

A Reevaluation of Punishment: An Analysis of Resistance Behavior

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Six types of response consequences where stimuli immediately occurs, disappears, being sustained or are withheld:

Stimulus:	Presenting:	Withdrawing:
Positive reinforcer (S^R):	Positive reinforcement	Negative punishment (type 2 punishment)
Negative reinforcer (S^A):	Positive punishment (type 1 punishment)	Negative reinforcement

Extinction:	S^A sustained	S^R withheld
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Extinction and punishment

- Responses to be extinguished or punished have to occur
- In extinction all the positive reinforcers to the target behavior must be withheld and all the negative reinforcers must sustain
- ”.... failure to be reinforced is slightly aversive.” (Skinner, 1968, p. 188).

Extinction is a so called reductive procedure

”**Extinction** is a procedure in which reinforcement of a previously reinforced behavior is discontinued. In this way extinction describes a reductive procedure for behaviors previously maintained by positive or negative reinforcement and by naturally occurring sensory consequences.”
(Cooper, Heron, & Heward (1987, p. 378-9).

The term "punishment"

- “Punishment” does not here refer to its legal use, where **a person or organism is punished** for its actions
- In scientifically literature punishment is defined in two different ways

Clinical practices and punishment

- In the history of applied behavior analysis punishment and procedures containing punishment have been closely linked to practices focusing on decreasing behaviors labeled as aberrant, unwanted or problematic (aggression, self injurious behaviors). (Foxx, 1983).
- Much of the research on the effects of punishment on human behavior has been done on patients labeled as developmentally disabled or autistic. (Axelrod & Apsche, 1983).
- The prevalence of destructive behaviors (aggression, self injury and property destruction) range between 23 to 90% in different studies. (Thompson, Gray, 1994; Singh, 1997).

Response Reduction is Involved in the Definition of Punishment by some authors

“... the defining characteristic of punishment is directly measurable in terms of the existence of response reduction.”

(Azrin & Holtz, 1966, p. 382).

Punishment → Response Reduction

- “... the defining characteristic of punishment is directly measurable in terms of the existence of response reduction.”
(Azrin & Holtz, 1966, p. 382).
- The focus is on the frequency of the target behavior

Is Punishment Changing the Frequency of the Punished Behavior?

"The definitions differ only with respect to the direction of change of the response probability: an increase of probability for positive reinforcement, a decrease for punishment. Neither process is secondary to the other."

(Azrin & Holtz, 1966, p. 383).

Is Punishment Changing the Frequency of the Punished Behavior?

“A punisher is defined in an analogous way [as a reinforcer]: the decreased occurrence of responses similar to one that immediately preceded some event identifies that event as a punisher.”

(Catania, 1992, p. 91.)

Is Punishment a Response-weakening Procedure?

”Negative reinforcement is a response-strengthening procedure, but punishment is a response-weakening procedure.”

(Grant & Evans, 1994, p. 132.)

Define Punishment Without Presupposing Any Effect

"We must first define punishment without presupposing any effect. .../... what course is open to us? The answer is as follows. We first define a positive reinforcer as any stimulus the *presentation* of which strengthens the behavior upon which it is made contingent. We define a negative reinforcer (an aversive stimulus) as any stimulus the *withdrawal* of which strengthens behavior."

(Skinner, 1953, p. 184-5.)

A Definition of Punishment

- "***punishment*** - An operation in which an aversive or conditioned aversive stimulus is made contingent upon a response."
(Ferster & Skinner, 1957, p. 731).
- This definition is not presupposing any effect

How to Measure the Effects of Punishment and Extinction?

- Skinner, and all other behavior analysts have measured the effect of punishment and extinction in the rate of response of the punished or extinguished behavior
- Rate of responding has been the fundamental datum in behavior analysis

Incompatible Behavior to the Punished Behavior Will Occur

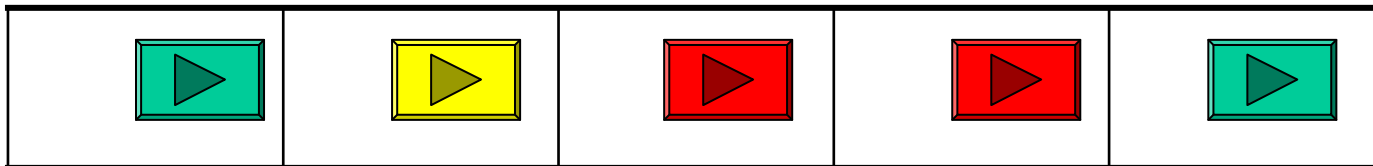
- “But for both theoretical and practical purposes it is important to remember that we are always dealing with positive probabilities. Punishment, as we have seen, does not create a negative probability that a response will be made but rather a positive probability that incompatible behavior will occur.” (Skinner, 1953, p. 222).
- “In general then, as a second effect of punishment, behavior which has consistently been punished becomes the source of conditioned stimuli which evoke incompatible behavior.” (Skinner, 1953, p. 187).

Skinner versus the others

- The skinnerian definition rests upon answering the question: What is the effect of withdrawing a positive reinforcer or presenting a negative? According to Skinner: “If punishment is repeatedly avoided, the conditioned negative reinforcer undergoes extinction. Incompatible behavior is then less and less strongly reinforced, and the punished behavior eventually emerges. When punishment again occurs, the aversive stimuli are reconditioned, and the behavior of doing something else is then reinforced. If punishment is discontinued, the behavior may emerge in full strength”. (Skinner, 1953, p. 189).
- Skinner seems to prefer this definition to a more direct one, such as that of Azrin and Holz (1966), because he believed that **the effects of punishment were not permanent**. (Van Houten, in Axelrod & Apsche, 1983).

Target Behavior

- Inappropriate behavior can always be analyzed as a chain of behavior
- A chain has a first response and a last response
- In a chain of behaviors, some responses are “worse” than others



A Chain of Responses

- Green = Different appropriate behaviors
- Yellow = “Warning” behaviors, early signs of unwanted behaviors
- Red = Dangerous behaviors (easy to define). (The first red response can be seen as a warning of the second).



Where in this chain is punishment most effective if the goal is to lower the frequency of dangerous target behavior?

The goal is to abruptly and change direction of the chain

- We try to fade the interruptions to gradually milder forms. It means: we are gradually changing the function of the interrupted behavior. (The principle of one-functionality is not followed in a strict way).
- The interruptions does not have the goal to lower the frequency of the disrupted behavior by aversive stimuli. The primary focus is on changing direction of the behaviors involved, and reinforce incompatible forms of behaviors.

Mild Disruptions

- When it is impossible to extinguish an inappropriate behavior we will disrupt the chain of behaviors in a mild way – as early in the chain as possible
- The disruptions should be the same for **yellow** and **red** behavior

One-functionality

- Inappropriate behavior can be made one-functional. It means that the target behavior must be followed immediately by only one type of consequence.
- We are often using a short period of time out as a consequence.

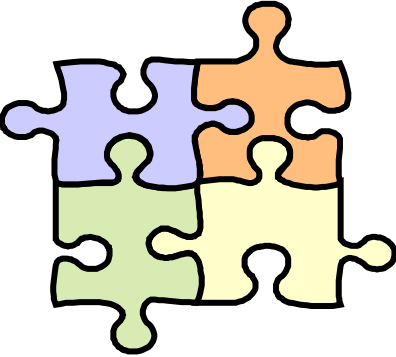
Arrange opportunities for appropriate (“green”) behavior

- We prefer to make opportunities for “green” (appropriate) behavior
- Appropriate (“green”) behavior can be reinforced (positively or negatively)
- We prefer to use a method which reinforces incompatible behavior

The Target Behavior

- Deviant behaviors are often multifunctional. They are controlled by many different consequences. Often they are intermittently reinforced by positive and negative reinforcement.
- If the “meaning” of deviant behavior is to damage, hurt, tease, we are changing the meaning. The “meaning” of any behavior is it’s historical consequences.

Procedures for decreasing behaviors:

When deviant behavior occurs in a situation and is interrupted:	When deviant behavior does not occur in a given situation:	Deviant behavior occurs, but is not interrupted:
<ol style="list-style-type: none"> 1. Holding, response blocking. 2. Hand guidance. 3. Graduated hand guidance. 4. Time-out from reinforcement. 5. Response-cost procedures – negative punishment. 6. Reconstructing the scene. 7. Redirection. 8. Positive practice. 9. Restitution correction. 10. Incompatible practice correction. 11. Alternative practice correction. 12. Negative practice correction. <p>Overcorrection variants of the above.</p> <ol style="list-style-type: none"> 13. Presentation of aversive stimuli – positive punishment. 	<ol style="list-style-type: none"> 1. Discriminants for acceptable behavior are arranged. 2. Successive forms of approaching behavior are reinforced. Desensitization techniques. 3. Fading of discriminants for deviant behavior. As in desensitization techniques. 4. Acceptable behaviors are reinforced, differential reinforcement procedures (DRO, DRA, DRI, NCR) are employed. 5. Explanations, rule governing procedures. 6. Making appointments, behavioral contracts. 7. Resistance explanations. 8. Model resistance explanations. 	<ol style="list-style-type: none"> 1. Extinction. 2. Reconstruction of the situation as soon as deviant behavior is followed by acceptable behavior. 3. Prepare better for the next episode where deviant behavior might occur. 

The Weakness of Punishment

- B. F. Skinner said: The ultimate weakness of punishment as a technique of control has been known for a long time
- We do agree: Punishment has unwanted side effects and often challenges ethical and legal matters

Our Opinion About Punishment:

- Even though we define and analyze effects of punishment, we do not advocate the use of such consequences.
- We will always look for alternatives to punishment, however punishment has effects on behavior. [Punishment1](#)
[Punishment2](#) [Punishment3](#)

Don't Lower the Frequency of the Target Behavior With Punishment!

- Azrin & Holz are advising behavior analysts to follow [14 rules](#) if they are going to lower the frequency of the target behavior with punishment
- The un-skinnerian definition of punishment has seduced parents and therapists all over the world to use punishment
- Today most behavior analyst are looking for effective alternatives to punishment

Is the Action Which is Always Punished Rare *or* Low Frequent?

- “Since punishment depends in large upon the behavior of other people, it is likely to be intermittent. The action which is always punished is rare.”
(Skinner, 1953, p. 190).
- The action which is always punished by other people are rare. Actions which are always punished can be low frequent.

Carr & Lovaas on the temporary effect of electric shock treatment:

”The suppression of the target behavior following shock treatment will be temporary unless reeducation of the client is attempted. That is, problem behaviors, however bizarre, do serve a function, and if the client is not taught some appropriate, alternative way of satisfying this function, he or she is almost certain to return to the problem behavior at some time in the future.”
(In Axelrod & Apsche, 1983).

On the use of positive reinforcement procedures (DRO, DRI, DRA, DRL, NCR)

Sometimes positive reinforcement procedures will fail or not be completely successful in attempts to encourage and maintain desirable behaviors.

(Fichter, Wallace, Liberman, & Davis, 1976; Foxx, 1984; Kazdin, 1973; Sullivan & O'Leary, 1990).

From Escape to Avoidance

“Escape and avoidance procedures often go hand in hand in behavior change programs. First a behavior is established through escape conditioning and then continues to be strengthened through avoidance conditioning.”

(Grant, & Evans, 1994).

Aversive Activities

“Aversive activities have been extensively used in escape and avoidance conditioning.”
(Grant, & Evans, 1994, p. 140).

What is an aversive activity?

- Is it aversive to lay down?
- Is it aversive to sit down?
- Is it aversive to raise up?
- Is it aversive to walk?
- Is it aversive to stop and reconstruct?

Why are these activities categorized aversive in our cultures?

- The reason why we are talking about such activities as aversive can be that the person sometimes is showing very deviant behavior and verbal protest when he is told or helped to do such “aversive” activities
- An aversive activity can't be aversive because it is categorized aversive. This is a category mistake.

When Inappropriate Behavior is Negatively Reinforced?

- “Research has shown that a good deal of inappropriate behavior is due to escape conditioning.” (Grant, & Evans, A. 1994, p. 141.)
- Removal of an effortful or difficult task can be a reinforcer.

Appropriate Escape Behavior

- If inappropriate behavior is reinforced by a time out period then appropriate behavior could be reinforced by time out as well
- We are giving the client the opportunity to escape from any kind of aversive stimuli except when we are doing discrete trial training on resistance

Time Out

- Time out from positive reinforcement is a punishing procedure
- Time out from aversive stimuli is a negative reinforcing procedure
- A short time out can function as a small reinforcer, or a slight punishment

Exposure to Triggers

- “The final goal of a trigger analysis program is to teach the student to control her or his behavior in the presence of the problematic triggers.” (Rolinder & Axelrod, 2000).
- Exposure to triggers (S^D) calls for individual analysis of how the unwanted behaviors are dealt with. Sometimes triggers have to be faded (in or out).

Resistance Behavior

- The concept resistance behavior was introduced in Norway 1976. (Karlsen, A. 1976, p. 2).
- The establishment of resistance behavior requires a scientific analysis of behavior
- Resistance behavior is “self-control”

Skinner on "resistance":

- "the child escapes from them by pulling his hand away or avoids them by not reaching." (1968, p. 186)
- "they resist any new practice" (1968, p. 259)
- "Stimuli which acted just before the child was burned should also have become aversive, and any behavior which brings escape from them or avoids them will be negatively reinforced. ...//... "The burnt child *shuns* the flame." (1968, p. 186)
- "Being awakened by the bell proved to be aversive, and the child learned to avoid it by staying dry." (1968, p. 197)
- "resistance to at technology of teaching" (1968, p. 259)
- "I resist looking at the manuscript." (1983, p. 210)
- "resistance or revolt" (1968, p. 259)
- "actively holding still" (1953, p. 189)
- "... inactivity—an apathy or stubborn do-nothingness." (Evans, 1968, p. 34).
- "incompatible behavior ...//... would oppose the occurrence of the behavior punished." (1989, p. 127)
- "plain inaction" (1968, p. 98)
- "He "blocks." He refuses to obey" (1968, p. 98)
- "Inaction is sometimes a form of escape (rather than carry out an assignment, the student simply takes punishment as a lesser devil)" (1968, p. 98)
- "sullen inaction" (1968, p. 99)
- "any behavior of "doing something else"", (1953, p. 189)
- "doing something else" (1953, p. 191)
- "doing any thing else" (1953, p. 189-190)
- "turning" (1953, p. 191)
- "stopping" (1953, p. 191)
- "He can stop emitting unreinforced responses in an unfavorable situation" (1968, p. 167)
- "rejecting a response", (1957, p. 371)
- "acting of withholding", (1957, p. 372)
- "we dodge objects", (1987, p. 71)
- ""revoke"", (1957, p. 370)
- "**Passive resistance**" (Heading in Science and Human Behavior (1953, p. 360)). Passive resistance is "simply not behaving in conformity with controlling practices".

Resistance is "avoidance"

- Resistance behavior "avoid" a specific operant response called the target response
- Resistance behavior is incompatible with the target response, and is brought under control of the same discriminative stimulus

Resistance Behavior can be **Evoked** in Four Ways by the Operations:

1. extinction
2. positive punishment
3. negative punishment
4. rules (includes stimuli for imitative behavior)

From Overt to Covert Behavior

- Most normal resistance behavior is covert behavior
- It starts as overt behavior and can be changed into covert behavior

Resistance as a Pre-potent Response

- We prevent the occurrence of target responses simply by creating circumstances which evoke a resistance response which is pre-potent
- The stimulus for the target behavior must be changed to a stimulus for an incompatible response. A resistance response is a specific type of incompatible behavior.
- “Two responses which use the same parts of the body in different ways cannot be emitted together.” (Skinner, 1953, p. 218).

Resistance is a Specific Response

- Resistance behavior will prevent you from punishment
- Resistance is a specific avoidance response
- A specific punished response is incompatible with any other behavior, which includes the specific resistance response

What is Resistance?

- Operant resistance is a problem solving reaction which will stop or change the direction of your body or parts of your body
- Operant resistance is a secondary behavior
- The primary behavior is the target behavior which is changed in its direction or stopped

Is Resistance to Any Help?

- Resistance can prevent you from engaging in the target behavior
- Avoid temptation with resistance behavior
- “Wrong” behavior is generally resisted.
Resistance behavior is a specific response which will stop or change the direction of your own movement.

Why don't Everybody Talk about Resistance Behavior?

- It can be difficult to detect resistance behavior because we already are naming behavior otherwise in our cultural tradition
- Most resistance behavior is covert operant behavior. It is easier to learn to talk about overt behavior.

If You Don't Resist - You Will Burn Your Finger



The Conflict Between Target Behavior and a Resistance Response

- There will always be a conflict between the target behavior which leads to punishment and the resistance response which avoids it
- There will always be a conflict between the target behavior which leads to extinction and the resistance response which avoids it

How can Resistance Behavior be Established for the First Time?

1. By punishment of a resistance-incompatible behavior
2. By extinction of a resistance-incompatible behavior
3. Resistance behavior can also be directly primed by modeling or explanations
4. Resistance behaviors are established in the same manner as any other new behaviors

Let's Change the Function of the Occasion for the Target Behavior

- Resistance training is changing the function of the S^D for the target behavior
- If no resistance is emitted no reinforcers are made available (withholding reinforcers is slightly aversive)
- We are preventing the person from engaging in the target behavior when we are trying to establish resistance or testing resistance. (Resistance behavior is often established in [discrete trial](#) (**video**) training procedures).

$$S^{\Delta} = S^D$$

Behavior occurring in the place of the punished behavior is not caused by the punishment. It's wrong to attribute this *other* behavior, for instance resistance, to be *caused* by punishment. Punishment can be interpreted as an establishing operation. Discriminative stimuli for the punished or extinguished behavior will change their function to S^{Δ} . The S^{Δ} will be S^D for avoidance behavior.

Resistance Behavior Versus the Primary Target Behavior

- When resistance behavior is established it has its own contingencies
- Resistance behavior can be negatively reinforced independent of the primary incompatible target behavior
- A person will often formulate rules of not engaging in the target behavior

Resistance can be avoidance

- “In escape conditioning, an aversive stimulus is present at the time the response is made, and this stimulus is removed dependent on the response.” (our underscore). (Grant & Evans, 1994, p.135.)
- The resistance response can be established as an escape response, but when we are testing resistance it will be an avoidance response.

When can we start to establish resistance behavior?

When temper tantrums and aggression are extinguished under controlled contingencies we can start to establish the relevant resistance behavior

Resistance as problem solving behavior

- Resistance behavior is the most common problem solving behavior in a normal repertoire
- A person who has learned to react in inappropriate ways in connection to “aversive” activities should learn to resist in a normal way

Data and examples

- [Data 1](#) aggressive behaviors, SIB
- [Data 2](#) checks for resistance
- [Data 3](#) school
- [Data 4](#) protests, self destructiveness

From control to “self-control”

- We try to fade away our interruptions until the client is “disrupting” the chain of target behaviors with resistance behavior.
- Resistance behavior resembles the terms impulse control, self management procedures and self-control, used elsewhere in psychology.

On dealing with behavior problems

- When behavior problems cannot be extinguished, some type of interrupting procedure has to be employed. The procedure should be as mild as possible (in reference to punishing stimuli). To extinguish a behavior, one has to gain control over reinforcing stimuli.
- Sometimes positive reinforcement procedures will fail or not be completely successful in attempts to encourage and maintain desirable behaviors (Fichter, Wallace, Liberman, & Davis, 1976; Foxx, 1984; Kazdin, 1973; Sullivan & O'Leary, 1990).
- To teach the individual alternative reactions, that can compete with the unwanted behaviors, seems necessary in order to gain long term effects and to bring unwanted behaviors to a zero level. Resistance behaviors represent such alternatives.

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