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Operant Conditioning: Dispelling the Myths

by Marian Breland Bailey, PhD, and Robert E. Bailey

Editor's note: In this article, which is a follow-up to Marian and Bob Bailey's article on the science of animal training (Nov/Dec 2001), the Baileys take on the challenging task of debunking some common myths about animal training—and dog training in particular.

Myth #1: All trainers are operant trainers because all training is operant conditioning.

If a trainer from time to time accidentally applies an operant conditioning (OC) principle or procedure, that does not make the trainer an operant trainer.

Few traditional trainers purposefully use all the fundamental and derived operant principles. Some traditional trainers who appear to be doing well make extensive, albeit unwitting, use of operant principles, while other less-skilled traditional trainers make less use of these procedures. Those who do poorly often violate the principles.

While operant trainers base much of their training chiefly on objective experimental findings, the same is not true of traditional trainers. The traditional manner of teaching the apprentice trainer is to pass on—trick by trick, behavior by behavior—the secrets of the master trainer. In addition, many of the traditional trainers' methods are based on speculations concerning various dog "private events" and "drives," usually with little or no evidence. Such concepts as "prey

drive" may seem to explain much, but in fact they explain little, and such terms mean different things to different people. Where people have agreed what prey drive is, it may serve as shorthand to describe certain behaviors, but it does little to explain behavior. Books on traditional training methods abound, some very old, but these books are simply collections of anecdotes and "how-to-do-its."

Myth #2: Operant conditioning and clicker training are new and untried inventions.

Clicker training is far from new, although it is newly popular with dog and bird trainers. Marian Breland (now Bailey) and her late husband, Keller Breland, were using clickers for animal training back in the early 1940s. (We had to make our own clickers in 1943 because clickers, called "crickets" then, were part of the World War II effort.) Later, Skinner mentioned using a clicker in his article,

"How to Train Animals," in *Scientific American* (1952).

Wherever it came from, the use of

"... both [traditional and operant] training types support many myths and superstitions ..."

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the clicker simply creates a secondary reinforcer, one that possesses some unusual advantages. OC principles have been in continual use in the real world (e.g., by our firm, Animal Behavior Enterprises) since 1943. Most of our work used clickers or electric feeders that produced sounds similar in physical characteristics and function.

In the 1980s and '90s, Karen Pryor popularized what is known as clicker training. The name "clicker training" and the label "clicker trainer" have taken on lives of their own. In the early days, clicker training was essentially a synonym, or perhaps slang, for operant conditioning. That is no longer the case. Karen Pryor now considers clicker training to be more of a subset of OC, where punishment plays little role, if any. Karen Pryor's definition is good enough for us.

Myth #3: Operant conditioning does not allow punishment during training.

We do not claim to be totally positive trainers (TPTs) or clicker trainers, although we tend to lean strongly in this direction. In our combined careers spanning more than 103 years, we have used positive punishment perhaps a dozen times. Properly applied positive reinforcement is so effective, so fast, and produces such well-behaved animals that we use it almost exclusively. We know how to punish effectively when necessary. In the rare event where we used punishment to suppress behavior, only a few applications of a selected aversive were necessary to make unwanted behavior disappear (even in the face of extreme inducements for the animal to emit the formerly punished behavior). We did not need continued or additional correction.

Myth #4 (by traditional trainers): Operant conditioning is "soft" and lacks control.

In spite of its emphasis on positive methods (yet not excluding aversives), behavior analysis, when properly applied, does not present a "soft" training system. Nor do we (or other behavior analysts) believe in permissive child or animal rearing. Children and dogs need limits to be set and standards to achieve. The notion that using positive methods in dog training arose from permissive child-rearing practices puts the cart before the horse. The long spell of excessive, permissive child rearing and education came more from the Freudians and the "progressive" education of the 1920s and '30s (before Skinner) than from behavior analysts. Almost everyone now deplores this permissive aberration. Operant trainers set standards and limits (their criteria) and reinforce the animal's behavior when it meets those criteria.

"Children and dogs need limits to be set and standards to achieve."

Strong, effective stimulus control of behavior has been the rule in our work, but we accomplish this through positive means. Our free-ranging work with dolphins, ravens, pigeons, gulls, cats, and dogs demonstrates this control. We never punished a dolphin (nor a sea lion, whale, cat, gull, raven, or pigeon), nor

corrected such an animal with any but positive means. Further, we never lost an open-ocean dolphin to a pod of free-swimming dolphins, a school of tempting fish, or other distractions.

Myth #5 (by clicker trainers): The clicker is forgiving.

The simplicity of OC concepts may be at the heart of some of its problems. Many clicker trainers are fond of saying that the clicker is forgiving, but they fail to finish the sentence by saying clicker training is forgiving if you don't want sharp behavior. You get what you reinforce or what you click, not what you want. Poor reinforcement yields poor behavior. If your clicks are ill timed, then the behavior will not be precise. There is no magic in the clicker.

Myth #6: Behavior analysts believe that animals do not think.

Please note that we have not said a word about the animal's thought processes. Skinner said simply that he did not know, and could not know, what an animal or another person was thinking. There were not then, and there are not now, any reliable ways of objectively measuring an animal's thoughts.

Skinner said he did not need to know what the animal was thinking in order to shape its behavior. Thus, "private events" (that is, thinking) are ignored, not disclaimed. In Skinner's view, and in ours, statements concerning what the animal is thinking are speculation that serves little purpose when attempting to study, teach, or train behavior. This may change as neurology advances.

Myth #7 (by clicker trainers): Ratios are mandatory and should be started early in training.



We have discussed this ratio controversy at great length in other venues, and there are e-mail posts on various archives putting forth our position on the matter. We have used ratios only when it proved essential or convenient to maintain fully developed, high-rate behavior resistant to extinction. Most of the time, we used continuous reinforcement and trained the behavior to fluency. Continuous reinforcement gives the greatest precision and sufficient strength for most purposes. We strongly suggest that ratios not be used until the behavior is fully developed to the trainer's criteria.

Myth #8 (by clicker trainers): Punishment does not work.

Of course it works, and it has done so for traditional trainers for thousands of years. Clicker trainers lose credibility when they make arguments to the contrary. However, the fact that it can work does not mean that it is the only way, or even the best way, to train today. Thousands of years ago, horseback was the fastest mode of travel. The new technology in mass travel is the automobile. The new technology in mass training may be operant conditioning.

Myth #9 (by traditional trainers): Reinforcement does not work.

Of course it works, because it increases the strength of responses. Proper application of reinforcement technology results in very reliable behavior. Efficacy means "cutting the mustard."

Operant trainers pretty much own the fields of marine mammal training, husbandry training in zoos, bird training, and some other exotic animal areas, but traditional dog trainers have claimed that OC can't hack it with dogs. However, OC practitioners are now entering the dog training areas devoted to obedience, agility, service dogs, field dogs, schutzhund, and elsewhere.

The next few years will show whether OC practitioners can move beyond the present superficial application of the technology, abandon their myths, and achieve high levels of training complex, advanced behaviors.

"Successful animal training, regardless of the methodology, demands good mechanical skills and basic knowledge."

Myth #10 (by traditional trainers): Control of an animal is impossible without corrections.

Wrong. OC practitioners have repeatedly demonstrated fine precision control over behavior with positive reinforcement alone. Our accomplishments at Animal Behavior Enterprises should be a testament to the potential power of reinforcement. And we are not alone—many others have successfully used OC.

Myth #11a (by traditional trainers): Many clicker-trained animals are not really well trained.

Myth #11b (by clicker trainers): Many traditionally trained animals are not really well trained.

Sadly, both camps are right, at least to some degree. Successful animal training, regardless of the methodology, demands good mechanical skills and basic knowledge. This requires years of diligent study and practice. Few people are willing to

devote their lives in pursuit of such excellence.

As in other unregulated crafts and trades, many practitioners from both schools lack the basic skills needed for their profession. Because there are no generally accepted levels of performance, animal trainers are seldom measured for quality and productivity. Truly skilled practitioners, traditional and OC alike, are the exception rather than the rule. This should not be surprising, since there are relatively few truly professional animal trainers when compared to the total number of trainers in the United States.

Myth #12a (by traditional trainers): Most clicker trainers do not know what they are doing.

Myth #12b (by clicker trainers): Most traditional trainers do not know what they are doing.

Again, they are both right to some degree. Both the traditional camp and the clicker camp neglect the importance of mechanical skills, including precise timing. Few from either camp pursue advanced knowledge of behavior, especially the formal (academic) knowledge necessary to develop a true, widespread, sustainable, and teachable technology. Further, few from either camp use videotapes or coaching schemes to improve their training techniques.

Myth #13a (by clicker trainers): The more clicks (reinforcement), the better.

Myth #13b (by traditional trainers): The more corrections (punishment), the better.

Many traditional trainers believe that more corrections are necessary. Many clicker trainers believe that more clicking and treating are necessary. Indeed, a high rate of contingent positive reinforcement is

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a requirement for ensuring strong behavior. But to present a reinforcer—a click-treat sequence—for noncontingent (not related to the criteria) behavior accomplishes nothing. To be contingent, a reinforcer must depend on the behavior.

On the other side of the coin, corrections applied for no reason (i.e., noncontingently, randomly) do no good. However, these mythical beliefs can produce a lot of noncontingent correction and noncontingent clicking and treating. One can argue, with considerable supporting evidence, that noncontingent correction can do actual harm to an animal. Noncontingent clicking can result in a fat, not very well-trained animal or, at best, will produce no effects at all.

Myth #14a (by clicker trainers): The secondary reinforcer is just as good a reinforcer as a primary reinforcer.

Myth #14b (by clicker trainers): The secondary reinforcer is impervious to misuse.

In an experienced animal, a secondary reinforcer can be extremely powerful because of its numerous past associations with primary

reinforcers. This may lead to the illusion that the clicker or other secondary reinforcer is every bit as powerful as the primary. There are trainers who believe clicking without treating is perfectly okay, that using the clicker as a keep-going signal is perfectly okay, and that using a clicker as an attention-getter to call the animal is also okay.

With the usual lack of precision prevalent with many clicker trainers, most do not realize the growing weakening of behavior that results from such practices. Less-than-ideal use of the clicker may succeed at a lower level in spite of the trainer, rather than because of him or her. In this regard, it is true that clicker training is forgiving.

CONCLUSION

Our abbreviated remarks in this article are not intended to be a complete technical treatise on operant conditioning or traditional training. We have not presented documentation, citations, or references. Furthermore, both training types support many myths and superstitions that we have not mentioned. Many more may be growing out there. Here, once more, knowledge of the science can spot these for what they are.

We can point out a way to reduce

these myths and superstitions. The Internet offers a rapid, easy way for people to present and exchange data and information. This assumes that objective data, rather than casual anecdotes, become the focus of animal trainers everywhere. Trainers will have to learn new skills: quantification, unbiased observation, record keeping, and cautious interpretation. This last one is tough for all of us, but all trainers, regardless of methodology, will profit from such a universal sharing of valid information.

For a brief biography of the Baileys, see "Meet the Baileys" on page 11 of the Nov/Dec 2001 issue of this newsletter.

IN MEMORIAM

Marian Breland Bailey, PhD
1920-2001

In recognition of Marian "Mouse" Bailey, an extraordinary woman, scholar, teacher, and friend whose contributions to the science of animal training have forever changed our lives and the lives of our canine companions. Your passion for knowledge will inspire and guide our profession for generations to come.

The Association of Pet Dog Trainers