

## **The Abative Effect: A New Term to Describe the Action of Antecedents that Reduce Operant Responding**

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Behavior-analytic terminology concerning the so-called inhibitory effect of operant antecedents lacks precision. The present paper describes the problem with current nomenclature concerning the effects of antecedent events that reduce operant responding and offers a solution to this problem. The solution consists of adopting a new term, *abative*, for the effect in question. This paper suggests that the new term has several advantages over terms currently used and that adopting this term will yield a variety of practical and theoretical benefits, including, but not limited to, a more consistent vocabulary to describe antecedent–behavior relations.

Since its inception as a scientific discipline, behavior analysis has concerned itself with terminological precision and parsimony (e.g., Chiesa, 1994; Lattal & Poling, 1981; Michael, 1975, 1982, 1993; Schlinger, Blakely, Fillhard, & Poling, 1991; Skinner, 1931, 1938, 1945, 1957). Indeed, behavior analysts generally agree that precise and parsimonious descriptions of environment–behavior relations increase the effectiveness of our analyses; thus, we continually seek to refine our technical vocabulary. When a verbal practice appears to be inadequate for predicting, controlling, or interpreting environment–behavior relations, our scientific community should abandon this practice and adopt a new one that is likely to lead to more effective practical action (Skinner, 1957).

Given the traditional behavior-analytic emphasis on terminological precision, it is surprising that our terminology concerning the effects of operant antecedents lacks clarity. Behavior analysts describe antecedent events as having one of two effects on the fre-

quency of operant behavior. One possible effect is to increase the frequency of some operant, whereas the other effect is to decrease the frequency of some operant. The operant literature usually refers to the former effect as *evocative* (e.g., McGill, 1999; Michael, 1983, 1993; Wilder & Carr, 1998), but a number of terms are used to refer to the latter effect. In his discussion of the evocative effect of antecedent stimuli, Michael (1983) stated,

The term [*evoke*] is somewhat unsatisfactory in suggesting only an increase, since some of the relations that will be considered evocative involve decreases. *Evocative* or *suppressive* would actually be more accurate but also more cumbersome, so for now let us assign to *evoke* and *evocative* a bidirectional implication. (p. 19)

However, in actual practice behavior analysts typically do not use the term *evocative* in the bidirectional manner advocated by Michael. Rather, behavior analysts most often use one of two terms when describing antecedent-induced reductions in responding, and these terms pose problems for a consistent technical vocabulary. It is to these terms and problems that we now turn.

The two terms behavior analysts most frequently use to describe reduc-

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Table 1

*Some antecedent events that have an abative effect.*

Antecedent	Effect	Representative demonstrations
Stimulus correlated with the absence or reduced frequency of reinforcement ( $S^A$ )	Reduces response rates relative to rates in absence of stimulus	Farthing and Hearst (1968); Hearst (1968); Weisman and Palmer (1969)
Stimulus correlated with the presence or increased frequency of punishment ( $S_p^D$ )	Reduces response rates relative to rates in absence of stimulus	Honig and Slivka (1964); O'Donnell et al. (2000)
Abolishing operation that reduces the reinforcing effectiveness of some consequence (AO)	Reduces breaking points under PR schedules and response rates under VI schedules	Clark (1958); Gilbert (1967); Hodos (1961)

tions in response frequency are *inhibition* and *suppression*. In the operant literature, these terms are typically used to refer to different behavioral phenomena. For example, *inhibition* is often used to describe reductions in response rate due to the onset of a stimulus that has been correlated with extinction (i.e., an  $S^A$ ; Farthing & Hearst, 1968; Hearst, 1968; Weisman & Palmer, 1969). If one speaks of inhibition, a behavior analyst likely will think of inhibition training, the resulting inhibition gradients, and the  $S^A$  relation. However, antecedents in addition to the  $S^A$  can reduce response frequency. Table 1 describes some antecedents that reduce responding, although the list is not exhaustive. Such antecedents include discriminative stimuli correlated with the delivery of punishing consequences (i.e., an  $S_p^D$ ; Honig & Slivka, 1964; O'Donnell, Crosbie, Williams, & Saunders, 2000) and abolishing operations that reduce the reinforcing effectiveness of some event (e.g., Clark, 1958; Hodos, 1961). Using the term *inhibition* to describe the effects of these and other antecedents that reduce the frequency of an operant response may cause difficulty for behavior analysts who are trained to use *inhibition* only when referring to the effects of an  $S^A$ .

The term *suppression* is used in two very different contexts within behavior analysis. First, the term is used to describe the rate-reducing effects of conditional stimuli (CSs) in conditioned suppression procedures (also called conditioned emotional response, or CER, procedures; e.g., Azrin & Hake, 1969; Estes & Skinner, 1941; Lyon, 1968). Second, *suppression* is used to describe the effects of punishment on operant responding (e.g., Hymowitz, 1976, 1981). A problem with using the term to describe the effects of both consequences and antecedents is that the effects of consequences are *function altering*, whereas the effects of antecedents are *evocative* (in the bidirectional sense used by Michael, 1983, 1993). Technically, it seems improper to use the same term to describe the very different effects of antecedents and consequences.

Therefore, the two terms most commonly used by behavior analysts to describe antecedent-induced reductions in response frequency refer to different behavioral phenomena and are problematic. Woods (1987) discussed this general issue several years ago. He proposed to subsume all operant antecedents that reduce response frequency under the  $S^A$  rubric. This proposed so-

lution to the problem of describing what Woods termed *inhibitory stimulus control* actually further confuses the issue by confounding an observed change in behavior with the controlling variable presumably responsible for that change. This confusion seems especially troublesome because, as mentioned previously, other operant antecedents can have response frequency-reducing effects similar to those of S<sup>A</sup>s. Classifying all antecedents that reduce operant behavior as S<sup>A</sup>s is neither logically nor technically sound and complicates efforts to develop a consistent and precise technical vocabulary.

Given the problems associated with the alternatives currently in use, we propose that behavior analysts adopt the term *abative* (pronounced "uh-BAIT-ive") to describe the antecedent events that reduce the frequency of operant responding, regardless of how or why they do so. Thus, the abative effect should be considered the exact opposite of the evocative effect, and we would use the verb *abate* when describing an antecedent's action of reducing the frequency of responding just as we use the verb *evoke* when describing an antecedent's action of increasing the frequency of responding. The term *abative* has several distinct advantages over terms currently in our technical repertoire. First, the term is a neologism, so its sources of control are potentially limited to those observed behavioral effects described in this paper. Second, the term nicely parallels the word *evocative* in construction and function (i.e., as an adjective). Third, the term's root, *abate*, means "to reduce, to do away with" (*New Webster's*, 1989, p. 1) and "to reduce in amount, degree, or intensity; to lessen" (*American Heritage Dictionary*, 1996, p. 2). These meanings are consistent with our proposed usage of *abative*. Unlike *inhibition* and *suppression*, the term *abate* does not carry unwanted connotations, but instead simply describes an observation. Finally, unlike Woods' (1987) proposed solution of using S<sup>A</sup> to refer to the effect in ques-

tion, *abative* describes an observed behavioral effect rather than naming, perhaps incorrectly, the specific antecedent thought to produce that effect.

Although adding another term to our technical lexicon may not be the first choice for some when resolving terminological issues, there seems no better solution at the moment. To develop a comprehensive science of behavior, we must continue to refine our technical vocabulary. Although they sometimes have been ignored, antecedent events exert a considerable amount of control over operant behavior (Dinsmoor, 1995). Hence, the explication of antecedent control is quite important for a variety of practical, technical, and theoretical reasons. A more precise description of the abative effects of antecedents should yield practical benefits, including improved consistency in our technical vocabulary, improved identification of operant antecedents, and improved conceptual and experimental analyses.

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