

## PRINCIPLES OF BEHAVIOR: CONCEPTUAL PROBLEMS

A VIEW FROM YOUNGSTOWN STATE UNIVERSITY

*plastic tacks*

\*\*draft\*\*

Stephen A. Graf

The objectives of this symposium as set forth by Malott and Garcia deal with problems in the study and application of the principles of behavior, which they classified as problems of terminology, problems of emphasis, and problems in interpreting behavioral data.

The framework for my remarks consists of attempts over the past 13 years to teach a general psychology course from a behavioral perspective using the Malott and Whaley text, Psychology. [As a required course for many curricula within the University, the size of a section runs between 60 and 200 people. Many other sections of this course are taught each quarter by other individuals using other texts and other perspectives.]

In Part I, the focus will be the conceptual problems at large, while Part II will focus on conceptual problems within a specific set of behavioral concepts.

## PART I. General Problems.

I'd like to deal first with the problem of emphasis.

## EMPHASIS 1. Student automatic with behavior principles

In what way might I best emphasize those behavioral principles which form the groundwork of behavior analysis? That seems to be a rather basic, straightforward question of emphasis, but it can easily miss a crucial feature of the teaching situation. In whose acts am I most interested, my own or my students?

Any emphasis that I choose in presenting information represents part of my teacher behavior. Fine. But the real outcome of crucial interest? Student behavior. We know that acts are related to their outcomes and so "teacher telling" isn't going to prove very effective in producing "student behaving". Here the acts involved are the student writing or saying basic principles of behavior analysis. If I'm going to follow the law of effect, I need to provide some outcomes for the student writing or saying behavior analysis principles.

I'm not talking here about "applying" principles of behavior analysis but rather out-and-out memorization of the principles. Get those principles into the student's repertoire as "rudimentary tool skills". If they can state the concepts, then take your chances with adding "understanding" and "application".

The next issue? What does it take to demonstrate that the principles are in the repertoire? The answer is that it takes speed

and accuracy. "Automaticity" is a word some have used that describes the aim fairly well. This bothers those who have lived only in the accuracy dimension. They can't see anything deficient about being slow and accurate. The answer, simply put, is that slow isn't automatic, and if it's not automatic it's not overlearned well enough to stay within the repertoire for the long haul.

The emphasis on developing the student repertoire I've been describing was not the same as the question of what specific behavior principles should be emphasized, which I think is the type of emphasis to which Malott and Garcia were alluding. Thus a second emphasis.

#### **EMPHASIS-2. The basic terms to understanding behavior**

What do you emphasize in behavior analysis? I think it should be the terminology. The problem of terminology is one we may have underestimated. Many of the terms basic to behavior analysis are more easily misinterpreted than understood. As Ogden Lindsley has pointed out, an important word in any science should "compel" the correct interpretation.

In putting together a list of terms, concepts, and their definitions, one's own behavioral history shows. I don't think one is going to develop a great list overnight or even over a year. But putting something down gives you something to work with and something "solid" for others to critique. As George Lehman says, "The road to success is always under construction."

The list, which I call the "Basic Keys" as a convenient label, currently consists of 22 items (Appendix 1). Students are required to write them accurately on two different occasions in five minutes or less. Or, an individual may opt to say them, in which case the time limit is one minute or less. There are five opportunities made available to accomplish this, and the student is done with the task as soon as two successes have occurred.

Students who succeed only once on the task receive a 'C'. Students who succeed twice but repeat the same minor flaws receive a 'B'. Students who fail to ever accomplish the task face an inevitable 'F' in the course and are advised to withdraw for the quarter and try again in subsequent quarters.

#### **DISCOVERY: It's Tougher Than It Looks**

What I have found is that the task as stated is not an automatic one. Data from the number of failures each week show a linear dividing decay function each quarter, but suggest that the number of opportunities would need to be tripled to eliminate failures.

The point that I'd like to make is that in the above situation where we're just going for building the basic definitions into the repertoire of a student, it doesn't get done with some students in the five weeks of a ten-week quarter in which we have allocated to this task. [A] large amount of attention has been given to task analysis in attempts to produce more efficient student learning, but no major improvement has been produced. The next directed effort will

probably be to build computer-assisted practice through an authoring program. Logistic stumbling blocks currently exist for this project, but it may be the best answer.]

If it takes this amount of instructional effort via heavy consequence to produce a minimal feat such as reproduction of the basic behavioral terminology, how difficult will it be to produce appropriate identification of examples and nonexamples? Direct Instruction and Engelmann and Carnine's Theory of Instruction provide a technology to do this, but this type of development is still in its infancy in my course.

[I'm not sure that Direct Instruction can be done effectively in the large section settings that predominate in general psychology. If you want to ensure that the discriminations are within each student's repertoire, some type of computer-assisted drill and practice seems the best bet.]

### PROBLEMS OF INTERPRETING BEHAVIORAL DATA

Problems in interpreting behavioral data represent the third focus proposed by Malott and Garcia. I think the gaps here are considerable. For example, we tend to transform or bypass frequency measures as the basic datum of our science, even though frequency and celeration measures are universal measures of behavior. We tend to create idiosyncratic, stretch-to-fill, laminated charts instead of communicating more efficiently with standard ones. We tend to cling to the belief that behaviors grow, decay, bounce and spread by adding when the evidence indicates that the world multiplies. The underpinnings of "reinforcement theory" are inadequate in handling phenomena such as counter-jumps and counter-turns, where a consequence produces a significant immediate increase in rate of response, but also a significant downward trend in rate. Malott and Garcia's addition of "analogues" is a distinct improvement, but only if the rest of us recognize its importance. To sum up, Malott and Garcia have called for a discussion of the major conceptual gaps in behavior analysis. I started out to speak to that issue, since the "Basic Keys" are an attempt to provide a conceptual framework. What I wound up saying was that we probably need to address the technology gaps in teaching. Otherwise the conceptual gaps become "academic".

### Part II. Zooming in to Specific Case

#### Help Me Find the Conceptual Gaps

1. Psychology - studies inner & outer acts  
[ emphasizes radical behaviorism position; inner acts = thinking, etc. = private events; acts = action = behavior = responses ]
2. Determinism - assumes act has cause  
[ attitude of science from Whaley and Surratt; also from Malott & Whaley ]
3. Frequency - counts act over time  
[ basic measure of behavior from Skinner ]
4. Celeration - draws trend of frequency over time  
[ basic measure of change in behavior from Lindsley ]
5. Contingency - hooks up act to result  
[ core concept from Whaley, Malott, & Garcia; might drop "up" ]
6. Analysis - finds contingency  
[ with application (#10), the two main parts of psychology (Malott & Whaley) ]
7. Rule - describes contingency & setting  
[ from Malott & Whaley; basis for rule-governed behavior ]

- [ from Malott & Whaley; replaces discriminative stimulus; includes reward contingencies, relief contingencies, punishment contingencies, penalty contingencies from Lindsley & Whaley, Malott & Garcia ]
9. Analogue - bridges act & delayed result  
 [ from Whaley, Malott & Garcia; a key to upgrading examples to reality; cornerstone that ties into rules, direct-acting contingencies and indirect-acting contingencies ]
- 10 Application - controls conditions to produce acts  
 [ with analysis (#6), the two main parts of psychology (Malott & Whaley); also corresponds to "scientific manipulation", from Whaley & Surratt ]
11. Behavior mod - provides new results for old acts  
 [ applied field of behavior analysis ]
12. Feedback - provides info about prior act  
 [ from Malott & Whaley; shows how result cues subsequent act ]
13. Reward - accelerates act when presented contingently  
 [ from Lindsley; replaces "reinforcement" ]
14. Relief - accelerates act when removed contingently  
 [ from Lindsley; replaces "negative reinforcement" ]
15. Punisher - decelerates act when presented contingently  
 [ from Lindsley; replaces "positive punishment" ]
16. Penalty - decelerates act when removed contingently  
 [ from Lindsley; replaces "negative punishment" ]
17. Empiricism - tries looking over guessing  
 [ attitude of science from Whaley & Surratt ]
18. Parsimony - tries simplest ways first  
 [ attitude of science from Whaley & Surratt; also from Malott & Whaley ]
19. Remediation - tries again if wrong or slow  
 [ learning principle; source unknown ]
20. Purposivism trap - says future produces present acts  
 [ from Malott & Whaley; also from Malott, Tillema & Glenn; definition more appropriately teleology ]
21. Reification trap - makes abstraction concrete  
 [ from Malott & Whaley; multitude of examples from mainstream psychology ]
22. Rationalization trap - rewards faulty thinking  
 [ from Malott & Whaley; "traps" used on #20, #21, #22 to emphasize common inappropriate operations ]

#### References

- Engelmann, S. & Carnine, D. (1982). Theory of instruction. NY: Irvington.
- Lindsley, D.R. (1983). Say reward, relief, punishment, or penalty. Journal of Precision Teaching, 3, 100-101.
- Pennypacker, H.S., Koenig, C.H., & Lindsley, D.R. (1972). Handbook of the standard behavior chart. Kansas City, KS: Precision Media.
- Malott, R.W. & Whaley, D.L. (1983). Psychology. Holmes Beach, FL: Learning Publications.
- Malott, R.W., Tillema, M., & Glenn, S. (1978). Behavior analysis and behavior modification: An introduction. Kalamazoo, MI: Behaviordelia.
- Whaley, D.L., Malott, R.W. & Garcia, M.E. (1988). Elementary principles of

Whaley, D.L., & Surratt, S.L. (1968). Attitudes of science: A program for a student-centered seminar (Third edition). Kalamazoo, MI: Behaviordella.

Subj: **Graf '89 on College-level Behavioral Instruction (ABA presentation notes)**  
 Date: Tuesday, September 14, 2004 1:03:59 PM  
 From: JWESHLEMAN@AOL.COM  
 To: SCLISTSERV@LISTS.PSU.EDU

Is College Level Behavioral Instruction Worth the Effort and Expense?

Stephen A. Graf, Ph.D.

Youngstown State University

Presented at ABA, Milwaukee, May 1989

(Notes taken by JE. See reference at end of notes.)

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 About College Level Behavioral Instruction...

Graf asks:

1. What's happening here?

Answer: Assess the environment

- empirically
- periodically.

If we're going to make a decision about giving up something or getting into something, we should do it on the basis of data.

Next, once a decision is made, does it commit you to it forever?

- conduct periodic evaluations.

Also look at: Antecedent-Behavior-Consequences:

- Direct-Acting Contingencies
- Indirect-Acting Contingencies

2. Does it (e.g., particular teaching tactic) need to be done?

- If not, then stop.
- If yes, then the challenge:

3. Can you do it?

- Some things are logistically impossible or aversive.
- Data, when periodically assess environment.

4. Does it still need to be done?

- Maybe you have met the challenge, and it does not need to be done.

5. Do you want to do it?

- Ask as you re-assess.

(This is Graf's answer to the question posed to the panel.)

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Graf continues:

Examples:

If you're going to do something and try it, plan ahead.

Plan on recording data:

- Data charted on Standard Celeration Charts.
- Data recorded for two academic quarters at YSU.
- Students, tried task twice.

Counted:

- Attempts
- Successes
- Failures

Do you continue to do the task 7 times? No, 5 attempts.

Early on, there is a higher number of failures, which decelerate in a linear function.

Is it worth the effort?

- No, if they can't do it by 5 weeks, flush out those students who can't master the task.

Over successive calendar years, what are the data?

(This is looking backwards, not planning ahead.)

On standard celeration yearly chart, charted:

1. How many enroll?
2. How many withdraw?
3. How many A's? Etc.

Result:

EACH of the grad distributions is INDEPENDENT.

Celerations of "A's" and "B's" do not necessarily coincide. They are independent.

What answers you come up with depends on what you SEE.

Instructional Improvement -- ratings

(Graf presented standard celeration charts of student ratings of instruction.)

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Discussion Comments by Dr. Ernest A. Vargas:

"One thing that came across in the panel discussion is that innovation is a hazardous and rewarding enterprise."

"More people should have attended this session. Why? Two reasons:

1. We tend to be too formalistic about instructional systems.
2. We don't take into account the complexity of the system."

"Graf focused on teacher's behavior, a necessary element in improving teachers behavior."

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Reference:

Graf, S.A. (1989). Presentation in the Panel Discussion Is College Level Behavioral Instruction Worth the Effort and Expense? (Lawrence E. Fraley, Chairperson), held at the meeting of the Association for Behavior Analysis, Milwaukee, May. [Session #711, EDC/ELS, Room Executive B, Hyatt Regency Hotel, Saturday, May 27, 1989, Noon-1:20 PM. E.A. Vargas, Discussant.]

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2004 Comment by JE: Graf shared at this panel that the different grades are INDEPENDENT of each other; that A's, B's, C's, etc. celerate independently. You can see the independence when you chart grades on SCC's. Also, when answering any such question like the one posed to the panel, always ask what the data are.

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Notes taken by J.W. Eshleman, Saturday, May 27, 1989  
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Comments?

-- JE