Desensitization and Counterconditioning

Sys*tematic desensitization* is a technique that was originally developed by behavioral psychologists to treat people with anxiety and phobias. The subject is exposed to a fear-evoking object or situation at an intensity that does not produce a response. If you were terrified of ants, for example, your first hierarchy rung might involve showing you a cartoon of a pink, unrealistic ant. You wouldn't be the slightest bit afraid (hopefully). The intensity - in this case, degree of realism - is then very gradually increased contingent upon you continuing to feel okay. A hierarchy is developed at the beginning of treatment, ranging from the easiest to most difficult versions of the stimulus.

Desensitization is most often performed in conjunction with another technique, *counterconditioning*, which is an application of classical (or Pavlovian) conditioning. In classical conditioning, when one event becomes a reliable predictor of another event, the subject develops an anticipatory response to the first event. The association between the two events is particularly evident if the second event is relevant or potent.

There are important advantages for animals of learning the tip-offs to important environmental events. Dogs learn that a leash coming out of the cupboard means a walk is next. Cats learn that the sound of the can opener means food is next. This is all classical conditioning.

So, what if, whenever I show you the picture of the ant, I then give you a bit of favorite Belgian chocolate? With repetition, you will start to have a nice feeling about that ant.

It's crucial to maintain the distinction between classical and operant conditioning. In classical conditioning the animal is learning about events and their predictive relationship with other events. In operant conditioning he is learning about his own voluntary behavior and its consequences. Classical conditioning is about associations. Operant conditioning is about rewards and punishments. And, the anticipatory response that is conditioned using classical conditioning procedures is involuntary.

All kinds of involuntary response s can be classically conditioned, such as gastric and salivary secretions, immune responses and autonomic reflexes. These are of little practical interest in dog behavior modification, but *emotional* responses are of tremendous interest. Pairing one stimulus with a meaningful second stimulus can create a Conditioned Emotional Response, or CER. We can actually teach dogs to like things.

Counterconditioning is about changing associations. It's called *counter*conditioning rather than simply conditioning because the dog already has an unpleasant emotional response to the thing we're trying to condition, so we *counter* that by establishing a pleasant CER. So, a dog who is uneasy around strangers learns that their presence, proximity and later, contact, predict his favorite things in the world.

How this looks in actual treatment is the presentation of a low-enough intensity, or *sub-threshold*, version of the trigger, immediately followed by a potent, pleasant counter-conditioning stimulus. This is repeated until the dog is evidently and eagerly anticipating the counter-stimulus when the trigger is presented. Then, the intensity of the trigger is increased and the procedure repeated. If, at any point, the dog shows the original reaction to the trigger, it means the intensity is too high. It is important to then back off to a reduced trigger intensity

and work back up gradually again. No good comes of teaching the dog the world isn't mostly safe. In fact, it can make the dog worse.

Order of Events in Classical Conditioning

The difference between establishing a beautiful CER and literally achieving nothing is very often due to how well the trainer orchestrates the order of events. In order for a dog to have an anticipatory response to the first event in a classical conditioning procedure, it must have high predictive value that the second event is coming. This predictive relationship can be muddied by a couple of common errors.

First, there is a risk of simultaneous or backward conditioning. Simultaneous conditioning refers to presentations where the second event occurs simultaneous to the first, so there is no predictive relationship. Backward conditioning refers to presentations of the two events in reverse order so that the predictive relationship is also reversed. Dogs get excited at the sight of their leash coming out of the cupboard because the walk comes *afterwards*. If the walk happened simultaneous to or before the leash came out of the cupboard, the leash's appearance would not be a very good tip-off. It wouldn't give the dog any information about when a walk is coming.

Similarly, if events in stranger desensitization procedure are not in the correct order, conditioning won't take place (or the dog may become tense around food if people are presented after the food and at too high an intensity). The first event is the approach, appearance of the person(s) at low intensity (i.e. high distance, low movement etc.). The second event is the fabulous pay-off: a happy owner and the super high value treats.

In counterconditioning to strangers, this means that the appearance of, approach by or touch of the stranger must *precede* the delivery of the counterconditioning treat. If the trainer is trying to "prevent" a reaction by showing the dog the treats up front, or if the order of presentation gets sloppy, the emotional response either will not get conditioned or will get conditioned, but to something other than the approach and/or removal. Many people feel intuitively that if events are close together in time, animals will form associations regardless of the precise order of events, but this is a mistaken intuition. There must be a *predictive* relationship. Strangers predict goodies.

Distributed with permission from Jean Donaldson.