Journal of Applied Companion Animal Behavior
Vol. 4, No. 1. 2010

Functional Assessment: Predictors and Purposes of Problem Behavior

Susan G. Friedman, Ph. D.
Department of Psychology
Utah State University, Logan, UT

Paper presented at the annual conference of the North American Veterinary Conference, Orlando, FL, January 2009

Introduction

"Any intelligent fool can make things bigger and more complex... It takes a touch of genius—and a lot of courage—to move in the opposite direction." Albert Einstein

Hidden in the complex world of behavior science is a simple fact, which is that there is never just behavior. Behavior doesn't occur in a vacuum independent of conditions, or spray haphazardly from organisms like water from a leaky showerhead. Behavior always depends on the environment in some way. Influential environmental stimuli or events can occur before and after behavior, referred to as antecedents and consequences, respectively. Functional assessment is the process of developing hypotheses about the functional relations among antecedents, behaviors and consequences—the ABCs. The hypothesis generated from a sound functional assessment improves our understanding of behavior and our ability to predict it. Functional assessment also improves the interventions we design to decrease problem behavior, increase appropriate alternative behaviors, and teach new skills.

Terminology Tumult Again

Respondent and operant responses are two basic types of behavior that depend on environmental events in different ways. Respondent behaviors are defined by their dependence on the presentation of certain antecedents, i.e., the stimuli or events that occur *before* the behavior occurs. Respondent behaviors are innate in the sense that they are performed automatically, given the presentation of the eliciting stimulus. For example, a puff of air directed at an animal's eye automatically elicits a blink (A causes B). In contrast, operant behaviors are defined by their dependence on *consequences*, the stimuli or events that happen *after* they occur. Operant behaviors are not automatically elicited; rather, they occur at some frequency and are strengthened (increased) or weakened (decreased) depending on the consequences the behaviors produce (B is a function of C). For example, a parrot may increase the frequency of whistling as a function of the vocal responses from caregivers that whistling produces.

There is a lot of confusion about these two types of behavior that is beyond the scope of this paper. However, to correct two common errors, note that operant behavior is not the result of mechanistic, stimulus–response relations (that defines the respondent class of behaviors called reflexes) and respondent behavior is not always simple (e.g., modal action patterns such as food procurement, reproduction, care and rearing of young, and defense, which are a function of eliciting antecedents called releasers). The main focus of functional assessment is operant behavior, as so many problem behaviors are the result of poor antecedent arrangements and inadvertent reinforcement.

Antecedents, Behavior, Consequences

With operant behavior, the smallest unit of analysis is the three-term contingency antecedent–behavior–consequence, or ABC. No smaller unit has meaning because there is never just behavior. Behavior is defined as what an animal does, given certain conditions, which can be measured. Hypothetical, psychological constructs or vague, diagnostic labels are not themselves behaviors; they are descriptions of behavior that are often barriers to understanding and changing behavior. The main focus of

functional assessment is necessarily overt, public behavior and environmental conditions because external observers can't verify private behaviors, such as thoughts and emotions. This focus on observable behavior does not discount animals' cognitions and emotions. It represents adherence to the most fundamental standard of scientific practice: measurability. As measurement technology improves, it may be that internal correlates of behavior, such as changes in heart rate, can improve our work with certain species and behavior problems.

Consequences are the engine that drives the future strength of operant behavior, the very purpose of behaving; antecedents are the signposts that signal the behavior–consequence (BC) contingency immediately ahead. For example, an offered hand (A) may set the occasion for a parrot to step up (B), which results in attention (C). Over time, stepping up may increase as a function of attention, in the presence of an offered hand. The offered hand is a predictor of stepping up, and attention is the purpose the behavior serves. This parrot doesn't step up because it's sweet; it's called sweet because it steps up. For another parrot, an offered hand (A) may signal a different BC contingency—stepping up (B) results in confinement in a cage (C). For this second parrot, stepping up may decrease as a function of confinement in the cage, and the offered hand may predict biting instead to serve the purpose of escaping confinement in the cage. This bird doesn't bite because it's territorial; it's called territorial because it bites. Behavior is selected by consequences. Behaviors that produce desired outcomes are repeated; behaviors that produce aversive consequences are modified or suppressed. Behavior is a purposive tool, part of every animal's biological endowment, used to affect the environment.

Functional Assessment

Functional assessment requires observation skills that clients can quickly develop. The following key questions help focus their observations on the ABCs:

- What does the problem look like in terms of actual behavior, i.e., what do you see?
- Under what conditions does your animal do this behavior, i.e., what events predict it?
- What does your animal get, or get away from, by emitting this behavior?
- Under what conditions does your animal not do this behavior, i.e., when is it successful?
- What do you want the bird to do instead?

The answers to these questions will improve clients' understanding of the problem behavior and their ability to predict and change it. Examining the ABCs reveals that there are no problem behaviors; there are problem situations. The problem behavior is only one element of problem situations. The other two elements, occasion-setting antecedents and functionally related consequences, are environmental elements that can be changed. Through the process of functional assessment, caregivers are better prepared to take responsibility for their birds' problem behavior and then change conditions that maintain it. Without this information, we may inadvertently make the problem behavior worse with a faulty solution. For example, it is not uncommon for a parrot to lower the volume of its vocalizations in response to soft human sounds. This observation has led to the commonly proffered advice to redirect a screaming parrot by whispering to it. The functional assessment looks like this: client enters room (A), the parrot screams (B), and the client whispers (C). From this functional assessment we can see that the client's whispers *follow* the parrot screams and, therefore, may inadvertently increase screaming. A different, more effective strategy would be to whisper *before* the parrot screams to prevent it from occurring in the first place. This alternative functional assessment looks like this: client enters room whispering (A), parrot vocalizes with a lower volume (B), and client praises and opens cage door (C).

Considerations for Designing a Behavior Change Plan

Reducing problem behaviors is not the only goal when planning an intervention. A good plan is one in which the physical and social context of the environment is redesigned to provide the animal with an opportunity to preserve the

function served by the problem behavior with an acceptable alternative behavior, and to allow the animal to learn new skills that make the problem less likely to occur. The focus on preserving the function of a problem behavior with an appropriate alternative is fundamental to understanding behavior and respecting behaving organisms: if the behavior didn't matter to the animal, it wouldn't keep doing it. For example, the function typically served by biting is to remove someone's hand—that is, to say no. Since all animals have a right to say no, our first goal should be to replace biting with an acceptable way to say no—for example, leaning away or squawking. Our second goal is teaching the bird that saying yes, by stepping up, yields even better outcomes.

O'Neill et al. (1997) describe four considerations to increase the effectiveness and efficiency of behavior change plans. First, behavior support plans should describe how the client plans to change the environment to promote and maintain appropriate behavior. This is accomplished by changing a wide range of conditions such as medications, diet, physical settings, schedules, exercise, training procedures, and the use of rewards and punishers. It is also important to describe in detail exactly who in the family will do what and when. To change animal behavior, we change what we do, including the environment we provide.

Second, there should be a clear link between the functional assessment and the intervention plan. For example, a functional assessment may reveal that a parrot repeatedly jumps off a perch and chews the floorboards to gain sensory reinforcement. Therefore, the intervention plan to reduce this behavior should identify what alternative behavior the animal can use to accomplish this goal in a more acceptable way (e.g., the bird can chew similar wood items on a variety of perches stationed in the room). The intervention should also identify new behaviors to teach the parrot (e.g., use stimulating puzzle toys). See Figure 2 for a diagram of the problem behavior, replacement behavior and desired behavior paths. The main focus of an intervention plan should be on what an animal should do instead of the problem behavior, not on what it should not do. Thus the importance of asking, what do you want the bird to do instead?

Third, behavior change plans should be technically sound. A technically sound plan is one that adheres to the scientific principles of learning and behavior in order to make the problem behavior irrelevant, inefficient, and ineffective. A problem behavior becomes irrelevant when an alternative behavior provides the same, or more, reinforcement. A problem behavior becomes inefficient when, compared with the wrong behavior, the right behavior can be performed with less effort and fewer responses, and results in quicker reinforcement. And a problem behavior becomes ineffective when the maintaining reinforcer is reduced or withheld each time the behavior is exhibited.

Fourth, the behavior change program should fit the client's setting and skills. The best strategy is the one that can be implemented effectively by the people responsible for the plan. Interventions should fit the client's routines, values, resources, and skills. A good plan is effective in helping the animal and also results in reinforcing outcomes for the client, in both the short and long run.

The following form is included to structure clients' understanding and prediction of the problem behaviors and design of a behavior change plan using the most positive, least intrusive, effective methods.

Functional assessment and intervention design (FAID) form

1. Observe and operationally define the target behavior.
    a. What does the animal do that can be observed and measured?

2. Identify the distant and immediate physical and environmental antecedents that predict the behavior.
    a. What general conditions or events affect whether the problem behavior occurs?
        i. Medical or physical problems?
        ii. Sleep cycles?
        iii. Eating routines and diet?
        iv. Daily schedule?
        v. Enclosure and activity space?

    b. What are the immediate antecedents (predictors) for the problem behavior?
        i. When, where and with whom is the behavior problem most likely to occur?
        ii. Does the behavior immediately follow a caregiver's demand or request, or a person entering or leaving the environment?

    c. When is the animal most successful—that is, when doesn't the problem occur?

3. Identify the consequences that maintain the problem behavior, i.e., the immediate purpose the behavior serves.
    a. What does the animal gain by behaving in this way, such as attention, an item or activity, or sensory feedback?
    b. What does the animal avoid by behaving in this way, such as particular people, a demand or request, items or activities, or sensory stimulation?
    c. To what extent does the animal's natural environment support the behavior (i.e., what function might it serve)?

4. Develop a summary statement describing the relationships among the antecedent predictors, the behavior, and consequence for each situation in which the behavior occurs (Figure 1).

Distant antecedents: This parrot was rehomed after spending its first 6 months loose in a dark basement with nine other parrots. It was malnourished and undersocialized.

Antecedent: When I offer my hand
Behavior: parrot bites
Consequence: to remove my hand
Prediction: Biting will continue/increase

Figure 1. Functional Assessment Summary Statement

After the functional assessment summary statements have been developed, the primary caregiver can respond to the following questions to design the behavior change program.

1. Replacement behavior: What existing alternative behavior would meet the same purpose for the animal?
    a. Rather than _____
    (Identify the problem behavior)

b. This animal can _____
(Identify the replacement behavior)

Example: Rather than biting my hand, this parrot can lean away.

2. Desired behavior: What behavior do you ultimately want the parrot to exhibit?
   a. When _____
   (Summarize antecedents)
   b. This animal _____
   (Identify desired behavior)
   c. In order to _____
   (Summarize "payoffs")

   Example: When I offer my hand, this parrot can step up, in order to get a ride to the play tree.

3. What has been tried so far to change the problem behavior?

4. Preliminary strategies: Can I do something differently or change something in the environment so that the behavior doesn't occur in the first place?
   a. I could make adjustments related to WHEN the problem behavior is likely to occur by:
   b. I could make adjustments related to WHERE the problem behavior is likely to occur by:
   c. I could make adjustments related to the ACTIVITY during which the problem behavior is likely to occur by:
   d. I could make adjustments related to the PEOPLE present when the problem behavior is likely to occur by:
   e. I could teach/reteach a behavior such as:
   f. I could adjust some aspect of the environment by adding, removing or changing an item or condition such as:
   g. Other adjustments that can be made are:

5. Training strategies: What skill(s) will the animal need to be taught in order to successfully demonstrate the replacement behavior?
   a. Who will provide the training?
   b. When will the training take place?
   c. Where will the training take place?
   d. How often will training take place?
   e. How and how often will opportunities for practice be provided?

6. Reinforcement procedures: What will I do to increase the occurrence of the replacement/desired behavior?
   a. Identify potential reinforcers: What preferred items, activities or people might be used as incentives in an intervention for this animal?
   b. Establish specific behavior criteria: What exactly must the animal do to earn the above reinforcers?
   c. Determine the schedule of reinforcement: How frequently can the animal earn the above reinforcers? Typically, continuous reinforcement (a reinforcer for every correct behavior) is best.

7. Reduction procedures: What will I do to decrease the occurrence of the problem behavior?
   a. I will ignore all occurrences, immediately attending to something else by:
   b. I will stop and redirect each occurrence of the behavior by:
   c. I will implement time out from positive reinforcement by:
   d. Other strategies:

8. Implementation details: What other details or explanations would help another person implement this plan accurately and consistently?

9. Tracking change: How can I monitor the animal's behavior so I have a reliable record of progress and can continue or modify the plan as needed?
    a. Describe exactly how data will be collected and recorded.
        i. Frequency count of the target behaviors across the day.
        ii. Frequency count from ___:___ am/pm to ___:___am/pm
        iii. Timing duration of target behaviors.
        iv. Other.

10. Evaluating outcomes: This program will be considered successful if what outcome is achieved by both the animal and the caregivers, under what conditions?

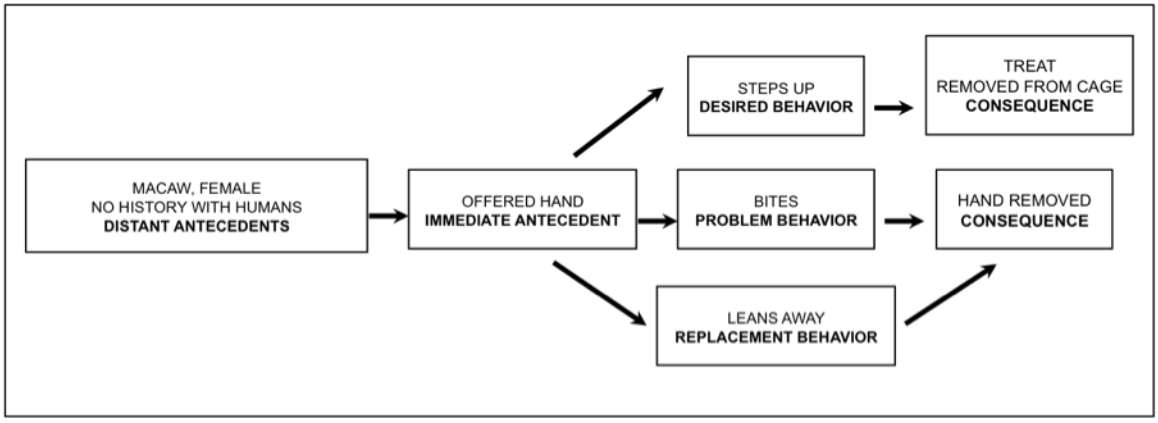

Figure 2. Diagram of Problem Behavior, Replacement Behavior, and Desired Behavior Paths

References

O'Neill, R. E., Horner, R. H., Albin, R. W., Sprague, J. R., Storey, K., & Newton, J. S. (1997). *Functional assessment and program development for problem behavior: A practical handbook* (2nd ed.). Pacific Grove, California: Brooks/Cole.