Testbank

# Chapter 1: The nature of perception, and some ways of investigating it

1. Researchers in perception study:

a. How the brain acquires information through the senses

b. The neurological basis of handedness

c. Why some things are easier to remember than others

d. None of these

**Ans:** A

2. Which of the following is not a Gestalt psychologist?

a. Koehler

b. Wertheimer

c. Koffka

d. Gibson

**Ans:** D

3. Which of the following is a Gestalt perspective on perception?

a. Bigger is always better

b. The whole is other than the sum of the parts

c. The whole is less than the sum of the parts

d. Perception relies on past experience

**Ans:** B

4. Which statement best captures Gregory’s view of perception?

a. Percepts are accurate representations of the world

b. Percepts are like scientific hypotheses

c. Percepts are like weather forecasts

d. Perception does not involve cognition

**Ans:** B

5. According to Gibson, the affordance of an object is?

a. The likely cost in the effort of manipulating it

b. Its natural place in the world

c. Its implicit suggestion of how to handle it

d. Its economic value

**Ans:** C

6. Which of the following is not a level of description in Marr’s theory of vision?

a. Algorithmic

b. Computational

c. Physiological

d. Implementation

**Ans:** C

7. A motion coherence threshold is calculated from:

a. The proportion of elements moving in the same direction at the same velocity

b. The proportion of moving elements of the same contrast

c. The element with the lowest velocity

d. The proportion of stationary elements

**Ans:** A

8. In the elderly, motion coherence thresholds are higher (motion perception is worse) than in the young:

a. At higher speeds

b. At lower speeds

c. At all speeds

d. There is no difference at any speed

**Ans:** B

9. Adapting to vertical stripes:

a. Makes horizontal motion harder to see

b. Makes oblique stripes harder to see

c. Makes faint vertical stripes harder to see

d. Makes everything harder to see

**Ans:** C

10. In serial visual search, reaction times:

a. Decrease with the number of elements in the display

b. Become more variable

c. Increase with the number of elements in the display

d. None of these

**Ans:** C

11. Perceptual learning in Vernier acuity has been studied by:

a. Change in contrast thresholds

b. Selective adaptation

c. Change in coherence thresholds

d. Transfer of training

**Ans:** D

12. The oblique effect is:

a. Misperception of a statement which is indirect

b. Lower sensitivity to oblique than to horizontal and vertical contours

c. Slower responses to things seen out of the corner of the eye

d. Misperception of body orientation when not upright

**Ans:** B

13. When hearing and vision provide conflicting information about the location of objects:

a. Visual information is always followed

b. Auditory information is always followed

c. Auditory information biases perceived location when visual information is imprecise

d. None of these

**Ans:** C

14. Which of the following brain regions is thought to be involved in synaesthesia?

a. Pre-cuneus

b. Hippocampus

c. Frontal lobes

d. Hypothalamus

**Ans:** A

15. Measuring how changes in the apparatus affect the properties of the stimulus is known as:

a. Sensitization

b. Accommodation

c. Transduction

d. Calibration

**Ans:** D

16. The highest frequency which can be detected by a human with normal hearing is about:

a. 100 Hz

b. 5 kHz

c. 20 kHz

d. 50 kHz

**Ans:** C

17. The loudest sound which can be heard by a human without feeling pain is about:

a. 120 dB (SPL)

b. 50 dB (SPL)

c. 200 dB (SPL)

d. 80 dB (SPL)

**Ans:** A

18. The average luminance of the sky is about:

a. 100 cd m−2

b. 1000 cd m−2

c. 4000 cd m−2

d. 400 cd m−2

**Ans:** C

19. The size of visual stimuli is often expressed in:

a. Centimetres

b. Candelas per square metre

c. Foot lamberts

d. Degrees of visual angle

**Ans:** D

20. The elements of which an image on a digital computer screen is composed are known as:

a. Textels

b. Pixels

c. Radians

d. Verniers

**Ans:** B

21. How is human vision different from the operation of a bar-code reader?

a. It transduces electromagnetic energy into electrical activity

b. It is usually accurate

c. It makes use of a large cache of stored knowledge

d. It is usually fast

**Ans:** C

22. Why is the Law of Similarity not a good explanation of perceptual grouping?

a. It is hard to understand

b. It is a re-description of the phenomena which it seeks to explain

c. There are experiments which disprove it

d. There are other perceptual laws which contradict it

**Ans:** B

23. JJ Gibson was especially interested in:

a. The perceptual control of actions

b. Visual illusions

c. Visual cognition

d. Brain mechanisms of perception

**Ans:** A

24. Implementation (one of Marr’s levels of explanation) must be different in principle in brains and digital computers because:

a. They have different energy requirements

b. One is made of metal, the other of living tissue

c. The computer is much faster than the brain

d. Neurons can be in one of many states, whereas the elements in a digital computer can be in one of only two states

**Ans:** D

25. An absolute threshold is:

a. A definition of a completely forbidden action

b. A measure of the faintest stimulus that can be detected

c. That part of personal space from which everyone else is excluded

d. The smallest difference between stimuli needed for reliable discrimination

**Ans:** B

26. Thresholds are a measure of which aspect of a perceptual system?

a. Its sensitivity

b. Its dynamic range

c. Its adaptability

d. Its ecological importance

**Ans:** A

27. In parallel visual search, reaction times:

a. Decrease with the number of elements in the display

b. Become more variable

c. Increase with the number of elements in the display

d. Do not vary with the number of elements

**Ans:** D

28. Ahissar and Hochstein suggested that during the early stages of perceptual learning:

a. Learning occurred in more central cognitive processes

b. Learning occurred in specific early visual mechanisms

c. Learning was slow and tentative

d. Learning was not subject to interference

**Ans:** A

29. Contextual or top-down effects in perception are probably mediated at least to some extent by:

a. Lateral connections in the retina and cochlea

b. Reward signals in the brain

c. Feedback from later to earlier stages of perception

d. Cerebellar activity

**Ans:** C

30. Humans can detect the range of sound frequencies from about:

a. 1 Hz to 100 Hz

b. 20 Hz to 20 kHz

c. 5 kHz to 100 kHz

d. 20 kHz to 100 kHz

**Ans:** B

## Short answer questions

1. Compare and contrast the views on the nature of perception of RL Gregory and JJ Gibson

2. How has motion perception changed in the elderly?

3. How have visual search tasks affected our view of visual attention?

4. How have experiments on perceptual learning influenced our view of plasticity in the adult brain?

5. How would you convince a sceptic who says that synaesthesia is just a product of a vivid imagination?

# Chapter 2: Research methods in perception

## MCQs

1. Introspection is of limited value in understanding perception because:

a. Some perceptual processes are not available to consciousness

b. It is hard to describe what one perceives

c. People tend to make mistakes in their description of percepts

d. None of these

**Ans:** A

2. The Method of Adjustment is of limited value because:

a. There is a large variance in the responses

b. It confounds caution and sensitivity

c. It does not give repeatable results

d. It takes too much time

**Ans:** B

3. In a graph showing the Signal + Noise and the Noise distributions in Signal Detection Theory, the units on the *x*-axis are:

a. Criteria

b. Probabilities

c. Logarithms

d. Standard deviations

**Ans:** D

4. In Signal Detection Theory, the observer’s criterion:

a. Is the value below which responses are rejections

b. Is the value above which responses are rejections

c. Is the value below which responses are hits

d. Is the value below which responses are incorrect

**Ans:** A

5. The psychometric function:

a. Is the observer’s motivation to do a task

b. Is a measure of the observer’s personality

c. Is a graph plotting observer performance against stimulus value

d. Is the result of calibrating the apparatus

**Ans:** C

6. Performance in a 2AFC task is affected by:

a. Shifts of criterion

b. Lapses of attention

c. Slowness of response

d. None of these

**Ans:** B

7. A shortcoming of the Method of Constant Stimuli is that:

a. It encourages guessing

b. It produces Class B observations

c. It requires an initial guess by the experimenter about threshold value

d. It produces imprecise measures of threshold

**Ans:** C

8. Adaptive Methods make use of:

a. The history of the participant’s responses

b. Random guessing

c. The experimenter’s guess about the location of the threshold

d. The participant’s criterion

**Ans:** A

9. Data obtained from Magnitude Estimation are:

a. Interval

b. Binary

c. Categorical

d. Ordinal

**Ans:** D

10. Sensory evoked potentials are usually averaged:

a. To remove the effects of brain activity not related to the stimulus

b. To identify in which perceptual system they originate

c. To prevent experimenter bias

d. To eliminate criterion shifts

**Ans:** A

11. From the Auditory Evoked Potential, one can identify:

a. Lapses of attention

b. A native speaker of a language

c. Intrusive thoughts

d. The likely site of neural damage in the auditory system

**Ans:** D

12. Magnetoencephalography is conducted in a shielded room:

a. To prevent extraneous noises from interfering with the measurements

b. To prevent any danger to experimenters

c. To prevent interference with the signals from the brain by the magnetic field of the earth

d. To allow more precise stimulus presentation

**Ans:** C

13. Which of the following is not a disadvantage in fMRI?

a. Its temporal resolution

b. Restrictions on the individuals who may be scanned

c. A need to keep the participant stationary

d. Its spatial resolution

**Ans:** D

14. The units into which the brain is subdivided in the analysis of data from fMRI are known as:

a. Voxels

b. Pixels

c. Sulci

d. SQUIDs

**Ans:** A

15. Which of the following is not a disadvantage in studying the effects of brain lesions in humans?

a. Over time, tissue surrounding the lesion may take over lost functions

b. A lesion may affect several functional areas

c. Patients’ willingness to cooperate in studies

d. Patients may tire quickly

**Ans:** C

16. A receptive field is:

a. An individual’s field of view

b. Part of the measurement process in fMRI

c. A dimension of personality

d. The array of sensory receptors within which stimulation causes changes in the activity of a sensory neuron

**Ans:** D

17. Repetitive transcranial magnetic stimulation with short (<5 ms) intervals between pulses:

a. Produces excitatory effects in neural tissue

b. Produces inhibitory effects in neural tissue

c. Is not recommended for experimental purposes in humans

d. Has no effect on neural tissue

**Ans:** B

18. Support for the Bayesian approach to perception has come from studies of:

a. Single neurons

b. Visual aftereffects

c. Cue combination

d. Masking

**Ans:** C

19. Artificial neural networks are composed of:

a. Layers

b. Random couplings

c. Recursive loops

d. None of these

**Ans:** A

20. Artificial neural networks learn by:

a. Turning off some units

b. Adding more unit

c. Finding the most active unit

d. Changing the weights of inputs at each unit

**Ans:** D

21. Questionnaires can give useful information about:

a. Differences in perception between groups

b. Neural processing in the retina

c. Perceptual thresholds

d. Auditory cortex

**Ans:** A

22. In a two-alternative forced choice task:

a. The stimulus is always detectable

b. The participant never makes an error

c. The stimulus is always presented

d. Lapses of attention do not affect measures of performance

**Ans:** C

23. The slope of the psychometric function gives:

a. A measure of the observer’s accuracy

b. A measure of the precision in the sensory system being investigated

c. The observer’s criterion

d. None of these

**Ans:** B

24. Magnitude Estimation is useful because:

a. It produces interval data

b. It is bias-free

c. It gives data which are normally distributed

d. It can be used to measure the perception of stimulus attributes which are hard to quantify

**Ans:** D

25. The EEG gives:

a. Excellent temporal resolution

b. Immunity to interference from electrical equipment

c. Excellent spatial resolution

d. Useful data from a single trial

**Ans:** A

26. Which of the following is not a disadvantage of PET?

a. Its temporal resolution

b. The need to inject a radioactive substance into participants

c. A need to keep the participant stationary

d. Its spatial resolution

**Ans:** D

27. In fMRI, the haemodynamic response is:

a. The pulse

b. The assumed change in blood flow associated with neural activity

c. The increase in heart rate produced by arousing stimuli

d. The unwanted changes in heart rate caused by scanner noise

**Ans:** B

28. Repetitive transcranial magnetic stimulation with intervals of 10 to 30 ms between pulses:

a. Produces excitatory effects in neural tissue

b. Produces inhibitory effects in neural tissue

c. Is not recommended for experimental purposes in humans

d. Has no effect on neural tissue

**Ans:** A

29. Broca examined post-mortem the brains of patients who had problems in speaking but not in understanding speech. He found lesions in the:

a. Right parietal lobe

b. Left occipital lobe

c. Left temporal lobe

d. Lateral left frontal lobe

**Ans:** D

30. A problem with applying the Bayesian approach to perception is that:

a. Perception has a random element

b. It is sometimes difficult to ascertain prior probabilities

c. Likelihoods are often equal

d. It imposes unlikely constraints

**Ans:** B

## Short answer questions

1. What are the advantages and disadvantages of the Method of Adjustment and a two-alternative Forced Choice task as ways of measuring sensory thresholds?

2. To what extent do adaptive psychophysical methods overcome the disadvantages of other methods?

3. Describe TMS and give an example of its use in experiments.

4. Why is fMRI-A a useful technique? Give an example of its use.

5. Compare and contrast single cell recording in animals and the study of humans with brain damage as ways of studying brain function.