

B*E*T*A: BEHAVIOR EDUCATION TRAINING ASSOCIATES

Post Office Box 225129, San Francisco, CA 94122-5129

415-564-7830 800-368-BETA (2382) FAX: 415-242-1302

"Issues for Behavior Analysts to Consider."

Chair: Frank Marone, B*E*T*A: Behavior Education Training Associates
beta.sf@juno.com or bmsca@juno.com

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'Secrets' of Applied Behavior Analysis (EAB). Frank Marone and Karen Baker,
B*E*T*A: Behavior Education Training Associates, San Francisco, CA

Introduction. The senior author has been involved in the experimental analysis of behavior and applied behavior analysis for three decades. Most of this work has been in the area of what today is called "Positive Behavior Analysis". We have noted behavioral applications becoming increasingly mechanistic along with a concomitant expansion of behavioral techniques. We are concerned that this may inadvertently promote ignorance of basic principles.

For example, Discrete Trials Teaching (DTT) has become popular in recent years as a treatment for autism. DTT is a simple 'stimulus-response-reinforcement' arrangement akin to those utilized for decades in arranging effective learning situations for others. It is today considered something virtually anyone can do correctly, and we have often seen it misused. For similar reasons – the technique is seen as easy, straightforward, and self contained – applications of time out (TO) and of functional analysis (FA) have produced many failures.

Applied Behavioral Analysis is a deep field of knowledge. Learning some of the 'tricks of the trade' such as DTT, TO, or FA has become some people's entire understanding of the field. Effective implementation, including long term change, relies upon comprehension of the underlying concepts of Applied Behavior Analysis which provide a context for utilization of such techniques.

We discuss a small number of applied behavior analysis strategies that while basic seem largely ignored today by many engaged in applied behavior analysis. It is hoped that discussion of such basics will promote thoughtful consideration and increased utilization.

"Waiting." How often have you read a behavioral report or intervention protocol specifying that when the person receiving assistance did not respond to a stimulus within a certain number of seconds that what the implementer should do is 'wait' for occurrence and a reinforcement opportunity? Probably very rarely. Yet, this is the classic position of a trainer working with a rat or pigeon in a box. WAIT for the behavior to occur (or a 'successive approximation'). How does one befriend a timid animal? WAIT for closer and closer approaches.

Why is waiting infrequently specified as a behavioral strategy? We propose that it reflects an impatience to actively demonstrate control over the behavior of others. The field of applied behavior analysis has long struggled with the proper place of concepts such as compliance and punishment, both active means of controlling others without necessarily improving their lives nor teaching new skills.

Does waiting work? A recent clinical example: Megan had been having difficulty with an at home one on one academic program for some time. When asked to come to the work table, Megan began to move away, get in bed, and throw household items such as lamps and knick knacks. A variety of strategies emphasizing active control of Megan (e.g., points, physical force, response cost, TEACCH structures) had gradually led to a worsening in all measures over the previous two years. After a reinforcer assessment that suggested Megan's interest in learning and in social contact, intervention consisted of asking Megan to come to the work table, followed by the implementer going to and waiting for her there.

Megan broke several lamps and other household items during a three day documentation period at the start of this intervention. She spent much time away from the table and/or in bed. This was considered a reasonable cost by her family as she had been doing this already under conditions of increasingly unsuccessful intervention. Following inception of the waiting intervention, Megan progressed from first coming to her work table at about 12:00 noon (asked at 8:30 a.m.; three and a half hours latency) and working for about 30 minutes out of 120 (25% of opportunities) to coming to her work table within five minutes of being asked and working about 300 of 360 minutes (83%), in several weeks.

Waiting was not the only strategy employed, but it was the primary one that brought Megan to the learning environment.

Are there times when waiting may not be appropriate? Most would agree that waiting for a young child to stop running into traffic might become a failed intervention. But, the example of Megan suggests that 'danger' (e.g., throwing objects) may not by itself obviate the usefulness of waiting.

"Absence Antecedents". Reports of behavioral occurrence often include some statement that the behavior is viewed as unpredictable, coming 'out of the blue'. The principles of applied behavior analysis suggest that behavior is lawful, therefore predictable. Thus, when behavior is considered unpredictable it is logical to assume that the tools brought to the situation are inadequate rather than that this particular behavior is somehow unique and lies outside the realm of applied behavior analysis.

Applied behavior analysis relies in part on the assessment of antecedents, usually considered occurrences that immediately precede performance of a behavior and are determined to have some connection to it (i.e., 'trigger' it). This common definition of antecedents suggests a readily visible and active relationship between an external event and the occurrence of a behavior. This can lead to erroneous assessment and analysis.

Occurrences in everyday life tell us that there is a class of antecedents that involves the failure of presentation of a stimulus. Standing in front of a candy machine, Bill begins to beat on it. What happened? "I put my money in and pressed the button, but nothing came out." Waiting for a bus, Stephano begins to talk to himself and pace, becoming increasingly agitated, talking on his cellular telephone. What happened? The bus was due at 9:11 and Stephano's watch now reads 9:12.

We have termed these “absence antecedents”, because it is the absence of something that immediately precedes and triggers the behavior rather than the presentation or occurrence of something. We specifically look for these, especially in situations in which the complaint is that the behavior is unpredictable.

Can manipulation of “absence antecedents” positively impact behavior? A clinical example: Michael plays in his room with a large number of toys. Periodically, he approaches the child gate fixed in place in his doorway and tosses each toy out into the hallway until he has none left. Then, he begins to cry and hurt himself. The “absence antecedent” is the number of minutes that transpire without Michael being given a chance to interact with his parents. An intervention is begun that schedules this interaction more densely. The problem ceases immediately.

A more difficult example: Lance, who is deaf and blind, sometimes whirls around and strikes his instructor when she attempts to help him retrieve his lunch and head towards the cafeteria. The “absence antecedent” turns out to be something that prepares Lance for being offered physical assistance. When the instructor has been continuously engaged with Lance for several minutes leading up to assisting him with his lunch, there is no problem. Intervention consists of offering Lance a standard preparatory warning that someone is about to offer him help, a gentle tap, tap, tap with one finger on the top of his right shoulder. The problem ceases.

“Gain/Demand Ratio”. How much reinforcement is enough reinforcement? Many of us have at times been in situations in which we reached a point of throwing up our hands and exclaiming “This isn’t worth it!” Research in several fields has long suggested the importance of perceived equity in situations. In general, people perform better when the ratio between effort expended and rewards attained is well balanced. This can be difficult to assess for a host of reasons. We felt it important enough to attempt to develop a measure. This proved surprisingly easy, at least in the typical situations in which we are asked to conduct assessment.

It is important to adopt the perspective of the person being assessed. We score as a Demand anything that communicates an expectation that the person will respond: a work paper being placed on a student’s desk, an adult being asked to clear her plate after finishing eating, a teenager being asked a question about his recent whereabouts, even a child with limited developed social and language skills being greeted by a parent. We score as a Gain anything that accrues to the individual and can be discretely counted: a praise statement, points, edibles, a break.

A ten minute sample yields an admittedly rough estimate of the overall “positiveness” of a situation, from the perspective of the individual. We believe that even though this is a fairly rough estimate it is more workable than an unquantified view. Assessing this ratio does enable us to better understand problem situations and ones in which problems are less frequent. More important, manipulating the ratio reliably alters the behavioral situation. We have documented instances in which altering the ratio halfway through a ten minute sample is immediately followed by behavioral improvement.

The Gain/Demand Ratio is consistent with work in reinforcer density over time. One difference is that the ratio shifts according to the particulars of the situation. Another difference is that an improvement in the ratio can be obtained by increasing the frequency of Gains (a consequence intervention) OR by reducing the frequency of Demands (an antecedent intervention), or both.

This statistic allows for a variety of fine tuning methods of improving performance and behavior. It is especially useful to have a way of coming at a solution working from 'both ends' of a situation, as it were. For example, we find that an imbalance leaning towards Demands often reflects repeated prompting (e.g., "What is it? Daniel, what is it? What is this? Come on, you know what this is."), especially without 'strengthening the prompt', or a series of prompts without pause (e.g., "Come in. Sit down. Work on page 23.") In such situations it is relatively easy to improve the Gain/Demand Ratio by simply refraining from repeating prompts or injecting Gains (e.g., "Thank you.") between each two successive instructions.

"Guided Practice". The use of prompts, especially verbal prompts, and prompt hierarchies is a long standing feature of the fields of learning and applied behavior analysis. The risk of overutilizing prompts is well recognized. As some others have brilliantly pointed out, when this occurs it is more accurate to characterize the instructor rather than the student as 'prompt dependent'.

We suggest that the use of prompts again reflects the applied behavior analyst's impatience towards generating change and establishing control over the behavior of others. There are powerful alternatives available that are often ignored or at least underused. Many of these spring from the application of behavior analysis to animals. It is not typically possible to prompt an animal to perform in a particular way. One is rarely successful telling a white rat "Go over there and press that lever." The combination of things one might do to facilitate desired behavior and performance we term "Guided Practice". It is important for the individual to repeatedly practice correctly performing the target behavior. A variety of forms of guidance that more naturally fit into the situation than do prompts may be introduced to generate this.

In a typical learning situation, verbal prompts (instructions) are efficient. I may have to tell you only one time how to get to my house to enable you to do so repeatedly thereafter. Written verbal prompts (e.g., a recipe or assembly instructions) are also often successful for typical learners. Working with others who learn less efficiently from instructions, we often begin with methods similar to what works for us. This only becomes a problem when the number of trials to criterion becomes inflated. At this point, what began as instructions become stimuli integral to the performance of the behavior. In most instances, this was not the intention and is problematic.

Alternatives: We consider three broad possibilities – environmental arrangements, modeling/co-acting, and physical assistance. Many of these tend towards Shaping, another underutilized strategy not further discussed here.

Take the skill of sitting in a chair. A necessary environmental arrangement is to have a chair in the room. More effective arrangements may be to fill the room with chairs so sitting on one is the easiest thing to do, to use a chair especially attractive to the individual, or to start with a large couch that essentially fills the room. Without the prompt of “sit down”, such arrangements guide the learner in the direction of the skill performance desired, which can then be reinforced.

Modeling/co-acting might involve the instructor entering the room with the learner present and sitting in one of the chairs. Physical assistance extends this just a bit to the instructor entering the room and sitting down, while holding hands with or otherwise guiding the learner to do likewise. An important aspect of the latter strategy is discriminating between ‘physical assistance’ and ‘physical force’.

When you are receiving a tennis lesson, the tennis instructor may stand behind you, take your hand, and guide you through performance of the desired forehand stroke. This is physical assistance, a kind of guided practice. The tennis instructor would not be likely to overpower you and force you to perform a stroke in a certain way and still expect you to learn or even to return for another lesson. We use the same criteria implementing physical assistance.

Many things essential to promoting learning and/or behavior change have not been included in this discussion. These include shaping and reinforcement, especially social reinforcement, mainstays of our interventions. It can readily be seen that each of the four strategies briefly described above are likely to be combined in any one situation. We hope that this discussion revivifies for some the importance of understanding of basic learning and behavior analysis principles to the promotion of permanent change.

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