

# Evolutionary Theory of Personality

*How evolution shapes who we are: Understanding personality through the lens of natural and sexual selection.*



## From Drop-Out to Harvard Professor

*David Buss dropped out of high school at 17, working night shifts at a truck stop. After violent encounters and drug arrests, he enrolled in night school and won a random lottery to enter University of Texas—despite lacking the required GPA.*

*Ten years later, he was a professor at Harvard University.*



# The Spark of Evolution



## Intellectual Awakening

*Buss's fascination with sex, attraction, jealousy, and mating behaviors focused his career ambitions and sparked his love of learning.*



## Family Influence

*His father, Arnold H. Buss, was a distinguished psychology professor who published the first evolutionary psychology textbook.*



# How Evolution Works

01

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## Artificial Selection

*Humans breed desirable traits in species—like creating Great Danes and Chihuahuas from wolves.*

02

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## Natural Selection

*Nature selects traits that increase survival. Successful traits become more common over time.*

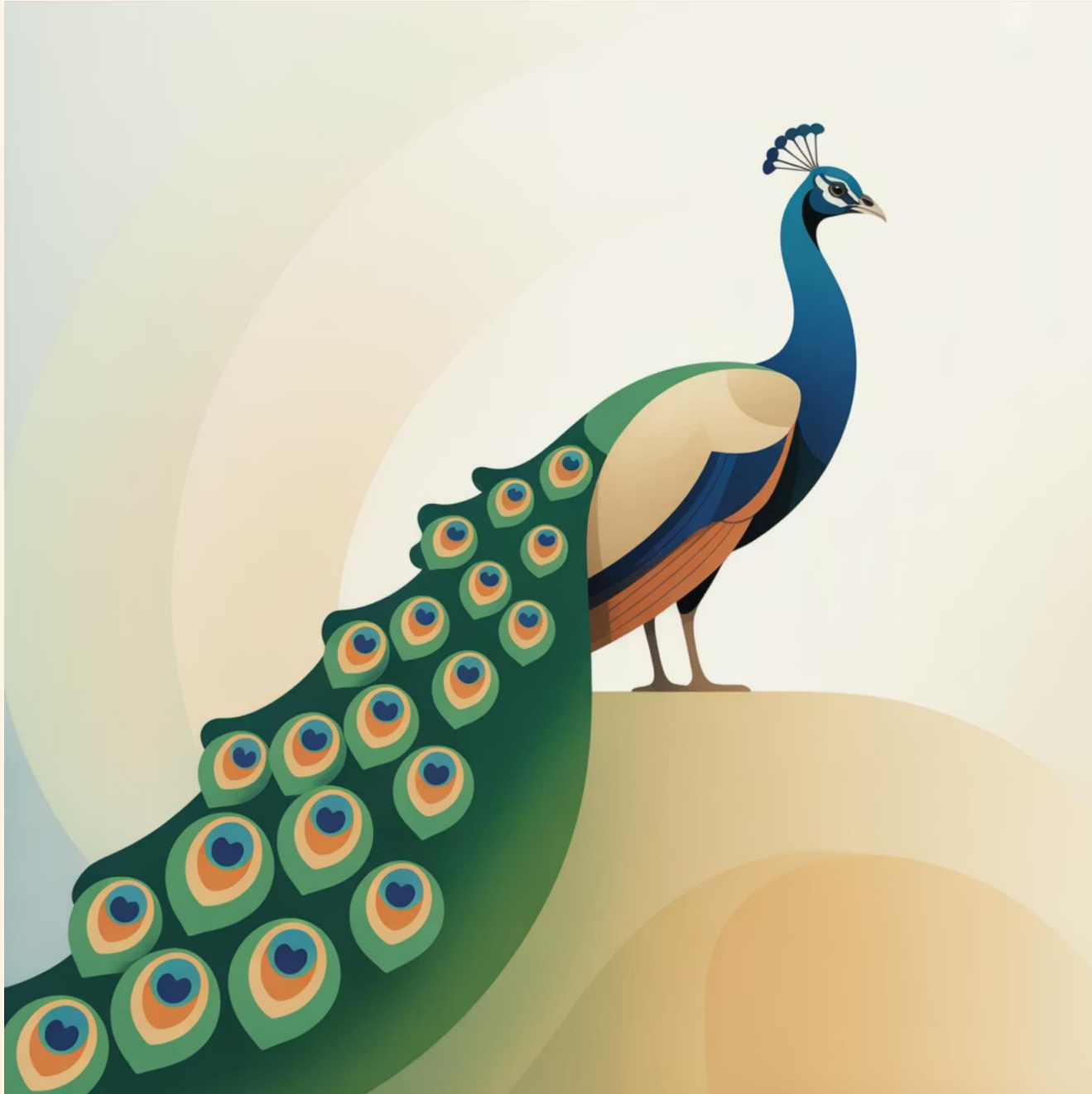
03

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## Sexual Selection

*Traits that attract mates get passed on—even if they reduce survival, like peacock feathers.*

# The Peacock Paradox



## Why Handicaps Signal Fitness

*Peacock plumage makes survival harder but signals health to peahens. Only the strongest males can maintain bright, bulky feathers—an honest marker of genetic fitness that cannot be faked.*

*In humans: strength, beauty, intelligence, and creativity are sexually selected traits.*

# Three Evolutionary Outcomes



1

## Adaptations

*Evolved strategies solving survival or reproductive problems. Examples: sweat glands, taste preferences, human intelligence.*

2


## By-Products

*Traits that come along for the ride. Examples: scientific ability, driving skill—not directly evolved but enabled by adaptations.*

3

## Noise

*Random changes with no functional impact. Example: whether your belly button is an "innie" or "outie."*



# The Marriage of Evolution and Personality

*Both evolution and personality start with individual differences. Yet it took until the 1990s for these fields to merge—more than 130 years after Darwin predicted it.*

# The Paradox of Personality

📄 **The Central Question:** *If natural selection eliminates maladaptive traits and creates universal human nature, how can individuals consistently differ in personality?*

1

Natural Selection

*Should eliminate differences over time*

2

Yet Personality Exists

*People clearly differ in consistent ways*

3

Buss's Solution

*Personality traits are adaptations*



# Four Big Questions

# 1 Why is the human mind designed this way?

*How did it evolve to its current form?*

## 2 How is the human mind designed?

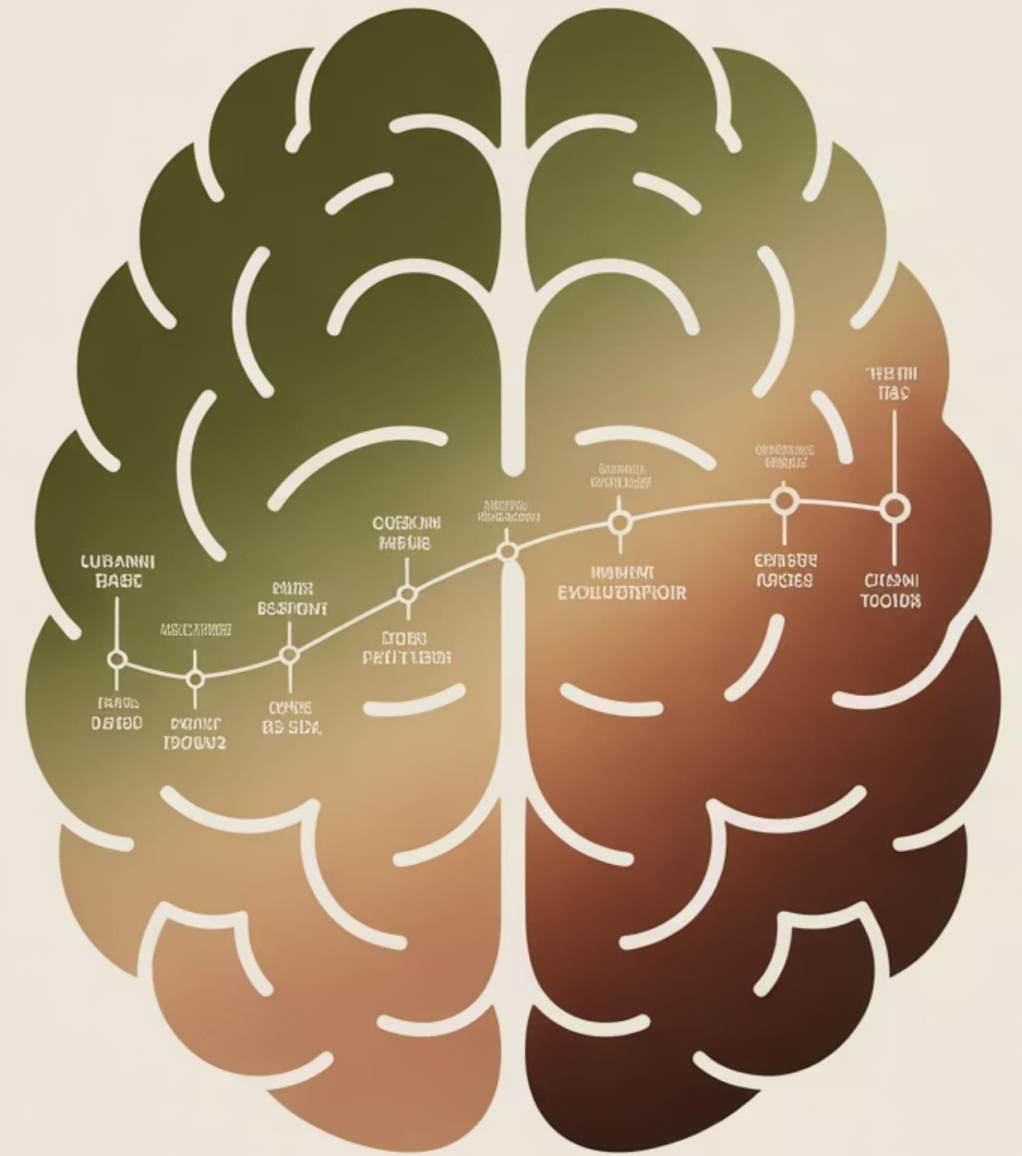
*What are its parts and structure?*

### 3 What functions do these parts serve?

*What is the mind designed to do?*

## 4 How do mind and environment interact?

*How does this shape human behavior?*



# Nature AND Nurture

## The Fundamental Situational Error

*Assuming environment alone produces behavior without internal mechanisms.*

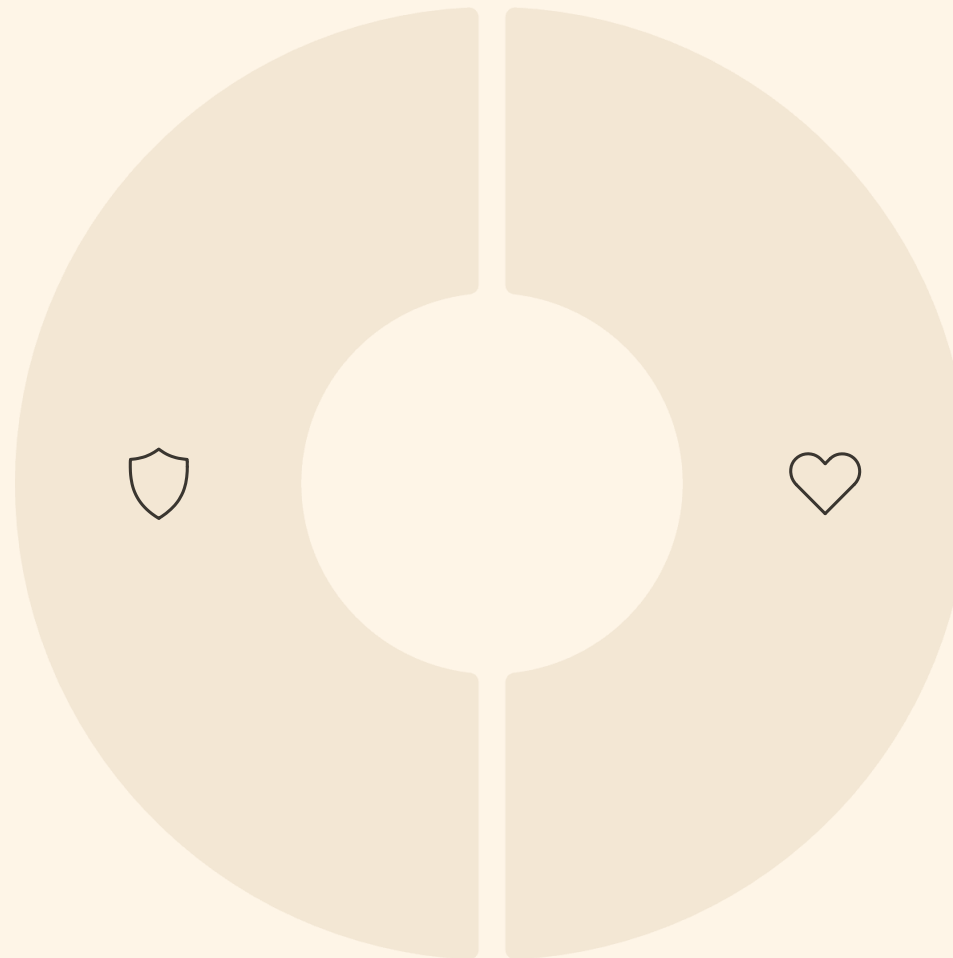
*Evolution is inherently an interaction between biology and environment. Evolved mechanisms only exist in response to environmental input. There is no split between nature and nurture.*

## The Fundamental Attribution Error

*Ignoring situational forces and focusing only on internal dispositions.*

# Adaptive Problems

**Survival**  
*Disease, parasites, food shortages,  
harsh climate, predators, natural  
hazards*



**Reproduction**

*Mate attraction, mate selection,  
intrasex competition, intimacy*

*Evolution by natural selection has produced mechanisms—complex solutions to these fundamental problems of life.*

# Physical vs. Psychological Mechanisms

## Physical Mechanisms

*Physiological organs and systems solving survival problems. Often shared across species.*

- *Sensory systems (eyes, ears, nose)*
- *Immune system*
- *Blood clotting*
- *Temperature regulation*

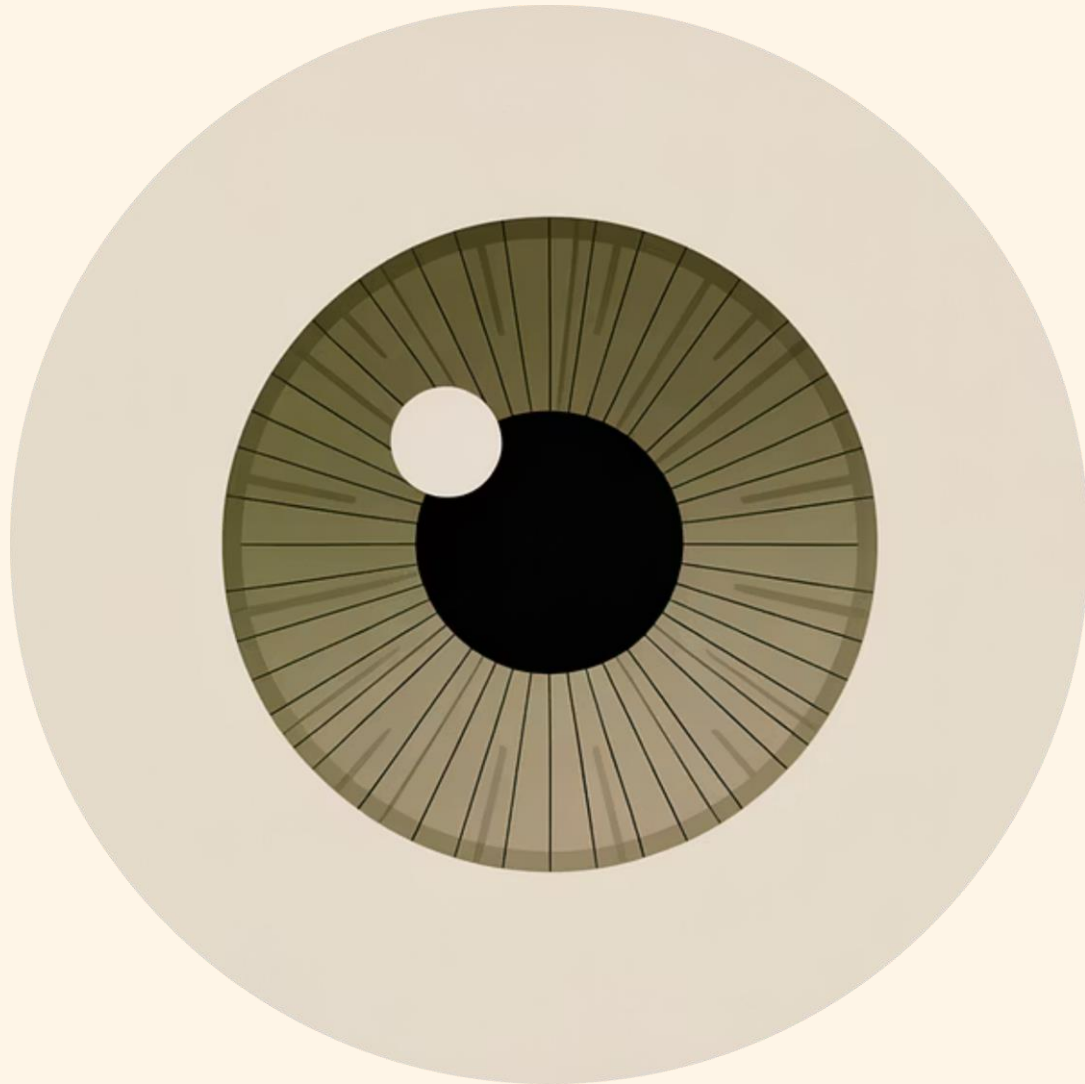
## Psychological Mechanisms

*Internal cognitive, motivational, and personality systems. More species-specific.*

- *Dominance and status-seeking*
- *Trust and cooperation*
- *Mate preferences*
- *Emotional responses*



# Sensory Adaptations Differ



## Human Vision

*Three color receptors (red, green, blue) for superior color vision*



## Dog Hearing

*Hear 10-35,000 Hz vs. human 20-20,000 Hz range*

*Different species evolved different sensory mechanisms to solve the same problem: taking in information from the external world.*

# The Big Five as Evolved Strategies

## Surgency/Dominance

*Hierarchy negotiation, leadership, risk-taking, positive emotion. Signals status and attractiveness.*

## Agreeableness

*Cooperation, group cohesion, alliance formation. Signals trustworthiness.*

## Conscientiousness

*Reliability, focus, commitment to work. Signals dependability in times of need.*

## Emotional Stability

*Stress management, threat sensitivity. Adaptive anxiety warns of danger.*

## Openness/Intellect

*Innovation, problem-solving, exploration. Signals creativity and intelligence.*

# Personality Answers Adaptive Questions

- *Who is high or low in the social hierarchy?*
- *Who possesses the resources that I need?*
- *With whom should I mate?*
- *Who might harm me or betray my trust?*
- *Who will make a good member of my group?*
- *Whom can I trust and depend on when in need?*

*Personality traits signal to others our ability to solve survival and reproductive problems.*

# Origins of Individual Differences



## Environmental Sources

*Early experiential calibration and alternative niche specialization*



## Heritable/Genetic Sources

*Body type, facial morphology, physical attractiveness*



## Nonadaptive Sources

*Neutral genetic variations and mutations*



## Maladaptive Sources

*Genetic defects and environmental trauma*



# Early Experiential Calibration

## Childhood Shapes Strategy

*People who grow up without a father present are more likely to be sexually active early and have more partners. This reflects calibration to an environment where parental attention is unreliable and adult relationships are viewed as transient.*

*Attachment style is another example: secure attachment in childhood predicts similar relationship patterns in adulthood.*



# Birth Order and Niche Specialization

1

First Born

*Identify with parents and authority figures to gain attention*

2

Later Born

*Focus on overthrowing those in power (older siblings) to stand out*

*Children of different birth orders gravitate toward different personalities and interests—it's the only way to gain parental attention when competing with siblings.*



# Motivation and Emotion as Mechanisms

## Power and Dominance

*Takes forms of aggression, achievement, status, hierarchy negotiation. Directly affects health and well-being.*

## Intimacy and Love

*Expressed through attachment, reciprocal alliance, cooperation. Essential for survival and reproduction.*

## Emotions as Alerts

*Negative emotions signal harm (sadness for loss, anger for insult). Positive emotions signal benefit (pride for success).*

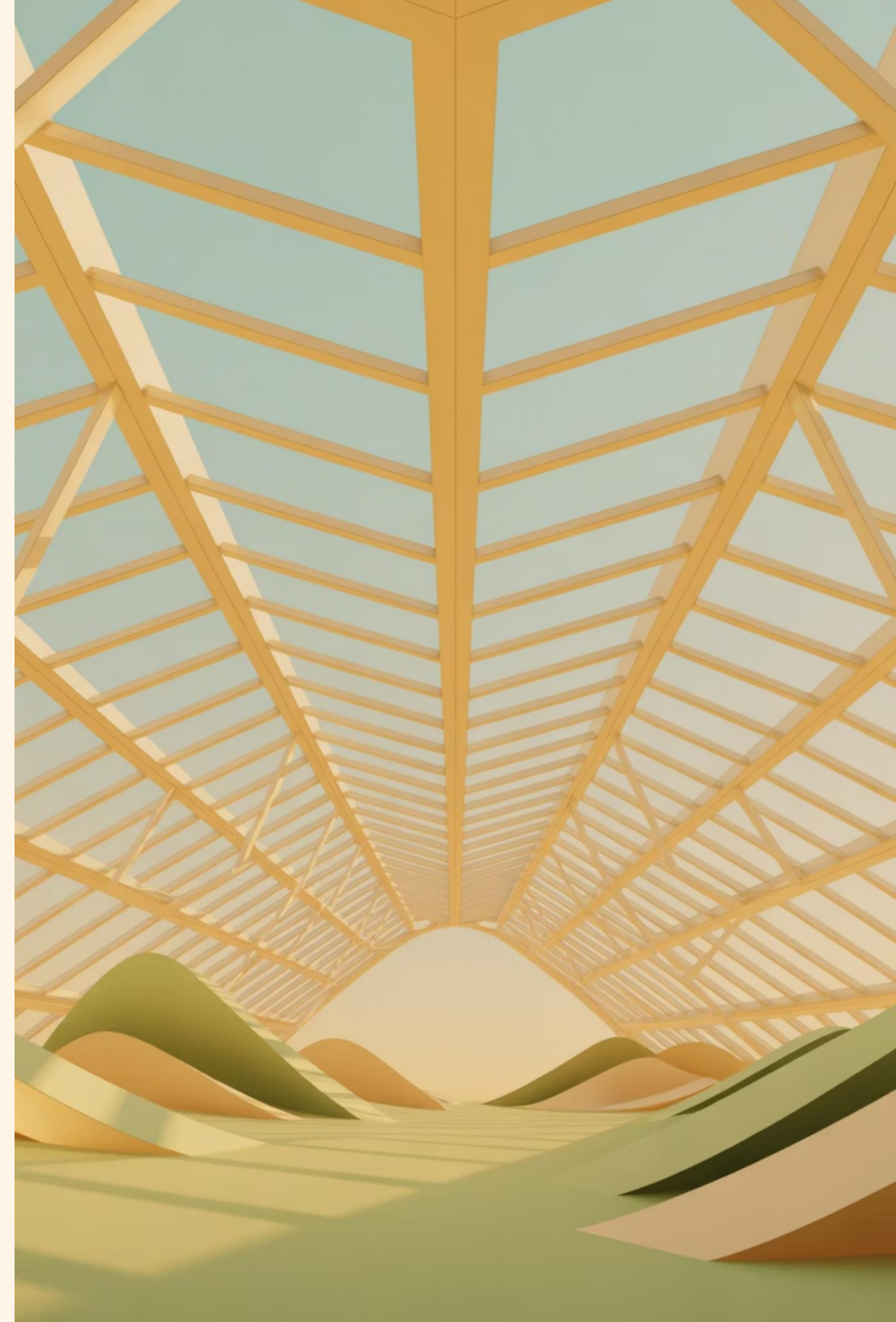
*Motivation and emotion are directly linked with stable personality traits and are adaptations that solve problems of survival and reproduction.*

# The Grand Framework Returns

*"Evolutionary meta-theory, properly conceived, provides for personality psychology the grand framework it seeks, and which has been missing almost entirely from its core formulations."*

*—David Buss, 1991*

*After a century of fragmented theories, evolutionary psychology offers a comprehensive explanation for personality's ultimate origins, overall function, and structure—bridging biology and psychology to understand who we are and why.*



# Neo-Bussian Evolutionary Theories of Personality

*Building on David Buss's groundbreaking work, evolutionary personality theory has evolved to explain how personality traits emerged as adaptive solutions to survival and reproduction challenges.*



## Chapter Overview

# Expanding Evolutionary Personality Theory

01

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### MacDonald's Contributions

*Linked personality to evolved motivational and emotional systems, proposing viable alternative strategies for fitness.*

02

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### Nettle's Framework

*Argued environmental variability selects for individual differences, with costs and benefits for each Big Five trait.*

03

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### Research Evidence

*Studies in fitness, genetics, and animal personality support evolutionary origins of personality.*





# MacDonald's Four Personality Dimensions

Dominanc  
e

*Approach  
motivation  
tied to power  
and status  
seeking.*

Conscienti  
ousness

*Impulse  
control and  
organized  
behavior  
patterns.*

Nurturanc  
e

*Caregiving  
and prosocial  
behavioral  
strategies.*

Neuroticis  
m

*Negative  
affect and  
threat  
sensitivity  
systems.*

# Viable Alternative Strategies

*MacDonald argued personality variation represents adaptive responses to changing environments. Different traits succeed in different contexts.*

## Guppy Boldness

*In low-predator environments, bold guppies thrive. When predators appear, cautious traits become common within generations.*

## Chickadee Exploration

*Bold, exploratory female chickadees survive better in food-poor years. In abundant years, cautious birds have higher survival rates.*



# Nettle's Costs and Benefits Framework

*Each Big Five dimension carries evolutionary trade-offs that maintained variation in ancestral populations.*

## Extraversion

**Benefits:** Mating success, social allies, environmental exploration

**Costs:** Physical risks, reduced family stability

## Neuroticism

**Benefits:** Vigilance to dangers, competitive striving

**Costs:** Stress, depression, interpersonal difficulties

## Openness

**Benefits:** Creativity enhances attractiveness

**Costs:** Unusual beliefs, potential psychosis



## Conscientiousness

**Benefits:** Long-term fitness focus, increased life expectancy, desirable social qualities

**Costs:** Missing immediate gains, obsessionality, rigidity

## Agreeableness

**Benefits:** Understanding others' mental states, harmonious relationships, valued coalition partner

**Costs:** Vulnerability to social cheating, failure to maximize selfish advantage

Common Misconceptions

# Three Misunderstandings About Evolutionary Theory

## Genetic Determinism Myth

*Evolution requires nature-nurture interaction. Calluses only form with environmental input. Epigenetics shows experiences alter gene expression.*

## Conscious Mechanisms Myth

*Evolved strategies operate unconsciously. We don't calculate inclusive fitness mathematically, just as spiders don't understand geometry to spin webs.*

## Optimal Design Myth

*Adaptations lag behind environments. Our preference for fatty, sugary foods was adaptive ancestrally but contributes to modern obesity.*



# Research Evidence: Personality and Fitness

*Three lines of research support evolutionary personality theory: traits as fitness indicators, genetic foundations, and animal personality studies.*



## Fitness Studies

*Personality traits relate to reproductive success and survival rates.*



## Genetic Research

*Twin studies show 40-60% of personality differences stem from genetics.*



## Animal Personality

*Similar traits exist across species, suggesting ancient evolutionary origins.*

# The Tsimane' Study: Testing Evolutionary Predictions

*Gurven and colleagues studied the Tsimane', a small-subsistence Amazonian society, to examine personality's relationship to fitness in conditions closer to ancestral environments.*

## Study Context

- *90 villages, 50-500 people each*
- *Limited education (25% literacy)*
- *20% infant/child mortality rate*
- *Measured Big Five personality traits*



An illustration of a man with dark hair, wearing a green jacket, holding a baby. The background consists of soft, abstract shapes in shades of orange and green.

# Personality and Reproductive Success

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Women

*No relationship between personality and reproductive success in women.*

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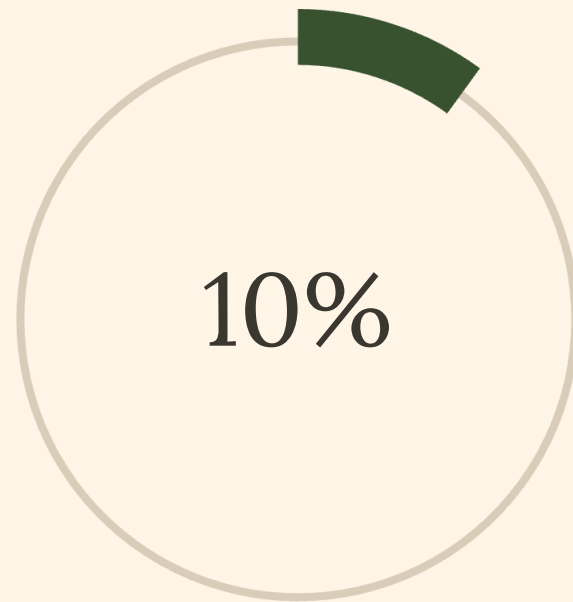
Men

*High extraversion, openness, conscientiousness and low neuroticism predicted more children and surviving offspring.*

*Results support sexual selection of personality traits, particularly in males competing for reproductive opportunities.*

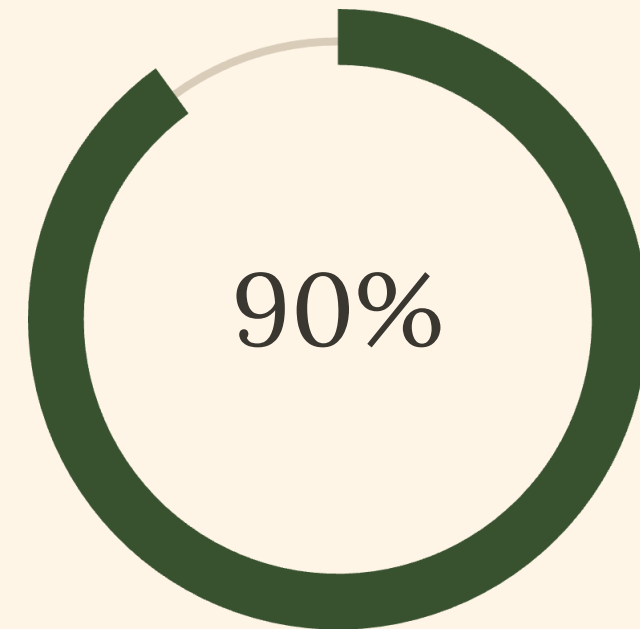
# Health Costs of Personality Traits

*Researchers measured health costs through BMI, cortisol levels, inflammation markers, and infection indicators.*



**Industrious Men**

*Small health cost: elevated infection measures for highly industrious men.*

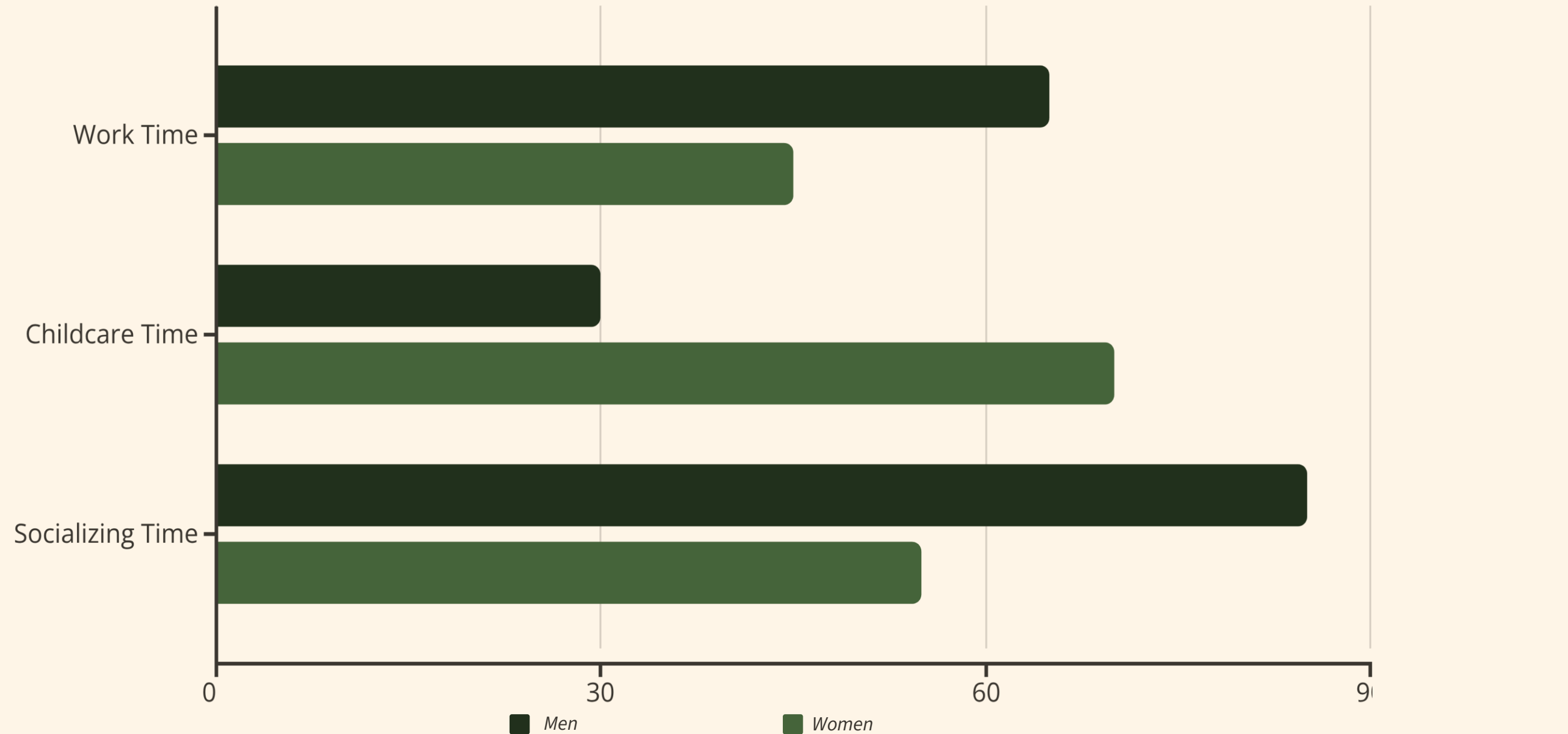


**Extraverted, Open, Prosocial**

*Better overall health than men low on these traits.*

❏ **Social Conflict Finding:** *Extraverted and open men had more village conflicts. Ironically, prosocial men also experienced more conflicts, while industrious men had fewer.*

# Personality and Fitness-Related Activities



*Personality more strongly predicted fitness activities in men. Socializing showed strongest personality relationships: extraverted, open, agreeable, prosocial men socialized most.*





# Industrialized Cultures: Reproductive Success

*Berg and colleagues studied over 10,000 elderly Americans, examining personality's relationship to children and grandchildren—true reproductive success across generations.*

## Generation 1

*High extraversion, lower conscientiousness and openness linked to more children.*

1

2

## Generation 2

*Same personality pattern predicted more grandchildren. Higher agreeableness also associated with more grandchildren.*

# Embodied Fitness: Strength and Education

*Von Rueden and colleagues examined how personality relates to physical strength and educational attainment in the Tsimane'.*

## Physical Strength

- *Upper body strength measured*
- *Grip strength assessed*
- *Positively related to prosociality*
- *Not related to industriousness*

## Educational Attainment

- *Years of schooling tracked*
- *Related to prosocial behavior*
- *Associated with extraversion, agreeableness, conscientiousness, openness*

# Extraversion and Reproductive Payoffs

*Lukaszewski and Roney argue extraversion co-evolved with traits that enhance reproductive success.*

**Physical Strength**  
*In men, strength relates to extraversion—supporting mate competition.*



**Physical Attractiveness**

*Attractiveness relates to extraversion in both sexes—garnering social attention.*

**Social Approach**

*Extraverts more likely to approach mates and compete for status.*

# Genetics and Personality

*Complex psychological traits are polygenically transmitted—influenced by many genes, not single genes.*



## QTL Method

*Quantitative trait loci approach identifies genetic markers associated with personality traits on continuum from low to high.*



## Twin-Adoption Studies

*Research shows 40-60% of personality differences stem from genetic influence, with environment accounting for remainder.*

# The DRD4 Gene and Thrill Seeking



## Dopamine Connection

*The DRD4 gene affects dopamine production. Longer gene sequences produce less efficient dopamine, leading to thrill-seeking behavior to compensate.*

*First genetic evidence for normal personality trait. Found across species: birds, apes, dogs show similar DRD4 effects on exploratory behavior.*

# Animal Personality Across Species

*Gosling and John's meta-analysis of 19 studies across 12 species found personality dimensions similar to human Big Five.*



## Primates

*Chimpanzees share all Big Five dimensions with humans, including conscientiousness—the most recently evolved trait.*



## Mammals

*Dogs, cats, horses show neuroticism, extraversion, agreeableness. Some show openness and conscientiousness variants.*



## Birds & Fish

*Chickadees display bold-shy dimension. Guppies show consistent exploratory differences—approach versus avoidance.*

# Critique of Evolutionary Personality Theory



## Strengths

- *Broad scope organizing knowledge*
- *Generates novel predictions*
- *Strong empirical foundation*
- *High parsimony with few key concepts*



## Limitations

- *Difficult to falsify directly*
- *Limited practical applications*
- *Debate over what constitutes adaptation*
- *Risk of "just-so stories"*

*Despite criticisms, evolutionary personality theory has generated over 660 scholarly articles and established scientific infrastructure including dedicated journals and societies.*

# Concept of Humanity

## Optimism vs. Pessimism

*Neutral and descriptive.*

*Humans capable of both heroism and cruelty—both are part of evolved nature.*

## Determinism vs. Free Will

*Complex view. Awareness of evolved mechanisms gives power to change them. Biology and environment both necessary.*

## Causality vs. Teleology

*Strongly causal. Evolution by natural selection is fundamentally a theory of origins and causes.*

## Conscious vs. Unconscious

*Emphasizes unconscious. Most evolutionary strategies operate beyond awareness, like attraction and stress responses.*

## Biological vs. Social

*Balanced perspective. Evolved mechanisms require environmental input. Structure is universal, content shows individual differences.*