Straight Talk about Parrot Behavior*

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Have you ever heard the expression, "It's like herdin' cats"? That describes some of the best days working on our internet list, Parrot Behavior Analysis Solutions (PBAS; www.yahoogroups.com). PBAS is not a chat group; it's a special interest work group dedicated to applying the scientific principles of behavior to living and learning with companion parrots. In light of the many preconceived and deeply-rooted notions about parrot behavior, not to mention behavior in general, maintaining this scientific focus is sometimes just like herdin' cats! Still, there isn't another crowd with whom I'd rather spend my Saturdays.

You may be thinking, "A science of behavior? Gee, isn't anything left to common sense anymore?" Unfortunately, the subject of companion parrot behavior has been left to so-called common sense too long and it has proven to be far more common then sensible. Common sense is often little more than a social record of folk wisdom, clichés and homilies about behavior. Common sense maintains the status quo so we continue to do what we know best rather than seeking out the best we can do. Our widespread acceptance of common sense information about parrot behavior has produced too many experts with too little expertise. As a result, caregivers are often trying desperately to follow completely conflicting advice -- sometimes found in the same book or magazine, or even in the very same article. Many of the problems people experience with parrots in their homes are either caused, or exacerbated, by this lack of basic scientific knowledge about learning and behavior.

Common sense tends to be inconsistent as a source of knowledge because, by definition, it is not grounded in scientific methods that aim for congruence of facts and theories. The scientific method is not a single set of rules; rather it is defined by three general principles, all of them essential to our quest to understand, predict and influence parrot behavior for successful companionship in our home. First, science employs methods of systematic observation of *measurable* phenomena. The current understanding of parrot behavior is plagued with vaguely defined labels and immeasurable concepts called hypothetical constructs, discussed further below. Second, science aims to produce publicly verifiable knowledge through *replication and peer review*. In the realm of parrot behavior, an "anything goes" attitude often prevails characterized by such statements as "Only you know what's best for your parrot." Too often disagreements about best practices are dismissed as merely political. This trivializes the urgent need for dialogue, education, and dissemination of replicable approaches. Third, science seeks explanations that are *testable*. Many of the assertions that characterize conventional wisdom about parrot behavior cannot be quantified and therefore cannot be tested. For example, do birds of a feather flock together or do opposites attract? Do we spare the rod and spoil the [parrot] or do we treat our parrots as we wish to be treated?

Recently, with parrot training curricula popping up like mushrooms on the internet, bad advice is just plain out of control. These ads are slick and the sellers convincing:

> **"TIRED OF THOSE PERNICIOUS PARROT PROBLEMS? For just $759.99 ($59.99 if you buy now) you too can learn to don a leather glove, drag your struggling parrot out of its cage, and hold on to its feet until it learns to love you! Bandages are included so you can wear your scars proudly like the real experts!"**

After all, common sense tells us that to know parrots is to be bitten by them. No? We need to snap out of it. Common sense is a myth. And myths cannot be given the same status as scientific information if we are to provide well for our parrots. Unfortunately science has a hard time competing with hype, and this is especially true with behavior science. As parrot caregivers we need to be critical thinkers skilled at evaluating knowledge claims and expert opinion; we need to resist the appeal of explanatory fictions, razzamatazz promises and feigned fixes; and we need to learn the basic principles of learning and behavior without the oversimplification that dilutes accuracy. Given the rapid rise in the sale and subsequent relinquishment of thousands of companion parrots yearly, it is clear we have no more time to lose.

Below are 5 common fallacies about behavior science and parrot behavior that we routinely discuss on the PBAS list as new people join us. In addressing these fallacies we provide people with straight talk about behavior. Our goal is to inspire parrot caregivers to look further and learn more about behavior science and living and learning with parrots. A reading list is provided at the end of this presentation to get you on your way. It's really not a very steep climb. It's just that for most of us, it's braving new terrain. But, that's what makes it exciting!

1. **Behavior science doesn't apply to the *real* world.**

Many people think that behavior science is solely a laboratory science or that the principles of behavior first discovered in laboratories only apply to rats and pigeons. On the contrary, Applied Behavior Analysis (ABA) is the real world branch of experimental behavior analysis and over the last 60 years it has achieved a wide sphere of influence where all sorts of behavior solutions are needed. Below is a partial list of fields in which ABA has been highly effective.

- education
- clinical psychology
- autism
- self-injurious behavior
- developmental disabilities
- infant assessment
- gerontology
- organizational performance management
- training and instructional design

- behavioral safety
- the experimental analysis of behavior (basic research)
- brain injuries
- human operant research
- animal and pet training
- verbal behavior
- behavior pharmacology, drug self-administration and drug discrimination
- behavior toxicology
- behavioral medicine
- computer modeling of behavior and artificially intelligent agents
- decision support systems
- human factors and user interface design

The relevance of behavior science to improving the lives of humans and other animals is no longer reasonably questioned. To learn more about it, see www.behavior.org. At this site there is a comprehensive tutorial, an excellent glossary, and a treasure trove of interesting articles.

2. **You can't modify hardwired behaviors.**

The old model that pits nature against nurture is now being replaced with a new understanding best characterized as nature via nurture. In other words, nature and nurture are inextricably entwined. This new view is largely the result of recent findings that learning, defined as *behavior change due to experience*, involves gene activation. In reciprocal fashion, experience activates genes, which produces proteins that change the neural circuits in the brain and alter the way in which an individual behaves. At every step of the way, the environment is involved.

Innate behavior is automatic, it is behavior performed without prior experience. Innate behaviors include simple reflexes (e.g. eye blink) and flexible action patterns (e.g. bathing) common to all members of a species. There are also genetic lines within each species that increase the occurrence of very general behavioral tendencies (e.g. shyness). Still, none of these forms of innate behavior are unaffected by experience. For example, the first time someone unexpectedly drops a heavy book most of us automatically startle but by the fourth or fifth time the book is dropped, neither we, nor our parrots, bat an eye. This process is known as habituation.

Too often, people evoke the hardwired explanation as an excuse for their own lack of knowledge about behavior and lack of teaching skills. They draw sweeping conclusions about all parrots based solely on personal experience with a very limited number of birds, for example, amazons are innately afraid of the color red; cockatoos innately scream at dawn and dusk; and severe macaws are innately aggressive. Of course the implication of the supposed innateness of these behaviors is that there is something inside the bird's brain that can't be changed. The critical thinker asks, "If these behaviors are hardwired why is it that all companion amazons, cockatoos and

severe macaws do not behave this way?" and, "In what way does the environment account for these observations and maintain these behaviors?"

3. **Birds have a natural drive to dominate their owners.**

In psychology, terms like dominant, aggressive, and shy are a mix of vague, ambiguous labels and hypothetical constructs. A hypothetical construct is an inferred mental process used to explain the underlying cause of behavior. By definition constructs are not tangible entities and are best understood as place holders for a time when science reveals more about the way in which our internal and external environments interact with the body's physiological systems to produce behavior. People say parrots bite because they have an innate need to dominate us; however we know that the environment is involved in all facets of what we do. In fact, the *only* evidence that a dominance drive is the underlying mental process that explains biting is the observable behavior itself. There is no direct measure of dominance drive because it doesn't exist as an entity – it's an idea. Something that doesn't have a tangible form can't cause behavior. To think so is simply unscientific thinking.

From a behavior-change perspective, the most relevant cause of present behavior is past consequences. Here are some examples of how we can use that fact to better understand, predict and change behavior:

Antecedent: Grace offers her hand to Peri;
Behavior: Peri steps up;
Consequence: Grace puts Peri in his cage.

Antecedent: Grace's offers her hand to Peri;
Behavior: Peri bites Grace;
Consequence: Grace leaves Peri on top of his cage.

Can you predict Peri's future behavior from the first analysis? Is he likely to step up more or less in the future, given the consequence Grace provides? How about the second example: Is Peri more or less likely to bite, given the consequence Grace provides? Which explanation for behavior is more useful for changing Peri's biting, a dominant mind or past consequences?

A final point: People who use vague labels and hypothetical constructs to describe parrots are producing a Tower of Babel out there. (This is also true about labeling children but this is an article about parrots.) We think we know what people mean when they use them but chances are we don't have a clue. To test this theory, I asked the students in one of my parrot behavior classes to list three behaviors a parrot would display if it was labeled an easily "agitated" parrot. As predicted, they submitted twenty different behaviors (bites, paces, screams, etc.) but the really telling piece of data is that only 9 of the twenty behaviors appeared on more than one person's list!

To the extent that we remove ourselves from describing observable, measurable behaviors, we reduce our ability to understand, predict and change behavior. So, next time you hear someone describe what their parrot *is* or *has*, ask `em what their parrot *DOES*.

4. **Parrots are like 3-5 year old children.**

To investigate animals' cognitive ability, Irene Pepperberg studied the learning behavior of Alex, an African grey parrot. Of course one of the uniquely intriguing characteristics of parrots for this type of research is that many parrots talk. Over 20 years of intensive training, representing tens of thousands of instructional hours, Alex learned to discriminate 50 object labels; 5 shapes; 7 colors; 4 materials; quantities up to 6, and the concepts same/different and bigger/smaller. For people who thought these skills could only be mastered by humans, or at best great apes, it is a stunning demonstration of animal learning. As described by Pepperberg, "It is incredibly fascinating to have creatures so evolutionarily separate from humans performing simple forms of the same types of complex cognitive tasks as do young children." (see http://www.edge.org/documents/archive/edge126.html).

Even for those of us who hail ourselves as having suspected as much all along, the scientific control of this demonstration allowed us to replace our own fallible common sense with facts. However, these data also bring to light another important issue for companion parrot caregivers that strikes at the heart of our greatest dilemma: Can we meet parrots' behavioral needs in our living rooms? On the one hand, the comparison to children makes a striking point: Parrots are not like potted plants that thrive on only water, sunshine and rich soil. They are not décor to accent the subtle hues of our throw pillows. They are intelligent thinking, emoting, and doing creatures that are built to behave not to be still.

On the other hand, it is reasonable to suspect that other species of animals can learn similarly stunning discriminations given the same intensive learning opportunity. In fact, I can't even imagine what a human would learn over 20 years of individualized daily instruction. Thus, the real message transcends the comparison of parrots to children. It is not an issue of so-called intellectual capacity, lest we replace one kind of speciesism for another. By this I mean, don't *all* animals in our care deserve to live stimulating lives, rich with variation, activity, and problems to solve? Or is this standard of living for only those species that learn simple forms of the same types of complex cognitive tasks performed by young children?

There is another consideration, as well. In what way does the frequently exaggerated interpretation that parrots are like 3-5 year old children actually hurt parrots? How many parrots are relinquished because they didn't meet people's expectations as feather kids, (e.g., did not follow directions or displayed aggression to strangers)? For your information, below is a partial list of behaviors characteristic of most 3-5 year old children. The list includes just cognitive oriented tasks. There are scores of other behaviors not on this list from the social and physical skill domains.

- can place objects in a line from largest to smallest
- can recognize some letters if taught
- may be able to print own name
- recognizes familiar words in simple books or signs
- understands the concepts of "tallest, biggest, same, more, on, in, under, and above
- counts 1-7 objects out loud - but not always in the right order
- understands the order of daily routines
- speaks in fairly complex sentences, e.g. "The baby ate the cookie before I could put it on the table."
- asks a lot of questions, including ones on birth and death
- enjoys singing simple songs, rhymes, and nonsense words
- adapts language to listener's level of understanding
- learns name, address and phone number
- if taught asks and answers who, what, when, why, and where questions
- continues one activity for 10-15 minutes
- names 6-8 colors and 3 shapes
- follows 2 unrelated directions
- has basic understanding of concepts related to number, size, weight, colors, textures, distance, position, and time;
- understands immediate passage of time as in what happened yesterday, but does not understand calendar time;
- has long attention span and finishes activities;
- understands and remembers own accomplishments;
- adds "ed" to words ("I goed to the door and put-ed the cat outdoors and "He hurt-ed me.").

The take-home message is that parrots are not kids and kids are not parrots. As eloquently stated by Marion Breland Bailey, "Every animal is the smartest for the ecological niche in which it lives - if it were not, it would not be there." Few of us take the time to learn about parrots' unique characteristics which are often very different than humans and vital to understanding, predicting and influencing their behavior. Parrots hear, see, digest and even breathe differently than we do. And of course, kids can't fly. In what ways do we fail to meet parrots' needs because we tend to admire them most when they reflect to us our own image?

5. **Punishment doesn't work with parrots because they don't understand cause and effect.**

I have to admit to scratching my head upon first reading this particular fallacy in light of parrots' obvious learning abilities. It is really a double fallacy as both clauses are demonstrably incorrect. Punishment does work with parrots, as it does with all species of learners; and, parrots do understand cause and effect as measured by the behaviors they display. *There are many compelling reasons not to use punishment to*

reduce parrots' problem behaviors but their lack of understanding the relationship between cause and effect is not one of them.

Perhaps this confusion stems from a misunderstanding of the most fundamental principle of behavior, called the Law of Effect. This law has its distant roots in observations made by Aristotle but it was first scientifically described by the scientist E.L. Thorndike at the turn of the century. Since that time, the Law of Effect has been demonstrated with hundreds of different species of animals. Simply, this law states that *behavior is a function of its consequences*. In other words, the frequency of a response is changed by the consequences that follow that response. We apply the Law of Effect with two basic procedures – reinforcement and punishment. Reinforcement increases the frequency of behavior and punishment decreases the frequency of behavior.

These are scientific terms with precise meaning. Although people often think of reinforcers as rewards, that can be misleading. Rewards generally refer to prizes, trophies and accolades but many reinforcers don't fit that image. For example, if you shout at a bird every time it screams and the screaming continues because of your shouting, shouting is a reinforcer for that bird. Punishment can be an equally confusing term. People often use it to mean retribution, retaliation and revenge. In applied behavior analysis, if a behavioral decrease is not observed, the consequence is not a punisher for that particular bird. As you can see, the matter of which consequences function as reinforcers or punishers is highly individual. The proof is strictly in the future rate of the bird's behavior. If your bird continues to behave in a particular way, it is being reinforced regardless of your intentions.

Two of the most important characteristics of effectively delivered consequences are 1) contingency, i.e., the dependency or relationship between the behavior and the consequence, and 2) contiguity, i.e., the closeness or timing with which the consequence follows the behavior. When a consequence is delivered inconsistently, it is hard for the learner to associate the two events. If the consequence is delivered too far in time after the behavior, this lack of immediacy decreases the effectiveness of the consequence as well. Perhaps it is inconsistent delivery and poor contiguity that accounts for the fallacy that punishment doesn't work with parrots. Parrots clearly understand cause and effect as they navigate hundreds of behavioral choices daily based on experience from which they predict outcomes. Parrots go to food bowls because doing so causes the effect of access to food; parrots step onto human hands because doing so causes the effect of being removed from their cages; and parrots scream because doing so causes the effect of favorite people appearing.

There are scientific reasons why punishment is the least preferred behavior-change strategy and should be used as rarely as possible. More than 40 years of study have shown that frequent punishment increases the probability of four side effects detrimental to the quality of life of all animals. These side effects include aggression, apathy, generalized fear, and escape/avoidance behaviors. Unfortunately, these side effects are commonly seen among captive parrots. This should lead us to wonder if

this is the fallout associated with inadvertent punishment living among humans, from the parrot's point of view.

Fortunately, there are positive reinforcement alternatives to punishment. Positive reinforcement is the process of increasing behavior by delivering a consequence that tends to be something the bird behaves to get. By positively reinforcing a desirable alternative behavior *at the same time* as ignoring an undesirable behavior we increase what we want to see more and decrease what we want to see less. This procedure, called differential reinforcement of alternative behavior (DRA), is different than ignoring alone as it has a powerful positive reinforcement component. In this way we replace problem behavior rather than only eliminate it, thereby ensuring higher rates of positive reinforcement in our parrots' lives.

A less positive, more intrusive strategy (and therefore less desirable than differential reinforcement) to reduce problem behavior is a mild punishment (behavior decreasing) procedure called Time Out from Positive Reinforcement (T.O.). With T.O. the consequence is the temporary removal of the bird from reinforcing activities for just a half a minute so. The bird is then returned to the scene of the "crime" to do it right. No emotional behavior on the part of the teacher is necessary. The T.O. procedure will do the work for you. As with all procedures, T.O. must be implemented with impeccable consistently and immediacy. These strategies are discussed in more detail in several of the books on the attached reading list.

Conclusion

Improving your skills as critical consumers of behavior information and as parrot teachers, trainers and caregivers is a lot like getting in shape: You have to get out of your comfort zone, stretch to meet your objectives, and commit to change. It's hard work replacing common sense with scientific knowledge. Many people have told me that these are not realistic goals for someone named Average J. Bird-Owner. However, having taught several hundred students the basics of behavior science applied to companion parrots, I have yet to meet a single person with this name. I have met a lot of other people whose curiosity, intelligence and devotion to improving the lives of parrots is far from average.

It is hard to resist jumping from facts to stories, i.e., our personal interpretations of the facts. Many of us have a tendency to fall in love with our own explanations too quickly. These are two reasons why scientific thinking is so important. Scientific thinking increases our ability to sort out the wheat from the chaff that collects around the subject of parrot behavior. Perhaps the three most important skills of scientific thinking are 1) stick with behavioral explanations that can be observed and measured; 2) consider alternative explanations for what you observe that are based on the interaction between behavior and the environment; and 3) ask anyone making assertions about parrots, "How do you know that?" Be assured that confident experts are impressed by people who ask this question and they are happy to respond. Adding just these three skills to your parrot caregiving toolbox will greatly improve your

ability to provide well for your bird. To acquire more teaching tools, read some of the books suggested below. As you will quickly learn, the fundamental principles of learning and behavior apply to all species of learners. As such, no behavior toolbox is complete without the tools of behavior science.

Alphabetical List of Suggested Readings

1. Animal Training: Successful Animal Management through Positive Reinforcement, by Ken Ramirez (1999).

2. Clicking With Birds: A Beginners Guide to Clicker Training Your Companion Parrot by Linda Morrow (available at http://www.avi-train.com/manual.html).

3. Clicker Training with Birds, by Melinda Johnson.

4. Culture Clash, by Jean Donaldson

5. Do Animals Think?, by Clive D. L. Wynn

6. Don't Shoot the Dog: The New Art of Teaching and Training (revised edition), by Karen Pryor.

7. First Course in Applied Behavior Analysis, by Paul Chance.

8. For the Love of Greys, by Bobbi Brinker (available at www.thegabrielfoundation.org)

9. Good Bird! A Guide to Solving Behavioral Problems in Companion Parrots! by Barbara Heidenreich.

10. How Dogs Learn, by Mary Burch, Ph.D. & Jon S. Bailey, Ph.D.

11. The Power of Positive Parenting A Positive Way to Raise Children, by Glen Latham.

*I want to thank all the participants of the Parrot BAS internet list, who inspired this article, for their fine teaching and learning.