

1. Why is the topic of mental imagery important and interesting to study?
 - o Mental imagery is knowledge – driven – it utilizes information stored in long term memory to create internal images of sounds and objects
 - o It is highly associated not only with everyday life but also with other cognitive processes
 - o Mental representation of stimuli that are not physically present
 - o Understanding mental imagery process provides connections to other cognitive phenomena, such as perception, memory, and thinking

2. Know why it is challenging to study and understand a basic assumption for studying it
 - o Two different types
 - Visual imagery and auditory imagery
 - Elusive and inaccessible (not directly observable)
 - fades quickly
 - o How to study mental imagery
 - Based on assumption
 - If a mental image resembles a physical object then people should make judgments about the corresponding physical object.
 - We should be able to rotate a mental image in the same way that we can rotate a physical object

3. Know Mental Rotation Task and the finding in Shepard and Metzler's study
 - o Same/different task using pairs of line drawings
 - o Two vs. three dimensions
 - o Reaction time to decide same/different
 - o Reaction time was a function of the amount of rotation

- 3-1 Know the findings in subsequent studies
 - Research with other stimuli also finds clear relationship between amount of rotation and reaction time
 - Older people perform more slowly on a mental rotation task
 - o But other imagery skill were not consistently correlated with age
 - Deaf individuals fluent on American Sign language showed better performance for 180 degree rotation task
 - o Because they have extensive experience in watching a narrator produce a sign
 - People could use motor cortex in the mental rotation tasks

4. Be able to explain how mental imagery can be stored using the two different perspectives: Analog code vs. Propositional code
 - o Analog code: a representation that closely resembles the physical object. Not a perfect representation that closely resembles the physical object. Not a perfect representation and can be prone to errors.
 - Strong empirical support: the mental rotation task!
 - o Propositional code: an abstract, language like representation, does not physically resemble the original stimulus

4-1 Know the debates on them (what's the evidence of Analog code? what's the evidence of Propositional code?) and what's the current conclusion?

- Many researchers support the analog code but there seems to be some evidence supporting the propositional code in some circumstances. Seems that both are partially correct
 - The imagery debate
 - o Mental rotation supports analog-coding
 - It takes longer to perform a large rotation than a small one, thus activating visual properties of the objects
 - o Whereas, a propositional code would predict similar reaction times for these two conditions
 - o Primary visual cortex activation occurs when people perceive objects as well as work on tasks that require detailed visual imagery
 - Analog code
 - o Behavioral and cognitive neuroscientific data support an analog code
 - o However, the effect of ambiguous visual images is difficult for the analog account to accommodate
 - We often use analog code. But if it's necessary, people create mental images using both propositional and analog codes
5. How do people make judgments about distance and shape in mental imagery?
 - o People make distance judgments in a similar fashion for mental images and physical stimuli
 - o People make decisions about shape in a similar fashion for mental images and physical stimuli; this conclusion holds true for both simple shapes (angles formed by hands on a clock) and complex shapes (geographic regions, like Colorado or West Virginia)
 6. Know gender differences in ability of mental imagery (spatial ability)
 - o There is zero to little gender differences in verbal and mathematical ability
 - o There are effect sizes ranging from small to large for gender differences in spatial ability

- Spatial ability represents several different skills
 - Spatial visualization: “small” gender differences
 - E.g.; look at a sketch of a busy street to find hidden human faces
 - Spatial perception: “moderate” gender differences
 - E.g.; adjusting an illuminated rod as a perfect vertical position in a dark room
 - Mental rotation: “moderate” to “large” gender differences
 - Gender effects on spatial ability vary as they type of skill
7. Know what is heuristics and how it affects judgements about cognitive maps
- Cognitive map: mental representation of geographic information, including the environment that surrounds us
 - Heuristics
 - General rule that is usually correct
 - A “mental shortcut”
 - An advantage of using heuristics: quick decisions.
 - A disadvantage of using heuristics: sometimes they lead to bad decisions
- 7-1 Know how distance estimates would vary with various factors (e.g. number of intervening cities, category membership, landmarks)
- Estimating the distance between two known points
 - Often distorted by:
 - Number of intervening cities
 - Had a clear-cut influence on distance estimates
 - E.g.; 300 miles apart on the map:
 - People estimated as 280 miles apart with no intervening cities and 350 miles apart with three intervening cities
 - Category membership
 - The categories we create can have a large influence on our distance estimates
 - People tended to shift each location closer to other sites that belonged to the same category
 - E.g.; distance between the courthouse and the police station considered closer but not the courthouse and the golf course
 - Landmarks