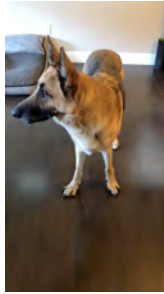


Behavior is to What?® How WE Learn:

A Natural Science Perspective



S.G. Friedman, Ph. D
www.behaviorworks.org
facebook.com/behaviorworks



POP QUIZ

- ▶ Eyes are for ...
- ▶ Ears are for ...
- ▶ Legs are for ...
- ▶ Behavior is for ...

WHAT'S BEHAVIOR FOR?

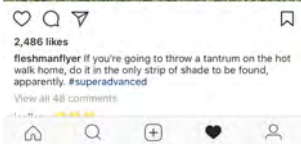
- ▶ Behavior is for operating on the environment to change it in some way.
- ▶ We all behave for effect.
 - ▶ No individual behaves to be ineffective.
 - ▶ Effectiveness—to gain reinforcers and escape/avoid aversive stimuli.
- ▶ Learning is BEHAVIOR CHANGE DUE TO EXPERIENCE

WHAT'S LEARNING FOR? RAPID RESPONSE ADAPTATION

- ▶ "The ability to learn is the product of natural selection. It is an evolved mechanism for coping with the challenges of a changing environment."
- ▶ "Learning does not give the *species the tendency* to behave a certain way in a particular situation; rather, it gives the *individual the tendency* to modify its behavior to suit a situation. It is evolved modifiability."
- ▶ "Learning takes up where reflexes, [modal] action patterns, and inherited behavior traits leave off. "
- ▶ "Learning enables the organism to adapt to situations for which its innate behavior is inadequate."

Chance, P. (1999). *Learning and Behavior* (4th ed.). Pacific Grove, CA: Brooks/Cole.

BEHAVIOR HAS FUNCTION.
WHAT'S THE OUTCOME?



VIVE LA
RESISTANCE!

Before they hatch, cuttlefish embryos can peer out of their eggs and spot potential prey. Embryos exposed to crabs preferred them as prey later in life (Darmaillacq, et al, (2008).



Pavlov's Plants. Plants? Plants!



- Plants have evolved to move toward light (unconditional stimulus) - phototropism.
- Light was the US and air flow as the CS. I.e., Air flow from fan predicted the location and time of light.
- After repeated pairings of fan-then-light, garden peas grew towards the source of the air flow even when the light was not present. Not so for control group. (Gagliano, et al. , 2016).

Low marks on meeting least intrusive, effective strategy. We can do better.



Process not just outcome!



Romey, Calgary Zoo

TEACHING, TRAINING, CONSULTING, CONDITIONING
Changing observable behavior by changing conditions.
Teaching animals to control their reinforcers.

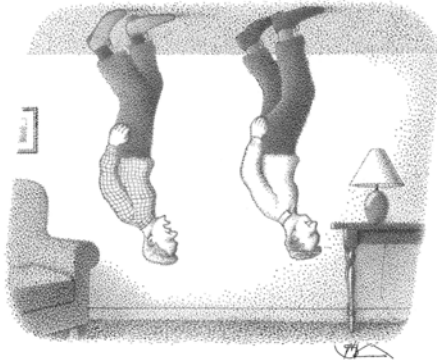


Learning solutions.

SKINNER, (1953). SCIENCE AND HUMAN BEHAVIOR

- ▶ "The practice of looking inside the organism for an explanation of behavior has tended to obscure the variables which are immediately available for scientific analysis. These variables lie outside the organism, in its immediate environment and in its environmental history" (p.31).

BEHAVIOR IS LAWFUL. WHO KNEW? WOULDN'T KNOW FROM OUR CULTURAL FOG!



"Personally, I find it counterintuitive."

Which nestling is not like the other?



Gros-Louis, Goldstein and King, 2006. Mothers provide differential feedback to infants' prelinguistic sounds. *Int'l J. of Behavioral Dev.* 30 (6), 509-516.

OBSTACLES TO A SCIENTIFIC ANALYSIS OF LEARNING

- ▶ "We must give up the idea that **personal recipe knowledge** of [human] behavior is adequate, that this is the only psychology we need" (Stanovich, 2001, p. 222. *How to Think Straight About Psychology*).

OBSTACLES: LABELS

- ▶ "It does not help in the solution of a practical problem to be told that some feature of [an individual's] behavior is due to frustration or anxiety; we also need to be told how the frustration or anxiety has been induced and how it may be altered." (Skinner, 1953. *Science and Human Behavior*, p. 167).

CONSEQUENCES ARE THE ENGINE THAT AFFECTS BEHAVIOR AND ANTECEDENTS (CUES AND CONTEXT)



STIMULUS CONTROL VS DIALOGUE TRAINING

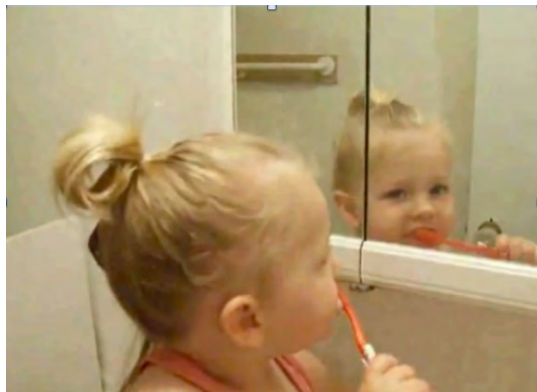


Denise Hasse

CULTURAL FOG



UNCOMMON KNOWLEDGE

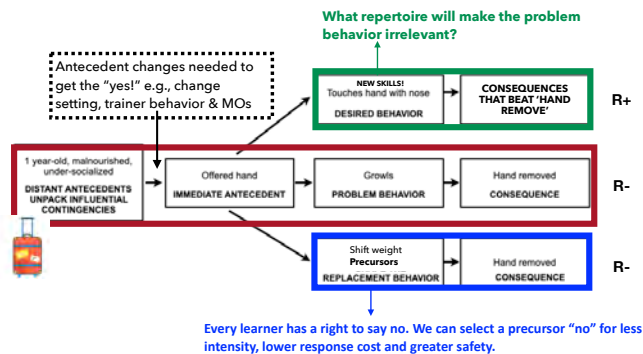


SIX KEYS



- ▶ What does the problem behavior look like?
- ▶ What conditions, events, cues predict it?
- ▶ What's the function—get or get away? What do they lose if they do it our way?
- ▶ What can the learner do instead for the same function?
- ▶ What new skills will benefit this learner?
- ▶ What prerequisite skills are needed?

3-PATH FUNCTIONAL ASSESSMENT MODEL Honor the "No" and Shape the Yes!



O'Neill, et al. 1997

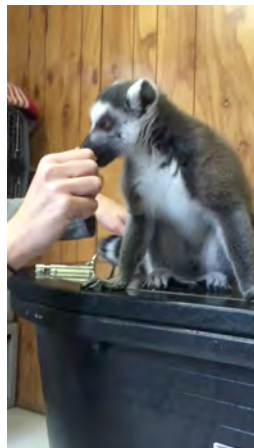
WHAT TO WE WANT THE LEARNER TO DO?



Wouter Stellard & Emily Yunker, Columbus Zoo

WHERE DO WE START?

- ▶ Shaping, prompting, fading in one session – not slow by anyone's standards.
- ▶ Great A and C arrangements.
- ▶ Observation and reinforcement of natural variation the lemur offers, moves through approximations to end goal.
- ▶ Rate of reinforcement - video is 1.47" long.
 - ▶ How many reinforcers were delivered?



20.11/min



Percy, Columbus Zoo

S

"Errorless" Learning

28 sessions

25 errors v. 3,000 errors

- ▶ Errors punish learning!
- ▶ Slower learning.
- ▶ Aggression.
- ▶ Frustration.

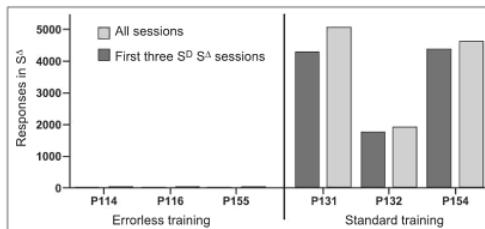


FIG. 8.10 Results of the errorless discrimination procedure used by Terrace. Adapted from Fig. 1 of "Discrimination learning with and without 'errors'," by H. S. Terrace, 1963, *Journal of the Experimental Analysis of Behavior*, 6, 1-27.

From Pierce, W.D. & Cheney, C.D., (2008). *Behavioral Analysis and Learning* (4th ed.). NY, NY: Psychology Press.

ANTECEDENT ARRANGEMENT

Antecedent arrangement makes the right behavior more likely.



Ke\$ha
Armadillo &
Tori Roeder.

SETTING EVENTS - WHAT CAN I CHANGE ON THE NEXT REPETITION TO MAKE THE RIGHT BEHAVIOR MORE LIKELY?



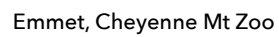


DISCRIMINATIVE STIMULI AKA CUES - WHAT CAN I CHANGE ON THE NEXT REPETITION TO MAKE THE "RIGHT" BEHAVIOR MORE LIKELY?



Diagram illustrating various behavioral interventions on a highway exit ramp, categorized by a vertical color bar on the left (red at the top, green at the bottom).

- Positive Punishment** (Red sign)
- Extinction, Negative Reinforcement and Negative Punishment** (Orange sign)
- Differential Reinforcement of Alternative Behaviors** (Blue sign)
- Positive Reinforcement** (Purple sign)
- Antecedent Arrangements** (Green sign)
- Wellness: Nutritional, Physical** (Green sign)



IN SUM



A Make the right behavior easier.



B Behavior is an action not a label.



C Make the right behavior reinforcing.

© Fritzler & Friedman
