

# Stress and Memory

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Bing. (n.d.). [Cartoon of stress]. Retrieved November 8, 2021 from, <http://cliparts.co/cliparts/pTo/de9/pTod>

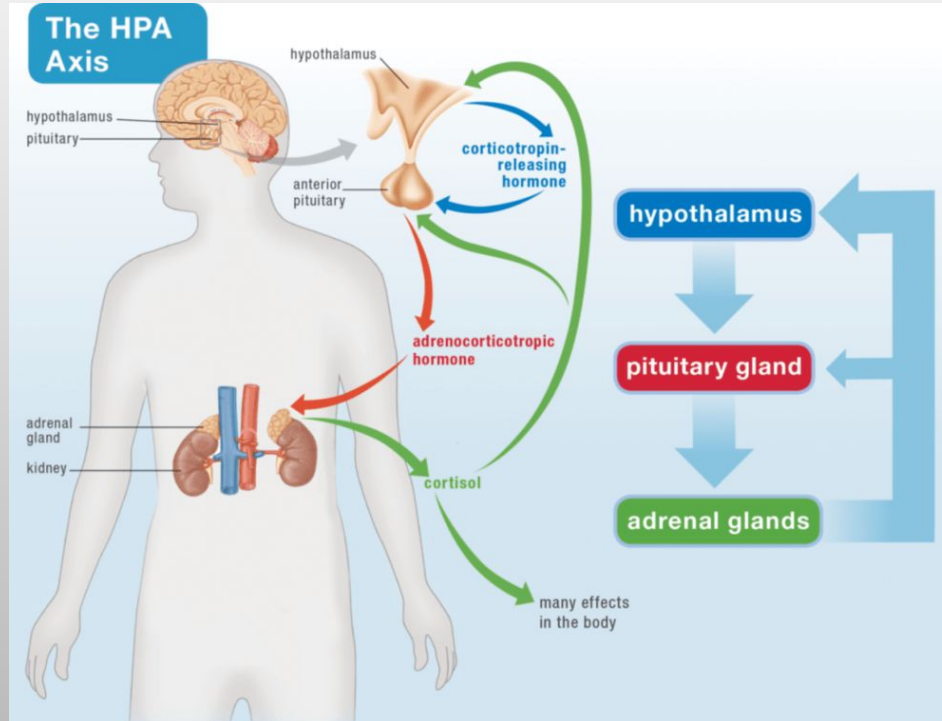
# What is **Stress**?

- ❖ “A type of response that typically involves an unpleasant state, such as anxiety or tension” (Gazzaniga, 2018)
- ❖ Result of a **stressor**
- ❖ Elicits a **coping response**
- ❖ Two types of stress:
  - Eustress - Stress of positive events.
  - Distress - Stress of negative events.



Bing. (n.d). [Image of stressed person]. Retrieved November 8, 2021 from, [https://neurowellnessspa.com/wp-content/uploads/2019/02/Blog/mq\\_StressStrikes1.jpg](https://neurowellnessspa.com/wp-content/uploads/2019/02/Blog/mq_StressStrikes1.jpg)

# How Our Bodies Respond



- ❖ Stressors activate two systems:
  - A fast-acting sympathetic nervous system
  - **Hypothalamic-pituitary-adrenal (HPA) axis**
- ❖ HPA axis
  - Hypothalamus sends chemical message to pituitary gland
  - Pituitary gland sends hormone to adrenal gland
  - Adrenals produce cortisol
  - Cortisol circulates throughout body and to various brain areas
- ❖ Usually results in **fight-or-flight response**

# Types of Memory

## ❖ Sensory Memory

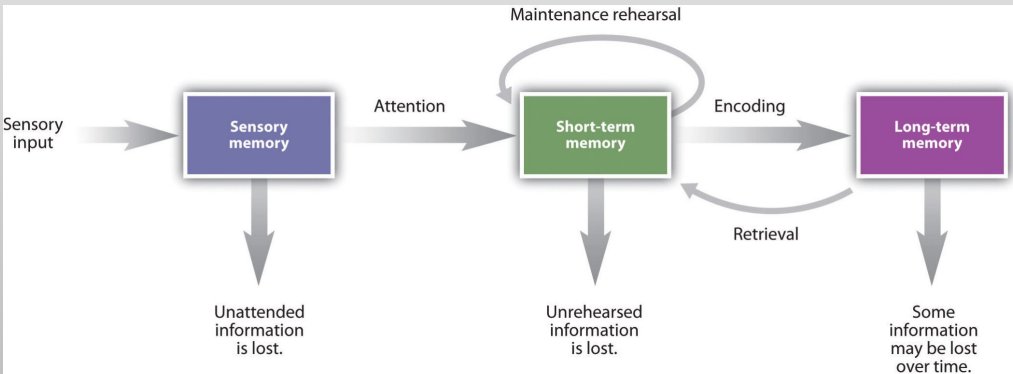
- Tied to sensory systems
- Lasts fraction of a second
- Includes Iconic and Echoic

## ❖ Short-term memory

- Briefly holds a limited amount of information
- Includes **working memory**
- Rehearsal

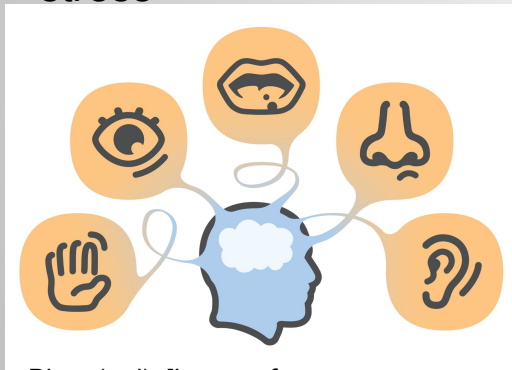
## ❖ Long-term memory

- Relatively permanent
- Nearly limitless

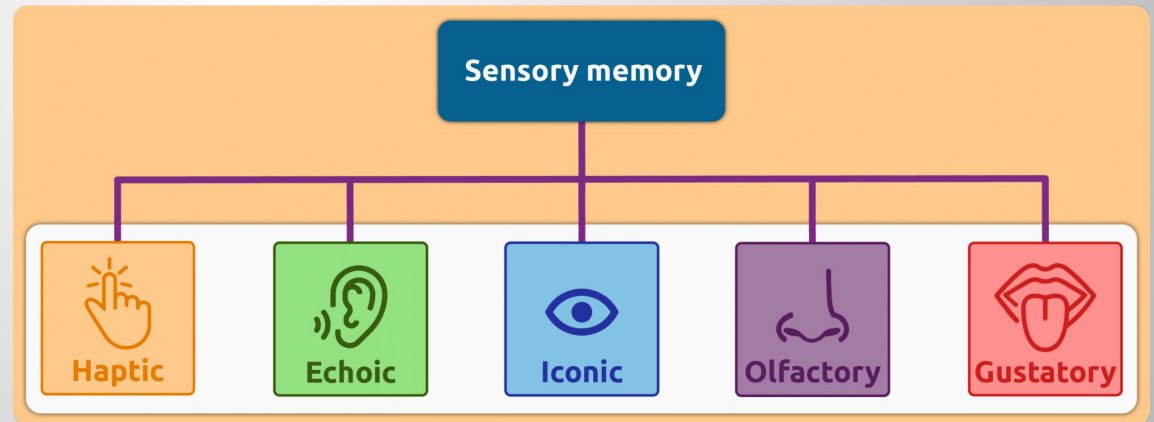


# The Effects of Stress on Sensory Memory

- ❖ Storing information in Sensory Memory includes paying attention
  - Stress is a distraction
  - Unaware of sensory input
- ❖ Some sensory information will not be stored in long-term memory due to excessive stress



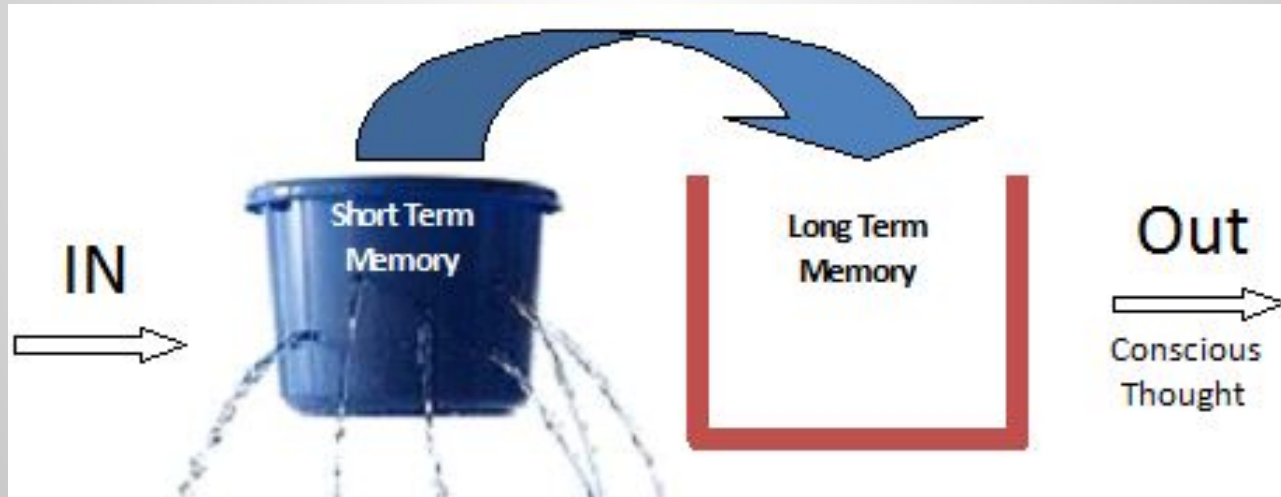
Bing. (n.d). [Image of sensory memory]. Retrieved November 8, 2021 from, <https://webstockreview.net/images/5-senses-clipart-sensory-memory.jpg>



Bing. (n.d). [Image of sensory memory]. Retrieved November 8, 2021 from, <https://www.simplypsychology.org/sensory-memory.png>

# The Effects of Stress on Short-Term Memory

- ❖ Prohibits the information from being processed effectively in working memory
  - Information remains for about 20 to 30 seconds
  - If not monitored the information is lost
  - Stress competes with the stimulus you are processing (rehearsal is interrupted)



Bing. (n.d). [Image of short-term memory]. Retrieved November 8, 2021 from, <https://f.hubspotusercontent20.net/hub/182679/file-28878537.png/short-term-memory-diagram-resized-600.png>

# The Effects of Stress on Long-Term Memory

- ❖ Stress impairs our ability to store long-term memories
  - Excessive cortisol damages the hippocampus
  - Causes **absentmindedness** (the shallow encoding of events)
  - Poor practicing of retrieval
- ❖ Stress interferes with the **retrieval** of long-term memories
  - Interference is occurring, making it difficult to remember



Bing. (n.d). [Image of long-term memory]. Retrieved November 8, 2021 from, [https://fthmb.tqn.com/FEUFfngz0QnlEaDeJzYxDp7Inzo=/3572x2790/filters:fill\(87E3EF,1\)/171383850-56a7963d5f9b58b7d0ebf0fe.jpg](https://fthmb.tqn.com/FEUFfngz0QnlEaDeJzYxDp7Inzo=/3572x2790/filters:fill(87E3EF,1)/171383850-56a7963d5f9b58b7d0ebf0fe.jpg)

# What Can We Do?



Bing. (n.d). [Image of man praying]. Retrieved November 9, 2021 from, <https://hopebiblechurch.org/wp-content/uploads/2017/12/Hands-of-Prayer-Christian-Stock-Image.jpg>

- ❖ Get more sleep
  - During sleep, our brains process memory
- ❖ Exercise
  - Lowers blood pressure
  - Enhances memory and cognition
  - Aerobic exercise promotes the growth of neurons
- ❖ Spirituality
  - Provides meaning in life
  - Religion can “...serve as a buffer against hard knocks” (Gazzaniga 2018)
  - Practicing retrieval through praying



# Works Cited

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<https://www.youtube.com/watch?v=nn6gnhg71hE>

Gazzaniga, M.S. (2018). *Psychological Science*. W.W. Norton & Company, Inc.

Tying C.M., Amin H.U., Saad M.N.M., & Malik A.S. (2017). The influences of emotion on learning and memory. *Frontiers in Psychology*, 8(1454), 1-22.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2017.01454/full>