "we carry around a stone age brain in a modern environment" (things like sugar and fat heavily appeal to us due to survival pressures of the past)

Milestones in the Origins of Modern Humans

Note: it has taken roughly 3.7 billion years to get from the origins of the first life on earth to modern humans in the twenty-first century
Humans are mammals and the first mammals originated more than 200 million years ago

- one thing which classifies mammals has been that they all nourish their young through the mammary glands (mamma comes from the word mammal which is the latin word for breast)

Note: 85 million years ago was when chimpanzees emerged onto the earth
Note: one of the most critical developments in ourselves was bipedal locomotion – the ability to walk upright on two feet

- the oldest record of tools was from 2.5 million years ago

Landmarks in the Field of Psychology
Note: Freud and William James were fans of Darwin's work, and they took much from it
Note: 100 000 years ago, 3 distinct groups of hominids roamed the world: Homo *Neanderthalensis* in Europe, Homo Erectus in Asia, and Homo Sapiens in Africa

- 30 000 years ago that changed with an ice age wiping out much of them

To explain why only one, homo sapiens remained in a singular form is explained by either one of two competing theories:

1) **Multiregional Continuity Theory (MCT)**: first migration from Africa took place 1.8 million years ago and slowly the group evolved into what we see today as humans

- essentially that we evolved into the same being, but from different places on Earth

2) **Out of Africa Theory (OOA)**: modern humans were already evolved in Africa and then migrated to other continents

Note: it has been suggested that our lineage between Neanderthals diverged 400 000 years ago (from DNA testing)

- interestingly enough, there is more genetic diversity between Africans then there is among populations anywhere else in the world

Freud's Psychoanalytic theory
Sigmund Freud: proposed a radical theory in the late 1800's which had a sexual foundation

- at its core was the instinctual system which included two fundamental classes of instincts:

1) **Life-Preservative Instincts**: need for food, water, and shelter and certain fears (eg. snakes)
2) **Sexual Instincts**: final stage of adult development which led to reproduction

Note: later on, Freud amended his theory and had a single banner for both: Life Instincts (also adding a second category of instinct known as the Death Instinct)
William James and the Psychology of Instincts
Principles of Psychology: published in 1890 as his classic treatise

- defined instincts as "the faculty of acting in such as way as to produce certain ends, without foresight of the ends, and without previous education in the performance"
- instincts are not always blind, but they could be modified by experience or overridden by other instincts
- some instincts are conflictive and so cannot be expressed at the same time as others

Note: most controversial part about James' Theory was his list of instincts

- most contemporaries of his believed them to be a small number, but for him it was the exact opposite – people did not like not feeling in control

some instincts included: imitation, vocalization, emulation, pugnacity, dear of definite objects, shyness, sociability

- James proposed that humans had more instincts than any other animals

The Rise of Behaviourism

James B. Watson: proposed the mechanism of *classical conditioning*

- two previously unconnected events come to be associated
- Pavlov and his experiments come to mind here

Note: a decade later, ***B. F. Skinner introduced Radical Behaviourism*** and the principle of **Operant Conditioning** (reinforcing the consequences of behaviour were the critical causes of subsequent behaviour)

- it was assumed innate that humans have a general ability to learn by reinforcing consequences

The Astonishing Discoveries of Cultural Variability

Things like emotions, passions, yearnings, desires, beliefs, attitudes, and investments – must be added during each person's life (culture)

- the human mind had the "capacity for culture", but it was the specific culture that was the causal agent responsible for filling in the blanks
- ***Margaret Mead*** made famous after her discovery of the Samoans and was quick to criticize America for its system
- Later, ***Derek Freeman*** (1983) visited for himself and found the exact opposite (there was much more murder, rape, and conflict than even in America)

The Garcia Effect, Prepared Fears, and the Decline of Radical Behaviourism

Harry Harlow (1971): known for his experiments on raising monkeys in isolation to observe their behaviour (other group of monkeys had an artificial mother with them)

- when presented with a wire mother who gave them food, they would rather cozy up to the wire mother who had cloth on her (suggesting a contact effect)
- ***experiment from Garcia*** (1966) revealed that rats who had been given food and gotten sick a few hours later, never ate that type of food again (time had no effect)
- rats apparently are preprogrammed to learn eating habits easy but for other things, they do not learn so well
- ***Martin Seligman*** later added that it is easy to get humans to be afraid of things like snakes, but things such as electric outlets would fare much harder

Peering Into the Black Box

Cognitive Revolution: comprised of the violations of the fundamental "laws" of learning, the study of language, and the rise of computers

Note: for an organism to accomplish certain tasks, it must solve a number of information-processing problems

- in order to understand beahviour, we must understand our brains

Chapter 2: The New Science of Evolutionary Psychology

Karl Grammer: evolutionary psychologist who formed a team of researchers to study sexual signals in human beings – they used a typical bar as the environmental setting

- as a form of the control over the experiment, female participants were asked about their use of birth control and current point in their menstrual cycle
- at the end of the experiment, it was shown that men were much more likely to touch women physically who not taking birth control, and who were the most fertile (period of ovulation)
- ovulating women in the study were also observed to wear more revealing clothing

The Origins of Human Nature

Three Theories of the Origins of Complex Adaptive Mechanisms

Note: Evolution by selection is a *creative* process

- as descendants of these successful ancestors, we carry with us the adaptive mechanisms that led to our ancestors' success (p. 34)

Theory 1: Creationism (sometimes known as intelligent design)

- the idea that a supreme deity created all of the plants and animals we see on earth

Note: ***this is not considered a scientific theory because***:

1) It cannot be tested empirically
2) Creationism has not guided researchers to nay new scientific ideas
3) Creationism has not proved useful as a scientific explanation for already discovered organic mechanisms

Note: creationism is not a matter of science but of religion and belief (it can never be proven false by its adherents)

Theory 2: Seeding Theory

- life did not originate on earth
- life either came from something like a meteorite, or through intelligent beings somewhere else in the cosmos

Note: this theory is at least testable (looking at meteorites and testing for life)

Note: ***As it stands, Seeding Theory is incorrect because***:

1) no evidence on earth exists to validate its claims
2) it has not led to any new scientific discoveries (no predictions)
3) Infinite regress problem (where did these intelligent beings come from?)

Theory 3: Evolution By Natural Selection

Note: it is considered a theory in the scientific sense, but it has been demonstrated to have occurred numerous times (both in and out of the lab)

Note: according to Alcock (2013), it is viewed by most biologists as a fact

The theory of Natural Selection contains many scientific virtues:

1) Explains known facts
2) Leads to new predictions
3) Provides guidance to important domains of scientific inquiry

The Three Products of Evolution

1) **Adaptations**: inherited and reliably developed characteristics that came into existence through natural selection (useful because helped to solve problems better than what was available in previous generations)

2) **By-Products** (of adaptation): characteristics which do not serve a function or adaptation (they are merely "carried along" – eg. belly button)
3) **Random Effects**: things such as chance mutations (may be due to rapid environmental changes)

Note: Adaptations have a genetic basis (since they are inherited)

- many adaptation (most) are comprised of many genes (human eye containing hundreds
- to qualify as an adaptation, it must emerge at the appropriate time during an organism's life in reasonably intact form and hence be characteristic of most or all members of a given species

Note: adaptations do not only need to occur at birth but can be developed over the life span

- eg. walking in humans and things like puberty indicting readiness to procreate
- an adaptation MUST do something to contribute to survival and/or reproduction

Note: as it pertains to mutations (copying errors), these will occur in single individuals

Environment of Evolutionary Adaptedness (EEA): refers to the statistical composite of selection pressures that occurred during an adaptation's period of evolution responsible for producing the adaptation (Tooby & Cosmides, 1992)

- refers to selection forces, or adaptive problems, that were responsible for shaping it over deep evolutionary time (referring to the history of each adaptation)

By-Products: the belly button is simply a by product because it does not help us with anything, but yet it is a by-product of an adaptation –umbilical cord providing food for fetus'

Random Effect: some of them are neutral, some are accidentally beneficial, and some are just harmful to reproductive success

Note: all evolutionary scientists agree that adaptations are the primary product of evolution by selection (Alcock, 2013; Dawkins, 1982; Dennett, 1995; Gould, 1997; Trivers, 1985; Williams, 1992)

Note: ***Evolutionary psychologists tend to focus on one special subclass of the adaptations that comprise human nature – psychological adaptations***

Levels of Evolutionary Analysis in Evolutionary Psychology

Note: evolutionary psychology's hypothesis centres on adaptive problems and their solutions – adaptive problems faced by our ancestors and the adaptive psychological solutions to those problems

General Evolutionary Theory: The first level of analysis

- evolution by natural selection is understood from the "gene's eye" view – differential gene replication is the engine of the evolutionary process by which adaptations are formed

Note: since evolutionary psychology is based on the assumption that evolution by natural selection is true, anyone who disputes this validity must first prove the following:

1) scientists must be able to demonstrate that life forms can be created in short periods of time (without giving chance for natural selection to occur)
2) that we have species which contain adaptive functions useful only to other species
3) scientists discovered adaptations which functioned for the benefit of same-sex competitors

Note: hierarchy of the Levels of Evolutionary Analysis can be seen in Figure 2.1 (p. 39)

Middle-Level Evolutionary Theories

1) Trivers' Theory of Parental Investment and Sexual Selection
2) Theory of Parasite-Host Coevolution
3) Theory of Reciprocal Altruism

Examining Trivers' theory in detail: Trivers argued that the sex that invests more resources in its offspring will evolve to be more choosy or discriminating in selecting a mate (and vice-versa)

- in the species where females invest more in their offspring, they do, in fact, demonstrate more choosiness in mate selection

Note: Trivers theory is compatible with general evolutionary theory (natural selection)

Specific Evolutionary Hypotheses

Example 1: women have evolved specific preferences for men who have resources to offer (Buss, 1989a; Symons, 1979)

Note: this is an example of an evolutionary psychological hypothesis because it proposes the existence of a specific psychological mechanism – a desire – that is designed to solve a specific human adaptive problem (securing a mate who appears capable of investing in children)

Two Strategies for Generating and Testing Evolutionary Hypotheses

1) **Top-Down (or theory-driven approach) Hypothesis Generation**: one can start at the top with general evolutionary theory and derive hypotheses – theories going from the general to the specific
2) **Starting with an Observation (and basing theory around it)**: once an observation is made about the existence of a phenomenon, we can then proceed in a bottom-up fashion and generate a hypothesis about its function (aka "bottom-up" strategy)

Strategy 1: Theory Driven or "Top Down" steps

1) Derive hypothesis from existing theory
2) Test predictions based on hypothesis
3) Evaluate whether empirical results confirm predictions

Strategy 2: Observation Driven or "Bottom Up" steps

1) Develop hypothesis about adaptive function based on a known observation
2) Test predictions based on hypothesis
3) Evaluate whether empirical results confirm predictions

Note: something like a woman's appearance having to do with her desirability to men does not need to be scientifically proven to be accepted generally (as an observation)

- most widely advocated evolutionary hypothesis is that a woman's appearance provides a wealth of cues to her fertility (Sugiyama, 2005)

Note: one such feature, in terms of mate selection in men towards women is called WHR (waist hip ratio)

- comes from the research of psychologist Devendra Singh (1993) who demonstrated that a low WHR (waist is smaller than hips) is linked to fertility in women
- women with low WHR, are more easily impregnable and women with high WHR are more likely to develop heart disease (which in turn leads to lower fertility)

The Core of Human Nature: Fundamentals of Evolved Psychological Mechanisms

What is human nature and where does it come from? (in terms of an evolutionary psychology viewpoint)

All Species Have a Nature

- refers to humans, and all other species as having something about them which makes them unique (eg. Freud thought human nature consisted of raging sexual and aggressive impulses and William James thought it was our instincts)

Definition of an Evolved Psychological Mechanism

- set of processes inside an organism with the following properties

1) **An evolved psychological mechanism exists in the form that it does because it solved a specific problem of survival or reproduction recurrently over evolutionary history**
- like a key made to fit a particular lock (failure of this led to failure of inheritance)

2) **An evolved psychological mechanism is designed to take in only a narrow slice of information**
- example of the human eye – can only see limited things (is not all-purpose)
- in evolutionary psychology, something like the fear of snakes is tantamount to fear of slithering things with an elongated body

3) **The input of an evolved psychological mechanism tells an organism the particular adaptive problem it is facing**
- input of seeing a snake will alert us to the fact that we are facing a survival problem
- inputs allow us to distinguish and gauge what our reactions will be

4) **The input of an evolved psychological mechanism is transformed through decision rules into output**
- after input is received, we can start to weigh the options in what we will take in our next action (eg. attack the snake or run)

5) **The output of an evolved psychological mechanism can be physiological activity, information to other psychological mechanisms, or manifest behaviour**
- the way we make our decisions after all input is received and the situation is clearly understood

6) **The output of an evolved psychological mechanism is directed toward the solution to a specific adaptive problem**
- our feelings of the input, such as a snake or a partner cheating on us, will cause us to make decisions around these feelings (outputs are psychological states which are not always good or bad, but they do force us to make a choice in alleviating an adaptive problem)

Summary of Evolved Psychological Mechanisms

Input – Decision Rules (If – then statements) – Output

- an evolved psychological mechanism is a set of procedures within the organism designed to take in a particular slice of information and transform that information via decision rules into output that historically has helped us with the solution to an adaptive problem (p. 48)

Important Properties of Evolved Psychological Mechanisms

- examining several important properties of evolved psychological mechanisms (features will combine to yield the flexibility of behaviour that characterizes modern humans)

Evolved Psychological Mechanisms Provide Non-arbitrary Criteria for "Carving the Mind at Its Joints"

Note: why do anatomists identify things like organs as being separate mechanisms (within the body as a whole)? Answer: their function

- all of our organs and body play a different role
- for this reason, evolutionary psychologists believe that the same principles should be used for understanding the mechanisms of the mind (focusing on function)

Evolved Psychological Mechanisms Tend to be Problem Specific

Note: there is no such thing as a general adaptive problem – even something simple like an address is very specific – it would not be suffice to say "head west"

- since adaptive problems are specific, their solutions must be as well

- to solve specific problems then, we need a *specific selection criteria*

Problem-specificity of adaptive mechanisms is favoured over Generality because:

1) General solutions fail to guide the organism to the correct adaptive solutions
2) Even if they do work, general solutions lead to too many errors
3) What constitutes a "successful solution" differs from problem to problem

Humans Possess Many Evolved Psychological Mechanisms

Note: the problems of survival alone can be in the hundreds, yet we need to solve them in order to still be alive

- because a large number of different adaptive problems cannot be solved with just a few mechanisms, the human mind must be made up of a larger number of evolved psychological mechanisms (to cope) – p. 50

The Specificity Complexity, and Numerousness of Evolved Psychological Mechanisms Give Humans Behavioural Flexibility

Note: psychological mechanisms are distinct from instincts (which are observed in behaviour)

- psychological mechanisms function more like rules in the sense that they guide in what we will do – either run from the snake or fight
- aka "if, then" procedures"

Beyond Domain-Specific Psychological Mechanisms

Note: humans have evolved several domain-general mechanisms (Chiappe & MacDonald, 2005)

Examples of proposed general mechanisms: ***General Intelligence/ Concept Formation/ Analogical Reasoning/Working Memory/Classical Conditioning***

Note: Chiappe and MacDonald (2005) argued that domain-general mechanisms such as general intelligence evolved precisely to allow for the solution of non-recurrent problems in attaining evolutionary goals (specialization of some sort leads to overall better results)

Note: at this point, the debate is still on regarding whether we do indeed have domain-general mechanisms

Superordinate Mechanisms: mechanisms that function to regulate other mechanisms

Learning, Culture, and Evolved Psychological Mechanisms

Note: here it is examined where culture, learning, and evolution go together

- are all human behaviours caused by learning and culture?

Recap of definition of evolved psychological mechanisms:

1) environments featuring recurrent selection pressure over deep time formed each mechanism
2) environmental input during a person's development is necessary for the emergence of each mechanism
3) environment input is necessary for the activation of each mechanism

Learning: simply refers to something in the organism being changed as a consequence of input from the environment

- learning requires structures first however – evolved psychological mechanisms which allow us to learn

Note: in order for humans to avoid incest, it does not take a class, but an evolved learning mechanism – certain cues we take from the environment (such as not being sexually intimate with who we grow up with)

Note: learning and evolved are not competing explanations/theories, but rather, learning requires psychological adaptations

Methods for Testing Evolutionary Hypotheses

Note: the scientific foundation of evolutionary psychology rests on convergent evidence from a variety of methods and sources of data (see Table 2.3 in text)

Methods and Data Sources for Testing Evolutionary Hypotheses

Methods for testing evolutionary hypotheses	Sources of data for testing evolutionary hypotheses
1. Compare different species	1. Archeological record
2. Cross-cultural methods	2. Data from hunter-gatherer societies
3. Physiological and brain imaging methods	3. Observations
4. Genetic methods	4. Self-reports
5. Compare males and females	5. Life-history data and public records
6. Compare individuals within a species	6. Human products
7. Compare the same individuals in different contexts	
8. Experimental methods	

Comparing Different Species: involves testing predictions about the occurrence of the trait among species other than the animal whose behaviour the researcher is trying to understand

- example given in the text is that of a sperm competition hypothesis – the function of sperm volume is to displace competing males' sperm and hence increase the odds of fertilizing a female's egg
- the result we should find is that whichever species of primate has the largest testicles, should correlate to sexual promiscuity (and that is what we find)
- Chimpanzees have the largest (adjusted or body weight and are more promiscuous)

Cross-Cultural Methods: most obvious methods are those which pertain to adaptations that are hypothesized to be universal (such as basic emotions)

- gender specific tasks, for example can be carried out across different cultures around the world with the same general result – men and women have specialized abilities in certain areas over one another

Physiological and Brain Imaging Methods: can be used to assess emotional arousal, sexual arousal, and stress

- we have an objective method of testing certain hypotheses
- example from text was that children with step-parents experience more stress than those with biological parents – this was shown to be true

Note: another study showed that testosterone, which is involved in mate competition, would be reduced in men who were in committed relationships (McIntyre et al., 2006)

Genetic Methods: these comprise twin studies and adoption studies to help us pinpoint what exactly we can say is biologically determined and what is not (eg. inheritance)

- one example is the theory that females will reach sexual maturity and first menstrual cycle faster when there is no father around vs. when there is (Belsky, 1997)
- with the advent of molecular genetics, we can even our own DNA and trace it

Comparing Males and Females: comparing sexes provides another method for testing hypotheses about adaptation

- example of male sexual jealousy given in the text – being more prevalent than female sexual jealousy primarily because it might mean our offspring is not ours

Comparing Individuals within a Species: example can be of comparing young women to old women – there may be some things they differ in which would be beneficial to know

- age may play here for certain behaviours and maybe other things
- the observation of young women having a much higher chance of reproduction than older women (there must be a reason for this)

Comparing the Same Individual in Different Contexts: this is useful for revealing evolved psychological mechanisms

- hypotheses can be formulated about the adaptive problems confronted in two different situations and hence about which psychological adaptations will be activated in each

Experimental Methods: with an experimental method, one group is typically exposed to a "manipulation" and a second group serves as a control

Sources of Data for Testing Evolutionary Hypotheses

Archeological Records: through carob-dating methods, we can obtain rough estimates of the ages of skulls and skeletons and trace the evolution of brain size through history

Data from Hunter-Gatherer Societies: current studies of traditional peoples, especially those isolated from Western civilization provide a rich source of data for testing evolutionary hypotheses

- Kim Hall and Hilliard Kaplan (1988) found that hunting, for some men did not benefit them directly, as the meat was shared, but that it did prove advantageously for mate selection

Observations: these prove useful in devising theories which start out by testing evolutionary hypotheses

Self-Reports: can be secured through interviews or questionnaires

- some phenomena can only be examined through self-reporting (such as sexual fantasies)
- it was hypothesized that men's fantasies were more visual and sex-intense while those of women referred to a focus on mystery and romance

Life-History Data and public Records: things like marriages, divorces, births, deaths, crimes, and misdemeanors, are all part of the public record

- from this we can compile some theories and see if the statistical evidence comes to the same conclusion

Human Products: the things humans make are products of their own minds

- so many things that sell well, do so because we might have an evolved desire for these substances

Transcending the Limits of Single Data Sources: all data sources have limitations

- even the fossil record is not complete
- life date from public records can be subject to systematic bias
- thus, the solution in having a better answer is to use multiple data sources

Identifying Adaptive Problems

Note: How do we know what these adaptive problems are?

- we cannot rewind the evolutionary clock and see all the things our ancestors confronted in the past
- each new adaptation creates new adaptive problems of its own, such as becoming coordinated with other adaptive mechanisms

Guidance from Modern Evolutionary Theory

Note: Evolutionary theory guides us to the following broad classes of adaptive problems:

1) **Problems of survival and growth**: getting the organism to the point at which it is capable of reproduction
2) **Problems of mating**: selecting, attracting, and retaining a mate and performing the needed sexual behaviour required for successful reproduction
3) **Problems of parenting**: helping offspring survive and grow to the point at which they are capable of reproduction
4) **Problems of aiding genetic relatives**: the tasks entailing in aiding the reproduction of nondescendant kin who carry copies of one's genes

Guidance from Knowledge of Universal Human Structures

- a second source of knowledge comes from the accumulated knowledge of universal human structures
- all humans, for the most part, live in social structures
- all known human groups have social hierarchies

Guidance from Traditional Societies

- a third source of guidance may come from traditional societies (hunter-gatherer)
- these societies more closely resemble the conditions under which we evolved more so than modern societies

Guidance from Paleoarcheology and Paleoanthropology

- fourth source of guidance may come in the form of stones and bones
- analysis of our ancestor's teeth may give us clues as to their diets

Guidance from Current Mechanisms

- fifth source of knowledge comes from current psychological mechanisms of humans
- some things, all humans (no matter the culture) have in common

Guidance from Task Analysis

- more formative procedure for identifying adaptive problems
- task analysis starts with an observation about a human structure and then asks this question: for this structure or phenomenon to occur, which information-processing procedures and behavioural tasks must be performed?
- Task analysis involves identifying the cognitive procedures that must be performed for it to occur using only information that would have been available in ancestral environments

Organization of Adaptive Problems: survival is highest, followed by mating

Chapter 3: Combating the Hostile Forces of Nature

Human Survival Problems

Note: differential reproduction is the bottom line of the evolutionary process

- Charles Darwin said: "as more individuals are produced than can possibly survive, there must in every case be a struggle for existence, either one individual with another of the same species, or with the individuals of distinct species, or with the physical conditions of life" *1859, p. 53)

Hostile forces of nature: refer to encountered dangers to our survival

- include: climate, weather, food shortages, toxins, diseases, parasites, predators, and hostile (conspecifics)

Folk Biology: the intuition that living things come in discrete packets that correspond to distinct species; and that each distinct species has an internal "essence" that produces its growth, bodily functions, external form, and special powers

- this folk biology emerges early in us and is universal among cultures

Food Acquisition and Selection

Note: without food or water, we will certainly die

- for this reason, most animals engage in food searching more so than any other activity
- finding food for survival and a mate for gene propagation are essential to life

Social and Cultural Aspects of Food

Note: in some cultures, failure on the part of a man to provide food leads to loss of status in the group

- food permeates our psychological preoccupations, verbal discourse, social interaction, and religious beliefs on a daily basis

Food Preferences

Note: most people in the world spend more money on food than anything else

- in western countries like Germany and the US, it is 21% of income (spent on food)
- in India and China, it is 50%

Note: both humans and rats have a shared evolved taste preference for sweetness

- sweet foods are generally calorie dense and so are very useful
- our dislike for bitter/sour foods seems to come from it being associated with toxins so we tend to avoid them altogether

Neophobia: a strong aversion to new foods (shared trait between rats and humans)

Disgust: The Disease-Avoidance Hypothesis

Disgust: as an emotion, serves as a defense against microbial attack which protects us from the risk of disease (Curtis, Aunger, & Rabie, 2004; Oaten, Stevenson, & Case, 2009)

- motivates strong withdrawal from the disgust-producing stimulus

Predictions about disgust based on an evolved defense mechanism:

1) Disgust should be evoked most strongly by disease-carrying substances
2) Disgust elicitors should be universal across all cultures

Note: empirical research confirms both predictions (Curtis & Biran, 2001)
- in one study, merely showing people images of contaminated food elevated their body temperature (Stevenson et al., 2012)

Note: another prediction of this Disease-Avoidance Hypothesis is that since women typically care for their infants and children, they have a specialized interest to protect not only themselves from disease, but also their children
- women do, indeed, find images depicting disease-carrying objects more disgusting than men and have a greater perception of the threat of contamination (Curtis et al., 2004)

Note: throughout history we have found that in times of famine, humans have been known to eat each other so it may seem possible that humans also have the capacity to override their disgust reaction in order to solve other adaptive problems

Sickness in Pregnant Women: The Embryo Protection Hypothesis

Note: during the initial 3 months of pregnancy, some women will develop what is commonly known as "morning sickness" (about 75% from self-reports – Brandes, 1967)
- morning sickness is a heightened sensitivity and a nauseous reaction to certain foods

Note: according to Profet (1992), pregnancy sickness may be an adaptive function that prevents mothers from consuming/absorbing teratogens (toxins/ other harmful agents)
- the foods pregnant women find repugnant appear to correspond to those carrying the highest doses of toxins
- pregnancy sickness occurs during the time of the growing fetus' most vulnerable moments (when their organs are being formed – 2-4 weeks post-conception)

Note: it has also been found that women who do not experience pregnancy sickness during first trimester are roughly three times more likely to experience a spontaneous abortion

Fire and Cooking

Note: unique to humans is how we prepare our food – we cook it (through fire)
- according to the cooking hypothesis, the invention of fire and the ability to cook provided the key evolutionary impetus for the evolution of extraordinarily large brains (Anthropologist Richard Wrangham says it is one of the keys to modernism)

Evidence for Wrangham's Cooking Hypothesis:
1) Cooking food provides a predictable increase in its net energy value
2) Cooking renders foods more easily digestible
3) Cooking is a human universal
4) The human brain requires a tremendous number of calories to function
5) We fare poorly on exclusively raw-food diets (women sometimes lose reproductive functioning)

Note: cooking goes back to 1.6 – 1.9 million years ago when Homo Erectus appeared in the fossil record with substantially larger brains than other ancestors

Why Humans Like Spices: The Antimicrobial Hypothesis

The Antimicrobial Hypothesis: spices kill or inhibit the growth of microorganisms and prevent the production of toxins in the foods we eat and so help humans to solve a critical problem of survival – avoid being made ill or poisoned by the foods we eat (Sherman & Flaxman, 2001)

Note: spices have been a way to kill off microorganisms (go back in history 1000s of years)
- spices are more prevalent in hotter climates (and more prevalent in meat dishes)

Why Humans Like to Drink Alcohol: An Evolutionary Hangover?

Note: primates have been eating fruit for at least 24 million years
- most primates are primarily frugivorous – fruit is the mainstay of their diet

- the ripest fruits contain high amounts of sugar and ethanol

Frugivory By-Product Hypothesis: states that the human preference for drinking alcohol is not an adaptation, but rather is a by-product of adaptive fondness for ripe fruit (Dudley, 2002; Singh, 1985)

The Hunting Hypothesis

Note: ancestral methods of securing food have been lined to the rapid emergence of modern humans, but the importance of hunting in human evolution has been controversial

- one of the controversial views is of "Man the Hunter" – this view asserts that man moving away from foraging to hunting big game was a major impetus for evolution
- one view as to why we changed so rapidly from foragers to hunters is that in Africa a few million years ago, there was a global cooling which made plant life scarce and animals became more attractive

Note: among contemporary traditional human cultures, meat consumption ranges from 20-40% and goes as high as 90% during cold seasons

- according to Tooby & DeVore (1987), it is next to impossible to get all essential nutrients from a vegetarian diet alone (such as cyanocobolamine)

Note: there is also a gut difference between humans and other primates

- ours are largely dominated by the small intestines which are used to break down protein-rich food sources rapidly

The Provisioning Hypothesis

Provisioning Hypothesis: states that human males are unique among primates in their heavy parental investment in children

- it is more beneficial to transfer meat over distances because it contains more calories than non-meat sources
- for this reason, hunting has been useful to humans, not only for individuals

Strong Male Coalitions: hunting provided this because in order to hunt large game, it required teamwork and cooperation

- things like group-on-group aggression and political alliances have also served to unite humans

Note: hunting can also account for strong reciprocal altruism and social exchange

- it has only been observed in humans the ability to form lifetime relationships based on reciprocity
- might be due to the fact that hunting is not 100% reliable – you may not be able to have a catch each and every time, but the times you do, it pays to share, because next time when you cannot catch, someone will remember you
- hunting also provides a provision for the sexual division of labour – men are stronger naturally so are better able to carry out physical activities

The Show-Off Hypothesis: Status Competition Among Men

Show-Off Hypothesis: proposed by Anthropologist Kristen Hawkes (1991) which suggests that women prefer to have neighbours who are show-offs – men who go for the rare but valuable bonanzas of meat because they benefit by having a portion of it

- if women can have a share then it would be beneficial to them to reward men who pursue this strategy

Note: it has been shown that better hunters have more mates (Smith, 2004)

Note: the Show-Off Hypothesis is in direct contrast to that of the Provisioning Hypothesis

- as Hawkes argued, men hunt more for the social benefits and not mainly to provide for their families

The Gathering Hypothesis

Note: According to this view, it was women who provided the evolutionary impetus for the emergence of modern humans (and not male hunters – Tanner, 1983)

- this view states that tools were fashioned not for hunting, but for digging up and securing various types of plants
- after the invention of stone tools for gathering came the invention of containers for food and tool storage
- this view places hunting much further along in human history

Comparing the Hunting and Gathering Hypotheses

Note: the gathering hypothesis does not account for the division of labour between the sexes (which has been observed across a number of cultures worldwide)

- the hunting hypothesis does explain more, such as why women do not hunt as much (pregnancy and children to worry about and the elevated risk)
- gathering hypothesis also has problems explaining the advent of human social bonds lasting decades and why women should share their food with men

Adaptations to Gathering and Hunting: Sex Differences in Specific Abilities

Note: if men and women each had specialized abilities (hunting/gathering), we should expect that each sex also have dedicated cognitive abilities that supported these actions

Silverman et al (2000): proposed a ***hunter-gatherer theory of spatial abilities***

- theory proposes that men will show superior abilities in the types of spatial tasks that would have been useful in hunting (tracking and killing animals requires different spatial problems than does foraging for plants)
- "the ability to orient oneself in relation to objects and places, in view or conceptualized across large distances, and to perform mental transformations necessary to maintain accurate orientations during movement … this would enable the pursuit of prey animals across unfamiliar territory, and also accurate placement of projectiles to kill or stun the quarry" (Silverman & Eals, 1992, pp. 514-515)

Note: in short, the theory predicts that women will be better at "spatial location memory" as a gathering adaptation and men will be better at navigational abilities (map reading and mental rotation)

- results of psychological testing have confirmed these sex differences

Silverman, Choi, and Peters (2007) study: in 40 countries and across 7 ethnic groups, men scored higher than women on the three-dimensional mental rotation task

- in contrast, women scored higher than men in 35 countries (out of 40) over all 7 ethnic groups on the object location memory task

Finding a Place to Live: Shelter and Landscaping Preferences

- over evolutionary time it has been our goal to not only find food, but reliable shelter in places which are advantageous to our survival

The Savanna Hypothesis

Note: the Savanna Hypothesis was championed by Orians (1980, 1986) and suggested that ***selection has favoured preferences, motivations, and decision rules*** to explore and settle in environments abundant with the resources needed to sustain life (while also avoiding environments lacking resources and posing risks to survival)

- the Savanna in Africa, which has been widely believed to be the site in which humans originated, has met the above requirements
- there is more game on the Savanna than in a tropical forest

Note: studies have shown that humans prefer natural environments and specific kinds of trees (which are found in the Savanna) – (Orians & Heerwagen, 1992)

3 Stages of Habitat Selection: (according to Orians and Heerwagen, 1992)

1) **Selection**: upon arrival to any site, our first thought is explore or leave
2) **Information Gathering**: environment is explored for its resources/dangers
3) **Exploitation**: whether to stay long enough to reap benefits of resources

Note: each stage is incremental and depends on accepting the first

Combating Predators and Other Environmental Dangers: Fears, Phobias, Anxieties, and 'Adaptive Biases"

Adaptive rationale for human fear: fears cause us to deal with the source of danger (which provides a survival function)

Isaac Marks (1987): "Fear is a vital evolutionary legacy that leads an organism to avoid threat, and has obvious survival value… without fear few would survive" (p. 3)

Fear: the usually unpleasant feeling that arises as a normal response to realistic danger

- distinguished from phobias (which are fears out of proportion to the threat)

6 Ways Fear and Anxiety Offer Us Protection: Mark (1987) and Bracha (2004)

1) **Freezing**: aids the vigilant assessment of a situation, conceals one from the predator, and sometimes initiates an attack
2) **Fleeting**: distances the organism from specific threats
3) Fighting: this reaction may cause the threatening predator to flee
4) **Submission/Appeasement**: typically works when threat is member of one's own species (will help to preserve life in some circumstances)
5) **Fright**: response characterized as "playing dead" – useful when fleeting or fighting will not work
6) **Faint**: losing consciousness to signal to an attacker that one is not a threat

Most Common Human Fears

Charles Darwin on fear: "May we not suspect that the … fears of children, which are quite independent of experience, are the inherited effects of real dangers … during ancient savage time? (Darwin, 1877, pp. 285-294)

Note: humans are far more likely to develop fears of dangers that were present in the ancestral environment than of dangers in the current environment

Note: Table 3.2 in text outlines specific fears and the relevant adaptive problem (p. 88)

Note: even people living in modern environments still report to psychiatrists that overwhelmingly they fear snakes and strangers more than anything else (on average)

Rakison & Derringer, 2007; Sulikowski, 2012 study: suggest that the fear of spiders in humans develops by 5 months of age

Gerdes, Uhl, & Alpers (2009): spiders evoke greater fear than any other group of arthropods

Note: even the fear of heights in inborn into us (Bertenthal, Campos, & Caplovitz, 1983)

- children will not climb over (apparent) visual cliff even to get to their mothers

Separation Anxiety: another kind of fear peaking between 9-13 month old infants

Note: animal fears appear around age 2

Agoraphobia: fear of being in public places/spaces from which escape might be difficult emerges later in life as the young leave the home (Marks & Nesse, 1994)

John Neuhoff (2001): evolutionary psychologist who documented an adaptive bias in the perception of looming auditory motion

- there is a striking asymmetry in approaching sounds vs. receding sounds
- changes in approaching sounds are perceived as greater than equally receding sounds

Children's Antipredator Adaptations

Note: there is evidence, both from early humans to contemporary ones (such as the Ache foragers of Paraguay) that we have always faced danger from other animals

- damage to ancient skulls and other bones consistent with teeth marks show this

Barrett (2005) and his colleagues argued: Children require at least 3 Cognitive Skills

1) A category of predator or dangerous animal: forms the basis of antipredator defense
2) Inference that predators have motivations to eat prey: which means they will destroy prey by any means necessary (danger)
3) Understanding that death is a potential outcome of an interaction with a predator

Note: implicit in these realizations is the fact that death leads to loss of ability and is permanent and irreversible

Barrett (1999): study demonstrated that children as young as 3 have a sophisticated cognitive understanding of predator-prey encounters

Descent Illusion: proposed by Jackson and Cormack (2008) which found that humans perceive 32% greater vertical distance when viewing from the top compared to when viewing from the bottom (evolved mechanism for us to be especially careful when at the top of a structure)

Darwinian Medicine: Combating Disease

Note: humans have evolved adaptations to combat diseases, but not all are intuitively obvious – emerging science of Darwinian medicine is helping us make new advancements

Fever: the common recommendation is simply to take 2 aspirin and rest

- research has shown the fever-reducing drugs may only prolong disease

Note: in one study (Nesse & Williams, 1994), a physician (Julius Wagner-Jauregg) intentionally injected syphilis patients with malaria (which caused fever) and found that the survival rate had increase by 30%

- fever can be seen as a natural and useful defense against disease

Iron-Poor Blood: iron is food for bacteria

- when a person gets an infection, the body produces a chemical that reduces blood levels of iron (this starves the bacteria which paves the way for combatting infection and recovery)

Weinberg (1984): study found that giving people iron supplements actually increased their rate of infection

Why do People Die? – why do people choose to die and why cant we live forever?

The theory of Senescence

Senescence: refers not to any specific disease, but the deterioration of all bodily mechanisms as the organism grows older

Starting point of senescence is observation – as we get older, the power of natural selection decreases

Pleiotropy: the phenomenon whereby a gene can have two or more different effects

- example of a gene which boosts testosterone in males – in youth, will produce a more competitive individual, but later in life might lead him to develop prostate cancer
- through this process, we have evolved genes that help early in life, but do damage later (helps to explains why eventually our organs wear out eventually)

The Puzzle of Suicide (accounting for suicide from an evolutionary perspective)
Denys de Catanzaro (1991, 1995): evolutionary psychologist who developed an evolutionary theory of suicide

- central argument is that suicide will most likely occur when an individual has a dramatically reduced ability to contribute to his/her own inclusive fitness
- indicators are expectations of future poor health, chronic infirmity, failure, poor mating prospects, and being a burden

Suicidal Ideation: whether a person has ever considered suicide, whether recently or the distant past, had made plans to do so, or had previously tried to commit suicide

- Catanzaro took a large sample which included the elderly, mental hospital patients, and a sample of inmates (who had committed antisocial crimes)
- The findings corroborated his theory

Note: in another study (Brown, Dahlen, Mills, Rick, & Biblarz, 1999), it was found that individuals with low reproductive potential and high burdensomeness to kin reported more suicidal ideation (and general depression/hopelessness)
Note: its also interesting to note that sex differences in suicide peak at two different points in life (for men its during 15-35 when there is the most intense mate competition – 6x more likely than women to commit suicide and 70+, men are still 7x more likely than women)
Homicide
Note: although there is still murder in human society, the rates are substantially lower than in the past (Pinker, 2011)

- among the Hiwi hunter-gatherers of Venezuela and Columbia, 35% of all adult deaths were caused by either homicide or warfare

Walker and Bailey (2013): compilation of 11 anthropological studies showed that in South America (traditional societies), the violent death rate was about 30% (4125 total)

- 70% were male

Chapter 4: Women's Long-Term Mating Strategies

Note: nowhere do people have an equal desire for all members of the opposite sex
Scientists have documented evolved mate preferences in many nonhuman species:

- the African village weaverbird is a good example (Collias & Collias, 1970)
- the male presents himself to the female by displaying his nest, hanging upside down, and flapping his wings – females, if interested, will stop and inspect the nest
- a male who is rejected often will destroy and rebuild his nest and keep trying

Note: in humans too, we find some kind of selection going on as well

Theoretical Background for the Evolution of Mate Preferences

Note: this sections reviews two theoretical issues – definition of the two types of mate preference that exist in both males and females, and the influence of parental investment on the nature of mating

Parental Investment and Sexual Selection

Note: mature reproductive cells are called gametes

- each gamete has the potential to fuse with another gamete of the opposite sex to form a zygote (fertilized gamete)
- males are the sex with the small gametes, and females with the large gametes

Note: males produce millions of sperm, which are replenished at a rate of 12 million an hour

- for women, they will ovulate about 400 times during their reproductive lifespan

Note: the great initial parental investment of females makes them a valuable reproductive resource (Trivers, 1972) (gestating, bearing, lactating, nurturing, protecting, and feeding)
Trivers' (1972) Theory of Parental Investment and Sexual Selection makes two predictions:

1) The sex that invests more in offspring will be more discriminating or selective about mating
2) The sex that invests less in offspring will be more competitive for sexual access to the high-investing sex

Note: with human beings, it is clear that women have greater obligatory parental investment

Mate Preferences as Evolved Psychological Mechanisms

Note: evolution has favoured women who prefer men possessing those attributes that confer benefits and who dislike men possessing those attributes that impose costs

- selecting a mate requires psychological mechanisms that make it possible to add up the relevant attributes and give each an appropriate weight to the final decision

The Content of Women's Mate Preferences

Preference for Economic Resources

Note: the evolution of the female preference for males offering resources may be the most ancient and pervasive basis for female choice in the animal kingdom

- the gray shrike, a bird in the Negev Desert in Israel (Yosef, 1991) will gather prey and amass a stash of it in preparation for breeding season
- the males with the largest caches will win out with the females over other males
- the males with no resources received no attention at all

Table 4.1 Adaptive Problems in Long-Term Mating and Hypothesized Solutions

Adaptive Problem	Evolved Mate Preference
Selecting a mate who is able to invest	- good financial prospects, social status, slightly older age, ambitious/industrious, size, strength, and athletic ability
Selecting a mate who is willing to invest	- dependent, stable, love and commitment cues, and positive interactions with children
Selecting a mate who is able to physically protect her and children	- size (height), bravery, and athletic ability
Selecting a mate who wills how good parenting skills	- dependent, emotional stability, kindness, and positive with children
Selecting a mate who is compatible	- similar values, age, and personality
Selecting a mate who is healthy	- physical attractiveness, symmetry, health, and masculinity

Note: women stand to benefit more from long-term single spouse relationships, both for her and offspring because men tend to care for their children and their future – temporary sexual partners generally do not confer resources, social status, or provisions to temporary relationships

Preference for Good Financial Prospects

Note: evidence from dozens of studies documents that modern US women indeed value economic resources in mates substantially more than men do

- in a study which was replicated many times, women valued resources in their partner twice higher than men did (Buss, Shackelford, Kirkpatrick, & Larson, 2001)

Gustavsson & Johnsson (2008): personal ads and dating website profiles confirm that women who are seeking marriage desire strong financial resources

- this is true no matter the age of a woman (both college-level and older)

Buss (1989a): study comprising over 10 000 people across 37 countries, multiple cultures and continents, and across every kind political system concluded that women (seemingly) everywhere value resources in their partner twice as higher than men do

Preference for High Social Status

Note: going back to the time of our ancestors, we can see that even they had some semblance of status hierarchies

- in language we find that we have special designations for people at the top or who have high status

Note: US women place much higher emphasis on professional degrees and education in general as it is generally linked to social status

Preference for Somewhat Older Men

Note: the age of men also provides an important role when assessing his resources

- for most men it takes many years to acquire resources, status, and respect of their peers
- in the US, culture, status and wealth tend to accumulate with increasing age

Note: in prior study (mentioned above), women preferred men who were older

- the average of all cultures surveyed showed the age preference to be 3.5 years in difference

Preference for Ambition and Industriousness

Note: those who work hard continuously are more likely to achieve higher levels of education, status, and higher annual salaries

- industrious and ambitious men secure a higher occupational status than lazy, unmotivated men (Jencks, 1979; Kyl-Heku & Buss, 1996; Lund, Tammes, Moestue, Buss, & Vollrath, 2007; Willerman, 1979)
- in the overwhelming majority of cultures, women value ambition and industry more than men do

Preference for Dependability and Stability

Note: among the 18 characteristics in the worldwide study on mate selection, the second and third most highly valued characteristics, after love, are a dependable character and emotional stability or maturity

- across all 37 cultures, women rated dependability a 2.68 (out of 3) on the indispensible measure
- for men it was very close (2.47)

Preference for Height and Athletic Prowess

Note: one benefit to women of long-term mating is the physical protection a man can offer

- a man's size, strength, physical prowess, and athletic ability are cues that signal solutions to the problem of protection

Buss & Schmitt (1993): women judge short men to be undesirable for either a short-term or a long-term mate

Dixon, Halliwell, East, Wignarajah, & Anderson (2003): study form Britain and Sri Lanka showed a strong female preference for males as muscular and lean

Preference for Good Health: Symmetry and Masculinity

Note: good health is a signal that someone may be around a long time to provide resources

- unhealthy mates might also transmit diseases to the woman and even the offspring
- both men and women judge good health as highly important

Note: an important physical marker of good health is the degree to which the face and body are symmetrical (Gangestad & Thornhill, 1997)

Shackelford & Larsen (1997): facially symmetrical individuals score higher on tests of physiological, psychological, and emotional health

- for women, men are more sexually attractive when they are facially symmetrical

Note: women prefer faces which are more masculine than average (Rhodes, 2006)

- women also find vocal masculinity to be attractive (Feinberg, DeBruine, Jones, Little, 2008)
- masculine features signal good health

Note: women living in low-health nations have especially strong preferences for facial masculinity (Pisanski & Feinberg, 2013)

- it might be that women prefer men with masculine faces due to their views of good health

Love and Commitment

Note: having resources and committing them are two different things

- resources can be directly observed but commitment cannot

Love as a recent phenomenon: Jankowiak (1995) suggested that love was the result of European romantics hundreds of years ago

- this has been proven empirically wrong from cross-cultural examinations

Buss, 1988a, 2006a; Wade, Auer, & Roth, 2009: acts of commitment top both women's and men's list as most central to love

- include giving up romantic relationships with others, talking of marriage, and expressing a desire to have children
- one essential component of love is fidelity and another one is the channeling of resources to the loved one
- among the worldwide study (of over 10 000) containing 18 characteristics, mutual attraction or love proved to be the most highly valued by both sexes

Preference for Willingness to Invest in Children

Note: an adaptive problem women face when selecting a long-term mate is gauging men's willingness to invest in children – important for two reasons:

1) Men sometimes seek sexual variety and so may channel their efforts toward other women (mating effort) rather than toward children (parental effort)
2) Men evaluate the likelihood that they are the actual genetic father of a child and tend to withhold investment from the child when they know or suspect that the child is no their own (La Cerra, 1994)

Psychologist Peggy La Cerra's research: showed women photos of a man standing alone, a man interacting with an 18-month old child happily, man ignoring a crying child, man and child shown with no expression, and a man vacuuming a rug

- study comprised 240 women
- women rated highest the man in the interaction condition as a marriage partner

Note: when the conditions were reversed for the sexes, men found the interaction condition equally attractive as the condition of the woman standing alone doing nothing

- these findings show a sex difference in partner selection

Preference for Similarity

Note: successful long-term mating requires sustained cooperative alliances over time

- similarity leads to emotional bonding, cooperation, communication, mating happiness, lower risk or breaking up, and possibly increased survival of children (Buss, 2003; Castro, Hattori, & Lopes, 2012)
- women and men alike show strong preference for mates who share their values, political orientations, worldviews, intellectual level, and to a lesser extent their personality characteristics

Homogamy: preference for similarity

- homogamy for physical appearance might be due to "sexual imprinting" on the opposite-sex parent during childhood
- daughters who received more emotional support from their fathers were more likely to choose similar-looking mates (Nojo, Tamura, & Ihara, 2012; Watkins, DeBruine, Smith, Jones, Vukovic, & Fraccaro, 2011)
- there is strong overall "mate value" with the "10's" mating with other "10's" and so on down the ladder (Buss, 2003)

Additional Mate Preferences: Kindness, Humour, Incest Avoidance, and Voice

Barclay, 2010; Philips, Barnard, Ferguson, & Reader (2008): women greatly value the traits of kindness, altruism, and generosity in a long-term mate

- women strongly prefer altruistic mates for the long-term

Miller (2007): kindness and altruistic proclivities signal the possession of abundant resources

Buss and Barnes, 1986; Miller, 2000: women strongly prefer mates who are humourous over the long-term

- humour may be an indicator of good genes which signals creativity and excellent functioning of complex cognitive skills

Note: incest avoidance is apt to produce "inbreeding depression", offspring with more health problems, and lower intelligence levels

- these incest avoidance mechanisms are stronger for women than men which is consistent with parental investment theory (Trivers)

Evans, Neave, & Wakelin, 2006; Feinberg et al., 2005b; Puts, 2005: women find a deep voice especially attractive in a potential mate

1) Deep voice signals maturity
2) Larger body size
3) Good genetic quality
4) Dominance
5) All of the above

Content Effects on Women's Mate Preference

Note: mate selection is not entirely the same for all women, but is relative to their situation

- this includes the magnitude of resources a woman already has prior to her search for a mate, the presence of other women, the temporal context of mating (committed versus causal mating), and the woman's mate value

Effects of Women's Personal Resources on Mate Preferences

The Structural Powerlessness Hypothesis (Buss & Barnes, 1986; Eagly & Wood, 1999):

- according to this view, because women are typically excluded from power and access to resources, which are largely controlled by men, women seek mates who have power, status, and earning capacity
- women always try to marry upward in socioeconomic status

Note: a study of the society of Bakweri (Cameroon, West Africa) exemplifies what can happen when women have real power (Ardener, Ardener, & Warmington, 1960)

- these women hold greater personal and economic power because they have more resources and are in scarcer supply than men
- women not only secure resources through plantation labours, but also from casual sex as a source of income
- there are about 236 men for every 100 women!
- Even with the added advantage, women still prefer men who have more than they do
- These women change husbands if they can find a man with more resources

Note: this also seems to be true in the US among high achieving women

- women's personal income was positively correlated with the income they wanted in an ideal mate (equal or greater)

Gil-Burmann, Pelaez, & Sanchez (2002): study of 1670 Spanish women also showed that women who greater resources than average were more likely to seek the same in a partner

Moore et al., 2006a, p. 201: internet study of 1851 women found that wealthier women prefer good financial prospects over physical attractiveness

The Mere Presence of Attractive Others: Mate Copying

Mate Copying: mate choices being influenced by the mating decisions of others (influence)

Dugatkin, 2000; Hill and Ryan, 2006: has been observed in other species like birds and fish

Dunn & Doria, 2010; Hill & Buss, 2008a: women judged a man to be more attractive when he was surrounded by other women

- women use social cues – if other women find a man attractive they are more apt to do the same

Effects of Temporal Context on Women's Mate Preferences

Note: women's preferences shift as a function of temporal context

Buss and Schmitt (1993): study carried out on women to rat 67 characteristics on their desirability in short-term and long-term mates

- study found that "ambitious" and "career-oriented" were rated higher for long-term seekers than in in short-term seekers
- "college graduate" and "creative" were also on that list

Joanna Scheib (1997): found that traits such as dependable, kind, and mature were the most valuable when looking for a husband

- in long-term marital context, women would rather character over looks

Effects of Women's Mate Value on Mate Preferences

Note: a woman's physical attractiveness and youth are two indicators of her mate value

- women who are young and more physically attractive have more mating options and can afford to be picky

Little, Penton-Voak, Burt, & Perrett (2002): found that women's self-rated attractiveness was significantly linked to attraction to masculine faces

- women who view themselves as physically attractive also show a more pronounced preference for symmetrical male faces (Feinberg et al., 2006)

Pawlowski & Dunbar, 1999a; Waynforth & Dunbar, 1995: women who are younger and more physically attractive specified a longer list of traits that they sought or required in a potential mate than did women lower in mate value (from studies in Canada, US, Croatia, and Poland on personal ads)

How Women's Mate Preferences Affect Actual Mating Behaviour

Note: in general, only the most desirable women are in a position to attract the most desirable men, and vice versa

- just because we have preferences, does not mean we will actually find them

Women's Responses to Men's Personal Ads

Powlowski & Koziel (2002): men with higher levels of education, older men, men who are taller, and men who offered more resources all received a larger number of responses from women than did men who lacked these qualities (taken from responses to personal ads)

Women's Marriages to Men High in Occupational Status

Pollet & Nettle (2007): study from 1910 of 21 973 showed that the higher a man's socioeconomic status, the greater the chances that he would actually marry

- poor men are far more likely to remain bachelors
- in Africa, men who owned lots of land could attract multiple wives

Women's Marriages to Men Who Are Older

Buss (1989a): women, on survey of 37 countries, preferred on average, 3.42 age difference

- in real data, the actual figure is 2.99 years (of 27 of those countries) – very close to preferences

Effects of Women's Preferences on Men's Behaviour

Note: if sexual selection is true, and women do look for mates with resources, then it should make sense that men would compete for resources in order to attract women

- the data confirms this prediction

Buss, 1988b; Schmitt & Buss, 1996: men are more likely than women to display resources, talk about professional success, flash money, drive expensive cars, and brag about their accomplishments

Roney (2003) hypothesized that mere exposure to attractive women would activate cognitive adaptations in men designed to embody the qualities that women want:

3 hypotheses:

1) men would increase importance of their financial success
2) experience feeling more ambitious
3) produce self-descriptions that correspond to what women want

- these hypotheses were confirmed in later studies

Chapter 5: Men's Long-Term Mating Strategies

Theoretical Background for the Evolution of Men's Mate Preferences

This sections covers the theoretical background for two topics – why men marry at all and the content of men's desires (how selection might have fashioned specific mate preferences in men)

Why Men Might Benefit from Commitment and Marriage

1) Rules set by women – many ancestral women required reliable signs of male commitment before consenting to sex (if men failed there might be no sex at all)
2) Increase in the quality of a woman a man would be able to attract – men who are willing to promise long-term resources, protection, and investment in children are appealing to women
3) Increase in the odds that the man would be the father of the children the woman bears – marriage entails repeated sexual access (expected exclusively)
4) Increase in the survival of the man's children – two parents can raise a child better than one
5) Fathers have useful information to pass on to children – even children who can survive without fathers' investment will do so without teaching and political alliances
6) There is an increased status for men who marry – in many cultures, men are not men unless they marry men
7) Men also gain coalitional allies through wife's family – they will add useful benefits

The Problem of Assessing a Woman's Fertility or Reproductive Value

Note: to be reproductively successful, ancestral men would've had to marry women with the capacity to bear children

- since we cant measure reproductive capability by observation only, we would need to use cues/observable qualities

Note: since we cannot also see when women are ovulating, the problem shifted to determining which women were likely to be capable of conceiving children

Reproductive Value: refers to number of children a person of a given age and sex is likely to have in the future

- the average expected future reproduction of a person of a given age and sex

Fertility: actual reproductive performance measured by the number of viable offspring produced

- in human populations, women in their mid-20's tend to produce the most viable children (this is where fertility peaks)

Note: two potential qualities to observe traits mentioned above come from looking at a woman's youth and her health

The Content of Men's Mate Preferences

Note: commonalities between men and women for potential mates include intelligence, kindness, understanding, and healthy (Buss, 2003) – value sharing as well

Preference for Youth

Note: youth is critical because a woman's reproductive value declines steadily as she moves past age 20

- in every country surveyed (out of 37), men preferred younger women

Kenrick & Keefe (1992): men in their 30's prefer women who are roughly five years younger and men in their 50's prefer women who are 10-20 years younger

Note: one evolutionary model predicts that what men desire is not youth per se but rather features of women that are associated with reproductive value or fertility

- this perspective leads to a counterintuitive prediction when it comes to the age preferences of adolescent males: teenage males should prefer women who are slightly older than they are because older women have higher fertility than women their own age or women who are younger

Kenrick et al (1996): testing prediction above, surveyed 103 teenage males and 106 females ranging in age from 12-19 – they were each asked about the type of person they would find attractive (with age included)

- results yielded three variables: ideal age, minimum age, and maximum age
- the teenage males more often than not selected older females to go out with
- this was true even though women have little interest in dating younger men

Evolutionary psychological explanation: men desire young women because over evolutionary time, youth has been consistently linked to fertility

Why much older men (50+) look for women in their thirties (and not younger): older men have a much harder time competing for women most derisible (20's) and so they might settle on a mid-30's preference

- large age discrepancies may create less compatibility
- mate homicide rate increases as age gap between partners widens (Daly & Wilson, 1988)

Evolved Standards of Physical Beauty

Note: our standards for female beauty embody cues to women's fertility or reproductive value

- beauty is in the adaptations of the beholder (Symons, 1995)

Our ancestors had access to two types of observable evidence of a woman's reproductive value -

1) **Features of Physical Appearance**: (full lips, clear skin, smooth skin, clear eyes, lustrious hair, good muscle tone, and body fat distribution)
2) **Features of Behaviour**: bouncy youthful gait, animated facial expression, and a high energy level

Note: freedom from disease is universally attractive

Gangestad & Scheyd (2005): femininity is also another cue to attractiveness

- this includes cues such as full lips, relatively large eyes, thinner jaws, small chin, high cheekbones, and a relatively short distance between mouth and jaw
- facial femininity is linked to higher levels of estrogen – the ovarian hormone that correlates with fertility (Schaefer et al., 2006)
- meta-analyses reveal that facial femininity is one of the most powerful cues to women's attractiveness (Rhodes, 2006)

Gangestad & Scheyd (2005); Rhodes (2006): facial symmetry is also another correlate of female attractiveness

Female average faces are more attractive:

1) people may show a generalized cognitive preference for things that are easily processed
2) averageness may be a marker of genetic or phenotypic quality

- deviations from averageness may be cues to environmental insults such as disease or genetic mutations

Note: leg length is also attractive to men – on average about 5% longer than usual (Bertamini & Bennett, 2009; Swami, Einon, & Furnham, 2006)

- study of 9998 Chinese women revealed that those with longer legs had more offspring (Fielding, Scholling, Adab, Cheng, & Lao, 2008)
- this might be the reason women wear high heels

Standards of Beauty Emerge Early in Life

Langlois, Roggman, & Reiser-Danner (1990): infants are able to find certain faces attractive and certain other unattractive – suggesting that we do not need to be taught these things

- it was previously thought that attraction was dictated by culture but that seems to be questionable with new findings

Standards of Beauty Are Consistent across Cultures

Cunningham, Roberts, Wu, Barbee, & Druen (1995): psychologist Michael Cunningham asked people of different races to judge the facial attractiveness of Asian, Hispanic, Black, and White women in photographs – turns out there was a consensus on what is desirable

Note: degree of exposure to Western Media did not affect the judgments of attractiveness

Beauty and the Brain

Note: when men looked at attractive female faces, the nucleus accumbens area of the brain became especially activated (this is a known reward centre of the brain)

- this reward centre fails to become activated when men look at average females (Aharon, Etcoff, Ariely, Chabris, O'Connor, & Breiter, 2001)

Body Fat, Waist-to-Hip Ratio, and Body Mass Index

Note: standards for female bodily attractiveness vary somewhat from culture to culture

- in cultures where food is scarce, plumpness is a signal of wealth, health, and adequate nutrition
- in the US, women think that men prefer someone super-skinny, but in actuality, it is more of an average female body

Swami, Frederick, Aavik Alcalay, & Allik (2010): study of 7434 individuals from 26 cultures in 10 world regions showed that men consistently prefer female bodies that are heavier in weight than women's perceptions of what prefer

Waist-to-Hip Ratio: before puberty, the WHR for both men and women is about the same

- ratio is .85 to .95 but after puberty, women's hip fat deposits cause their WHRs to become significantly lower than men's
- women with higher ratios have a harder time becoming pregnant
- .67 and .80 would be the ideal for a healthy woman
- the overwhelming consensus tends to be towards a low WHR for women

Note: in foraging societies, WHR tends to be higher than in western societies

- what seems to be true across populations is that men tend to prefer women with a WHR lower than their average (relative to their location)

Sex Differences in the Importance of Physical Appearance

Note: men place a premium on physical appearance and attractiveness in their mate preferences

- it seems to be that men care much more about looks in their partner than women (Buss, Shackelford, Kirkpatrick, & Larsen, 2001)

Note: the importance of attractiveness has increased dramatically in the US in the 20th century (Buss et al., 2001)

Do Men Have a Preference for Ovulating Women?

Ovulation: when the egg is released into the woman's uterus to be potentially fertilized by a sperm

- most nonhuman primates exhibit attraction to ovulating females (Puts et al., 2013)

Symons (1995): there are several ways men might be able to tell when women are ovulating (although not demonstrable through science)

- during ovulation, women's skin becomes infused with blood
- women's skin lightens
- during ovulation, women's levels of circulating estrogen increase (which produces a corresponding decrease in women's WHR)
- ovulating women are touched more by men in (singles) bars
- men find the body odor of a woman to be more attractive and pleasant
- men who smell t-shirts worn by ovulating women experience a rise in testosterone levels (compared to no effect vs. non-ovulating women) (Miller & Maner, 2010)
- a woman's voice will also rise in pitch
- women's faces are even judged to be more attractive during ovulation than not
- men perceive their romantic partners to be more attractive during this phase
- women report feeling more attractive themselves
- ovulating women received higher tips (in strip clubs) than non-ovulating women (Miller, Tybur, & Jordan, 2007)

Solutions to the Problem of Paternity Uncertainty

Note: concealed ovulation dramatically changed the ground rules of human mating

- this might be one reason why marriage might've benefited man in the early days
- men who married would benefit reproductively relative to other men by substantially increasing their certainty of paternity

Note: our forebears could have solved this uniquely male adaptive problem by seeking qualities in a potential mate that might increase the odds of securing their paternity

1) the desire for premarital chastity (virginity)
2) the quest for postmarital sexual fidelity

Note: the trend for men to value chastity more than women holds up to some degree worldwide

- people in China, India, Indonesia, Iran, Taiwan, and the Palestinian Arab areas of Israel attach a high value to chastity in a potential mate
- at the opposite end are Sweden, Norway, Finland, the Netherlands, Germany, and France who believe that virginity is largely irrelevant (Buss, 1989a)

Note: in countries like Sweden where there is a big social safety system, things that a husband might've provided in the past are no longer needed as they are provided by the government – the freer women are economically may play a role in virginity as well

Context Effects On Men's Mating Behaviour

Note: desires rarely show a 1:1 correlation with actuality

- men who are high in mate value though, will generally get what they want

Men in Positions of Power

Note: all throughout history we have the example of men who have status, resources, and wealth, will invariably choose young and beautiful women

Grammer (1992): as men's incomes go up, they seek younger partners

Burriss, Welling, & Puts (2011): men who are high in mate value express a stronger preference for facially feminine women (compared with men who are less attractive)

Contrast Effects from Viewing Attractive Models

Note: there is something to the notion that the ads we are shown are things we already like and not "taught" or "tricked" to like them – dispels the notion of arbitrary beauty standards

- it does have a negative effect when we compare ad images to our current partners
- viewing such images may cause men to become dissatisfied with, and less committed to, their mates

Testosterone and Men's Mating Strategies

Mating Effort: the time and energy devoted to pursuing mates and besting same-sex competitors (Ellison, 2001)

- higher testosterone levels facilitate male pursuit of females and testosterone levels increase after interacting with an attractive woman (Roney, Mahler, & Maestripieri, 2003)

Note: one study found that testosterone levels decreased after a man succeeds in attracting a long-term mate (Burnham et al., 2003; Gray et al., 2004)

- one study found that men in committed relationships had 21% lower t levels vs. single

Mazur & Michalek (1998): testosterone levels drop after forming a committed relationship

The Necessities and Luxuries of Mate Preferences

Budget Allocation Method (Norman Li et al.): refers to distinguishing between which mate qualities are "necessities" and which are "luxuries"

What do people prefer when they have a low versus a high budget of "mating dollars"?

- when budget was low, the men in he study chose to allocate most resources to physical attractiveness
- for women, they chose to prioritize resources (from men)
- when the budget increased, most groups chose desirable personality characteristics

Bottom Line: for men some minimum level of attractiveness; for women, some minimum level of resources and status

Effect of Men's Preferences on Actual Mating Behaviour

- examining the impact of men's long-term mate preferences on behaviour through personal ads, responses, actual marriages, vocal patterns, size of tips in restaurants, engagement ring prices, and patterns of intrasexual competition will show how preferences work in the real world

Men's Responses to Women's Personal Ads

Baize & Schroeder (1995): study examining responses to ads on both the Midwest and East coast (mean age of respondents was 37)

- men on average, received less responses than women did
- young women received more responses than older women did
- results confirm that men actually do seek out the things they say they want

Marital Decisions and Reproductive Outcomes

- age plays a factor in marriage partner choice (3 years younger on average for an American male's first marriage – as men's age increases, the younger the woman is)
- 5 years is the difference for second marriage and 8 for third (Guttentag & Secord, 1983)

Kenrick & Keefe (1992): average age difference between brides and grooms increases, as the man gets older

- men in their 20's tended to marry women who were only 1-2 years younger
- men in their 30's tended to marry women 3-4 years younger
- men in their 40's married women 13-14 years younger

Note: averaged across all countries (for which there is available data), grooms are 3 years older than their brides

Fieder & Huber (2007): men who marry young women also tend to have greater reproductive output (taken from sample of 10 000 post-reproductive Swedes)

- offspring peaked when wives were about 6 years younger than their husbands

Hill & Hurtado (1996): before the advent of birth control (and implementation), physically attractive women had more children (than non-physically attractive people)

- Jokela (2009) found similar results in examinations of high school yearbook photos and predicting amount of children based on physical attractiveness alone

Effect of Men's Preferences on Attention, Vocalization, Tips, and Engagement Rings

Maner, Gailliot, & DeWall (2007): study where they placed both men and women in front of a computer screen with someone attractive (of the opposite sex) on it

- when they were instructed to look elsewhere, men found it harder to divert their attention (men looking for short-term relationships had the hardest time looking away)

Hughes, Farley, & Rhodes (2010): men who believed they were speaking to an attractive woman over the phone intentionally lowered their voice tone

- when it was an unattractive women, they did not alter their voices

Lynn (2009): study of 374 restaurant waitresses showed that, as a proportion of the total bill amount, women who were younger, had larger breasts, blond hair, and a smaller body size, received more tips than women without these features

Cronk & Dunham (2007): men who were proposing to younger women, spent more on engagement rings (reflect standards of female mate quality)

Effect of Men's Mate Preferences on Women's Competition Tactics

Buss (1994b): the preferences of one sex are predicted to influence the forms of competition that occur in the opposite sex

- if this is true then it would suggest that women would compete with one another to fulfill what men want

3 ways to do this:

1) tactics that women use to attract men
- appearance-enhancement is high on this list
- this works much better for women than it does for men
- in study of both undergraduate men and women, females were more likely to use tactics involving deception in their physical appearances

2) tactics that women use to derogate competitors
- women criticize each other's physical appearance more often than men do of other men
- women in the high-estrogen phase of their cycle are more likely to derogate a rival's physical appearance (Fisher, 2004)

3) self-descriptions that women include in their personal ads when seeking men

Lipstick Effect: faced with hard times economically, women will spend more money on beauty products (Hill, Rodeheffer, Griskevicius, Durante, & White, 2012)

Sexual Competition Hypothesis: according to this idea, eating disorders such as anorexia and bulimia are thought to be maladaptive by-products of a mate competition strategy

Faer, Hendriks, Abed & Figueredo (2005) argue that:

1) the importance men place on physical appearance in mates
2) media images depicting thinness in models
3) the high levels of health in the United States

- these all cause extremes of intrasexual competition

Chapter 6: Short-Term Sexual Strategies

Note: attractiveness matter to both men and women, but more so for men, and this is especially pronounced when seeking a short-term sexual partner

Theories of Men's Short-Term Mating

- examining the costs/benefits of short-term mating for men
- specific adaptive problems that men must solve if they are to successfully pursue short-term mating

Adaptive Benefits for Men of Short-Term Mating

Note: men, more so than women are adapted to have a greater desire for casual sex

- this is partly because men do not get pregnant and have to worry about parental investment as much as women do
- historically, men have been able to achieve a higher increase in reproductive success mainly through increased sexual partners, rather than increases in the number of children by a single partner

Potential Costs of Short-Term Mating for Men

1) Contracting sexually transmitted diseases
2) Acquiring the status of "womanizer" which might inhibit finding a long-term partner later on
3) Lowering chances that their children would survive (since they wouldn't be around to help)
4) Suffering violence at the hands of that woman's partner (if she were already committed)
5) Suffering violence from female's family members due to pursuing sex only
6) Risking affairs of retaliation (if the men are committed themselves) and destroying bonds

Note: selection would favour psychological mechanisms in men to pursue short-term mating when the costs were low or could be avoided or minimalized

Adaptive Problems Men Must Solve When Pursuing Short-Term Mating

Note: some of these problems include: partner number, sexual accessibility, identifying which women were fertile, and avoiding commitment

1) Problem of Partner Variety: relaxation of standards for men might've been necessary as well as finding the right time after meeting someone to pursue sex
2) Problem of Sexual Accessibility: it would be advantageous for men to pursue women who were sexually available – this would include strategies aimed at targeting those who might be ready for sex and thus worth the pursuit
3) Problem of Identifying Which Women Are Fertile: short-term pursuits would involve a strategic selection process – finding ways to tell the most fertile woman
4) Problem of Avoiding Commitment: avoiding women who demand commitment or investment before sex

Evidence for an Evolved Short-Term Mating Psychology

Note: this evidence comes from the fact that not all women have been monogamous at all times throughout history

- casual sex involves two consenting adults

Physiological Evidence for Short-Term Mating

Note: existing adaptations in our psychology, anatomy, physiology, and behaviour reflect the scoring of prior selection pressures

- our sexual anatomy and physiology reveal ancient short-term sexual strategies

Testicle Size: large testicles evolved as a consequence of intense sperm competition

- sperm competition exerts a selection pressure on males to produce large ejaculates containing numerous sperm
- men's testes size, relative to body weight is greater than that of the gorilla and orangutan
- human male testes account for .079 % of body weight (and lower for other apes)
- this is 60% more than for orangutans and more than 4x for gorillas
- this ties in to casual sex because if more than one man had sex with a woman in the same time period, the sperm would compete for egg fertilization

Note: the chimpanzee boasts testicle size relative to bodyweight at .269 %

Variations in Sperm Insemination

Note: another clue to the evolutionary existence of casual mating comes from variations in sperm production and insemination (Baker & Bellis, 1995)

- one study where couples had sex with variations between encounters, the more the duration from one encounter to the next, the more sperm was produced
- it was almost double the amount of sperm from 100% of the time together vs. 5%!
- Numbers were 389 million sperm vs. 712 million

Psychological Evidence for Short-Term Mating

Desire for a Variety of Sex Partners

Note: lust is a strong motivational force for men – it is what drives men to pursue sex

Buss & Schmitt, 1993; Kennair, Schmitt, Fjeldavli, & Harlem, 2009; Schmitt et al., 2003:

- study examining how many sexual partners people desire (using US college students)
- in every culture and country surveyed, men, more often than women had a desire for more sexual partners

Time Elapsed before Seeking Intercourse

Buss & Schmitt (1993): study asking college students showed that it would take both 5 years for men and women to give a definitive yes to the question of how long it would take for them to have sex

- when the time scale was lowered to weeks and months, men reported a higher likelihood of wanting sex

Surbey & Conohan (2000): men reported a greater anticipated willingness to engage in sexual intercourse across all conditions compared with women

- in order for men to achieve their goals, they must sometimes lower their standards

The Lowering of Standards in Short-Term Mating

Note: high standards for attributes such as age, intelligence, personality, and marital status function to exclude the majority of potential mates from consideration

Buss & Schmitt (1993): college students were asked to provide information about their minimum and maximum acceptable ages of a partner for temporary and permanent sexual relationships

- college men have a wider window (about 4 years) than women do (16-28)

- for women it was 18-26

Note: this age range is only restricted to short-term mating partners

Mate Preferences

Note: for short-term mates, men avoid conservative types, prudish, and those with a low sex drive

- there is also the belief by men that women who have had more sexual partners have more experience and are therefore more promiscuous

Currie & Little (2009): men looking for short-term mating showed more selectivity and attention towards a woman's body and for long-term, there was more preference and interest in the face

- this is something not found in women

Minimizing Commitment after Sex: The Attraction-Reduction Effect and Avoiding Entangling Commitments

Haselton & Buss (2001): men with more sex partners (indicating a short-term mating strategy) experienced a sharp decline in how sexually attractive they found their partner immediately following intercourse

- this behaviour motivates a "hasty post-copulatory departure to minimize investment in any one woman" (p. 171-172)

Note: men and women both have tactics to avoid sexual encounters from escalating to a romantic relationship

- for men it was alaways about keeping the conversation sexual, and keep up as many other sexual partners as possible
- for women, they avoided displays of affection, bringing the man home, and/or not giving their phone number away

The Closing Time Phenomenon

Note: this refers to a bar-setting where it might be thought that as the bar is closing people might be more receptive to one another (Gladue & Delaney, 1990)

- in one study, 137 men and 80 women were asked at different times throughout the night to rate the members of the opposite sex on an attraction scale from 1-10
- the times were 9:00, 10:30, and 12:00 am
- as the time approached closing, men were viewing women as increasingly attractive
- at 9 pm, the average was 5.5, but at midnight it had increased to over 6.5
- for women, the effect was less pronounced, but still there; from 5.0 at 9pm to a 5.5 by midnight

Note: alcohol consumption did not seem to play a role in the ratings

Sex Differences in Sexual Fantasies and Sex Drive

Ellis and Symons (1990): men have about twice as many sexual fantasies as women (from samples in Japan, Great Britain, and the US

- men's sexual fantasies, more often than women, include strangers, multiple partners, or anonymous partners
- on a question of whether they would engage in a threesome, men responded 78% yes vs. 32% for women (Hughes, Harrison, & Gallup, 2004)

Note: for sex, emotions and personality are crucial for women

Cues to Sexual Exploitability

Note: Cari Goetz and her colleagues hypothesized that men oriented toward short-term mating should be especially sensitive to detecting and finding sexually attractive women who give off

cues to being vulnerable to being sexually seduced or deceived (Goetz, Easton, Lweis, & Buss, 2012)

- some of these clues included immaturity, intoxication, reckless, flirtatious, young, sleepy, skimpy clothing, and showing an open body posture
- these were cues used to select for short-term mating, but were found unattractive for long-term mating

Sexual Regret

Note: regret can be used a marker for future performance – avoiding future mistakes

- sexual regret operates as either a missed encounter, or sexual actions taken
- research shows that men, more than women are regretful of missed sexual encounters (Galperin et al., 2013; Roese et al., 2006)
- women in contrast, were more likely to regret sexual acts themselves vs. missed opportunities for sex

Behavioural Evidence of Short-Term Mating

Note: men across all cultures pursue short-term mating more than women do

Extramarital Affairs

Note: men in most cultures pursue extramarital sex more often than their wives

- in one study, 50% of men had extramarital affairs vs. 26% for women (Kinsey, Pomeroy, & Martin, 1948, 1953)

Prostitution

Note: prostitution occurs in every society that has been thoroughly studied

- in all cultures, men are overwhelmingly the consumers

Hook-Up Behaviour and Friends with Benefits

Hooking-up: referring to spontaneous sexual interactions without the confines of a traditional relationship (no promise of future commitment)

Friends with Benefits blend of traditional friendship with benefits of sexual intercourse

Note: men more than women tend to initiate these types of interactions

Campbell (2008): women more often report casual sex interactions as regretful and feelings of being "used" come up as well as depression

- women in general tend to see these relationships as a stepping stone to something else

Women's Short-Term Mating

Evidence for Women's Short-Term Mating

Note: if ancestral women never engaged in short-term mating, men could not have evolved a powerful desire for sexual variety (Smith, 1984)

Orgasm in Women

Note: it was once thought that orgasm in women functioned to make her sleepy and keep her reclined, thereby decreasing the likelihood that sperm would flow out

- this is incorrect because there is no link between the timing of flowback and the number of sperm retained (Baker & Bellis, 1995)
- women discharge about 35% of sperm within 30 minutes of insemination
- if the woman has an orgasm, she will retain about 70%
- lack of orgasm, then, would lead to less sperm being retained

Buss (2003): women who are having an affair were more likely to have an orgasm with their other partner than with their husbands

Behavioural Evidence

Note: women in all but the most restrictive societies sometimes engage in extramarital sexual unions (in the US it is anywhere from 20-50% of all married women)

- that comes from Athanasiou, Shaver, & Tavris (1970)
- some college studies reveal that women will sometimes have sex with their male friends as well as initiate hook-ups

Hypotheses about the Adaptive Benefits to Women of Short-Term Mating

Hypothesized Benefits to Women: Short-Term Mating

1) Resource: women could sort of trade sex for goods and/or services
- also, if a woman were able to obscure paternity, she would likely have more than one male providing her resources (to care for offspring they thought was theirs)
- protection; men will typically provide this to their mates and children
- status; a woman engaging in even casual sex with a high-status male might be elevated socially herself

2) Genetic Benefit: enhanced fertility might come useful when a woman's main partner cannot get her pregnant
- multiple mates could also provide superior genes for her children (man may not stick around due to high desirability but can offer a good future genetically for her children)
- "sexy son hypothesis": a woman will have sex and children will an attractive man in order to secure the best possible future for her son
- different genes can be added to the mix which might be advantageous for offspring

3) Mate Switching: can be useful when the regular provider or partner no longer provides resources for the woman and her children
- women sometimes switch mates simply for the reason that they can do better; finding a man who has more to offer

4) Short-Term for Long-Term Goal: this is where things start off as casual in order to test the waters for future planning – women offer sex short term with the idea of possible commitment later on

5) Mate Manipulation: this is where women manipulate men to get what they want; can be done through cheating or through signals that show her current partner than other men are interested in her (and that he should "step it up")

Costs to Women of Short-Term Mating

Note: women risk impairing their desirability as a long-term mate if they develop reputations for promiscuousness because men prize fidelity in potential wives

- without a committed long-term mate, women are more at risk for physical and sexual abuse

Note: infanticide rates among women are higher when they are single/unmarried

Empirical Tests of Hypothesized Benefits to Women

Note: women place a premium on the man's physical attractiveness when there is no commitment – might be due to the sexy son hypothesis, where the woman knows the man will not be around, but at least, if she gets pregnant, her son might not be at a total disadvantage

Note: women who desire men for short-term mating look for an extravagant lifestyle, spends lots of money on them, and who give gifts early into the "relationship"

Glass and Wright (1992): study found that the number one reason women cheat was falling in love/emotional intimacy with another person (over fun and career advancement)

- 77% viewed love as a compelling reason to cheat

Hypotheses Supported: mate Switching, Mate Expulsion, and Resources

Note: women found that cheating allowed them more easily to leave their current partner
Greiling and Buss (2000): the context most allowing of an affair by a woman was when the partner was having an affair, a partner unwilling to have sex, and an abusive partner

- a partner who could not hold down a job was also on the list of reasons

Hypothesis That is Promising: Short-Term for Long-Term Goals

- women use short-term mating as a way to evaluate a man as a long-term mate
- for this reason, women do not prefer to meet men who are already in relationships even if it is just for short-term mating

Note: for men, it does not matter if the woman is in a relationship or not

- promiscuity is also not desired by women even for short-term mating

Li & Kenrick (2006): in study asking women why they chose their short-term sex partner, after "I was physically attracted to that person", was that they thought it might lead to something long-term later
Another Promising Hypothesis: Good Genes
Note: a highly desirable man is often willing to have a brief encounter with a less desirable woman, as long as she does not burden him with commitments
Gangestad & Thornhill (1997): looking at faces, men with symmetrical faces were likely to have sexual relations with women who were already in relationships

- women appear to have a preference for these types of men when it comes to sexual encounters

Kruger, Fisher, & Jobling (2003): for casual sex, women prefer men who are daring, confident, strong, humourous, and successful with attractive women

- masculinity is also desired (more so for short-term than long-term)

Women's preferences at ovulation (for mates):

1) increased attracted to men with symmetrical faces
2) increased preference for facial masculinity
3) increased preference for men who are tall
4) increased preference for men who display creative intelligence
5) increased preference for men who are physically attractive and muscular
6) increased preference for men who display social presence and direct intrasexual competitiveness

Taking Stock of the Evolved Functions of Women's Short-Term Mating
Note: there is no requirement that women's short-term mating has only one function

- it would always depend on the context of that woman's individual goals

Note: from a female's perspective, female sexuality can be seen as something that can be exchanged or converted (into resources)
Context Effects on Short-Term Mating
Individual Differences in Short-Term Mating
Note: the **SOI** (***Sociosexuality Orientation Inventory***) measures and assesses individual differences in whether people pursue short-term mating strategies

- women who pursue short-term mating have substantially different perceptions of the benefits compared to women who tend not to pursue short-term mating
- women looking for short-term mating, view as beneficial a partner willing to experiment, experiencing orgasms, and high sexual attraction leading to sexual fulfillment

Note: things like getting fired, decrease in salary, and terminal illness are all things which increase the odds of short-term mating by certain women (looking for it)

Can a Short-Term Sexual Strategy be Perceived by Others?

Stillman & Maner (2009): study involving conversations with 24 different women with the same man

- interactions were recorded and shown to raters to decide
- things like eyebrow flushes, glances, smiling, laughing, closeness to the man, and dress were al cues to signal for short-term mating strategy

Campbell et al. (2009): study found that sexually unrestricted women were tended to have a more masculine facial appearance

Other Contexts Likely to Affect Short-Term Mating

Note: individuals may shift their proclivities at different times and in different contexts

Father Absence and Stepfather Presence

Note: the absence of a father while growing up has been reliably linked with the pursuit of a short-term mating strategy

- other research has found that those growing up without fathers reach puberty sooner and have sex sooner (Surbey, 1998b)
- poor or harsh parenting also has the effect of children reaching puberty sooner and having a large number of sexual partners (Tither & Ellis, 2008)

Note: childhood sexual abuse also leads to promiscuity and early puberty (Vigil, Geary, & Byrd-Craven, 2005)

Note: poor attachment to one's parents was also linked to sexual promiscuity for both sexes (Walsh, 1995, 1999)

Transitions across Life

Note: in some cultures casual sex is encouraged in order for that person to find out what they like and don't like and see their value on the mating market (Gregor, 1985)

Sex Ratio

Note: with increasing age, men marry more when they're older than do women

Note: men will shift to brief encounters if the numbers support it (many women are available)

- when there is a surplus of men, however, both men and women will adopt a long-term strategy

Mate Value, Masculinity, Body Type, and Personality

Mate Value: one's overall desirability to members of the opposite sex

Note: the self-perceived mating success scale assesses mate value

- scores collected are correlated to sexual history
- in a study examining this, the results varied significantly between sexes
- high-mate value men had sex earlier in life and scored towards the high end of the SOI and men high in social dominance tend to be more unfaithful
- men who compete in sports are also more likely to have more sex partners
- men who have attractive faces and masculine bodies have more short-term sex partners

Note: for women there appears to be no direct correlation between self-perceptions and SOI results in terms of short-term mate seeking

- it is only perceived that attractive women are less trustworthy

Note: traits like extraversion, low levels of agreeableness, and low levels of conscientiousness predicted an interest in short-term mating

Dark Triad of Personality: include traits like narcissism, psychopathy, and Machiavellianism (these also predict short-term mating – more so for men)

Chapter 11: Conflict Between the Sexes

Sexual Conflict: conflict between the evolutionary interests of individuals of the two sexes
- evolutionary interests are genetic interests

Strategic Interference Theory

Note: members of the same sex are often in competition with each other for precisely the same resources: members of the opposite sex and the resources needed to attract them

Note: many sex differences between opposite sex members (men and women) can be traced back to evolved differences in sexual strategies
- both sexes have short-term and long-term mating strategies

Note: one of the most important differences in strategies, occurs in the short-term
- it is more common for men to desire various sexual partners than for women
- in short-term mating for women, they have evolved to be more choosy whereas, as we saw in previous chapters, men will lessen standards for short-term mating

Note: above describes what is called ***strategic interference*** – when a person employs a particular strategy to achieve a goal and another person blocks the successful enactment of that strategy

Note: the theory of strategic interference applies not just to conflicts about the timing of sex
- it can range from sex to the workplace and even into marriage
- sexual harassment is a form of sexual interference in the workplace
- deception is another form when it comes to dating
- sexual infidelity within a marriage also is a form of sexual interference

Note: the second component of strategic interference theory postulates that the "negative" emotions such as anger, distress, and upset are psychological solutions that have evolved in part to solve the adaptive problems posed by strategic interference
- these help us to focus our attention on problematic events

Summary of Strategic Interference: it has two postulates –
1) Strategic Interference is predicted to occur whenever members of one sex violate the desires of members of the opposite sex
2) Negative Emotions such as anger, rage, and jealousy represent evolved solutions to problems of strategic interference

Note: conflict itself is not adaptive
- it is a undesirable by-product of the fact that the sexual strategies of men and women differ in profound ways

Note: a unification or confluence of interest cannot occur between all members of the same sex because we all (of the same sex) compete for the opposite sex

Conflict about the Occurrence and Timing of Sex

Note: men will sometimes seek sexual access with a minimum of investment

- men usually will preserve their resources for long-term mates
- women usually like to see some initial investment before sex

Conflict over Sexual Access

Inferences about Sexual Intent

Note: men sometimes make mistakes in judging a woman's sexual interest

Abbey (1982); Lindgren, George, & Shoda (2007): 98 male /102 female college students

- all viewed 10-minute tape of female student conversing with her professor over an assignment extension in his office
- women who watched the tape said that the female was only being nice/friendly
- the men did perceive friendliness, but also inferred some seductiveness on her part and sexual intention

Perilloux, Easton, & Buss (2012): speed-dating study; again, men perceived sexual intent from women (sexual misperception bias)

Note: in one cross-cultural study, Brazil and the US were studied (again with students) and the results showed that Brazilian men were more likely than American men to have bias

Note: when in doubt, men infer sexual interest – Men act on their inferences, occasionally opening up sexual opportunities

- if over evolutionary history even a tiny fraction of these inferences led to sex, men would have evolved lower thresholds for inferring women's sexual interest

Buss (2003): study of 200 university students found that women sometimes flirted and smiled at men as a way of gaining preferential treatment (even though no interest existed)

Deceptions about Commitment

Note: it has been found that men report intentionally deceiving women about emotional commitment

Buss (1994b): study of 112 college men found that 71% admitted to deception of emotional commitment

Note: because the deceived can suffer severe losses, there must have been tremendous selection pressure for the evolution of psychological vigilance to detect cues to deception and to prevent its occurrence

Note: when a woman seeks a committed relationship, the first line of defense is imposing courtship costs by requiring extended time, energy, and commitment before consenting to sex

- more time permits more assessment for women – greater opportunity for evaluation

Cognitive Biases in Sexual Mind Reading

Note: in reading the minds of others, there are two ways to go wrong –

1) infer a psychological state that is not there (e.g. assuming sexual interest in error)
2) fail to infer a psychological state that is there (e.g. unnoticed romantic attraction)

Error Management Theory: according to EMT, asymmetries in the cost-benefit consequences of mind-reading inferences, if they recur over evolutionary time, create selection pressures that produce predictable cognitive biases

- theory predicts that evolved mind-reading mechanisms will be biased to produce more of one type of inferential error than another

Note: Two mind-reading biases in mating –

1) **Sexual Over-Perception Bias** (men) – this leads men to feel more confident than otherwise might be the case – also minimizes lost opportunities
2) **Commitment Skepticism Bias** (women) – women might not perceive men as committed even when they do things to demonstrate they are (e.g. giving flowers)

Cyrus et al (2011): study conducted in Germany demonstrated that this *Commitment Skepticism Bias* existed in young women but not older women

- Older women might not be so picky because in their old age, a man might be able to help them

Sexual Withholding

Note: both sexes are bothered by this, but men more so than women

- women will withhold sex from certain men and selectively allocate it to others
- by withholding sex, women can also increase its value (scarcity of needed resource)
- another possible function of sexual withholding is to encourage men to evaluate her as a permanent (rather than a temporary) partner

Sexual Aggression, Sexual Exploitation, and Women's Co-evolved Defenses

Note: this section will examine sexual aggression by men and women's evolved defenses designed to prevent it

Sexual Harassment

Note: sexual harassment is typically motivated by the possibility that a come-on might lead to a short-term sexual encounter (although power-seeking and relationship seeking could also be motives)

- the view that sexual harassment is a product of the evolved sexual strategies of men and women is supported by the profiles of typical victims, including elements such as gender, age, marital status, and physical attractiveness

Kennair & Bendixen (2012): study of 1199 Norwegian high school students found that men who most often pursue a short-term mating strategy are more likely to sexually harass

Note: although any woman may be the target of sexual harassment, the victims are disproportionately concentrated among young, physically attractive, and single women

- women over 45 are less likely to receive sexual harassment (Studd & Gattiker, 1991)
- one study found that 72% of women 20-35 were the victims of sexual harassment

Kennair & Bendixen (2012): women who tend to pursue a short-term mating strategy are more likely to become victims of sexual harassment

Note: degree of distress women experience after sexual advances depends in part on the status of the harasser

- one study of 109 college women showed that these women were much more likely to reject a construction worker for a date than premedical students
- shows that socioeconomic status plays a role in woman's choices even if they are not interested at first
- women find acts of harassment most harassing from a low-status man

Sexual Exploitation and Cues to Sexual Exploitability

Note: men who pursue a strategy of sexual exploitation have adaptations to identify observable cues in women that indicate ease of sexual exploitation and to find those cues sexually attractive

- cues to sexual exploitability may include:
- psychological cues such as shyness, low cognitive ability, permissive sexual attitudes
- incapacitation cues such as intoxication and fatigue
- physical cues such as small body size and shorter walking gait

Note: study by Goetz et al (2012) found that women being intoxicated, reckless, sleepy, open body posture, and wearing revealing clothing were attractive to men seeking a short-term mate but not a long-term mate

Note: men's attraction to women displaying exploitability cues presumably motivates them to employ exploitative strategies toward women who are sexually accessible
Buss (2003): women are sometimes aware of what men look for in the short term and so may display these traits on purpose to get what they want – and even can use a "bait and switch" tactic to lure men into long-term relationships by-way of short-term mating
Sexual Aggressiveness
Note: this is one strategy men use to minimize their investment for sexual access
Buss (1989b): in this study, women rated sexual aggressiveness as worse than any other thing a man could present to a woman (a 6.5/7 on scale used)

- when men were asked, they rated female sexual aggression a 3.02/7
- for men, verbal abuse and mate infidelity were rated 5.5 – 6.0

Do Men Have Evolved Rape Adaptations?
Rape: use of force or the threat of force to obtain sexual intercourse
Note: in species like the scorpionflies and the orangutan, it seems to be present
Rape-as-Adaptation Theory: proposes that selection has favoured ancestral males who raped in certain circumstances

- proponents of this theory advance the hypothesis that at least six specialized adaptations might have evolved in the male mind (Thornhill & Palmer, 2000)

1) Assessment of the vulnerability of potential rape victims (e.g. during wartime)
2) A context-sensitive "switch" that motivates rape in men who lack sexual access to consenting partners (e.g. loser males who cannot otherwise have sex)
3) A preference for fertile rape victims
4) An increase in sperm counts of rape ejaculates compared with those occurring in consensual sex
5) Sexual arousal to the use of force or to female resistance to consensual sex
6) Marital rape in circumstances in which sperm competition might exist (e.g. when there might be female infidelity)

By-Product Theory of Rape: proposes that rape is a non-designed and non-selected-for by-product of other evolved mechanisms (e.g. male desire to sexual variety, sex without investment, psychological sensitivity to sexual opportunities, and the general capacity to use physical aggression to achieve goals)
Note: Buss maintains that conclusive evidence for either theory is lacking currently

- remember though that rapists tend to target young, reproductive-aged women disproportionately

Thornhill & Thornhill (1983): roughly 70% of rape victims are women 16-35
Individual Differences in Rape Proclivity
Note: one study showed that 35% of men would not rape even if no chance of being caught
Sexual Coercion as Part of a Life-History Strategy of Some Men
Note: for a small subset of men, rape may be part of a life-history strategy marked by high-levels of psychopathy, pursuit of a short-term rather than a long-term mating strategy, lack of empathy, and "hostile masculinity", particularly towards women (Figueredo, Gladden, & Beck, 2010)
Note: a majority of rapists show high levels of sexual arousal in the laboratory, as measured by penile tumescence, to stories and imagery depicting sexual violence, whereas far fewer non-rapists show such arousal (Lalumiere et al., 2005)
Note: many rapists also have a distinct life strategy – early onset of sexual activity, varied sexual experiences, and tendency to commit nonsexual crimes such as robbery and assault

- rape could then be the end product of an already-torn life (antisocial/criminal activity)

The Mate Deprivation Hypothesis

Note: according to the MDH, men who have experienced sexual deprivation will be more likely to use sexually aggressive tactics (Lalumiere, Chalmers, Quinsey, & Seto, 1996)

Note: in one study, men who evaluated their future earning potential as high tended to use more physical coercion than did men who perceived their future earning potential as low

Ellis, Widmayer, & Palmer (2009): men who commit sexual assault report higher number of lifetime sex partners

Partner Rapists

McKibbin, Shackelford, Goetz, & Starratt (2008): 10-26% of married women experienced rape from their husbands

Note: this form of rape has been included as an adaptation to sperm competition

- men whose wives have been sexually unfaithful, or who suspect their wives of infidelity, force sex in order to combat the sperm from competing males

Goetz & Shackelford (2009): study confirmed that men who suspected their wives of cheating would resort to force

Note: another study found that men who rape their partners scored high on psychopathy (which supports the life-history strategy theory)

Note: all we have at the moment are individual proclivities for why certain men may rape

Do Women Have Evolved Anti-Rape Adaptations?

Note: from an evolutionary perspective, the cost of rape to women begins with interference in a woman's mate choice

- raped women risk unwanted pregnancy with a man she did not want a child with
- it may also damage their reputation and lower their sexual market value for future

Note: cross-cultural surveys indicate that societies in which men rarely attack or rape women are the exception, not the norm

Women's evolved defenses to rape:

1) The formation of alliances with other males as "special friends" for protection
2) Mate selection based on qualities of men such as physical size and social dominance that deter other men from sexual aggression ("bodyguard hypothesis")
3) The cultivation of female-female coalitions for protection
4) The development of specialized fears that motivate women to avoid situations in which they might be in danger of rape
5) The avoidance of risky activities during ovulation to decrease the odds of sexual assault when they are most likely to conceive
6) Psychological pain from rape that motivates women to avoid rape in the future

Broder & Hohmann (2003): women who are not taking oral contraceptives tend to avoid risky activities such as going to a bar alone or walking in a dimly lit area, more when they are ovulating than at other times in the cycle

Pawson & Banks (1993): young women fear rape more than older women (who fear mugging more)

Prokop (2013): virgin women tended to engage in more rape-avoidance than non-virgin women

Note: McKibbin and colleagues (2009) discovered 4 common strategies for avoiding rape:

1) Avoiding strange or dangerous men
2) Avoiding appearing sexually receptive
3) Avoiding being alone

4) Being prepared and showing awareness of surroundings

Jealous Conflict

"Mate Poachers": rivals who attempt to lure someone else's mate away for either a sexual encounter or for a long-term relationship

- because of this and things like mate sexual infidelity, selection has favoured the evolution of defenses to fend off mate poachers
- this is why we experience things like jealousy along with coming up with behavioural tactics of mate retention

Note: jealousy may promote vigilance and prepare one for unfortunate circumstances

- it can also function as a way to curtail partner's actions and maybe even focus on how to have a better relationship

Sex Differences in Jealousy

Note: in a study of 511 college students, they were each asked to compare two distressing events: 1) partner having sex with someone else; and 2) partner becoming emotionally attached to someone else (Buss et al., 1992)

- 83% of the women found option 2 more distressing, whereas 60% of men found option 1 more distressing
- in another study, measuring physiological response (heart rate), men were also more distressed at the thought of their partner being sexually active with another

Note: the competing hypothesis claims that emotion and sexual activity are linked and the reason why women show more response to that emotion condition is that they fear their partner will be induced to sexual activity with the other woman led by emotions

- 4 empirical studies were conducted in 3 different cultures to test this
- conditions were repeated from study above (sexual intercourse with no emotion and emotion, but no sexual intercourse)
- the sex differences did not appear showing that men really do seem to care more about sex than women do
- the evolutionary explanation seems to be correct

Buss (2013): meta-analysis of over 100 studies maintains a sex difference in jealousy

Note: men, compared to women, have more difficulty forgiving a sexual than an emotional infidelity and indicate a greater likelihood of terminating a relationship following a sexual than an emotional infidelity

Note: study of brain activity using fMRI during imagery of sexual and emotional infidelity found that men showed far greater activation in the amygdala and hypothalamus – brain regions involved in sexuality and aggression

- women in contrast showed greater activation than men in the posterior superior sulcus – brain region involved in the process of mind reading (inferring partner's intentions)

Note: men's jealousy is especially attuned to rivals who have status and resources and women's jealousy is especially attuned to rivals who are physically attractive

From Vigilance to Violence: Tactics of Mate Retention

Note: psychological mechanisms can evolve only if they produce behavioural output that actually solves the adaptive problem – for jealousy, it would have to include 1) deterring mate poachers; 2) deterring partner from committing infidelity, and 3) lower the odds that the partner will leave

Sex Differences in the Use of Mate-Retention Tactics

Note: men are more likely to conceal their partner from other men, threats of violence, both on partner and men who he might think are a threat

- men also tended to use acts of submission and self-abasement more than women
- for women, they tended to put more effort in appearance for mate retention

Note: the less-involved person in the relationship is usually the more desirable

- women report that sometimes they induce jealousy to test strength of the relationship

Contexts Influencing the Intensity of Mate-Retention Tactics

Note: jealousy and its behavioural output in the form of mate retention are predicted to be highly sensitive to certain features of the relationship

Evolutionary psychologists have tested a series of context-specific hypotheses including:

1) youthfulness and physical attractiveness of the wife will be linked with men's mate-guarding tactics
2) men (especially those low on good genes) will increase their mate-retention efforts when their partners are ovulating
3) high-income and status striving of the husband will be linked with higher levels of mate-retention tactics performed by women

Reproductive Value of the Wife: Effects of Age and Physical Attractiveness

Note: youth and physical attractiveness are qualities men around the world look for

Note: in a study, men married to younger women reported devoting greater effort to the adaptive problem of mate retention

- they also reported greater partner concealment, emotional manipulation, verbal signs of possession, possessive ornamentation, intrasexual threats, and violence against rival men (than did men with older wives)

Ovulation Status of the Woman

Gangestad, Thornhill, & garver-Apgar (2005): study showed that men will increase their mate-retention efforts at precisely this time in their partner's menstrual cycle (ovulation)

- men do not want to take care of another man's child

Income and Status Striving of the Husband

Note: women's rate-retention tactics were not hypothesized to be a function of the husband's age or physical attractiveness

- women's hypothesized mate-retention tactics were linked to value of their mate in terms of income and status striving

Buss & Shackelford (1997c): correlate mate-retention tactics with the partner's income and with four measures of status striving

1) Degree to which a person uses deception or manipulation to get ahead
2) Industriousness and hard work
3) Social Networking
4) Integrating oneself with superiors

Note: women married to men with higher incomes reported greater vigilance, violence toward partner, appearance enhancement, possessive ornamentation, and submission and self-abasement

- these women also reported more emotional manipulation, resource display, appearance enhancement, verbal signals of possession, and possessive ornamentation
- age of spouse and length of relationship had no effect on results

Note: men who are taller perform fewer mate-retention tactics (Brewer & Riley, 2009)

- men lower in mate value use more cost-inflicting mate-retention tactics (e.g. insulting partner to lower self-esteem)

Dark Triad (of personality traits): narcissism, Machiavellianism, and psychopathy

- these types tend to use aggressive cost-inflicting mate-retention tactics

Violence Toward Partners

Note: one hypothesis of partner violence is that it is used to limit partner's autonomy

- wives who try to leave are more often in danger than women who stay
- killing of wife though ensures no children can come from that relationship

Wilson and Daly (1996): for threats to be taken seriously, they must be carried out

- violence is often used to keep a woman in the relationship
- it was hypothesized and eventually confirmed that younger women in relationships are more likely to leave or initiate a breakup than older women due to their high demand among men

Kaighobadi & Shackelford (2009): men who accuse their partners of sexual infidelity are more prone to be physically violent toward them

Note: the presence of step-children in the home also increases a woman's risk of violence

- another reason why violence may occur in a relationship to women is that the man lacks resources to keep a woman interested
- men who are poor are more likely to kill or hurt their partner

Note: both wife's infidelity and the husband's infidelity appear to precipitate violence toward wives

Note: in places like Mexico and Spain, it was found that the more closer the woman lived to family members, and the larger that grouping was, the less likely she was to be assaulted

Conflict over Access to Resources

Note: if men possess the resources that women need, then men can use those resources to control women

- women in relationships who lack resources often feel themselves at the mercy of their partner for fear that they may one day lose everything (Wilson & Daly, 1992)

Patriarchy: men's dominance over women in the family (and society in general)

Causes of Resource Inequality: Women's Mate Preferences and Men's Competitive Tactics

Note: women's desires for men with resources established the acquisition of resources as a major dimension of men's competition with each other

- things like male-male competition are linked to earlier death in males than for females

Chapter 7: Problems of Parenting

Women in the Kibbutz: study (1975) of 34 040 people in Israel of a community where parents make the exact same amount of money and children are raised communally

- when mothers of children were told that other women would raise their children, they revolted and demanded that a traditional division of gendered labour come back into place
- conducted by anthropologists Joseph Shepher and Lionel Tiger

Note: from an evolutionary perspective, children are a genetic vehicle for parents
Note: Tinbergen (1963) explored the puzzle of why nesting birds would go to the trouble of removing the broken shells from their newly hatched chicks and place them far away
3 Hypotheses to Explain this Behaviour:

1) Eggshell removal served a sanitary function
2) Eggshell removal protected the newly hatched chicks from its sharp edges
3) Eggshell removal made the nest less noticeable to predators

Note: after subsequent observation, hypothesis 3 served to be correct
Note: in all cases of species who invest in parental care, there is a potential threat to survival
Why Do Mothers Provide More Parental Care Than Fathers?
Note: the book called The Evolution of Parental Care documents cross-cultural data on parental care and investment
The Paternity Uncertainty Hypothesis
Note: mothers are pretty much 100% sure that children are theirs (not so with males)

- there is always some probability that males' children are not in fact their own
- paternity uncertainty is strongest in species with internal female fertilization

The Mating Opportunity Hypothesis
Note: the sex difference in opportunity cost makes it so that men who spend time looking after children (that may no be theirs) could rather be looking to secure other mates

- the more mates a male can get, the higher his reproductive output is likely to be
- according to this theory, male parental care should be rare when the opportunity costs of missed matings for males are high (Alcock, 2009)
- when males do not suffer mating opportunity costs as a consequence of investing in offspring, conditions are ripe for the evolution of male parental care
- when there are more women than men, men will worry about sexual opportunity more than parental investment and vice versa

An Evolutionary Perspective on Parental Care

Parental Favoritism: mechanisms of parental care will favor some offspring over others

Evolved Mechanisms of Parental Care Should be Sensitive to 3 Contexts:

1) Genetic Relatedness to the Offspring: are the children really my own?
2) Ability of the Offspring to Convert Parental into Fitness: will a given unit of my investment make a difference to the survival and reproduction of my children?
3) Alternative Use of the Resources that Might be Available to Invest in Offspring: will a given unit of my investment be best spent investing in children or in other activities such as investing in my sister's children or in additional mating opportunities?

Genetic Relatedness to Offspring

Note: substitute parents will generally care less for children than their natural parents

Duberman (1975): study of step-fathers and step-mothers showed that only 53% and 23% respectively, had any parental feelings towards their stepchildren

- this problem is noted cross-culturally, even in folklore (dreaded stepfather/stepmother)

How Men Assess Paternity:

1) Information about partner's sexual fidelity during period which child is conceived
2) Perceptions of the child's resemblance to themselves

Who Are Newborn Babies Said to Resemble?

Daly and Wilson (1982): study on newborns at the hospital (111 US births) showed that mothers were 4x more likely to say the child looked like their partner than themselves (80% vs. 20%)

- second study on questioning relatives of parents corroborated the first

Note: in independent studies (where mothers are not judging), it was shown that children do not look like their fathers more so than their mothers (ages 1, 3, and 5 especially)

Note: in another study, Platek, Burch, Panyavin, Wasserman, & Gallup (2002), men whose faces were morphed with a child's to show some resemblance were more likely to report feelings of welcoming and possible child support

- in fMRI brain scanning of men, they responded more with cortical activity to those faces which looked like them than for women in the same conditions (specifically higher levels of neural activation in the left front cortex)

Apicella & Marlow (2004): men who perceive children as resembling them will invest more

- men who perceive their wives as faithful and trustworthy will also invest more

Parents' Investment in Children

Effects of Men's Paternity Uncertainty on their Investment in Children's College Education: 3 Hypothesis –

1) Men will allocate more resources to their genetic children than to their stepchildren
2) Men who are uncertain about whether children are genetically their own will invest less than men who are certain
3) Men will invest more when the children's mother is their current mate vs. from former relationships (e.g. divorce/stepchildren)

Note: study was conducted on 615 men in New Mexico (with 1246 children total)

- results showed that all three hypotheses proved to be correct

Note: specifically for divorce, the child's relationship to their father is diminished much more than that of the child and mother

Child Abuse and Other Risks of Not Living with Both Parents

Note: the less genetically related the adult was to the child, the higher the probability of infanticide (Daly & Wilson, 1988, 1995, 1996, 1996b, 2007)
Note: from a study in Hamilton, Ontario of 841 households using data of children 17 and under

- data showed that children living with one genetic parent and stepparent were 40x more likely to be physically abused than children living with both natural parents

Child Homicide as a Function of Genetic Relatedness to Offspring
Note: the rates of child murder are far higher for stepparents than for genetic parents

- the highest risk is for very young children (up to 2 years old)
- range is 40-100x higher (for child abuse/homicide)

Sex Differences in Parenting Adaptations
Note: because mothers are always 100% certain of their maternity, but putative fathers are not, selection should favor parental adaptations in women that differ from those in men

- primary caretaker hypothesis contends that women will have evolved adaptations that increase the odds that their children will survive
- women show greater preference than men for viewing photos and silhouettes of infants
- has been shown that women are better at recognizing emotion in infants vs. men
- women's interest in children peaks during infancy and adolescence

Attachment Promotion Hypothesis: women should be better than men at decoding all expressions of emotion
Fitness Threat Hypothesis: predicts a special sensitivity to dangers that might be conveyed by negative emotions
Note: Shelley Taylor has proposed that women have "tend-and-befriend" adaptations to promote offspring survival

- "tending" = protecting children from danger
- "befriending" = creating and maintaining social networks

The Baby Effect: women, when paired with a baby, show less risk-taking behaviours than do men
Note: when parents view images of a potentially dangerous stranger (both sexes), parents are more likely than single people to view them as more menacing (Fessler, Holbrook, Pollack, Hahn-& Holbrook, 2013)
Offspring's Ability to Convert Parental Care into Reproductive Success
Note: selection should favor adaptations that cause parents to invest heavily when the children are most able to convert the parental care into fitness by an increase in their chances for survival or reproduction
Note: parental investment counts for a lot in a child's life – one study estimates that in ancestral times, 27% of infants did not see their first birthday

- even today, father absence puts a child's rate of survival much lower than vice versa

Note: higher levels of parental investment, as indicated by parental income and amount of time spent playing with the child, are positively correlated with academic skills, social skills, and subsequent socioeconomic status

- father's investment specifically measured for child's education shows 4x as much variance than a mother's investment

Parental Neglect and Abuse of Children with Congenital Abnormalities
Note: children who develop disabilities in life, particularly physical impairments, are more likely to be institutionalized and some (12%) were not even visited (1976 US census)
Note: these children, when not institutionalized, are more likely to be physically abused

Maternal Care Based on the Health of the Child

Healthy Baby Hypothesis: the health status of the child would affect the degree of positive maternal behaviour

- study by Mann (1992) on twin pairs where one of each pair was unhealthy
- results showed that the mother attended the healthy baby more than the other
- subsequent studies showed that income is a factor as affluent mothers will invest more in the high-risk at times when she can afford to

Age of the Child

Note: reproductive value – expected probability of future reproduction – increases from birth to pubescence

Note: younger offspring are much more likely to be killed than older ones

- this is progressive for parents until age 17, at which the homicide rate is zero (from parents)

Note: two negative indicators of the child's ability to promote the parent's reproductive success – birth defects and youth – predict homicides at the hands of genetic parents

Investment in Sons versus Daughters: The Trivers-Willard Hypothesis

Trivers-Willard Hypothesis: parents will produce more sons and invest more in sons when the parents are in good condition and hence have a chance of producing a son who will be highly successful in the mating game

- if parents are in poor condition or have little to invest, then they should invest more in daughters

Note: tests of this model are inconclusive (evidence on both sides)

Alternative Uses of Resources Available for Investment in Children

Note: energy & effort are limited – effort allocate to one activity will take away from another

- selection will have fashioned in humans decision-making rules for when to invest in children and when to devote one's energy toward other adaptive problems

Women's Age and Infanticide

Note: younger women should be more inclined to commit infanticide than older women (younger women will still have chances to birth again)

- infanticide is highest in the 15-19 age group and lowest in the oldest age group

Note: data from infanticide in Canada from 1974-1983 showed that teenage mothers are 3x more likely to commit infanticide (followed by women in their 20s, and then 30s, etc.)

Women's Marital Status and Infanticide

Note: unmarried women face three decision: (1) raise child alone, (2) abandon/adoption, and (3) kill he child and try again to secure an investing mate

Note: Daly & Wilson (1988) predicted that marital status in women will affect their decision regarding infanticide

- studies of cross-cultural data confirmed this
- in Canada, unwed mothers were 12% of women, but they represented over half of all maternal infanticide cases

Parental Effort versus Mating Effort

Note: effort allocated toward parenting is effort that cannot be allocated toward mating

Note: women will be more likely than men to channel energy and effort directly toward parenting rather than toward securing additional matings

- this has been demonstrated in anthropological findings (but in every culture surveyed, women do more for infants and children than men do)

Note: some studies suggest than men lack specific parental mechanisms that women have
- in studies of a mother holding an infant, men's attention was more attuned to the woman than the infant (Hess, 1975)
- even in as little as six hours after birth, women can identify their newborn by smell alone whereas men cannot (Barash & Lipton, 1997)

Note: in some cultures (Aka Pygmies of Central Africa), men of higher status spend less time with their children than those of low status

Theory of Parent-Offspring Conflict

Note: according to Trivers (1974), children and parents are predicted to have conflict
- we are related to our parents by only 50% so that means we also differ by 50%
- general idea is that this theory predicts that each child will generally desire a larger portion of the parents' resources than the parents want to give

General Conflict of Interest: the battleground that exists between parent and child over optimal allocation of resources

Theory of Parent-Offspring Conflict Yields Specific Hypotheses that can be Tested:
1) Parents and children will get into conflict about the time at which the child should be weaned
2) Parents will encourage children to value their siblings more than children are naturally inclined to value them
3) Parents will tend to punish conflict between siblings and reward cooperation

Note: study by Paul Andrews (2006) on teen suicidal behaviour showed that these may be strategies to coax additional resources from parents

Mother-Offspring Conflict in Utero

Note: same 50/50 rule applies here also, even in the womb
- selection will create mechanisms in the fetus to manipulate the mother to provide more nutrition than will be in the mother's best interest to provide

Note: as much as 78% of all fertilized eggs either fail to implant or are spontaneously aborted by the mother early in pregnancy (most due to chromosomal abnormalities)

Fetal Production of Human Chorionic Gonadotropin (hCG): hormone that the fetus secretes into the mother's bloodstream
- hormone blocks the mother from menstruating allowing fetus to be implanted

Preeclampsia: high blood pressure in pregnant mothers (due to feeding pressures of fetus)

Note: data from 1000s of pregnancies show that mothers whose blood pressure increases during pregnancy tend to have lower rates of spontaneous abortions (Haig, 1993)

Mother-Child Conflict and Sibling Relatedness

Note: the presence of a sibling should increase parent-child conflict since there will be competition for resources
- going further, stepsiblings will create more competition vs. non-stepsibling homes
- studies have demonstrated this (particularly in younger half-siblings)

Parent-Offspring Conflict over Mating

Note: problems of presenting potential mates to parents –
1) specific traits in a potential mate provide asymmetrical benefits to parents and their offspring
2) parents often attempt to arrange or influence mateships of their offspring to advance their own agendas

3) offspring may attempt to gain benefits from a short-term mating strategy which may inflict costs on the parents by compromising family reputation

Note: offspring rely more on physical beauty much more than parents do

- parents will prioritize potential mate's family background more so than offspring
- no parent is in favor of short-term mating strategies (bad image of family)

Note: parents view short-term mating as acceptable for themselves but not for children, and they also tend to engage in "daughter-guarding" (e.g. stricter curfews)

Chapter 8: Problems of Kinship

Note: an individual's relatives are all vehicles of fitness, but they differ in value

- section will favor mechanisms for helping ourselves twice as much as we help a brother

Theory and Implications of Inclusive Fitness

Hamilton's Rule: (technical formulation of inclusive fitness theory)

- the inclusive fitness of an organism is not a property of himself, but a property of its actions or effects
- inclusive fitness is calculated from an individual's own reproductive success plus his effects on the reproductive success of his relatives, each one weighted by the appropriate coefficient of relatedness

Altruism is defined by two conditions:

1) incurring a cost to the self to
2) provide a benefit to the other person

Note: Hamilton's rule is that natural selection that favor mechanisms for altruism when $c < rb$

- where c = cost to the actor, r = degree of genetic relatedness between the actor and the recipient, and b = benefit to the recipient

Summary: formula means that selection will favor an individual to incur costs if the benefits to a .50 kin member are more than twice the costs to the actor; if the benefits to a .25 kin member are more than 4x the cost to the actor; or if the benefits to a .125 kin member are more than 8x the cost to the actor

- the underlining key to this theory is that genetics matter, and the closer someone is to us, the better (BUT this rule, Hamilton's Rule, is NOT a psychological theory)

Evolvability Constraint: only those genes that code for traits that fulfill Hamilton's Rule can spread throughout the population and hence evolve to become part of the species-typical repertoire

- Hamilton's theory is a good basis for outlining why altruism exists

Theoretical Implications of Hamilton's Rule

Note: most important implication of Hamilton's theory of inclusive fitness is that psychological adaptations are expected to have evolved for different types of kin relationships

Sibships

Note: while siblings may be important social allies, they may be also be competition for parental resources

Gibson & Lawson (2011): study in Ethiopia that showed that as economic conditions improved and parents had more to give, sibling competition and rivalry over parental resources actually increased

Note: studies of birth order show that first-borns generally are more favored and are more likely to go with the status quo – as more children are added, they have more reason to be rebellious

Salmon and Daly (1998): middle-borns differ from first-and last-borns in scoring lower on measures of family solidarity and identity

- middle-borns are less likely to name a genetic relative as the person they are closest to
- they are also less positive and willing to help other family members

Salmon (1999): first-borns are more likely to feel solidarity with parents and perceive them as dependable, whereas middle-borns appear more likely to invest in bonds outside of the family

Sibs Versus Half-Sibs

Note: full sibs are related by 50% while half sibs are related only 25%

Holmes and Sherman (1982): study of squirrels showed that full sisters were more likely to cooperate in defending their young offspring

Grandparents and Grandchildren

Note: grandparents are related to grandchildren by an r of .25

Grandmother Hypothesis: evolutionary hypothesis for menopause speculates that menopause occurs because women will then have more time for children and grandchildren (Hill & Hurtado, 1991)

Hypotheses about Universal Aspects of Kinship

Note: Daly, Salmon, and Wilson (1997) outlined a set of hypotheses about the universal aspects of the psychology of kinship

1) Ego-centered kin terminology will be universal: in all societies, all kin will be classified in reference to a focal individual; "my parents are not the same people as your parents"
2) All kinships systems will make critical distinctions along the lines of sex: mothers are distinguished from fathers, sisters from brothers, etc. – important because of reproductive value
3) Generation is critical: with increasing age, children become more valuable to parents, whereas parents have less and less utility for parents
4) Kin relationships will be universally arrayed on a dimension of closeness and closeness will be highly linked with genetic relatedness
5) Degree of cooperation and solidarity between kin will be a function of their degree of genetic relatedness: cooperation and conflict should be predictable from the degree of genetic relatedness between kin members (people turn to family more so than non-kin members in times of need)
6) Elder members of an extended kin family will encourage the younger members to behave more altruistically and cooperatively toward collateral kin (kin who are not descendants such as brothers, sisters, etc.)
7) One's position within an extended kin network will be core components of the self-concept: beliefs about who you are will include kin linkages such as "son of X", etc.
8) People everywhere will be aware who their "real" relatives are
9) Kinships terms will be used to persuade and influence other people (even if no genetic-relatedness exists): terms like "brother/bro" are used to gain trust and ease

Empirical Findings that Support the Implications of Inclusive Fitness Theory

Alarm Calling in Ground Squirrels

Note: why is it that squirrels call out to other squirrels to notify them of a potential predator nearby when it is at the cost of their life? – Three Hypotheses

1) **The Predator Confusion Hypothesis**: alarm call might function to confuse predator by creating a mad scramble
2) **The Parental Investment Hypothesis**: perhaps children are more likely to survive even if a parent does not
3) **Inclusive Fitness Hypothesis**: although signaler might suffer early death (eaten), the squirrel's kin group (extended family) might all benefit (ensuring genes will survive)

Sherman (1977, 1981): tested hypotheses above in the California woods –

- first hypothesis did not find any evidence to support it (predators are not confused at all by alarm calling, but rather use it as a GPS to narrow in)
- it was discovered that females more often give out alarm calls (21% more vs. males)
- support was strongest for hypothesis 3 in that females will still alarm call even when extended family was around (and not their own children)

Kin Recognition and Kin Classification in Humans

Note: early association – exposure to kin in infancy is a key cue that primates use

- we can also detect kin by smell (although women are better at this than men)
- newborns who were breastfed prefer the odors of their mother to other women
- all cultures have kin classification systems – specific terms describing kin members

Doug Jones (2003a, 2003b): devised a universal grammar that governs all systems of kin classification – consists of three innate primitives of social cognition

1) Genealogical Distance: how close certain kin members are (genetically)
2) Social Rank: referring to relative age with older being more highly ranked than younger
3) Group Membership: distinguishes different types of kin such as maternal vs. paternal or same-sex vs. opposite sex siblings

Note: faces that are especially dissimilar to one's own are seen as especially untrustworthy (Krupp, DeBruine, Jones, & Lalumiere, 2012)

Note: upper part of the face seems to be important for kinship cues

- when lower half of a face was masked, kinship recognition went down by 5%, but when the upper half was covered, there was a discrepancy of 65%

4 Ways of Identifying Kin

1) Association
2) Odor
3) Kin Classification (through universal grammar of three cognitive building blocks)
4) Facial Similarity/Phenotypic Resemblance

Patterns of Helping in the Lives of Los Angeles Women

Note: Predictions of Helping include –

1) Among kin, helping will increase as a function of genetic relatedness
2) Among kin, helping will increase as the recipient's reproductive value increases

Note: percentages of instances of helping fall into three different categories of kinship

- 50% genetic overlap, 25% genetic overlap, and less than 25% genetic overlap
- all results show that close kin are more likely to be helped than distant kin

Note: more often than not, acts of helping tend to come from the older (who have less to offer the young in terms of reproductive value)

Life or Death Helping among Humans

Note: study by Burnstein, Crandall, & Kitayama (1994) explored hypotheses derived from inclusive fitness theory

Note: helping others should be a direct function of the recipient's ability to enhance the inclusive fitness of the helper – helping should decrease as the degree of genetic relatedness between helper and recipient decreases (helping should be greatest between siblings/parents then)

- helping should also decreases as the age of the recipient gets older

Two Types of Helping:

1) Helping that is substantial: acts that affect whether the recipient will live or die
2) Helping that is relatively trivial: acts such as giving someone spare change

- predicted patterns of altruism should be stronger under the first type than second

Note: study from the US and Japan tested these hypotheses and found that, given the scenario of a burning building, and only being able to save 1/3 people, decision rested on genetic relatedness

- helping decreased as the degree of genetic relatedness decreased
- this is especially true for life-or-death scenarios but for trivial matters, people were more inclined to help the elderly

Genetic Relatedness and Emotional Closeness: Is Blood Thicker than Water

Note: in helping others, "emotional closeness" is a psychological mediator

- it was found that individuals were more likely to be emotionally close to members who were most genetically related to them, but emotional closeness also statistically mediated the tendency to behave altruistically toward their family members

Note: genetic relatedness proved to be a strong predictor of subjective closeness with a correlation of +.50

- full siblings also have more contact to each other than half-siblings
- amount of grief is also related to kinship distance/genetic relatedness

Vigilance Over Kin's Romantic Relationship

Note: a study tested two hypotheses – (Faulkner & Schaller, 2007)

1) Individuals will maintain greater vigilance over the mating relationships of their close than distant kin
2) Individuals will maintain greater vigilance over the mating of their female than male kin

Note: results showed that there is evidence for both hypotheses based on three dependent measures; awareness of the romantic partner's good and bad qualities, awareness of how the romantic relationship was progressing, and the degree to which they worried about how the romantic relationship was progressing

Kinship and Stress

Note: stressful events release the hormone cortisol into the bloodstream – its functions are to increase energy temporarily for action and increase alertness

- too much of this hormone can actually damage reproductive functioning
- in homes where there is only parent, cortisol levels in children actually go up and households with a stepfather present and half-siblings show the highest cortisol levels among children (Flinn et al., 2005)

Kinship and Survival

Note: is there any evidence that having kin in close proximity affects actual survival rates during real life or death situations? – two studies have explored this

1) Survivors of the Mayflower pioneers in Plymouth Colony (McCullough & York Barton, 1990) – large predictor for survival was number of genetic relatives

2) Donner Party disaster of 1846: 40/87 died during a bitter winter (Grayson, 1993)

Patterns of Inheritance – Who Leaves Wealth to Whom?

Note: Can pattern of the distribution of wealth be predicted from inclusive fitness theory?

Three Predictions about Patterns of Inheritance: (Smith, Kish, and Crawford, 1987)

1) People will leave more of their estates to genetically related kin and spouses than to unrelated people
2) People will leave more to close kin than to distantly related kin
3) People will leave more to offspring than to siblings (even though the average genetic relatedness is the same in these two types of relationships)

Note: study to test hypotheses came from Vancouver BC of 1000 people (552 men/448 women)

- women tended to distribute estate over a larger number of people than did men
- first hypothesis was confirmed; 92.3% was left to either kin/spouse
- second hypothesis was also confirmed; more estates to closely related kin
- third hypothesis was also confirmed; more than 4x to children vs. siblings

Note: women were more likely to leave their estates to children than to their husbands and husbands more often left estate to their wives – but only if she was post-reproductive

- the fear was that she would use resources to attract a new mate and have more children

Investment by Grandparents

Note: theoretically, grandparents are genetically related by .25% for each grandchild

Note: paternity uncertainty also applies to grandparent-grandchild relationships in terms of sex differences

- from a grandfather's perspective, there are two ways he could be wrong about legitimacy (from child's father to himself and his own son/daughter)
- this is why grandfather-grandson relationships are usually more troubling/disconnected

Note: from the perspective of inclusive fitness theory, a grandmother should be more invested (due to 100% paternity certainty) in her grandchildren vs. grandfather

- this is especially true for the mother's mother (MoMo) and least true for father's father (FaFa)

Discriminative Grandparent Investment: hypothesis that predicts behavioural and psychological indicators of investment should follow the degree of certainty inherent in the different types of grandparent relationships

- most investment for MoMo and least for FaFa

Todd DeKay (1995): study of 120 undergraduate students analyzing grandparent-grandchild relationships that showed grandchildren were closest to their mother's mother

- it was also shown that investment was higher for mother's father than father's mother

Alternative Hypothesis proposed by Bill von Hippel (2002): paternal grandmothers should devote fewer resources than maternal grandfathers only when paternal grandmothers also have daughters

- when they have only sons, paternal grandmothers should be roughly comparable in the resources the allocate

Laham, Gonsalkorale, & von Hippel (2005): study examining hypothesis above showed that there was evidence to support it (n = 767)

Note: it is not true that there is a general sex difference between resource allocation

- the general expectation of a sex difference in investment cannot explain the fact that grandfathers, under some circumstances, invest more than grandmothers

Grandmother Hypothesis: idea that women evolved such a long post-menopausal lifespan precisely because grandparental investment enabled women to increase their inclusive fitness (successful reproduction of genes in future kin)
Absent Father Hypothesis: idea that because women are at a younger age than their mates and – if they live, they sometimes leave their aging partners to mate with younger partners
A Broader Perspective on the Evolution of the Family
Note: social scientists have not reached a consensus on what constitutes a family (Emlen, 1995)
Note: evolutionary biologist Stephen Emlen defines families as "those cases where offspring continue to interact regularly, into adulthood, with their parents"
Two types of families: (from Emlen)

1) Simple Families: a single parent or conjugal pair in which only one female reproduces
2) Extended Families: groups in which two or more relatives of the same sex may reproduce

Note: the presence of a breeding male is not essential to the definition of family

- when male is present, the family unit is called biparental
- when the male is absent, the family unit is called matrilineal

Note: in simple families, offspring do not reproduce while living at home and in extended families, parents will often actively suppress the reproduction of their offspring
Families inflict two primary costs on offspring:

1) Reproduction is delayed and sometimes directly suppressed
2) Competition for resources such as food is concentrated rather than dispersed, making life more challenging for both parents and offspring

Two theories to explain the evolution of families:

1) Ecological Constraints Model: families emerge when there is a scarcity of reproductive vacancies that might be available to the sexually mature offspring
- under these conditions, both the cost of staying within the family and the benefits of leaving are low
2) Familial Benefits Model: families form because of the bounty of benefits they provide to offspring
- these benefits include enhanced survival, enhanced ability to compete subsequently, the possibility of inheriting or sharing family territory, and inclusive fitness benefits gained by being in a position to help and be helped by genetic relatives while staying at home

Note: Emlen (1995) synthesized both theories into one unified theory of the origins of the family – his theory of family formation has three premises

1) Families form when more offspring are produced than there are available reproductive vacancies to fill (stemming from ecological constraints model)
2) Families will form when offspring must wait for available reproductive vacancies until they are in a good position to compete for them
3) Families will form when the benefits of staying at home are large (e.g. increased survival)

Family dynamics of kinship and cooperation:
Prediction 1: Families will form when there is a large shortage of reproductive vacancies but will break up when the vacancies become available (demonstrated in avian species)
Prediction 2: Families that control many resources will be more stable and enduring than families that lack resources (wealthy families will be more stable than poor ones)
Prediction 3: help with rearing the young will be more prevalent among families than among comparable groups lacking kin relatives (sister/brother might assist in raising children) – "allomothers" = closely related families

Prediction 4: when a breeder is lost because of death or departure, family members will get into a conflict over who will fill the breeding vacancy (loss of a parent opens up new vacancy) – the higher the quality of vacancy, the more competition to fill it

Prediction 5: the loss of an existing breeder and replacement by a breeder who is genetically unrelated to family members already present will increase sexual aggression

- when a mother remarries, the stepfather might be interested in her daughter causing sexual conflict and turmoil for that family

Critique of Emlen's Theory of the Family

Note: this comes from evolutionary psychologist Jennifer Davis and Martin Daly (1997)

- Davis and Daly offer three considerations that provide a unique context for examining human families

1) Human families might remain together because of competition from other groups
2) Humans engage in extensive social exchange based on reciprocal altruism with non-kin
3) Non-reproductive helpers, such as post-menopausal women, have little incentive to encourage their offspring to disperse, which might help to stabilize families

The Dark Side of Families

Note: this mostly refers to the battle for resources, particularly parental resources

Three fundamental sources of conflict within families:

1) Sibling Conflict: siblings compete for parental resources (which are finite)
2) Parent-Offspring Conflict: need and ability of offspring might cause unequal distribution of resources
3) Mother-Father Conflict: this problem arises when there is discord among parents over which child should receive what (or even withholding resources)

Note: it is not always true that families work together as a unity and benefit all members equally

Chapter 9: Cooperative Alliances

The Evolution of Cooperation

Note: why do people make sacrifices for others who are not related to them?

- sacrifices are costly to those who make them, yet they benefit the people for whom the sacrifices are made

The Problem of Altruism

Note: altruism is useful for genetic kin members (aka inclusive fitness theory)

- the problem of altruism refers to the risk of putting one's own life in danger for a friend

A Theory of Reciprocal Altruism

Note: theory states that adaptations for providing benefits to nonrelatives can evolve as long as the delivery of benefits is reciprocated at some point in the future

- the beauty in this is that both parties stand to benefit

Gains in Trade: when each party receives more in return than it costs to deliver the benefit

- in evolutionary terms, these gains in trade set the stage for the evolution of reciprocal altruism – those who engage in reciprocal altruism will tend to out-reproduce those who act selfishly

In summary: reciprocal altruism = cooperation between two or more individuals for mutual benefit (Cosmides & Tooby, 1992, p. 169)

Problem of Cheating: those who pretend to be a reciprocal altruist but only want the benefits

Tit for Tat

Prisoner's Dilemma: a hypothetical situation in which two people have been thrown in prison for a crime they are accused of committing together and of which they are indeed guilty

- the prisoners are held in separate cells so that they cant talk to each other
- the police try to speak individually to get them to speak against the other, but it would work to the prisoner's advantage that they both stay silent so they can be set free afterward

- the options are: confess on the other = freedom for that individual + small reward
- both confess = jail time for both, no confession = freedom for both

Note: this hypothetical dilemma resembles the problem of reciprocal altruism

- each person can gain from cooperating (R), but each is tempted to gain the benefit of a partner's altruism without reciprocating (T)
- the worst scenario for each individual is to cooperate and have who defects (S)

Note: "tit for tat" refers to the winning strategy for this hypothetical game

- this is based on a study of 200 rounds of gameplaying simulation by economists, mathematicians, scientists, and computer wizards
- the winning strategy was the most simple; tit for tat, which had only two rules – Cooperate on the first move, and reciprocate on every move thereafter
- so it works as a give and take – back and firth so long as the chain is not broken

Note: Axelrod (1984) identified three features of this strategy that represented the keys to its success

1) **Never be the first to defect** (always start out by cooperating)
2) **Retaliate only after the other has defected** (defect immediately after the first instance of non-reciprocation)
3) **Be forgiving** (if someone has once defected, and now is cooperating, start anew and cooperate as well)

Cooperating Among Nonhumans

Note: different species can arrive at similar solutions to common adaptive problems

Food Sharing in Vampire Bats

Note: vampire bats live off of the blood of other animals, but they are not equally good at finding a host and clinging long enough to get the replenishment they need

- one study found that 33% of the younger bats (under 2 years old) failed to get blood on any particular evening, whereas only 7% of the bats older than two years failed to feed (Wilkinson, 1984)

Note: bats can only go without blood for 3 days

- in order to survive youth, and bad nights (no hosts), bats routinely regurgitate blood for others in their colony
- they do this only for friends, the ones who have done the same for them in the past
- the bats gave more to their closer friends (ones they spent the most time with), and especially so when it counted (the more closer to death, the more blood given)

Chimpanzee Politics

Note: for chimpanzees, they have a structured hierarchy with one male leader who gets to copulate more times than any other male in the group

- that male will protect the females from danger, and in turn, they help to maintain his status
- sometimes, the lower ranking chimpanzees will work together to oust the alpha male from his position in which they will share in the reward together after
- this is also done with food

Cooperation and Altruism Among Humans

Social Contract Theory

Note: SCT developed by evolutionary psychologists Leda Cosmides and John Tooby to explain the evolution of cooperative exchange in humans with special attention to how humans have solved the problem of cheating

Note: what specific problems do people have to solve to evolve mechanisms that motivate forming social contracts and avoiding the ever-present threat of cheaters?

Cosmides and Tooby (1992) outlined Five Cognitive Capacities:

Capacity 1: The ability to recognize many different individual humans – remembering key features of a person will aid in keeping track of who you made promise to/they made to you

Capacity 2: The ability to remember the histories of interactions with different individuals – important to remember who you own/owes you to keep responsibility up

Capacity 3: The ability to communicate one's values to others – people you make a deal with need to understand the type of benefit you wish from them in the future

Capacity 4: The ability to model the values of others – must understand values of others

- make your contribution to the other person something they need at the right time

Capacity 5: The ability to represent cost and benefits, independent of the particular items exchanged

Summary: social contract theory proposes the evolution in humans of five cognitive capacities to solve the problem of cheaters and engage in successful social exchange

Evidence for Cheater-Detection Adaptations

Note: Cosmides and Tooby tested this theory in more than a dozen studies testing people's responses to logical problems

- humans did poorly in each case and the answer why seems to be that humans have not evolved to respond to abstract logical problems; they have evolved to respond to problems structured as social exchanges when they are presented in terms of costs and benefits
- in logical problems involving people and exchanges, humans do well
- the human mind, according to these researchers is finely tuned to detect cheaters

Do People Remember Cheaters

Note: memory may play a special role in cheater detection

- one study found that people remember the faces of known cheaters, especially low-status cheaters, better than they remember the faces of known cooperators (Mealey, Daood, & Krage, 1996)
- another study found that cheating was much more likely to be remembered if it was rare (Barclay, 2008)

Note: remember that the basic definition of psychological mechanisms involves input, decision rules, and output

The Detection of Prospective Altruists

The Ability to Detect the Genuineness of Altruistic Acts: (Brown & Moore, 2000)

- created a version of the Wason selection task to test whether people look for the existence of genuine emotions that might lie behind an act of altruism
- the altruism-detection task had this rule: "If X helps, then X seeks of credit"
- the logic behind this task is that people who help others only to receive external credit are not good candidates for helping in the future and so make poor cooperative allies
- those who help others without seeking credit, on the other hand, display genuine altruistic tendencies (this is the ideal)

results showed that most people chose cards that allowed them to detect altruists

Indirect Reciprocal Theory

Note: people who perform altruistic acts advertise a propensity for generosity and cooperation

- sometimes it comes from word of mouth where one person recommends another person who is of a good disposition to help and trustworthy
- indirect reciprocity may also explain why we help strangers

Costly Signaling Theory

Note: this is another path through which altruism can evolve

- individuals display acts of altruism to signal that they are excellent potential allies
- key to signaling is that its cost ensures that it is an honest signal

Note: the fitness benefits from costly signaling could come in the several forms –

1) Being preferentially chosen by others for cooperative relationships
2) Increased levels of cooperation within those relationships
3) Higher status and reputation within the group, which could lead to a host of benefits, including higher quality mating opportunities

Note: in a study on charity work, those who volunteered in private opted for the least time consuming method, but when it was declared in public, they offered more services (Bereczkei, Birkas, & Kerekes, 2010)

Summary: four theories have been developed to explain the evolutionary puzzle of altruism

1) **Inclusive Fitness**
2) **Reciprocal Altruism**
3) **Indirect Reciprocity**
4) **Costly Signaling**

The Psychology of Friendship

Note: friendship may be another potential avenue for the evolution of cooperation and altruism (Tooby & Cosmides, 1996)

- intuition is important as it might give us a clue and reason why friendships might not be based on reciprocal exchange entirely

Should Altruism be Defined According to the Cost Incurred?

Note: according to existing theories of altruism, altruism is not considered to have occurred unless the individual incurs a cost

- could it be the other way in cases like friendship? – where there is an evolution of adaptations designed to deliver benefits to others

Note: from an evolutionary perspective, the greater the cost to a person of delivering benefits to others, the less widespread delivering such benefits will be and the less costly it is to deliver benefits to others, the more widespread they will be

The Banker's Paradox

Note: bankers who loan money face a dilemma; a larger number of people seek loans than any bank has money to lend (and there are good and bad credit holders)

- the banker's paradox is that those who need money the most are exactly the same people who have the highest risk (of defaulting) and those who need money the least are the least risk
- the bank, then, will loan money to people who might not really need it

Note: in human interactions, we face the same problem: who to help with our limited time?

Becoming Irreplaceable

Note: Tooby and Cosmides (1996) proposed one solution to this problem; becoming irreplaceable or indispensable to others

- sometimes, when conflicted with two situations and only being to attend to one, we will most often choose that person who means more to us

How Might a Person Act to Increase the Odds of becoming Irreplaceable? (Tooby & Cosmides, 1996) –

1) Promote a reputation that highlights one's unique or exceptional attributes
2) Be motivated to recognize personal attributes that others value but that they have difficulty getting from other people
3) Cultivate specialized skills that increase irreplaceability
4) Preferentially seek out people or groups that value what you have to offer and what others in the group tend to lack – groups in which one's assets will be most appreciated
5) Avoid social groups in which one's unique attributes are not valued or in which one's unique attributes are easily provided by others; or
6) Drive off rivals who offer benefits that you alone formerly provided; people seem to be especially sensitive to "newcomers" who may duplicate your skill set, interfere with your existing alliances, or threaten to impose costs on your well-functioning group

Fair-Weather Friends, Deep Engagement, and the Dilemma of Modern Living

Note: fair-weather friend refers to those people only there for the good times

- when things are good, there is no difference between real vs. fake friends so how can tell who is a true friend?
- Due to our strict laws, it is hard for us to actually assess who is genuine in any given situation that might call for a true friend – it could just be that, in the 21st century, people need friends more for social bonds than for any other reason

Limited Niches for Friendships

Note: each person has a limited number of friendship niches (decision to befriend someone and not another)

- the problem we face then, is who will fill these slots?

Five Factors That Should Decide Your Friendship Choices (Tooby & Cosmides, 1996)

1) Number of Slots Already Filled
2) Evaluate Who Emits Positive Externalities
3) Select Friends Who are Good at Reading Your Mind
4) Select Friends Who Consider you to be Irreplaceable
5) Select Friends Who Want the Same Things that you Want

Costs and Benefits of Friendship

Note: while friends may be on-the-whole good, they can sometimes get in the way

- one study of female friendships discovered that the less attractive member of the friendship pair perceived more mating rivalry with their friendship than the more attractive member (Bleske-Rechek & Lighthall, 2010)
- a same-sex friendship carries the potential for intrasexual rivalry whereas an opposite-sex friendship does not

Note: in opposite-sex friendships, men, more often than women, bring up the topic of sex and pursuing something more than just friends

- this actually ends friendships (opposite-sex) 38% of the time (Halatsis & Christakis, 2009)
- another hypothesis of the development of opposite-sex friendships for women is that it may function to provide protection
- another reason for these friendships is that people might gain insight of the opposite sex
- with same-sex friendships there is always that comparison that doesn't go away

Cooperative Coalitions

Note: humans sometimes form cooperative coalitions – alliances of more than two individuals for the purpose of collective action to achieve a particular goal

- coalitions face two potential problems, however: defection and free-riding

Note: defection often becomes the evolutionary stable strategy – a strategy that once it predominates in a population, cannot be invaded or displaced by any other strategy

- for free-riding to be discouraged, there must be some punishment factor for uncooperative behaviour – punishment will work as deterrent or risk more ills

Punitive Sentiment: a desire to harm "slackers" in the group

- works by motivating the individual and the people to punish free-riders
- this will (1) Increase the chance that a reluctant member of the group will contribute and (2) Damage the free-rider's fitness relative to those who participate fully in the cooperative coalition (Price et al., 2002)
- this sentiment may a human universal with those most in accord with the group's goal will be the one's who are most likely to punish the free-riders

Altruistic Punishment: those who punish free-riders incur a cost – it takes time, energy, and effort to punish someone and punishers risk retaliation from those they punish

- the actor is doing a favour not only to himself but the group in punishing free-riders

Note: how could this form of altruistic punishment emerge?

1) Cultural Group Selection: certain cultural ideas spread due to its competitive advantage they provide to those groups holding them – in cases of nonconformity, altruistic punishment could help to carry the cultural legacy forward
2) Reputational Benefits: altruistic punishers receive higher esteem when they punish others

Chapter 10: Aggression and Warfare

Note: leading researchers have concluded that the "male violence that surrounds and threatens chimpanzee communities is so extreme that to be in the wrong place at the wrong time from the wrong group means death" (Wrangham & Peterson, 1996, p. 21).

Aggression as a Solution to Adaptive Problems

Note: what are the origins of aggression? (Buss & Duntley, 2008; Buss & Shackleford, 1997b)

Co-Opt the Resources of Others

Note: humans stockpile resources that are valuable to survival and reproduction

- include land, access to fresh water, food, tools, and weapons

Note: the means for exchange can involve social interactions (friendly cooperation/trade), stealing, and/or trickery

Note: child aggression is commonly about toys and territory and adult forms of aggression involve money or other goods from others

- the threat of aggression itself may be enough to extract resources, however

Defend Against Attack

Note: presence of aggressive conspecifics poses a serious adaptive problem for potential victims

- aggression can also be used as a defense strategy to protect one's reputation and/or family

Inflict Costs on Intrasexual Rivals

Note: another adaptive problem is posed by same-sex rivals who are vying for the same resources

- this can include members of the opposite sex
- sometimes a cost inflicted on a rival (aggression) can equal a benefit for the perpetrator

Negotiate Status and Power Hierarchies

Note: a fourth evolutionary hypothesis is that aggression functions to increase one's status or power within existing social hierarchies

- in some societies, there exist fight clubs where men fight to achieve status in the community (the more consecutive wins, the more respect is earned)

Deter Rivals from Future Aggression

Note: cultivating a reputation as aggressive might function to deter aggression and other forms of cost infliction from others (this is to instill fear in rivals only and not done out of malice)

Deter Long-Term Mates from Sexual Infidelity

Note: a sixth hypothesis is that aggression and the threat of aggression function to deter long-term mates from sexual infidelity (male sexual jealousy is the leading cause or precipitating context of spousal battering – Buss & Duntley, 2011)

The Context-Specificity of Aggression

Note: above represent the sex key adaptive problems for which aggression might be one strategic solution for humans (although not comprehensive/exhaustive)

Note: adaptive benefits must also be evaluated within the context of costs – aggression inflicts costs on others, but those others will not just sit idly by after having been attacked (must be on the lookout for revenge and retribution)

- the key point is that an evolutionary psychological perspective predicts that evolved mechanisms will be designed to be sensitive to context

Note: aggression strategies differ from culture to culture and even in individual contexts

Why Are Men More Violently Aggressive than Women?

Note: 86% of homicides committed in Chicago between 1965-1980 were by men (Daly & Wilson, 1988) – 80% of victims were also men

Note: in all cultures, men more often kill than women and the victims are mostly men

Note: an evolutionary model of intrasexual competition provides the foundation for such an explanation – begins with the theory of Parental Investment and Sexual Selection (ch. 4)

- selection favors riskier strategies (including intrasexual competition) within the sex that shows the higher variance
- species that show higher variance in the reproduction of one sex compared to the other tend to be sexually dimorphic (different body composition between males/females)

Note: the more intense the effective polygyny, the more dimorphic the sexes are in size and form

- for humans, we are mildly dimorphic (with only 18% more average body weight vs. women)

Effective Polygyny: refers to some males gaining more than their "fair share" of copulations while other males are shut out entirely

- this leads to more ferocious competition within the high-variance sex

Note: for those facing reproductive failure, a risky and aggressive strategy might be the last resort

- homicide data reveal that men who are poor and unmarried are more likely to kill compared with their more affluent and married counterparts (Wilson & Daly, 1985)

Two sides of aggression in competitive contexts marked by some degree of polygyny:

1) Aggression by a male to "win big" – gaining access to multiple females
2) Aggression to avoid total reproductive failure

Note: women also engage in aggression and like men, their aggression is mostly aimed towards members of the same sex

- studies of verbal aggression show that women tend to slander the physical appearance of their rivals (Buss & Dedden, 1990; Campbell, 1993, 1999)
- women, however, are less violent than men and take less risks

Note: evolutionary psychologist Anne Campbell argues that women need to place a higher value on their own lives than do men on theirs, given the fact that infants depend more on maternal care vs. paternal care (Campbell, 1999) – women should avoid and be fearful of situations that pose a threat of physical harm (more so than men)

Empirical Evidence for Distinct Adaptive Patterns of Aggression

Note: most straightforward prediction from the evolutionary theory of aggression is that men will be more likely than women to use violence and aggression

Evidence for Sex Differences in Same-Sex Aggression

Note: this includes body differences in design as suited for physical combat, sex differences in aggression, homicide statistics, bullying studies, and ethnographic evidence from Aboriginal communities

Body Differences in Design for Combat

Note: compared to women, men have 61% more total muscle mass, 75% more upper arm muscle mass, 91% greater upper body strength, taller bodies, heavier bodies, thicker jaw bones, stronger bones, greater bone density in the arms, higher muscle-to-fat ration, broader shoulders, and even thicker skin (Lassek & Gaulin, 2009; Sell, 2012)

- men also show a greater interest in using their bodies for physical activities (e.g. sports)

A Meta-Analysis of Sex Differences in Aggression

Note: Psychologist Janet Hyde conducted this research comparison of aggression (1986)

Sex Differences in Aggression presented as Effect Size:

- aggressive fantasies (.84), physical aggression (.60), imitative aggression (.49), and willingness to shock others in an experimental setting (.39)

Note: legend for effect size = .80 (large), .50 (medium), and .20 (small)

Summary of meta-analysis: men use aggression more than women in a variety of forms and the results range from medium to large

Same-Sex Homicides

Note: Daly & Wilson (1988) compared data of homicides from 35 cross-cultural studies

- in every culture for which there is data, the rate at which men kill other men far exceeds the rate for women vs. women

Same-Sex Bullying in Schools

Note: studies of both a middle school and a high school (Ahmad & Smith, 1994) showed that 54% of boys in middle school bullied others vs. 34% for the girls

- for high school, it was 43% (boys) and 30% (girls)
- extent of the bullying differed also as more males reported physical injury (36% vs. (9%)

Summary: males display more direct physical aggression and females show indirect aggression

Aggression in an Australian Aboriginal Community

Note: the Mangrove community in Australia was studied by Anthropologist Victoria Burbank which contained 600 aborigines

- she was a victim of bullying within that community with the majority coming from other females
- within themselves, men were far more aggressive than women (97% with a weapon)

The Young Male Syndrome

Note: not all men use aggressive tactics – young men appear to be the most prone to engaging in risky forms of aggression (the most aggressive forms which can lead to injury and death)

- young male syndrome refers to aggressive behaviours pertaining to young men that are risky

Note: through to age 10, the sex difference is negligible in who will be the victim of a homicide

- the peak for male homicide occurs in the mid-20's (men are 6x more likely to be a victim)
- this behavour seems to stem from competition for both mates and status/reputation within the community

Contexts Triggering Men's Aggression Against Men

Note: several causal contexts surround male-male homicides

Marital and Employment Status

Note: killers and victims alike share common characteristics = being unmarried & unemployed

- study from Detroit showed that although only 11% of adult men were unemployed that year, 43% of victims and 41% of perpetrators were unemployed (Wilson & Daly, 1985)

Status and Reputation

Note: key motive in male-male homicide is the defense of status, reputation, and honour

- reason for this might be because humans evolved in small-group living in which status and reputation were vital to a man's access to reproductively relevant resources, and particularly mating opportunities

Sexual Jealousy and Intrasexual Rivalry

Note: summary of eight studies of same-sex killings involving "love triangles" documented that 92% were male-male homicides vs. only 8% for females (Daly & Wilson, 1988, p. 185).

Contexts Triggering Women's Aggression Against Women

Note: females tend to use social exclusion (ostracism) as a primary strategy of getting rid of their female competitors (Benenson, Hodgdson, Heath, & Welch, 2008)

- they accomplish this through verbal aggression
- although they engage in verbal aggression equally (men and women), the content differs between the sexes with women focusing on physical appearance and sexual promiscuity
- according to Fisher & Cox (2009), men are influenced by these derogatory remarks

Summary: women socially aggress against other women in the context of competition to attract mates, to fend off mate poachers, retaliation for social contract violations, solve conflicts over access of food, and to solve problems within friendships

Contexts Triggering Men's Aggression Against Women

Note: sexual jealousy seems to be the primary cause of male aggression towards women – and more often than not, male-on-female violence occurs within the context of relationships

- this is most common across all cultures

Note: one characteristic which sticks out in violence towards women is their age – young wives and girlfriends are far more likely to be killed than older ones (Daly & Wilson, 1988; Shackelford, Buss, & Weeks-Shackelford, 2003)

- due to young women are the most desirable class and therefore, most competed for

Note: the overwhelming amount of violence put upon women results from sexual jealousy, mate-guarding, and the fear that the mate will leave or is involved with someone else

Contexts Triggering Women's Aggression Against Men

Note: when it comes to minor incidents of violence (slapping, spitting, name-calling), the actions are even for both men and women in relationships (occurs at the same rate)

Defense Against Attack

Note: when women kill their male partners, it is due to self-defense or being fed up of past prior abuse felt by the woman (Daly & Wilson, 1988)

Warfare

Note: male coalitional warfare is in every culture surveyed around the world

The Evolutionary Psychology of War

Tooby and Cosmides (2010): war is an intensely cooperative venture

Evolutionary Theory proposed by Tooby and Cosmides has 4 essential conditions that must be met for warfare adaptations to evolve:

1) Average long-term gain in reproductive resources must be sufficiently large to outweigh the reproductive costs of engaging in warfare over evolutionary time
- could be an increase in sexual access to females
2) Members of coalitions must believe that their group will emerge victorious
- must believe in the fight and the net-gain of resources afterward
3) Risk that each member takes and the importance of each member's contribution to the success must translate into a corresponding share of the benefits
- men who do not take risks with the group are excluded from any rewards (prevention of free-riding mentioned in ch. 9)
4) Men who go into battle must be cloaked in a "veil of ignorance" about who will live or die
- possible outcome of death must not be a probable expectation, otherwise there is no point

Note: all four conditions exemplify what Tooby and Cosmides call "The Risk Contract of War"

Predictions of Theory above:

1) Men, but not women, will have evlolved psychological mechanisms designed for coalitional warfare
2) Sexual access to women will be the primary benefit that men gain from joining male coalitions
3) Men should panic and flee when death appears to be imminent
4) Men should be more likely to go to war when their odds of success appear high
5) Men should have evolved psychological mechanisms designed to enforce the risk contract (seek out cheaters/free riders and punish them for offering no value)
6) Men should have evolved psychological mechanisms that function to detect , prefer, and enlist men in the coalition who are willing and able to contribute to it success

Men Engage in Warfare

Note: fact that men form coalitions and fight other men in coalitions is observed globally

Men are more Likely to Spontaneously Assess Their Fighting Ability

Note: men are naturally evolved to tell when it is wise and unwise to go to war

Adam Fox (1997): asked men how often they thought about fighting – results showed that it was about once a week for males and females reported never/once a year most often

Men Have Adaptations that Facilitate Success in War

Note: men's bodies are better equipped naturally for fighting/physical conflict

Sexual Access as a Recurrent Resource that Flows to Victors

Palmer and Tilley (1995): hypothesized that the primary motivation for males to join gangs is for sexual access to women

- studied 57 gang members in Colorado and 63 same-age members not in gangs
- study concluded that gang members had more sexual partners vs. non-gang members

Note: in some cultures, there are special social designations for those who kill and those who do not – it is a form of status (gang culture is similar)

What Qualities do Men and Women Seek in Coalitional Allies

Note: coalition was defined as "a group of people with whom you identify because you pursue common goals" (DeKay, Buss, & Stone, unpublished manuscript, p. 13)

- three researchers asked 60 men & 53 women based on 148 potential characteristics

Note: both men and women rated the following characteristic as highly desirable in a coalitional member – hardworking, intelligent, kind, open-minded, motivational, wide range of knowledge, good sense of humour, and dependable

Differences: being brave in the face of danger – 2.40 (men) vs. 1.66 (women)
- physically strong 1.07 (men) vs. 0.43 (women)
- good fighter 1.30 (men) vs. 0.42 (women)

Note: above results came from a study of undergraduates

Do Humans Have Evolved Homicide Mechanisms?

Note: more than 16 000 homicides are committed in the US each year, and more than 80% of these are carried out by men (Daly & Wilson, 1988 via FBI crime statistics)

Note: men even fantasize about homicide, much more than women (79% vs. 58%)

Slip-Up Hypothesis: proposed by Kenrick and Sheets (1993)
- according to this hypothesis, males have evolved a psychological propensity for violence as a means of coercive control and eliminating sources of conflict
- murder is not intentional, but merely a slip-up (as murder serves no adaptive function)

Note: an alternative explanation to the "Slip-up" Theory is the **Homicide Adaptation Theory** (Buss, 2005; Duntley, 2005a, 2005b; Duntley & Buss, 2005)
- according to this theory, humans have evolved specific psychological mechanisms that predispose them to kill others under certain predictable circumstances such as warfare, intrasexual rivalry, or spousal infidelity or defection

Evidence in Support:
- this adaptation also works for many other species
- fossil evidence of ancestral humans reveals war was always occurring
- there are even weapons in archeological finding of ancient humans
- theory accounts for why there is little to no murder of genetic relatives

Note: these competing evolutionary hypotheses have not yet been pitted up against up each other directly in empirical tests

Chapter 12: Status, Prestige, and Social Dominance

Note: status, prestige, esteem, honour, respect, and rank are accorded differently to individuals in all known groups

- people devote tremendous effort to avoiding disrepute, dishonor, shame, humiliation, disgrace, and loss of face (thus, the rise of status hierarchies emerge)
- one study of 59 three-person groups of strangers showed that within one minute of interacting, 50% of groups emerged with an established hierarchy, with the rest taking another 4 minutes to come to the same conclusion (Fisek & Ofshe, 1970)

The Emergence of Dominance Hierarchies

Note: crickets remember their record of loss/wins in fights with other crickets (Dawkins, 1989)

- if a cricket wins a lot of fights, it will become more aggressive in later fights
- the opposite effect occurs as well
- male crickets who win more are also more likely to pursue sex with females

Note: the term "pecking order" derives from hen behaviour

- when they first encounter each other, they will fight until each knows who is stronger/weaker
- this order for hens tends to be stable over time and advantageous for each hen
- dominant hens win because they no longer have to "prove" themselves and submissive hens will as well because they know the strength of their opponents and can avoid injury

Note: this hierarchy is an emergent property of the group and NOT the individual

Note: because all fights contain some risk of energy, time, and bodily injury, it would be better for both dominant/submissive parties to decide *before* fighting who is dominant/submissive

- for this reason, selection will favour the evolution of assessment abilities – psychological mechanisms that include assessment of one's own fighting abilities relative to those of others

Dominance Hierarchy: refers to the fact that some individuals within a group reliably gain greater access than others to key resources – resources that contribute to survival or reproduction (Cummins, 1998)

- those ranked higher have greater access to resources and vice versa
- dominance is transitive (chain of command A is dominant over B and then C, etc.)

Dominance and Status in Nonhuman Animals

Note: in Crayfish, more than one male cannot inhabit the same territory without determining who the boss is (Barinaga, 1996)

- it was discovered that Crayfish have a specific neuron that responds differently to the neurotransmitter serotonin depending on the status of that individual crayfish
- in dominant crayfish, serotonin makes the neuron more likely to fire
- in the losers, serotonin inhibits the neuron from firing

Note: when two submissive crayfish are put together, they will still vie for status/dominance

- when two dominant crayfish are placed together, one will emerge submissive

Note: chimpanzees also battle for dominance (de Waal, 1982)

- they make themselves look bigger by certain posture moves
- the most reliable indicator for dominance status among chimpanzees is the number of submissive greeting they receive from other chimps (both male and female)
- for chimps, dominance status = increased sexual access to females (de Waal, 1982)
- dominant chimp will usually be responsible for at least 50% of births in that group

two key features of primate dominance:

1) Hierarchies are not static
2) Physical size of the primate is not the primary determinant of rank

Evolutionary Theories of Dominance, Prestige, and Status

Note: any evolutionary theory must specify the adaptive problems that are solved by ascending status hierarchies, as well as explain why individuals accept subordinate positions within hierarchies

- a good theory would have to account for why status striving appears to be so much more prevalent among males than among females

Note: a good theory would also have to differentiate between dominance hierarchies (which determine allocation of resources) and production hierarchies (which involve coordination and division of labour for the purpose of achieving a group goal) from Rubin (2000)

Prestige, Signaling, Altruism, and Reputation

Note: costly signaling also plays a key role in the acquisition of prestige (Bliege Bird & Smith, 2005)

- in modern social groups, individuals acquire prestige by displaying high levels of competence on tasks that groups value, displaying generosity by giving more than taking, and making personal sacrifices that signal commitment to the group (Anderson & Kilduff, 2009) – key is to make sure others are aware of your sacrifices in order to gain prestige

Note: one study had people give or not give money to charity and found that when people were doing it publicly (for prestige), they were likely to give more (Bereczkei, Birkas, & Kerekes, 2007)

Leadership and Followership: The service-for-prestige theory

Note: displays that benefit others in the group or that indicate deep knowledge that is beneficial to the group is one of the keys to the evolution of leadership (King, Johnson, & Van Vugt, 2009)

- leading and following can be viewed as evolved strategies for solving adaptive problems that involve group coordination (e.g. coalitional hunting/defense)

Service-for-prestige theory of leader-follower relations: according to this theory, leaders provide key services followers in the form of organizational skills, intelligence, wisdom, and knowledge in relevant domains (they produce better outcomes for followers than they can do for themselves)

- this theory is based on reciprocal altruism
- key point is that followers have adaptations for granting prestige to some individuals as leaders, and leaders have adaptations for providing services to followers in exchange for the benefits of that prestige

An Evolutionary Theory of Sex Differences in Status Striving

Note: men and women vary extensively in terms of reproductive output

- male reproductive potential is much higher than for females

Note: nearly all fertile females will succeed in reproducing regardless of social status, but the same is not true for males

- this is why selection favours strategies for males not to be excluded from reproducing

Note: higher status in males is a preference for women

Status and Sexual Opportunity

Note: throughout history, men with the highest status have routinely collected women in harems; only choosing the young, fertile, and the most attractive

- extravagant sexual access to women is restricted to those high in status and power

Note: men scoring high on social dominance admit having more affairs (Egan & Angus, 2004)

- socially dominant adolescent males are more sexually active than their low-status peers
- in modern times, men who have high incomes and are high in status tend to have more frequent sex and a larger number of children (Hopcroft, 2006)
- men who are high in status marry women who are more physically attractive than men lower in status (Elder, 199; Taylor & Glenn, 1976; Udry & Eckland, 1984)
- high status men also seek out women who are younger and more fertile (Grammer, 1992)

Are men Higher in Status Striving?

Note: one cross-cultural study showed that boys were more likely to engage in rougher types of play, assaults, and other aggressive actions – as well as displays of "egoistic" dominance (Whiting and Edwards, 1988)

Note: psychologist Elenor Maccoby (1990) found that two of the biggest sex differences in the preschool years were –

1) Rough-and-tumble play: boys are more aggressive
2) Speech differences: boys use more egoistic language

Note: a sex difference in dominance motivation appears to emerge early in life

Note: Browne (1998, 2002) found that temperamental sex differences, including men's higher aggressiveness and risk-taking are linked with sex differences in status and income in the workplace as adults

Note: SDO refers to social dominance orientation (measure of dominance)

- those high in this category are more likely to put down other groups outside one's own

Men and Women Express Their Dominance through Different Actions

Note: women more than men tended to rate prosocial dominant acts as more socially desirable (e.g. "taking charge at a meeting") and men tended to rate egoistic dominant acts as more socially desirable, including "managing to get one's way" (from Buss, 1981)

Note: it is also true that men tend towards leadership roles – even when low-dominant men are paired with high-dominant women (Megargee, 1969)

Dominance Theory

Note: evolutionary psychologist Denise Cummins (1998, 2005) proposed a dominance theory as a framework to account for many human cognitive capacities that are otherwise puzzling

- proposal starts with the struggle for survival was commonly thought to be between a battle of the dominant and submissive counterparts
- "the evolution of mind emerges from this scene as a strategic arms race in which the weaponry is ever-increasing mental capacity to represent and manipulate internal representations of the minds of others" (Cummins, 1998, p. 37)

Note: dominance theory has two key propositions –

1) Humans have evolved domain-specific strategies for reasoning about social norms involving dominance hierarchies (e.g. who can mate with who, obligations, prohibitions)
2) These cognitive strategies will emerge prior to, and separate from, other types of reasoning strategies

Evidence to support dominance theory:

- early emergence in a child's life of reasoning about rights and obligations (known as deontic reasoning – reasoning about what a person is permitted, obligated, or forbidden to do)
- contrasts with indicative reasoning – reasoning about what is true or false

Note: dominance theory predicts that human reasoning will be strongly influenced by rank (and there is some empirical support for this proposition: Mealey, Daood, & Krage, 1996)

Social Attention-Holding Theory

Note: theory by evolutionary psychologist Paul Gilbert (1990, 2000a) emphasizes the emotional components of dominance

- theory is based in part on the concept of resource-holding potential (RHP)
- RHP refers to an evaluation that animals make about themselves relative to other animals regarding their relative strengths and weaknesses

Note: after evaluations of RHP are made, three types of behaviour follow –

1) Animal might attack
2) Animal might flee
3) Animal might submit

Note: again, these all come from prior evaluations/perceptions

- in humans, we have coopted RHP for another mode: social attention-holding potential (SAHP)
- SAHP refers to the quality of and quantity of attention others pay to a particular person
- In this theory, humans compete for attention, and for value by others in the group

Note: going up in the rank produces two hypothesized consequences

1) Elation
2) Increase in Helping

Note: this can help explain why others sometimes do not seek help from others – a perceived loss of status (Fisher, Nadler, & Whitcher-Alagna, 1982)

Note: plummeting in status according to SAHP will incur the onset of shame, anxiety, rage, etc.

Note: envy is one of the least studied emotions in psychology

- depression is the final hypothesized emotional reaction to the loss of status (following shame, rage, and envy)

Note: in summary, SAHP theory proposes that many aspects of human emotional life, from elation to depression, are evolved features of psychological mechanisms designed to deal with the adaptive problems of status hierarchies

Indicators of Dominance

Note: a variety of verbal and nonverbal characteristics indicate high dominance and status (e.g. time spent talking and testosterone levels)

Verbal and Nonverbal indicators of Dominance

Note: Argyle (1994) concluded that dominant individuals tend to stand at full height, often facing the group, with hands on hips and an expanded chest; they gaze a lot, looking at others while talking; they do not smile much; they touch others; they speak in a loud and low-pitched voice; and they gesture by pointing to others

Note: people infer physical and social dominance when they hear a man with a low-pitched voice (Wolff & Puts, 2010)

Size and Dominance

Note: the term "big man' has both connotations of physical size, as well as a man of importance

- in some cultures, the word for leader is translated as "big man"

Note: even with people we know personally, our mental image of their height is exaggerated if we know them to be high in social status (Dannenmaier &Thumin, 1964)

Testosterone and Dominance

Note: Testosterone is an androgen – perhaps the most important class of hormones responsible for the development and maintenance of "masculine" features in a variety of animals (Mazur, 2005)

- example of castrated male chicks – they will no develop fully and usually fail to attract females
- among humans, sex differences in testosterone are large (men average one hundred-thousandth of a gram of T per litre of blood – 7x that of women)

Note: T is produced in the adrenal cortex and the ovaries for women

- it is the male testes which allow for a much greater production of testosterone in males

Note: in one study, cows treated with T rose among their ranks and when it was withdrawn, they reverted back to their lower status

- similar results were seen in low-ranking roosters (Allee, Collias, & Lutherman, 1939)

Note: in humans, ethical issues impede experimental testing of this kind, BUT high levels of (preexisting) T have been associated with rebellious/anti-social acts, and risk-taking (White, Thornhill, & Hampson, 2006)

Note: the mispatch hypothesis states that placing high-T individuals in low-status conditions or low-T individuals in high status conditions will create stress and impair cognitive performance (Josephs, Sellers, Newman, & Mehta, 2006)

Note: one of the most well documented effects with T in humans is that it changes according to the individual's status (Mazur, 2005)

- T levels of athletes rise just before a match and if they win, elevated levels of T stay up to 2 hours

Note: the evolutionary function of these changes is unknown but it might be that they are preparing for future challengers

Note: the overall conclusion from this research must be confined to men, and it points to a reciprocal model of causation (Dabbs & Ruback, 1988; Mazur, 2005)

- high T levels in men might lead to dominating behaviours that lead to high status in some subcultures, but reciprocally, elevations in status appear to lead to elevations in T levels (Bernhardt, 1997)

Serotonin and Dominance

Note: evolutionary scientists Michael McGuire and Michael Raleigh conducted experiments in vervet monkeys and found that males with high social rank had almost twice as much serotonin in their blood as did the low-ranking monkeys (McGuire & Troisi, 1998)

- but when alpha males were overthrown, their serotonin levels plummeted

Needed: A Theory of Determinants of Dominance

Note: other correlates of dominance across cultures include athleticism, intelligence, physical attractiveness, humourousness, and good grooming (Weisfeld, 1997b)

- lacking is a comprehensive theory that can explain precisely what people value in others, why they value those things, and precisely why humans hold some people in esteem and awe while others remain ignored or are humiliated

Self-Esteem as a Status-Tracking Mechanism

Note: Barkow (1989) argues that self-esteem tracks dimensions of prestige, power, and status within one's referent group: "the evaluation that results in self-esteem is symbolic in nature, involving the application of criteria for the allocation of prestige" (p. 190)

Sociometer Theory: basic premise is that self-esteem functions as a subjective indicator or gauge of other people's evaluations

- an increase in self-esteem indicates an increase in the degree to which one is socially included and accepted by others
- a loss of self-esteem follows from a downward shift in inclusion and acceptance by others
- humans have evolved in groups and needed others to survive and reproduce – this led to the evolution of motivations to seek the company of others, form social bonds, and attain favour of others in the group
- a useful function of self-esteem would be to guide decisions about whom to challenge and to whom to submit (allows one to know which people not to mess with)
- another function of self-esteem is to gauge where one is in the sexual marketplace

Strategies of Submissiveness

Note: what is the function of submissiveness is things like sexual preference and resources is given to those high status members of the group?

Sex Differences in Submissive Strategies

Note: one study of men and women approaching doormen at clubs showed different strategies of trying to get in – women smiled more, played with their hair, and touched their faces (Salter, Grammer, & Rikowski, 2005)

- 46% of women smiled compared to 18% for men

Deceiving Down

Note: evolutionary biologist John Hartung (1987) proposed the concept of deceiving down to describe those stuck in a position that they might otherwise perceive as unfair or beneath their station

- this does not mean "playing dumb", but rather an actual reduction in self-confidence to facilitate acting in a submissive, subordinate manner
- subordinate = nonthreatening

The Downfall of "Tall Poppies"

Note: tall poppy comes the Oxford English Dictionary describing “an especially well-paid, privileged, or distinguished person” (Simpson & Weiner, 1989)

- other dictionaries describe this tem in similar ways

Note: Salovey &Rodin (1984) conducted a study which outlines the potential strategies of subordinates in terms of beahviour

- envy was the most common emotion experienced towards a tall poppy, especially if the other person’s success was in a domain that was important to the participant, such as academic achievement among students
- a submissive strategy could itself be taking pleasure in the fall of those with greater status