

Chapter 7

Summary:

1. Categories are classes of similar objects, events, or patterns. Concepts are mental representations of those categories. Concepts are thought to help us order our knowledge and to relate new objects or patterns to previously encountered ones.
2. There are five distinct approaches to the study of concepts. These have been themselves categorized into two major types: similarity-based and explanation-based
3. The similarity-based category, comprising the classical, prototype and exemplar views (and some parts of the schemata view), includes the approaches in which categorization is assumed to be based on the similarity of an instance to some abstract specification of the category (for example, a definition or a prototype) or to one or more stored exemplars.
4. The explanation-based category, comprising aspects of the schemata/scripts view and aspects of the knowledge-based view, instead sees people as classifying instances based on meaningful relationships among instances and categories.
5. The classical approach to concepts posits that each concept is defined by a set of necessary and sufficient features.
6. The prototype approach to concepts holds that we categorize objects by comparing them to mental abstractions, called prototypes, which are idealized representations of some class of objects or events.
7. Some researchers have found that the acquisition of concepts results in a shift from right-to-left hemisphere processing in the brain.
8. The exemplar approach to concepts assumes we store specific individual instances and use these stored representations to categorize.
9. The schemata/scripts view regards concepts as schemata, packets of information with specific parts that fill in default values for aspects of the situation.
10. Proponents of the knowledge-based view of concepts hold that people use their own theories to guide their classification of objects.
11. When people are explicitly asked to form concepts and to search for underlying rules or features, they seem to acquire and use different kinds of information from what they use when left to their own exploration. This raises the question of applicability of very traditional laboratory-based investigations of concept formation to the processes people use outside the laboratory. What gets learned depends, apparently, on the original learning materials, the task instructions, and the learner's anticipation of how the learned information will be used in the future. As in other areas of cognition, then the way people process information is flexible and varies with the situation and the purpose of the task.

Key Terms:

Artifact Concept: Things constructed to serve some function or accomplish some task.

Basic Level of Categorization: Most basic level of categorizing objects ie piano and guitar.

Category: Well defined class of similar things

Classical View of concepts: features represented are individually necessary and collectively sufficient.

Concept: a mental representation of some object or event.

Exemplar view of concepts: Assets that concepts include representations of at least some actual individual instances. The exemplar approach assumes that people categorize new instances by comparing them to representations of previously stored instances called exemplars.

Family Resemblance structure of concepts: a structure within each member has a number of features, sharing different features with different members. Few features are shared by each member – the more similar features it has the more typical it is.

Features: Under the classical view, the most fundamental characteristics

Implicit Learning: Requires that people pay attention to individual exemplars, storing information about and representations of them in memory. Later classification is done by comparing new instances to the representations of them in memory.

Knowledge-based view of concepts: a person classifying objects and events doesn't just compare features or physical aspects of the objects and events to features or aspects of stored representations.

Natural-kind concept: "Gold" or "Tiger" things that naturally occur in one's environment.

Nominal-kind concept: Concepts that have clear definitions

Nonanalytic concept formation: It is better to learn examples and learn implicitly than it is to learn the structures of how things are formed. I.e. the English language we learn by example rather than by learning every grammatically correct way to speak.

Prototype: idealized representations of some class of objects or events.

Prototype view of concepts: Denies the existence of necessary and sufficient feature lists. Regards concepts as a different sort of abstractions called prototypes.

Psychological essentialism: people generally act as if objects, people or events have certain essences or underlying natures that make them what they are. People have a reliance on underlying nature as a basis for many concepts.

Schemata/Scripts view of concepts: Concepts are a schema – frameworks of knowledge that have roles, slots, variables and so on. Schemata can embed themselves in one another hierarchically.

Subordinate level of categories: categories under the basic categories i.e. upright piano and grand piano rather than piano and guitar

Superordinate level of categories: categories over the basic categories i.e. if the basics are piano and guitar, the superordinate may be musical instruments

Chapter 8:

Summary:

1. Visual images are mental representations of perceptual experiences. There are also auditory, olfactory, cutaneous and other images each thought to be a mental representation of a perceptual experience.
2. Visual images are often used in mnemonics, techniques that improve the chances of recalling information. Some examples include the method of loci and the method of interacting images.
3. The dual-coding hypothesis of memory states that when information can be coded both by a verbal label and by a visual image, the memorability of that information is enhanced relative to information that can be coded only by a verbal label.
4. Not all psychologists believe in the existence of these two distinct codes. However, despite the theoretical possibility that only one propositional code is used to perform the visual imagery tasks described, many cognitive psychologists are persuaded by the evidence of the existence of some sort of a distinct visual spatial code.
5. Research on visual imagery has suggested that images function in some ways like internal pictures, undergoing certain kinds of mental operations and transformations. These mental operations and transformations appear to function in ways similar to corresponding physical operations and transformations.
6. However, other researchers and theoreticians have pointed out limitations in the image-as-picture metaphor. There are a number of ways in which images work differently from pictures. Some investigators, such as Fara(1988), have therefore concluded that “imagery is not visual in the sense of necessarily representing of information acquired through visual sensory channels. Rather, it is visual in the sense of using some of the same neural representational machinery as vision (P315).
7. Finke (1989) has proposed five principles of visual imagery.
 - a. Implicit encoding
 - b. Perceptual equivalence
 - c. Spatial equivalence
 - d. Transformational equivalence
 - e. Structural equivalence
8. Neuropsychological findings, taken in conjunction with the older studies, can help distinguish among different proposals. The studies that show activation of the visual cortex when forming imagery provide convincing evidence that the processing of visual images and the processing of visual perceptual information share a neural substrate.
9. Images are necessarily a private mental experience. It is all the more exciting then, when results from cognitive psychology and neuropsychology converge. Many consider the empirical investigations of imagery a major victory in the larger task of understanding how cognition, a collection of private mental experiences, functions.
10. Visual imagery can be seen as part of a broader topic of spatial cognition. Spatial information about spatial properties to navigate.

Key Terms:

Demand Characteristic: A task demands that a participant behave in some way.

Dual-Coding Hypothesis: long term memory contains two distinct coding systems for representing information to be stored. One is verbal, containing information about an item’s abstract, linguistic

meaning. The other involves imagery, mental pictures of some sort that represent what the item looks like.

Experimenter expectancy effect: When an experimenter gives unconscious subtle cues to participants.

Heuristic: A rule of thumb when determining something

Imaginal Scanning: View an image and scan it, moving from one position on the image to another, ie looking at the letter F and starting in the top left corner and looking at the other corners from the top left to the bottom right.

Implicit Encoding: information was stored unintentionally along with other information that allows you to construct a visual image of your kitchen, so you can count the number of drawers by remembering how your kitchen looked.

Mental Rotation: Being able to figure out what an image is even if it is rotated.

Method of Loci: Imagine a series of places or locations that have some sort of order to them. You then divide the material you wanted to remember around at the landmarks in order to remember them easier.

Mnemonics: Techniques that increase your chance of remembering.

Relational-Organizational Hypothesis:

Space around the body: Area immediately around you

Space of navigation: Larger spaces, ones we walk through, explore travel to and through.

Space of the body: Knowledge of where different parts of one's body are located at any moment.

Spatial Cognition: how people represent and navigate in and through space. That is, how do we acquire, store and use mental representations of spatial entities, and use them to get from point A to point B.

Tacit Knowledge: is knowledge that is difficult to write down or share verbally. It can be learned by doing or observing. It is a skill that we know how to do rather than facts. Ie how to speak or dance, we just feel how to do it, we do not know all of the rules.

Visual Image: mental pictures

Chapter 9:

Summary:

1. To be a language, a system must exhibit regularity (that is, be governed by a system of rules, called grammar) and productivity (be able to express an infinite number of ideas).
2. When researchers say that people "follow" the rules of a language, they distinguish between conscious awareness of a rule (which neither psychologists nor linguists believe is the way people apply most linguistic rules) and implicit access to a rule (such that a person follows a rule, though perhaps unaware of its existence and unable to articulate just what the rule is).

3. Language is structured on several levels: the phonological (sound), syntactic (ordering and structuring of words and phrases in sentences), semantic (meaning) and pragmatic (the ways in which language is actually used), to name a few. Each of these levels has a different set of rules associated with it.
4. People use different linguistic rules both when they produce and when they comprehend language. The ways in which a number of our perceptual systems are set up help people master the very complicated task of processing language relatively easily. Despite ambiguity in many of the utterances we encounter, we can use the context of the utterance as well as other strategies to settle on the most likely intended meaning.
5. Perceptual context effects exist at many levels. Context can affect even the perception of individual sounds. The phoneme restoration effect demonstrates that people effortlessly “fill in” experimentally created gaps in a stream of speech. Context affects the ways in which individual words are interpreted, although Swinney’s (1979) study suggests that context effects operate not instantaneously but after a brief (Fraction of a second) period.
6. People seem to parse sentences into syntactic constituents as they construct the sentence’s meaning. They appear to discard the exact wording of a sentence and to retain only a gist when they finish the processing. Many sentences involve some sort of ambiguity, which people seem to resolve very quickly.
7. In processing text passages, listeners and readers seem to be affected by the difficulty of the individual words and the syntactic complexity as well as by the propositional complexity, the relationships among sentences and the context in which the passage is presented.
8. Conversations, spoken versions of text, also seem governed by a system of implicit rules known as the Gricean Maxims of cooperative conversation. Speakers who consistently violate the maxims are doing so for humorous or ironic effect, trying to end or avoid conversation, being inattentive or inappropriate, or showing a gross disregard for the expectations of their conversational partners.
9. Two distinct proposals regarding the relation of language to other cognitive processes are the modularity hypothesis and the Whorfian hypothesis of linguistic relativity. The modularity hypothesis proposes that some aspects of language, especially syntactic processes, function autonomously, independent of any other cognitive process. This proposal, being relatively recent, awaits rigorous empirical testing, although some evidence is consistent with it. The rigorous empirical testing, although some evidence is consistent with it. The strong version of the Whorfian hypothesis of linguistic relativity, despite its intriguing nature, has so far failed to receive strong or lasting empirical support.
10. The development of various neuroimaging techniques has allowed researchers to construct detailed “brain maps” that localize different functions. There is some ongoing disagreement over just how localized any one language process is.

Key Terms:

Aphasia: Language disorders

Broca’s Aphasia: Difficulty speaking/writing fluent languages, still able to receive and process language.

Expressive Aphasia: (Same as Broca’s aphasia)

Grammar: A language is regular and has a system of rules, the rules are the grammar

Gricean maxims of cooperative conversation: Grice believed that for people to converse, they must do more than produce utterances that are phonologically, syntactically and semantically appropriate. It must also have continuity, don't usually follow up "What is your name?" with "I like pineapple pizza".

Informationally encapsulated process: It operates independently of the beliefs and the other information available to the processor.

Laterlization: The different hemispheres in your brain have different functions.

Lexical ambiguity: Occurs when words have two meanings, such as bank.

Linguistic competence: Underlying linguistic knowledge that allows people to produce and comprehend language.

Linguistic performance: Ability to produce the language correctly.

Modularity hypothesis: Certain perceptual and language processes are modules. These processes are thought to be set apart from other cognitive processes such as memory, attention, thinking and problem solving that are thought to be nonmodular.

Morpheme: Smallest meaningful unit of language.

Phoneme: The most basic sounds

Phonetics: the study of speech sounds and how they are produced.

Phonology: the study of systematic ways in which speech sounds are combined and altered in language.

Pragmatics: The flow/give and take. Listeners must pay attention and make assumptions and speakers must craft their contributions in ways that make the listeners job feasible.

Propositional Complexity: two sentences of equal length can differ in the difficulty to process. This is the propositional complexity of a sentence – the number of basic ideas conveyed.

Receptive Aphasia: (Wernicke's Aphasia) Difficulty receiving and processing language, but you can still speak/write it fluently.

Semantics: The branch of linguistics devoted to the study of meaning.

Syntax: The structure of each sentence.

Wernicke's area: Part of the cerebral cortex linked to speech comprehension and understanding. (written and spoken language).

Whorfian Hypothesis of linguistic relativity: We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds – and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significance