

# Contemporary Psychology



1. Dichotomies
2. Physiological vs. Psychological
3. Nature vs. Nurture
4. Psychology's Three Main Levels of Analysis

Today

- Understand the physiological vs. psychological dichotomy and some problems with it.
- Understand the nature vs. nurture dichotomy and some problems with it.
- Define the term 'epigenetics.'
- Discuss the levels of analysis at work in the field of psychology.

## Learning Goals

We tend to reduce the complexities of our lives down to simple, mutually exclusive dichotomies: right vs. wrong, good vs. evil, etc.

# Dichotomies

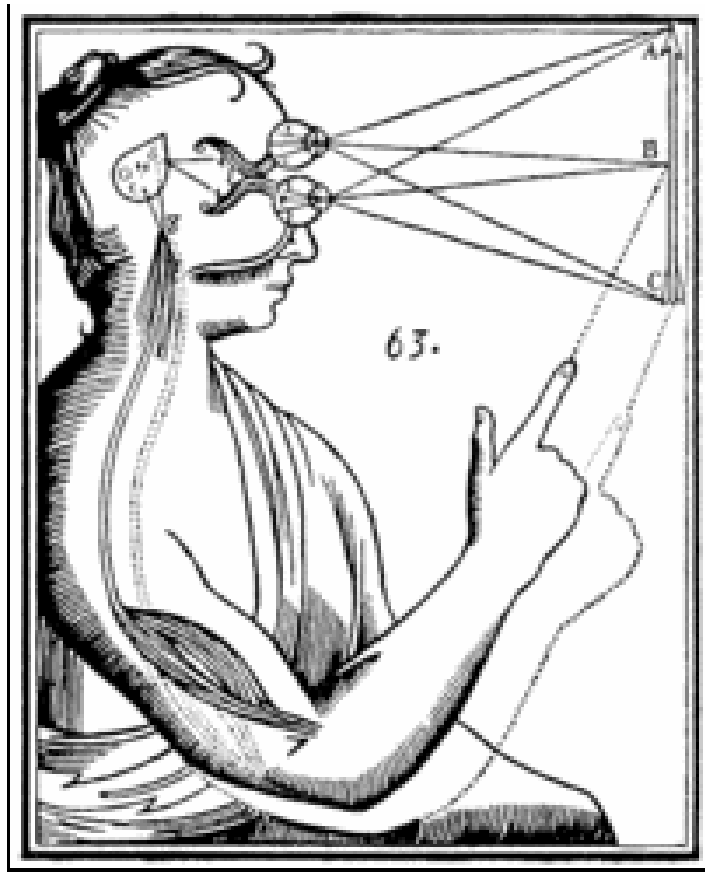
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The tendency to think about the biology of behaviour in terms of dichotomies is illustrated by 2 kinds of questions that people commonly ask:

1. Is it physiological or is it psychological? (body/brain vs. mind)
2. Is it inherited or is it learned? (genes vs. environment)

# Dichotomies

The 17th-century French philosopher René Descartes is probably most famous for his statement: "*Dubito, ergo cogito, ergo sum*" ("I doubt, therefore I think, therefore I am").



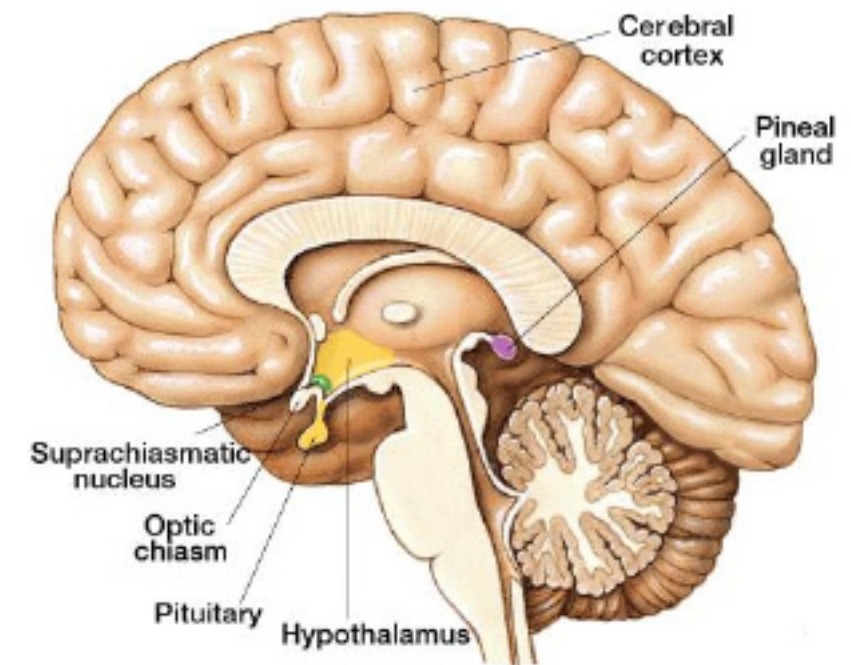
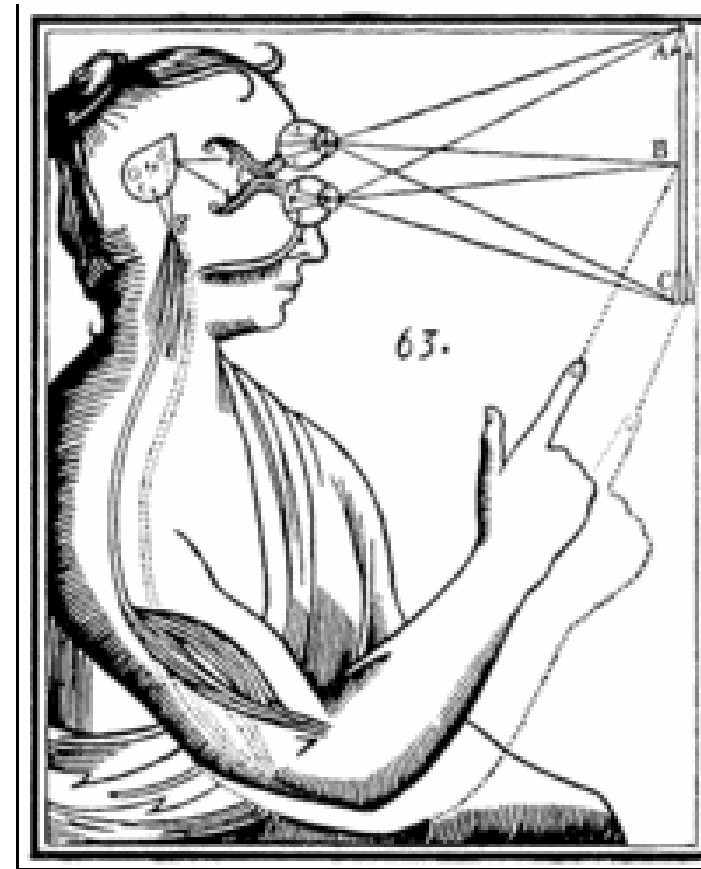
Physiological or Psychological?



Descartes also proposed a philosophy popularly known as Cartesian dualism: The universe is composed of two elements:

1. physical matter
2. the human mind (soul/spirit)

In his original conception, the body (including the brain) interacted with the mind via the pineal gland.



Physiological or Psychological?

Most people now understand that human behaviour has a physiological basis, but many still cling to the dualistic assumption that there are certain human activities that somehow transcend the human brain.

Physiological or Psychological?



“Although political views have been thought to arise largely from individual experiences, recent research suggests that they may have a biological basis.”  
(Oxley et al., 2006)

Physiological or Psychological?

# Neurological vs. Psychological

Schizophrenia is associated with elevated dopamine levels, etc.  
So, schizophrenia is a neurological disorder (a “brain disorder”,  
an “organic disorder”)?

## Physiological or Psychological?

# Placebo Effects

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If someone with Parkinson’s disease shows improvement in their symptoms after taking a placebo, is their condition “all in their mind.”

1. The brain is not capable of very complex things, so there must be a mind.
2. Only humans have minds, and only humans can think.

## 2 Key Aspects of Cartesian Dualism

“In no case is an animal activity to be interpreted in terms of higher psychological processes, if it can be fairly interpreted in terms of processes which stand lower in the scale of psychological evolution and development.” (Morgan 1903, p. 59)

# Morgan's Canon

1. Even the most complex of human cognitions can be affected by damage or stimulation to parts of the brain.

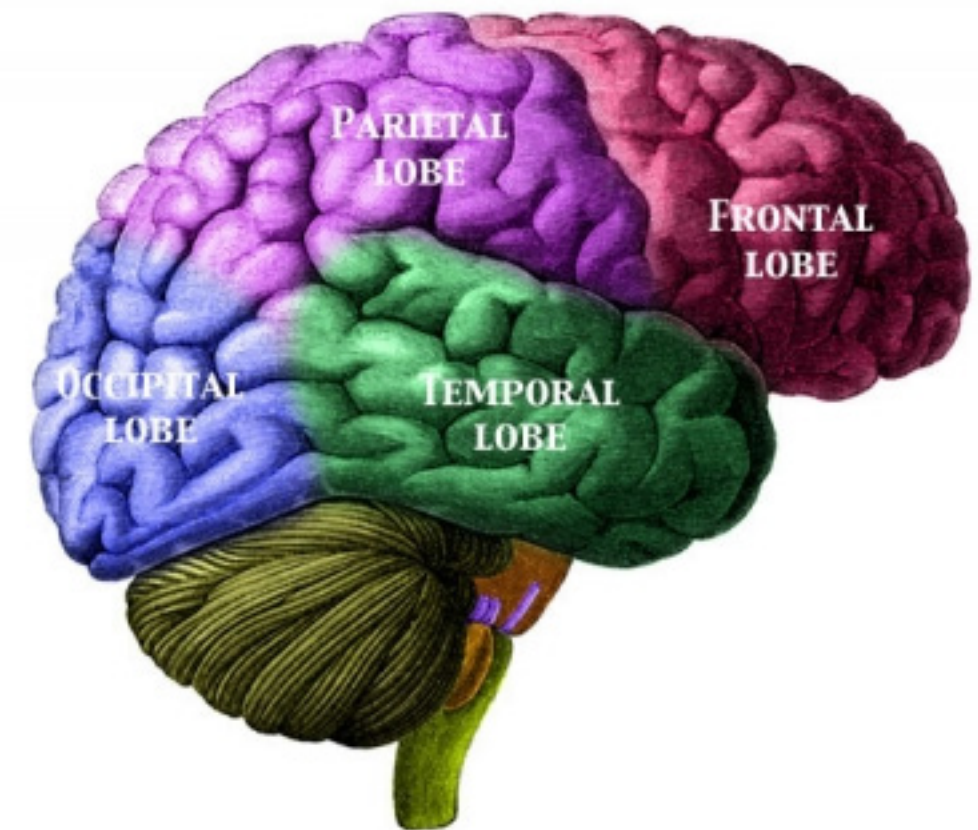
# Problems with Phys vs. Psych



1. Even the most complex of human cognitions can be affected by damage or stimulation to parts of the brain.

**Asomatognosia** refers to a disorder where the patient has a deficiency in the awareness of parts of one side of their own body.

Typically results from combined right temporoparietal and right medial frontal lesions, and affects the left side of the body (the contralateral side of the body).



# Problems with Phys vs. Psych

# 1. Even the most complex of human cognitions can be affected by damage or stimulation to parts of the brain.

“When I arrived I found the patient lying on the floor by his bed and staring at one leg...

‘Look at it!’ he cried with revulsion in his face. ‘Have you ever seen such a creepy, horrible thing? I thought a cadaver was just dead. But this is uncanny! And somehow--it’s ghastly--it seems stuck to me!’ He seized it with both hands, with extraordinary violence, and tried to tear it off his body, and, failing, punched it...

‘Easy!’ I said. ‘Be calm! Take it easy! I wouldn’t punch that leg like that.’

‘And why not?’ he asked...

‘Because it’s your leg,’ I answered. ‘Don’t you know your own leg?’..

‘How can a thing like that belong to me? I don’t know where such a thing belongs...’ His voice trailed off. He looked terrified and shocked.”

(Sacks, 1998, p. 55-57).

## Problems with Phys vs. Psych

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**Mirror Self-Recognition (MSR) Test in Chimpanzees:** Mirrors are first introduced into the cages of chimps and their behaviour is observed; then, the chimps are anesthetized and a coloured spot is painted on one of their brows. What is their reaction to the red spot?

Problems with Phys vs. Psych

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**Nurture**

North American  
Behaviourists

**Nature**

European  
Ethologists

**Inherited or Learned?**



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Music is made through an interactive process between player and instrument. How much of the music was made by the musician and how much by the instrument?

# Problems with Inherited vs. Learned

1. Evolution influences the social behavior influencing genes available to the member of each species.

2. Experience modifies the expression of an individual's genetic program.

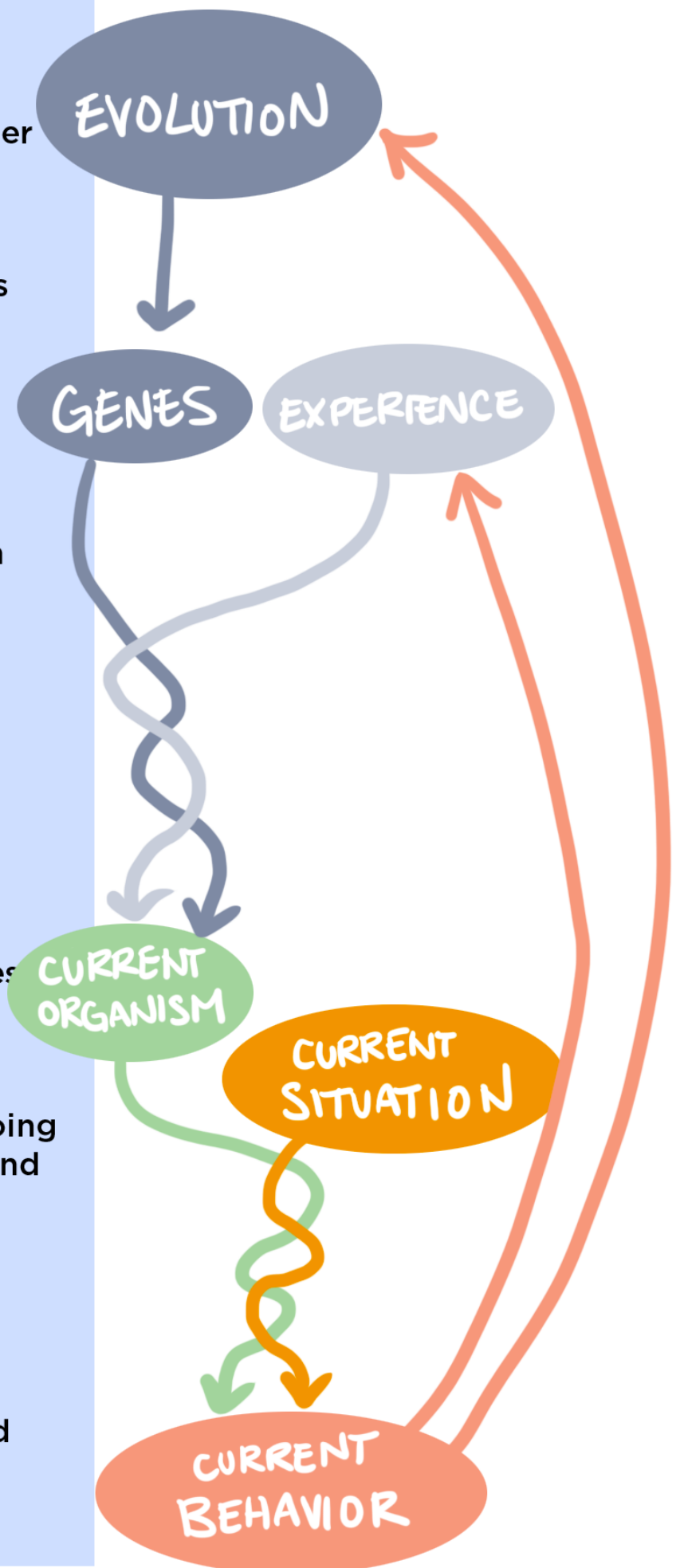
3. Each individual senses and initiates a unique program of neural development.

4. The development of each individual's nervous system depends on the interaction of genes and experience.

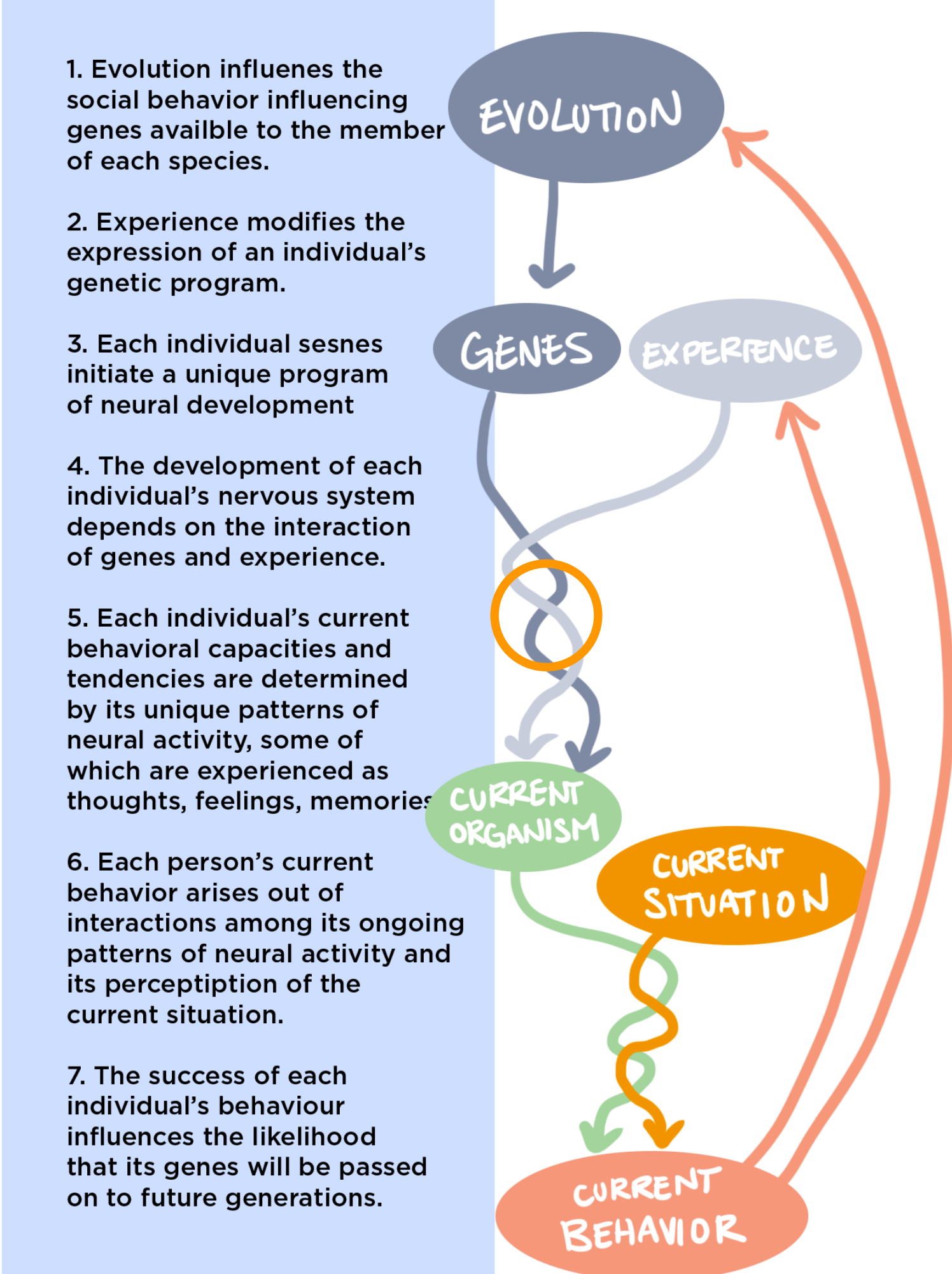
5. Each individual's current behavioral capacities and tendencies are determined by its unique patterns of neural activity, some of which are experienced as thoughts, feelings, memories.

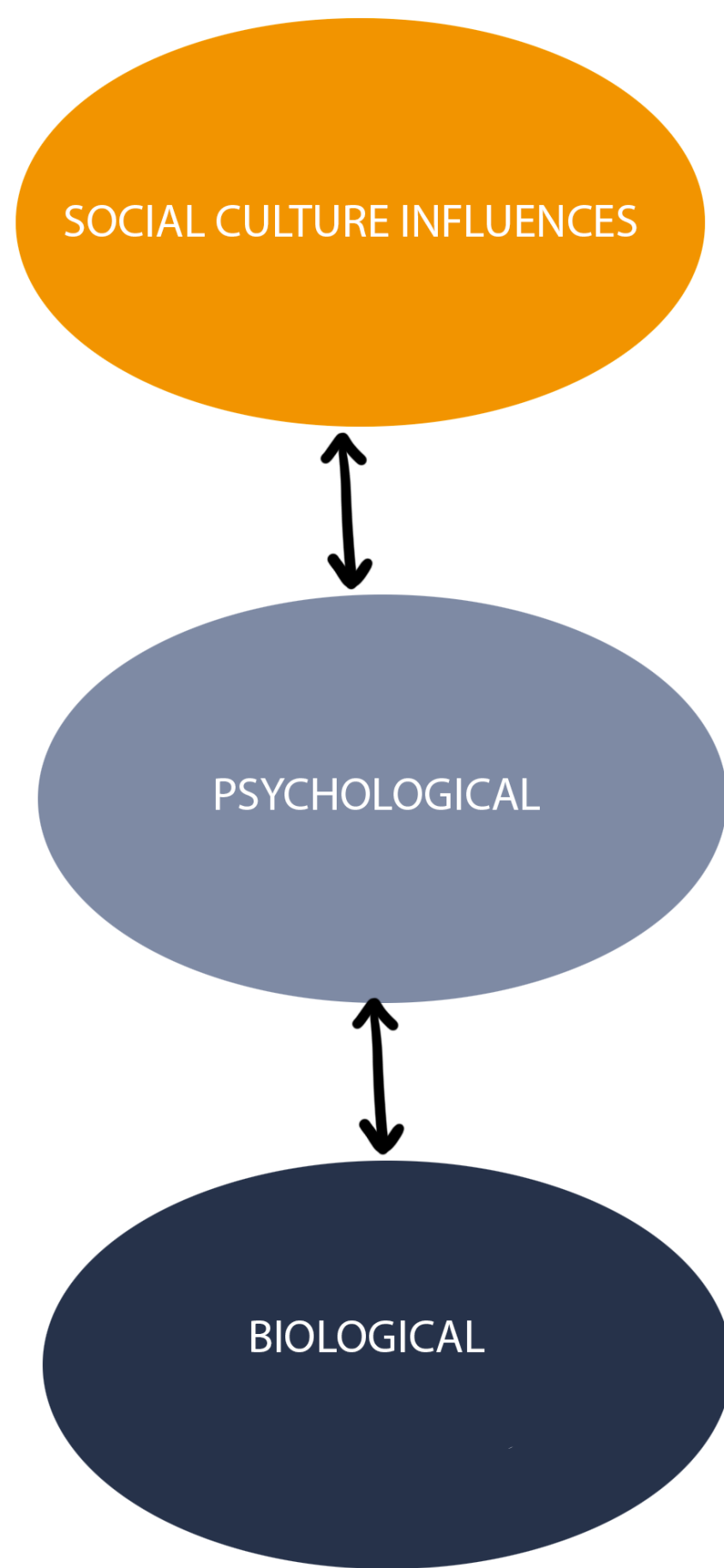
6. Each person's current behavior arises out of interactions among its ongoing patterns of neural activity and its perception of the current situation.

7. The success of each individual's behaviour influences the likelihood that its genes will be passed on to future generations.

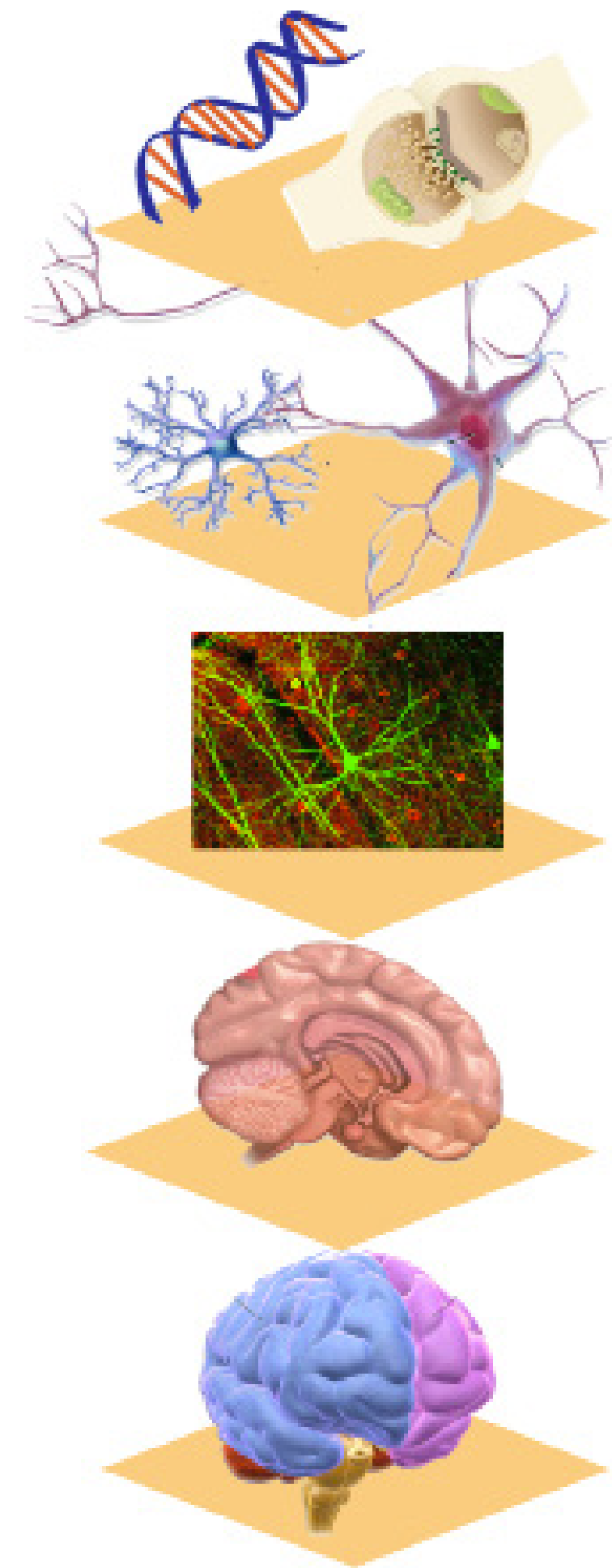


**Epigenetics:** Changes in phenotype caused by any means other than changes in the underlying DNA sequence (e.g., DNA methylation, histone modifications).





Levels of Analysis



molecular

brain regions

# Levels of Analysis