CH. 2: SELECTION OF BEHAVIOR

Introduction

1. Describe the main similarity between Darwin's efforts to account for the evolution of species and the present account of the learning of complex behavior.

2. The principle of natural selection is to species as the principle of b______, s_____, or r______, is to complex behavior. What is the significance of this analogy?

Social Impediments to a Selectionist Account

3. Summarize some of the major reservations concerning a selectionist approach to complex behavior. Evaluate these reservations. Can you think of other possible problems?

Uncovering the Origins of Complex Behavior

4. What does it mean to say selection is for the behavioral phenotype and not the biological phenotype?

Variation

5. Stimuli can function in two ways that have important effects on variation, the e______ function of stimuli and the m______ function of stimuli. Be able to define and give an example of your own construction of each function.

6. Why is variation so important to the emergence of complex behavior? Explain your answer.

Eliciting Function -- Reflexes

7. Define and give an example of a reflex. How do reflexes come about?

8. What is the distinction between respondents and operants; i.e., how are they alike and how are they different? Be able to give an example that illustrates each type of e______ - b_____ relation.

Motivating Function: Deprivation and Sensitization

9. How is deprivation produced? Give an example to illustrate your answer. Does forcing someone to eat more than they would choose have a motivational function? Explain your answer.

10. Be able to define sensitization and habituation, and give an example to illustrate each phenomenon.

11. Look at Figure 2.3 and be able to indicate what in the figure indicates elicitation, what sensitization, and what habituation.

12. Why does someone shouting "Look out" qualify as a stimulus that has a motivating function? Is this innate?

Selection

13. Discuss important aspects of the relation between natural selection and selection by reinforcement. Are they totally independent of one another? Be able to justify your answer.

14. Describe one piece of experimental evidence that indicates that the ability to learn contributes to reproductive fitness. (Hint: Any time you are asked to describe an experiment, you should include the procedures that were used and the actual result that was obtained. Be careful to distinguish between the result and the *interpretation* of that result. They are not the same.) Your answer should make it clear that you understand the meaning of the phrase "reproductive fitness".

Procedures for Studying Selection by Reinforcement

15. Be able to define the major difference and similarity between the c_____ procedure and the o_____ (or i_____) procedure for studying the acquisition of e______-b____ relations.

16. Be able to summarize the experiments in the text that illustrate each of the two types of procedures.

17. Describe a sequence of events in daily life that meet the definition of a classical procedure -- of an operant procedure.

Conditions Required for Selection by Reinforcement

18. What problems, if any, do you see in attempting to base an account of human behavior on research conducted with "lower" animals?

19. This section begins with a summary statement of the three conditions that are required for learning to occur. <u>After reading the entire assignment</u>, state the three conditions in your own words and be able to describe experimental work that supports each statement.

Temporal relation between the guiding environment and behavior

20. Why is the classical procedure best suited to study the relation between the environment and the eliciting stimulus?

21. Describe the basic features of the *model experimental preparation* used to study classical conditioning—the nictitating membrane of the rabbit.

22. What are the basic findings regarding the temporal relation between the environment and eliciting stimulus that have been obtained with this preparation? (See **Figure 2.7**.)

23. Be able to use all of the technical terms associated with the classical procedure. They are printed in **bold face** in the readings.

24. Are *new* connections formed in the nervous system when selection occurs with the classical-conditioning procedure? Be able to support your answer.

Temporal relation between behavior and the eliciting stimulus

25. What does the operant procedure permit the experimenter to investigate that the classical procedure does not?

26. Why does the reading state that "the operant procedure ... is the stuff of everyday life"? Give an example of your own construction to support your answer.

27. What are the basic findings from the operant procedure regarding: (a) the temporal relation between behavior and the reinforcer (see **Figure 2.8**) and (b) the responses that are guided by the environment as a result of the procedure (see Figure **2.9**)?

28. Changes in human behavior often appear to be independent on short-term relations between the environment, behavior, and the elicitor. In your own words, what are some reasons for this incorrect impression?

29. Is learning in experienced learners dependent on reflexive elicitors? Explain your answer using technical terms, e.g. c______, or s______ reinforcement.

30. What is *superstitious behavior* as the term is used here? Describe experimental evidence to support your answer.

Discrepancy between ongoing behavior and the behavior evoked by the eliciting stimulus

31. Describe the (a) reasoning, (b) procedure, and (c) findings from Kamin's study of

b_____.

32. What is the major conclusion to be drawn from the results of blocking experiments? Use the term b______ d_____ in your answer. Does the conclusion apply to learning in both the classical and operant procedures? Explain.

33. Two implications of blocking for learning in experienced learners are mentioned in the readings. Describe them in your own words.

A Principle of Selection by Reinforcement

34. As illustrated in **Figure 2.10** what are the similarities and differences between the classical and operant procedures for studying behavioral selection?

35. Make certain that you understand the technical terms used to describe events in the classical and operant procedures. Follow the application of those terms to the examples of classical and operant procedures in **Figure 2.11**. Are there two different *kinds* of learning, classical conditioning and operant conditioning? Explain.

Interactions among selected responses

36. Is the outcome of conditioning that *whatever* responses occur "immediately before and at the same time as the elicited response" are always elected? Explain by citing an experimental example.

The scope of a behaviorally based principle of reinforcement

37. Explain what it means to say that "selection by reinforcement provides a causal analysis of the environment"?

38. Be able to describe the following three types of difficulties that a principle of reinforcement faces when it is stated on the behavioral level alone: (a) biological constraints [use the term t______

a _____ in your answer], (b) ecologically invalid situations, and (c) some reinforcers that do not elicit responses that are measurable at the behavioral level.

A Biobehavioral Principle of Selection By Reinforcement

39. Summarize the methods and findings from studies of electrical stimulation of the brain as a reinforcing stimulus.

40. At the level of the synapse, what seems to occur when there is a change in synaptic efficacy brought about by a reinforcing stimulus? Use technical terms in your answer, e.g., V_____T____A____, pre______ neuron, post______ neuron, and the neurotransmitter, g______.

41. Be able to describe the important features of **Figure 2.14**. What is an input unit, an output unit, and interior unit? What is the contingency illustrated in each case? Give an example that is consistent with the contingencies shown in each panel of **Figure 2.14**.

42. Describe the major features of the results from the computer simulations of the classical and operant procedures shown in **Figure 2.15**. What conclusion may you draw from these results regarding the ability of the Unified Reinforcement Principle to accommodate learning with both the classical and operant procedures?

43. Carefully go through the various stages in the selection process illustrated in **Figure 2.16**. What happens to the strength of connections as learning occurs and which connections strengthen earliest in learning?

Concluding Comments

44. Read this section. If any part does not seem clear, go back and reread the section of the chapter that pertains to the summary.