

MODULE 21 THE OTHER SENSES

TOUCH

- Our “sense of touch” is actually a mix of distinct skin senses for pressure, warmth, cold, and pain. Touching various spots on the skin with a soft hair, a warm or cool wire, and the point of a pin reveals that some spots are especially sensitive to pressure, others to warmth, others to cold, still others to pain.

PAIN

- Pain is your body’s way of telling you something you something has gone wrong. You change your hair for survival. Feeling pain deals with both bottom-up processing and top-down processing.
- There are different nociceptors or sensory receptors that detect hurtful temperatures, pressure, or chemicals.
- **GATE-CONTROL THEORY** is the theory that the spinal cord contains a neurological “gate” that blocks pain signals or allows them to pass on to the brain. The “gate is opened by the activity of pain signals traveling up small nerve fibers and is closed by activity in larger fibers or by information coming from the brain.
- Ever have pain but didn’t realize it until after a task was complete? When we are distracted from pain (a psychological influence) and soothed by the release of our naturally painkilling endorphins (a biological influence), our experience of pain diminishes. The higher level of endorphins available, the less likely you will encounter pain.
- Others can experience little pain due to a mutated gene that disrupts pain circuits neurotransmission and experience little pain.
- **PHANTOM LIMB SYNDROME** is when the brain misinterprets the spontaneous central nervous system activity that occurs in the absence of normal sensory input. Occurs in a lot of war victims.
- We feel, see, hear, taste, and smell with our brain, which can sense even without functioning senses. We also seem to edit our memories of pain, which often differ from the pain we actually experienced. We seem to experience more pain when in a group setting that is also when others are also feeling pain. Pain can be a **BIOPSYCHOSOCIAL PHENOMENON.**

Biopsychosocial Approach to Pain

Biological influences:

- activity in spinal cord's large and small fibers
- genetic differences in endorphin production
- the brain's interpretation of CNS activity



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Psychological influences:

- attention to pain
- learning based on experience
- expectations



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Social-cultural influences:

- presence of others
- empathy for others' pain
- cultural expectations



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Personal
experience
of pain

- If pain is both a physical and psychological phenomenon, then it should be treatable both physically and psychologically. Placebos, electrical stimulation, massage, exercise, hypnosis, relaxation training, and thought distractions are all therapies for pain.

TASTE

- Taste's sensations were once thought to be sweet, sour, salty, bitter, and unami. Receptors of taste allow us to feel pleasure with certain foods that are a push for survival purposes. Taste receptors reproduce themselves every week or two.

SMELL

- Between birth and death, you will daily inhale and exhale nearly 20,000 breaths of life-sustaining air. Smell is a chemical sense using the olfactory receptor cells. The attractiveness of smells depends on learned associations.

BODY POSITION AND MOVEMENT

- **KINESTHESIA** is your sense of the position and movement of your body parts. Consists of sensors using joints, tendons, and muscles.
- **VESTIBULAR SENSE** is the sense of body movement and position, including the sense of balance. Semicircular canals allow for fluid to rush in to make you sense your body position and to maintain your balance.

SENSORY INTERACTION

- **SENSORY INTERACTION** is the principle that one sense may influence another, as when the smell of food influences its taste.
- McGurk effect is where we may perceive a third syllable that blends both inputs. Seeing the mouth movements for ga while hearing ba we may perceive da.
- Social interaction can also enhance/hinder the senses.
- **EMBODIED COGNITION** in psychological science, the influence of bodily sensations, gestures, and other states on cognitive preferences and judgments.

BE ABLE TO ANSWER: How does our system for sensing smell differ from our sensory systems for vision, touch, and taste?

PRACTICE FRQ: Describe the receptor cells for taste and smell.