Program Instruction Introduction to:

Part I - Establishing Operations

Part II - Rule-Governed Behavior

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The following is a programmed instruction introduction to the topic of Establishing Operations (EO's) and Rule-Governed Behavior (RGB). Programmed instructional materials are written in such a way that the subject matter is broken into small steps called frames. Each frame ends with a question which has been answered previously in the program.

The user of these materials, to gain maximal benefit, should write the answer to the questions on a separate sheet of paper prior to looking at the printed answer given in the program. It may be useful to cover the subsequent reading material with another sheet of paper to avoid accidental reading before you have written your answer. An asterisk (*) indicates the end of a frame. When you reach an asterisk you should stop and answer the question in that frame on the sheet of paper you are using to cover the printed answer. The printed answer will follow.

Some conventions have been used throughout this program:

1. Where blanks are used, the number of blanks indicates the number of words in the answer. Thus, "_____" indicates a one word response, "_____ _____" indicates a two word response, and so on.

2. A series of dashes "----------" will serve to indicate an expression is required.

3. In some cases there is more than one correct way to respond. You will have to use your own repertoire to evaluate whether or not your answer is synonymous with the printed answer.

It should be noted that this program is intended as a compilation of existing information on establishing operations and rule-governed behavior. The ideas and concepts in this program are not original to this program. Also, a list of references used appears at the end of the part for those interested in a more detailed look at that topic.

Part I - Programmed Instruction for Establishing Operations

Prerequisite Repertoires for Part I - Establishing Operations

Academic materials assume prerequisites, be it only the vocabulary used in the material. It is assumed that the users of this program have, as prerequisite, familiarity with the following concepts.

positive reinforcer
negative reinforcer
discriminative stimuli
deprivation

aversive condition
rate of behavior
escape and avoidance learning
operant chamber (Skinner box)
stimulus pairing
consequated (followed)
conditioned reinforcer

satiation
frequency of behavior
emitted behavior
elicited behavior
evocation (evocative, evoke)
suppression of behavior
punishment

Part I - Establishing Operations

Frame #1

As one looks at explanations of behavior in much of the current discipline of psychology, early historical antecedents, and "person in the street" accounts of behavior, some common explanatory concepts can be seen. The most common explanations are nonobservable, inner causing agents. These explanations are, by definition, nontestable. Historically, and currently, many explanations of behavior have been nonobservable agents and; therefore, these supposed causes of behavior are not _____. *

Answer to Frame #1 - testable

Frame #2

Some common terms used to describe these "inner" motivating causes of behavior include: needs, desires, drive states, wishes, instinctual states, urges, forces, motives, libido energy, biological tissue needs, feeling states, etc. It is not possible to see these "causes", this means that they are not _____. *

Answer to Frame #2 - observable

Frame #3

Many of the common everyday "person in the street" concepts of psychology deal with the notion that in order for a behavior to occur the behaving organism must first "know how" to do it, and then "want" to do it. Everyday terms such as "knowledge" and "motivation" have been used to refer to these topics. In order to do something an organism must (using everyday terms) have the _____ and the _____ to do it. *

Answer to Frame #3 - knowledge; motivation

Frame #4

The topic of knowledge (acquisition of behavior) is addressed in behavior analysis by basic principles, such as reinforcement. Motivation, on the other hand, has not been addressed as extensively. Early authors such as Skinner (1938) and Keller and Schoenfeld (1950) had chapters devoted to the topic of motivation. However, subsequent books on behavioral psychology have generally had less and less coverage of the topic; usually limiting discussion of the topic to the concepts of deprivation and satiation. The two most commonly talked about motivative variables are _____ and _____. *

Answer to Frame #4- deprivation; satiation

Frame #5

The topic of _____ has generally been receiving less coverage in recent behavioral texts than it had in earlier books in the field of behavior analysis. *

Answer to Frame #5 - motivation

Frame #6

The concepts of deprivation and satiation have gone a long way in providing an understanding of motivation. Using the model:

no X	behavior	presentation of X

where X is a stimulus, condition, or event, deprivation has explained the change in positive reinforcement value of the presentation of such stimuli as food, water, temperature, etc. The concepts of deprivation and satiation best address the reinforcer value of _____ reinforcers (reinforcement by the presentation of stimulus). *

Answer to Frame #6 - positive

Frame #7

There are also cases which the concepts of deprivation and satiation don't explain very well. For instance, more hours of deprivation of a screwdriver won't make a screwdriver a reinforcer; however, the presence of a loose screw may have that effect. Likewise, mild sexual stimulation, a salted peanut, and many other thing induce a change in the sensitivity to a reinforcer without any added period of deprivation. The _____ of a loose screw cannot be seen as deprivation. (i.e. the period of deprivation has stayed the same.) *

Answer to Frame #7 - presence (For more information on this topic see Appendix A)

Frame #8

To some, these and other questions have demonstrated a need for a more comprehensive concept than _____ and _____ to account for "motivating variables". *

Answer to Frame #8 - deprivation; satiation

Frame #9

The effort of behavior analysis is to look at things from a more functional perspective. In an effort to deal with the issue of motivation more effectively the concept of establishing operations (EO's) has been developed to describe a number of motivative variables. The term was first used by Keller and Schoenfeld (1950) and was later reintroduced by Michael in 1982. This term shows a means of putting the existing data into better order on the topic of motivation (i.e. deprivation and satiation). Behavior analysts use the term _____ _____ to talk about the topic of motivation. *

Answer to Frame #9 - establishing operation (EO)

Frame #10

An establishing operation (EO) is a procedure which can be defined in terms of two effects. establishing operations (EO's) alter the sensitivity (susceptibility effectibility) of an organism's behavior to

(A) reinforcement or punishment by particular reinforcers or aversive conditions, and

(B) evocation or suppression by associated discriminative stimuli (S^D's).

In this case, sensitivity refers to the likelihood that the organism's _____ will be affected by certain environmental stimuli. *

Answer to Frame #10 - behavior

Frame #11

If an organism's rate of behavior has become more likely to be affected by a particular stimulus, another way of saying this is that the behavior has become more _____ to that stimulus. *

Answer to Frame #11 - sensitive

Frame #12

The first defining effect of an establishing operation mentioned above is that EO's alter the sensitivity of an organism's behavior to

(A) reinforcement or punishment by particular reinforcers or aversive conditions.

This means that the future frequency of behavior can be more easily affected by the particular consequences related to the EO in effect. The first defining effect of an EO is to establish the sensitivity of an organism's behavior to _____ or _____ by certain consequences. *

Answer to Frame #12 - reinforcement; punishment

Frame #13

The second defining effect of an EO is that it establishes the sensitivity of an organism's behavior to

(B) evocation or suppression by associated discriminative stimuli (S^D's).

Evocation and suppression refer to the ability of particular S^D's to temporarily increase or decrease the frequency of a response. Establishing Operations alter the sensitivity of a behavior to _____ or _____ by discriminative stimuli associated with that behavior. *

Answer to Frame #13 - evocation; suppression

Frame #14

Thus, an establishing operation is defined as an environmental event, operation, or stimulus condition that effects an organism by momentarily altering:

(A) the reinforcing/punishing effect of other stimulus events (the reinforcer- establishing effect), and

(B) the frequency of occurrence of behaviors which have been consequated by those events (the evocative effect).

Name the two effects EO's have on an organism's behavior which defines them as EO's.

1. _____ - _____ effect
2. _____ effect *

Answer to Frame #14- reinforcer-establishing; evocative

Frame #15

Now let's look at more detailed descriptions and examples of (A) and (B) from the previous frames. First (A), the reinforcer-establishing effect is that EO's momentarily alter the _____ effectiveness of other stimulus events. *

Answer to Frame #15 - reinforcing/punishing

Frame #16

Part (B) is the evocative effect. The evocative effect of EO's is a momentary change in the _____ of occurrence of behaviors which have been consequated by events related to that particular EO. *

Answer to Frame #16 - frequency

Frame #17

A repairperson and her assistant have come to fix a leak in your sink. The repairperson notices a loose pipe fitting (EO). The momentary frequency of asking for a pipe wrench is increased, and she asks her assistant to hand her one. The increase in the frequency of the behavior, asking for a pipe wrench, is an example of the _____ effect of EO's. *

Answer to Frame #17 - evocative

Frame #18

Let us now look at a basic research example, a rat has been allowed to eat food freely for 24 hours (EO). This temporarily decreases the reinforcer effectiveness of food. The _____ effect of EO's is being discussed in this situation. *

Answer to Frame #18 - reinforcer-establishing

Frame #19

One common problem encountered when learning the concept of EO's is confusion with the concept of discriminative stimuli (S^D's). The following contrast may help to clarify the difference. An S^D is related to the differential availability (occasion for) of an effective reinforcer/punisher; whereas, an EO is related to the differential effectiveness (will it work) of an environmental event as a reinforcer/punisher. Therefore, the difference between EO's and S^D's can be seen as the difference between _____ and _____, respectively. *

Answer to Frame #19 - effectiveness; availability (order is important here)

Frame #20

If the effectiveness of a reinforcer is altered by a stimulus, that stimulus is acting as a(n) _____ _____. *

Answer to Frame #20 - establishing operation (EO)

Frame #21

A rat is placed in an operant chamber (Skinner box). If the rat presses the lever in the presence of a light it will receive a food pellet; however, if it presses the lever when the light is off the rat receives no food. For example, we might find that the rat presses the lever 8 times/minute when the light is on, and almost never when the light if off. The light in this case is functioning as a(n) _____ _____. *

Answer to Frame #21- discriminative stimulus (S^D)

Frame #22

We place another rat in a similar operant chamber. If the rat presses the lever it will always receive a food pellet. We find that, if the rat has been allowed to eat freely prior to being placed in the chamber, it exhibits no lever-pressing behavior; in contrast, if we then deprive the rat of food for a 24 hour period prior to placement in the chamber, it presses the lever at a rate of 10 presses/minute. Food deprivation is acting as a(n) _____ _____ in this situation. *

Answer to Frame #22 - establishing operation (EO)

Frame #23

Many psychological approaches have theories that attempt to explain "wants". This concept can most effectively be explained by the evocative effect of the establishing operation (EO). To "want" something is to have an increase in the momentary _____ of the behavior(s) which have typically obtained whatever is "wanted". *

Answer to Frame #23 - frequency

Frame #24

It is not convenient to consider the reinforcer-establishing effect in relation to "wants" because it refers to an event that is in the future with respect to the observation of the "want", the occurrence of reinforcement. Put another way, the reinforcer-establishing effect gives a stimulus greater ability to increase <u>future</u> behavior, whereas the evocative effect increases the <u>current</u> frequency of behavior. The effectiveness of reinforcement is increased ---------- as related to a "want"; therefore, it is inappropriate to use the reinforcer-establishing effect of EO's to explain "wants". *

Answer to Frame #24 - in the future

Frame #25

Furthermore, it is more appropriate to think of "wants" in terms of the evocative effect of EO's for experimental reasons. One can very easily observe a behavior occurring at a higher frequency following an establishing operation; whereas, it would require an extended period of observation to note that a stimulus has become a more effective reinforcer/punisher. Therefore, when a person observes a "want", they are actually observing an increase in _____ that has, in the past been followed by a particular stimulus. *

Answer to Frame #25 - behavior

Frame #26

The cognitive term "want" can most effectively be explained in the behavioral approach by the _____ effect of the EO. *

Answer to Frame #26 - evocative

Frame #27

Of course, both effects of EO's are related; however, when dealing with the concept of "wants", one should note the observation which leads us to think someone wants something. For example, you are sitting with your roommate when you notice that he has begun to open the cupboards, the refrigerator, and the cookie jar. Finally, he asks, "Do we have any cookies?" You might conclude that your roommate wants a cookie, but the issue related to establishing operations is that your roommate emitted "looking-for-cookies" responses more frequently than before. Which effect of EO's can be <u>observed</u> in the example? *

Answer to Frame #27 - The evocative effect

Frame #28

EO's can be usefully classified into two categories: unconditioned establishing operations (UEO's) and conditioned establishing operations (CEO's). A UEO is an EO whose reinforcer-establishing effects are unlearned. It is important to note that the unlearned aspect of the *reinforcer-establishing* effect is the characteristic which defines an EO as unconditioned; behaviors evoked by EO's are usually learned. The term unconditioned establishing operation (UEO) refers to _____ reinforcer-establishing effects. *

Answer to Frame #28 - unlearned

Frame #29

The term unlearned in this case is meant in the same way as unlearned with respect to reinforcers. Unlearned simply means that the effect is present without previous correlation (pairing) to other stimuli; a UEO is effective the first time it is presented. If an establishing operation is effective without _____ it is considered an unlearned establishing operation. *

Answer to Frame #29 - pairing

Frame #30

The _____ effect of an establishing operation must be unlearned for it to be categorized as a UEO. *

Answer to Frame #30 - reinforcer-establishing

Frame #31

A conditioned establishing operation (CEO) is a previously neutral stimulus which has gained reinforcer-establishing effects through a learned relation to another EO or some form of reinforcement/punishment. Neutral stimuli can be paired with _____ _____ or _____/_____ to become conditioned establishing operations (CEO's). *

Answer to Frame #31 - establishing operations; reinforcers/punishers

Frame #32

As with conditioned reinforcers (S^r's), CEO's are previously _____ stimuli. *

Answer to Frame #32 - neutral

Frame #33

In the previously mentioned example of a rat being deprived of food, food deprivation would be a(n) _____ establishing operation. *

Answer to Frame #33 - unconditioned (UEO)

Frame #34

You are studying in your room when you see a fly sitting on the wall. Immediately you go retrieve your fly swatter, return to your room, and swat the fly. Is the fly functioning as a CEO or as a UEO? *

Answer to Frame #34 - conditioned establishing operation (CEO)

Frame #35

You enter your 70°F house more frequently when it is -10°F outside than when it is 70°F outside. The freezing temperature outside of your house changes the reinforcer effectiveness of your 70°F house by functioning as a(n) _____ EO. *

Answer to Frame #35 - unconditioned (UEO)

Frame #36

A rat is placed in a chamber with a grid floor through which an electric shock can be delivered to the rat's feet. After 40 seconds has passed a buzzer comes on. When the buzzer sounds for 10 seconds a brief shock is delivered and the 40 sec. timer begins again; however, if the rat presses the lever before the buzzer has sounded for ten seconds the buzzer shuts off and the 40 sec. timer resets without any shock being delivered. The buzzer in this chamber (commonly known as a warning stimulus) is functioning as a(n) _____ EO. *

Answer to Frame #36 - conditioned (CEO)

CONGRATULATIONS!

You have just completed Part I of this set of programmed instructional materials. Appendix A and References are listed below and will provide further information on establishing operations.

Appendix A

Below is a list of issues which raise questions on straight deprivation/satiation accounts of motivation. Only a quick description is given. Some sources are provided.

ISSUES	SOURCES
Crowded environment	Sulzer-Azaroff/Mayer (1991, p. 152)
recent exposure to; punishment, extinction, other historical or contextual circumstances	Sulzer-Azaroff/Mayer (1991, p. 152)
aversive conditions establishing their own removal as reinforcement	Michael (1993, p. 5-6) Malott (1993, p. 163)
mild sexual stimulation increasing the reinforcer value of further sexual stimulation	Michael (1993, p. 4)
the establishment of punishers	Michael (1993, p. 7-8) Malott (1993, p. 164-165)
Schedule-induced polydipsia: influences reinforcing values of water	Malott (1993, p. 167-168)
adjunctive reinforcer: is a reinforcer to which the organism has become more sensitive because of the delivery	Malott (1993, p. 169-170)

of some other reinforcers or aversive conditions.

aggression: aversive conditions increase the reinforcing value of the stimuli produced by aggression. Malott (1993, p. 170-172)

rules (as in rule-governed behavior) Malott (1993, p. 377)

drug usage: repeated exposure increases (changes) reinforcing value Malott (1993, p. 173-176)

References

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Evocative Effect:

An E.O. shows an effect on the sensitivityof the behavior to reinforcement by particular reinforcer or punishment. For example, if we food deprive an organism , lever presses will be reinforced by the immediate presentation of food more than if we hadn't deprived the rat. Now a sound serves as an S^D, in the presence of the sound, the presentation of food has reinforced lever pressing. If we deprive the organism, he/she will

more likely press the lever when the sound is on. The sound will be more likely to evoke lever pressing. The establishing operation has made lever pressing more sensitive to evocation by the sound.

A similar analysis would apply to suppression by S^Ds associated with punishment contingencies.