

SENSATION AND PERCEPTION

AP® EXAM WEIGHTING

6–8%

INSIGHT INTO THE S&P UNIT

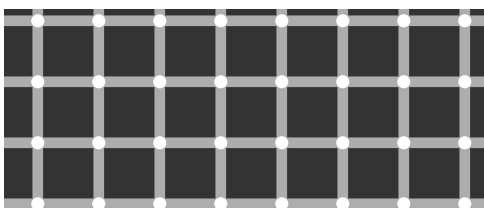
Psychologists study sensation and perception to explain how and why externally gathered sensations and perceptions impact behaviors and mental processes.

Sensations that we perceive process information about our surroundings, resulting in perceptions that influences how we think and behave. This unit builds upon our previous biological unit foundations, helping us better understand our brain, sensory organs, and the physiological processes behind the perception of our environment. Ultimately, this enables us to better understand the building blocks of why we do as we do.

ESSENTIAL QUESTIONS

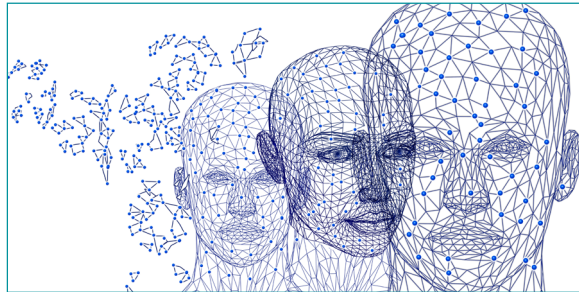
Connecting Physiology with Psychology:

1. How do we process the information we receive from our environment?
2. How does our interpretation of the information we receive from the environment influence our behaviors and mental processes?



INTRODUCTION

Why would it be important to include a unit such as sensation and perception in the AP® Psychology course?



While we may not notice it, our sensations and their resulting perceptions help us with the stimuli around us. This stimuli can be from a

wide range of sources. Our brain can process information without us even realizing it. For example, you hear tires screeching while you are very busy doing something else. Perhaps you are near enough by to even smell the hot rubber of the tires. Hopefully, the sensations from your hearing, and perhaps your smell, will help you to assess the situation so that you can avoid potential harm. In most instances, all of this occurred within seconds, and it may have seemed instinctual. You have sensation and perception to thank.

Why do some people experience more, or less, pain than others with the very same illness or injury?

To dig a bit deeper, how much could sensation and perception influence research? Determining mental status? Relationships? Learning? Thinking? Memory? Any other aspect related to human thinking and mental health? These two elements of the human psyche work in tandem to enable us to detect and react to changes in our environment.

THE PRINCIPLES OF SENSATION

Learning Target

Be prepared to describe the general principles of organizing and integrating sensation to promote stable awareness of the external world.

Continued on next page...

Break it Down

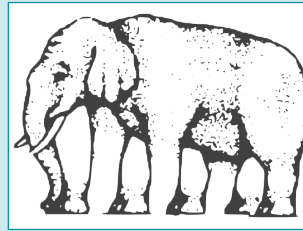
Concentrate on **Gestalt principles** and other foundational concepts such as **depth perception**. Be sure to review **sensory transduction**, including **absolute threshold**, **difference threshold**, **signal detection**, and **sensory adaptation**. As you compare bottom-up and top-down processing, it helps to keep a pyramid in mind. The bottom of the pyramid is the information; the top is the arrived at theory.

Bottom-Up Processing

Bottom-up processing starts at your sensory receptors and works up to the highest level of processing. For most of us, as we glance at the image to the right, we simply acknowledge the image as what most of us know as an elephant.

Top-Down Processing

Top-down processing constructs perceptions from sensory input by drawing on our previous experience and expectations related to the situation. We know that most elephants only have four legs...but what about this one? Top-down processing helps us understand the complexity of the drawing, and to process our exploration as we aim to get a final count of the appendages.



Thus, our sensory and perceptual processes work together to help us sort out...process... the complex images.

PRINCIPLES OF PERCEPTION

Learning Targets

1. Understand how experience and culture can influence perceptual processes.
2. Understand the role of attention in behavior.

This is the best time to review **perceptual set** (tending to see what we want to see, often impacted by psychological factors), **context effects**, and **schema**. Review how expectations, emotions, and motivation influence our perceptual set. All are building blocks of our perceptions, influencing thoughts and feelings, as well as where we direct our attention depending on the circumstances.

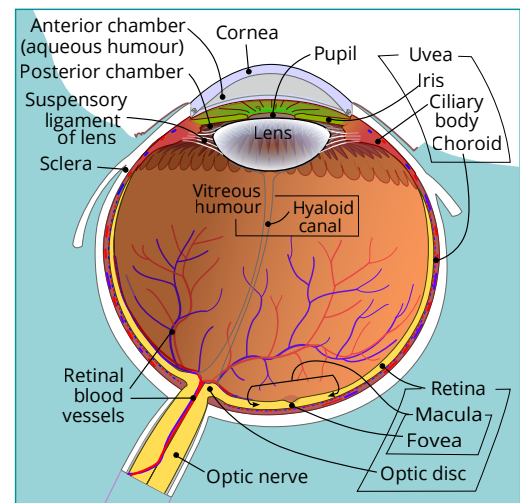
VOCABULARY

Key concepts include:

- Bottom-up processing
- Top-down processing
- Signal detection theory
- Difference threshold
- Weber's Law
- Young-Helmholtz trichromatic theory
- Opponent process theory
- Gate control theory
- Transduction

Key contributors include:

- Gustav Fechner
- Ernst Weber
- David Hubel



VISUAL ANATOMY

Learning Targets

1. Understand the vision process.
2. Understand common sensory conditions.

Be prepared to explain the vision process, specifically energy **transduction**, all relevant anatomical structures related to vision, and the specialized pathways in the brain for each of the senses.

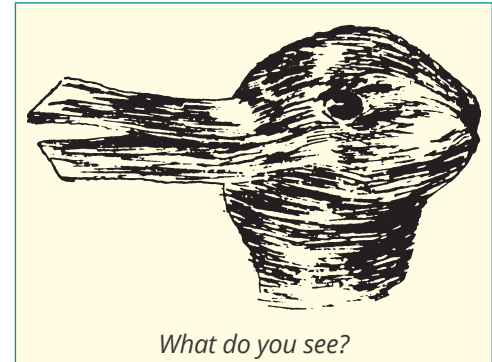
It will be important to explain common sensory conditions, such as vision and hearing impairments and **synesthesia**. Reviewing vocabulary for this unit is imperative.

VISUAL PERCEPTION

Learning Target

Understand the role of **top-down processing** in producing vulnerability to **illusion**.

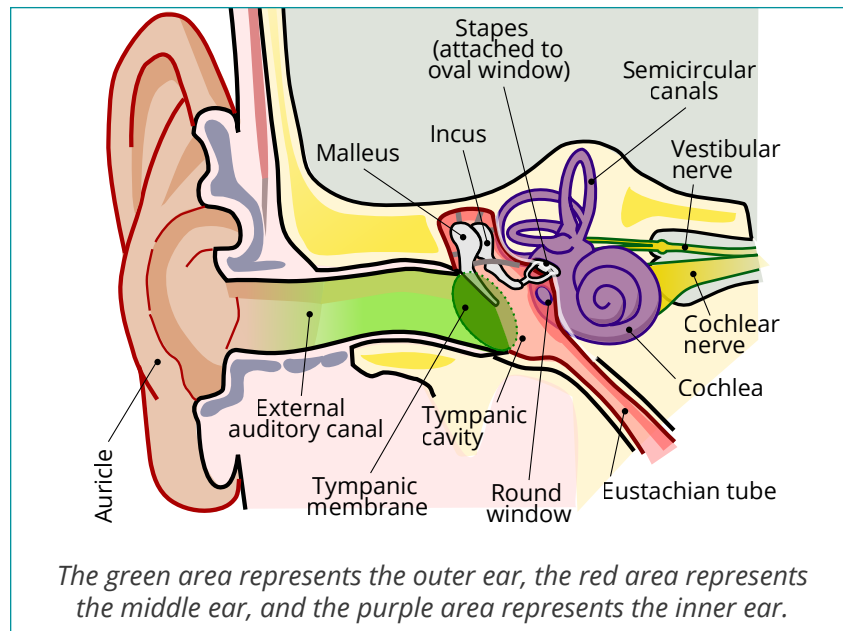
In other words, be prepared to explain how top-down processing could potentially influence our perceptions of situations that we experience differently than others. For example, in the image at right, some will see a duck initially, while others will perceive a rabbit.



AUDITORY SENSATION AND PERCEPTION

Learning Target

Understand the **hearing process**, the energy transduction involved, relevant anatomical structures, and the specified pathways in the brain for each of the senses.

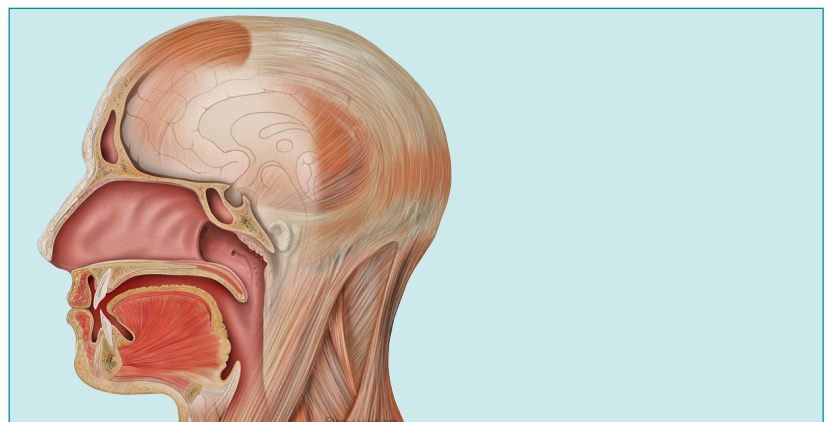


As you review the hearing “process,” remember to think about how our hearing uses sensation to impact perception. If we hear a loud crash in the road near us, we are likely to perceive a variety of emotions, and even recall memories, and both of these are units incorporated in the AP® Psychology course materials. As such, the sensation and perception unit material is frequently incorporated into multiple-choice and free-response questions from many other units. Knowing the foundations of each sense will help you tackle these questions with ease.

CHEMICAL SENSES

Learning Target

Understand taste and smell processes, including how energy transduction takes place, pertinent anatomical structures, and the pathways to the brain for both taste and smell.



BODY SENSES

Learning Target

Understand sensory processes, the specific nature of energy transduction, the relevant anatomical structures of each, and the specialized pathways to the brain for each.

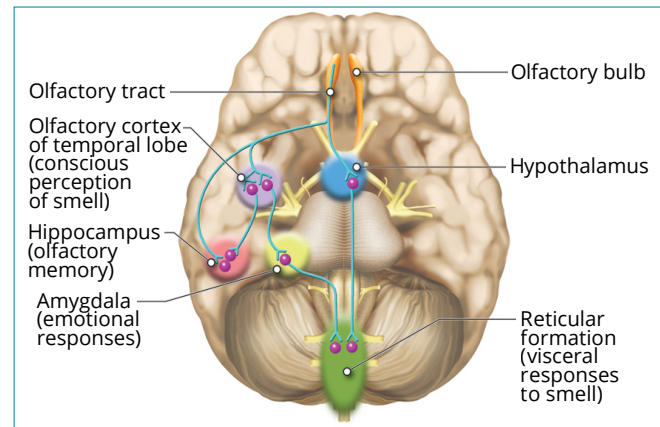
To simplify the target above, you need to be able to:

1. Understand and describe what each component is.
2. Understand and describe how each component functions.
3. Understand and describe where the pathways are in the brain for each body sense.

For each of the following senses:

- Touch
- Pain
- Vestibular
- Kinesthesia

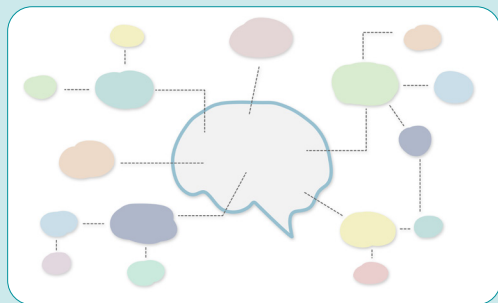
Hint: Take the time to print or draw a simple replica of the human brain and label the lobe where all the areas are that pertain to a particular sensation. While this is often a fun and enlightening unit, it encompasses a significant level of anatomy and physiology as well. Another option is to chart each sensory system, the sensation source, which receptors are involved, and the key brain areas impacted.



ASK A QUESTION

Q: How do I best prepare for the AP® Exam with the Sensation and Perception Unit?

A: Remember that whether you are responding to multiple-choice or free response questions, you are ultimately being challenged to not only understand the information, but demonstrate that you can accurately describe its importance. AP® Exams are designed to assess our higher-level thinking skills, as well as our ability to accurately apply learning across multiple units. To put it in more relatable context, while this unit might only have 6–8% weight on the exam, it will, more likely than not, be also tied to various topics from the entire course. (This is true of AP® courses in general.) Staying mindful of this, mind-mapping interconnectedness of material as you study can help immensely.



TIE IT TOGETHER

- How much information can be processed at a given point in time?
- Review thresholds and adaptation.
- How do motivations and emotions influence perceptions?
- What are the theories that explain various perceptions of color?
- Binocular vs. monocular depth clues and their influence on 3D and motion.
- Review perceptual constancies and their purpose.
- How do senses interact?
- Explain how each sense processes incoming information. (How does sound, sight, touch, temperature, etc., reach our brain?)
- How do our senses influence body movement?