

**DEPARTMENT OF PSYCHOLOGY**

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**EVOLUTIONARY PERSPECTIVE ON  
COGNITIVE PSYCHOLOGY**

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## INTRODUCTION

The evolutionary perspective on cognitive psychology explains human cognitive processes such as perception, attention, memory, learning, language, reasoning, problem-solving, and decision-making in terms of their evolutionary functions and adaptive value. The central assumption is that many psychological mechanisms have been shaped by natural selection because they helped organisms solve recurring problems related to survival and reproduction (Darwin, 1859; Tooby & Cosmides, 1992).

### Basic Assumption:

The evolutionary perspective is based on Charles Darwin's theory of natural selection. According to Darwin (1859), characteristics that provide advantages for survival and reproduction are more likely to be passed on to subsequent generations.

Applied to cognitive psychology, this means that cognitive abilities may have developed because they helped our ancestors deal with challenges in their environments. For example:

Attention helped individuals detect important environmental information.

Memory helped them remember food sources and dangerous locations.

Learning helped them modify behaviour according to experience.

Problem-solving helped them deal with environmental challenges.

Social cognition helped them understand other members of their group.

Therefore, cognition can be understood partly as a collection of mechanisms that enabled humans to adapt to their environments (Tooby & Cosmides, 1992).

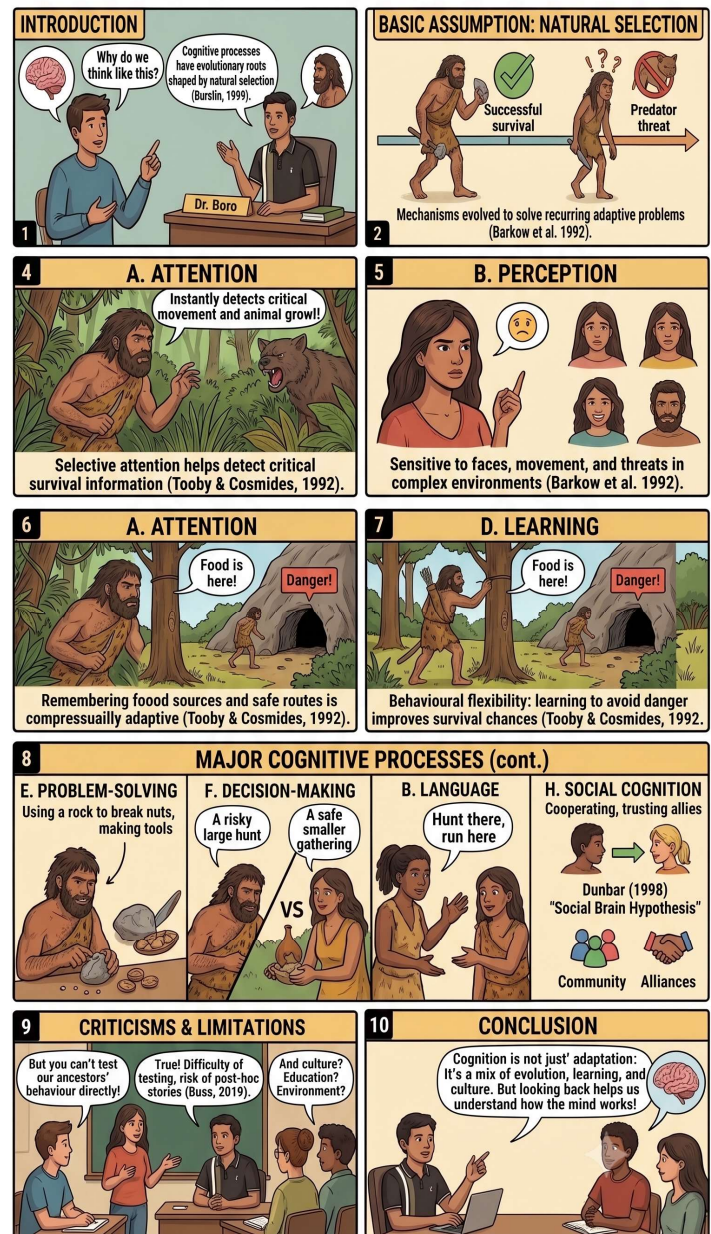
### Evolution and the Human Mind:

Evolutionary psychologists argue that the human mind has been shaped by the problems faced repeatedly by our ancestors. These problems included obtaining food, avoiding predators, finding shelter, forming relationships, cooperating with others, caring for children, and identifying trustworthy individuals (Barkow et al., 1992).

Cosmides and Tooby (1994) proposed that some cognitive mechanisms may be specialized for

dealing with particular types of adaptive problems. From this perspective, the mind is not necessarily a completely general-purpose information-processing system; rather, it may contain mechanisms that evolved to perform particular functions.

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## Evolutionary Explanation of Major Cognitive Processes

### A. Attention

Attention enables us to select certain information while ignoring other information. From an evolutionary perspective, selective attention has considerable adaptive value because organisms need to identify information that

is important for survival.

For example, an individual who quickly noticed a sudden movement or unfamiliar sound in a dangerous environment could respond more rapidly to a potential threat. Thus, attentional mechanisms may have been shaped partly by the need to detect biologically significant information (Tooby & Cosmides, 1992).

#### B. Perception:

Perception allows individuals to interpret information received through the senses. Evolutionary psychologists suggest that perceptual systems have been shaped by the need to obtain information that is relevant to survival and social interaction.

Humans are particularly sensitive to information such as faces, emotional expressions, movement, and potential threats. These abilities can be understood in relation to the demands of living in complex physical and social environments (Barkow et al., 1992).

#### C. Memory

Memory has an important adaptive function because organisms need to use information from previous experiences to guide future behaviour.

For example, remembering:

where food was found,  
which locations were dangerous,  
which individuals were trustworthy, and  
which strategies were successful  
could improve survival.

Research on adaptive memory provides evidence that information processed in relation to survival can be remembered particularly well. Nairne et al. (2007) found that imagining the survival relevance of information enhanced later memory performance.

Thus, evolutionary psychologists suggest that some characteristics of human memory may reflect the importance of remembering information relevant to survival.

#### D. Learning

Learning allows organisms to modify their behaviour based on experience. Evolutionarily, learning provides behavioural flexibility.

An organism does not have to rely entirely on genetically predetermined behaviour. Instead, it can learn from environmental conditions and adjust its behaviour.

For example, an individual who learns that a particular area contains danger can avoid that area in the future. Such flexibility can have adaptive value (Tooby & Cosmides, 1992).

#### E. Problem-Solving

Humans face numerous problems involving food,

shelter, social relationships, resources, and environmental threats.

Evolutionary psychology suggests that some aspects of human reasoning and problem-solving may have developed because they helped ancestral humans deal with recurring adaptive problems (Cosmides & Tooby, 1994).

For example, making and using tools required several cognitive abilities, including planning, memory, reasoning, and problem-solving.

#### F. Decision-Making

Decision-making involves selecting among different alternatives. From an evolutionary perspective, decisions concerning food, resources, social relationships, risks, and cooperation could have important consequences for survival and reproduction.

Some apparently irrational decisions may therefore reflect cognitive mechanisms that were useful under particular ancestral conditions but may not always produce optimal outcomes in modern environments (Cosmides & Tooby, 1994).

#### G. Language

Language is one of the most sophisticated human cognitive abilities. It allows individuals to communicate information, coordinate activities, teach others, maintain social relationships, and transmit knowledge across generations.

Pinker (1994) argued that language can be understood as an evolved human capacity. However, the evolutionary origins of language remain an active area of scientific debate.

#### H. Social Cognition

Humans are highly social organisms. Survival often depended on cooperation, competition, communication, and maintaining relationships within groups.

Consequently, cognitive abilities involved in understanding other people may have had important adaptive functions. These include:

- Recognizing emotions,
- Understanding intentions,
- Predicting behaviour,
- Remembering social relationships,
- Cooperating with others, and
- Identifying social alliances.

The social brain hypothesis proposed by Dunbar (1998) suggests that the complexity of primate social relationships placed substantial demands on cognitive abilities and may have contributed to the evolution of relatively large brains.

## Criticisms and Limitations

Despite its contributions, the evolutionary perspective has several limitations.

### 1. Difficulty of testing evolutionary explanations

The behaviour and psychological characteristics of our ancestors cannot usually be directly observed. Therefore, reconstructing the evolutionary history of a cognitive mechanism can be difficult.

### 2. Risk of post-hoc explanations

Critics have argued that evolutionary explanations can sometimes become plausible stories constructed after observing a behaviour, without sufficient independent evidence.

### 3. Role of culture

Human cognition is strongly influenced by culture, education, learning, and social experience. Therefore, evolutionary explanations should not be considered independently of cultural and developmental factors.

### 4. Multiple explanations

A cognitive behaviour may have several possible causes. It may reflect a combination of evolutionary history, biological development, learning, culture, and immediate environmental conditions.

### 5. Not every characteristic is an adaptation

Some psychological characteristics may be by-products of other adaptations rather than direct adaptations themselves. Therefore, evolutionary psychologists must distinguish between adaptations, by-products, and culturally learned behaviours (Buss, 2019).

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