BUREAU OF CHILD RESEARCH

AND

SCHOOL OF EDUCATION

UNIVERSITY OF KANSAS

Title: OPERANT BEHAVIOR MANAGEMENT: BACKGROUND AND PROCEDURES

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Presented at: Brecksville Institute, Brecksville, Ohio, May 1967.

Running Head: Operant Behavior Management

Prepublication Code: OBM

Invited by: Dr. Durand Jacobs, Veterans Administration, Brecksville, Ohio.

8 July 1968

OPERANT BEHAVIOR MANAGEMENT: BACKGROUND AND PROCEDURES[1]

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We in behavior modification and traditional psychology have a big problem. This problem is communicating our techniques to our consumers. Our communication problem goes even further than this. We can't even communicate accurately among ourselves any more. Our language has become our barrier, our own stumbling block. I am perhaps on a fool's errand, trying to communicate this to you through such archaic procedures as a lecture and scientific publication.

The Only Practical Child Treatment Strategy

At the University of Kansas for three years now, I've been trying to bring free-operant behavior management techniques to the consumers, the parents and teachers of America. The logic in this attempt is very simple. Figure I shows why it is necessary. According to the 1961 census figures, the total number of children five to seventeen years of age outnumbers the total members of the American Psychiatric Association 3,600 to 1. And all the psychiatrists in the APA do not work in a one to one encounter with children. A lot of them politic, make mental health laws or build mental health buildings. Others work with adults. So probably there are only about one quarter available to work with

children. This would make the more realistic ratio of 12,000 children to each psychiatrist.

Insert figure 1 about here

Psychologists are no better off. However, these psychiatrists and psychologists realize this and say they know they have to train social workers, nurses and psychiatric technicians. But even those are in too short supply. We doctors busy ourselves arguing and researching whether we should use operant behavior therapy or Pavlovian behavior therapy or some new kind of talk therapy. Our technicians and aides use our words but not our procedures. All treatments require a one to one encounter with the patient. All methods have this in common; we have to treat the child as an individual. No one has a program that will work for ten children whom he has never seen. And we have to face this reality. Someone has to work directly with each child. And we cannot afford for this person to be a doctor.

It is not until we come to teachers, members of the National Education Association, that we find a workable ratio. It is possible for one teacher to work with 26 or 30 children. Even so, not all teachers are teaching. Some are taking time out to become parents. This brings up an interesting management group. Parents have kept up with children. In fact, more often than not, the ratio is two parents to one child.

The strategy behind the methods I am trying to develop is that they must be practical methods which can be used by the parents and teachers of today. In developing methods we always put a teacher or parent between us and the child to make sure that we will not generate procedures that parents and teachers cannot use. That is our basic economic requirement. Practical behavioral management procedures must be capable of use by teachers and parents.

Figure 1. These 1961 figures illustrate why we must train parents and teachers in behavior management techniques. No other professional group is large enough to reach all the children in need.

Operant Behavior Background

Since I was asked to discuss background, I suppose I should put a little of the background in the foreground so that I can get on to the procedures which are the things of real importance.

Free-operant conditioning has its background in classical or Pavlovian conditioning (at times, unfortunately). Pavlov had won a Nobel Prize for his analysis of the chemistry of gastric secretions. However, he was not satisfied with the quality of his work. His teacher, Sechenov, had urged him to interfere with what he was studying as little as possible. Pavlov had gotten the gastric juice out of his dogs under surgical anesthesia. He wondered was the juice chemically the same as it would be in a dog awake, alert, and about to eat?

I mention this so you will see that the really good scientists try to get as close to real life as possible and still get a precise measurement. So Pavlov set out to get gastric secretions and saliva out of alert dogs about to eat. It took him two years to develop a little tube that brought the juice outside and into a cup. Pavlov got the saliva to drip by putting food powder in front of the dog's nose. But it was soon noticed that the dog's tube dripped when no food powder was presented. He would drip when the food powder man went by.

Rather than keep the cup at the tube all the time so no valuable saliva would be lost, Pavlov decided to study this "Psychic secretion." He got no place talking about the dog's "ideas," the dog's "wishes," the dog's "expectations," and decided to treat it like a simple physiological reflex. Then things cleared up and he developed the research design shown in Figure 2.

Insert figure 2 about here

Consequences and the Birth of Conditional Stimuli

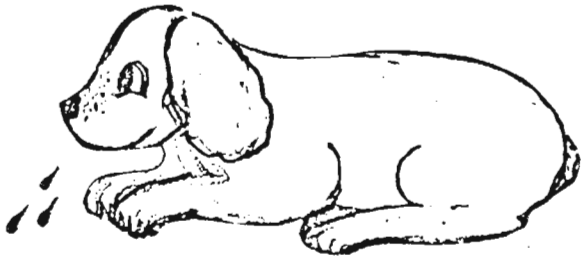
However, problems developed. Pavlov and his staff couldn't make themselves use the new reflex language vocabulary--they would have frequent relapses into the mentalistic words. Pavlov solved this problem by imposing a laboratory fine on all mentalistic terms. This worked, and classical conditioning was developed. I mention this to show the relationship between operant and classical conditioning.

Pavlov had to use fines (free-operant consequences) on himself and staff (behavior modification) in order to develop classical conditioning. So you can see that contingencies helped classical conditioning get started.

Back to Pavlov--the dripping dogs--and Figure 2. Then Pavlov found that he could ring a bell while presenting the food powder and after several associations, the dog would drip to the bell alone. He developed some very fancy techniques to bring this dripping into the laboratory and record its rate precisely. But academicians just cannot communicate this way to the general public. They can't talk about food powder and drips. So they labeled the food an unconditional stimulus and the drip an unconditional response. The bell was a conditional stimulus. Pavlov was very careful with his words. When the bell was presented without the food powder and the dog dripped, Pavlov called it a conditional response. It was conditional upon the bell being previously paired with food. Bells just don't make dripping unless some conditions have been met. That was very descriptive behaviorism. However, traditionally Americans are not content

Figure 2. Diagrammatic comparison of Pavlov's first observation with the later "classic" experiments it lead to. Substituting the bell for the food powder man gave Pavlov an easier variable to manipulate in his research.

FIRST OBSERVATION



FOOD POWDER ----------→ DRIPS

FOOD POWDER MAN ALONE ----------→ DRIPS

RESEARCH DESIGN

① BELL

② FOOD POWDER + BELL ----------→ DRIPS

③ BELL ----------→ DRIPS

CONDITIONAL REFLEX

S STIMULUS

R RESPONSE

Lindsley. Operant Behavior Management. Figure 2

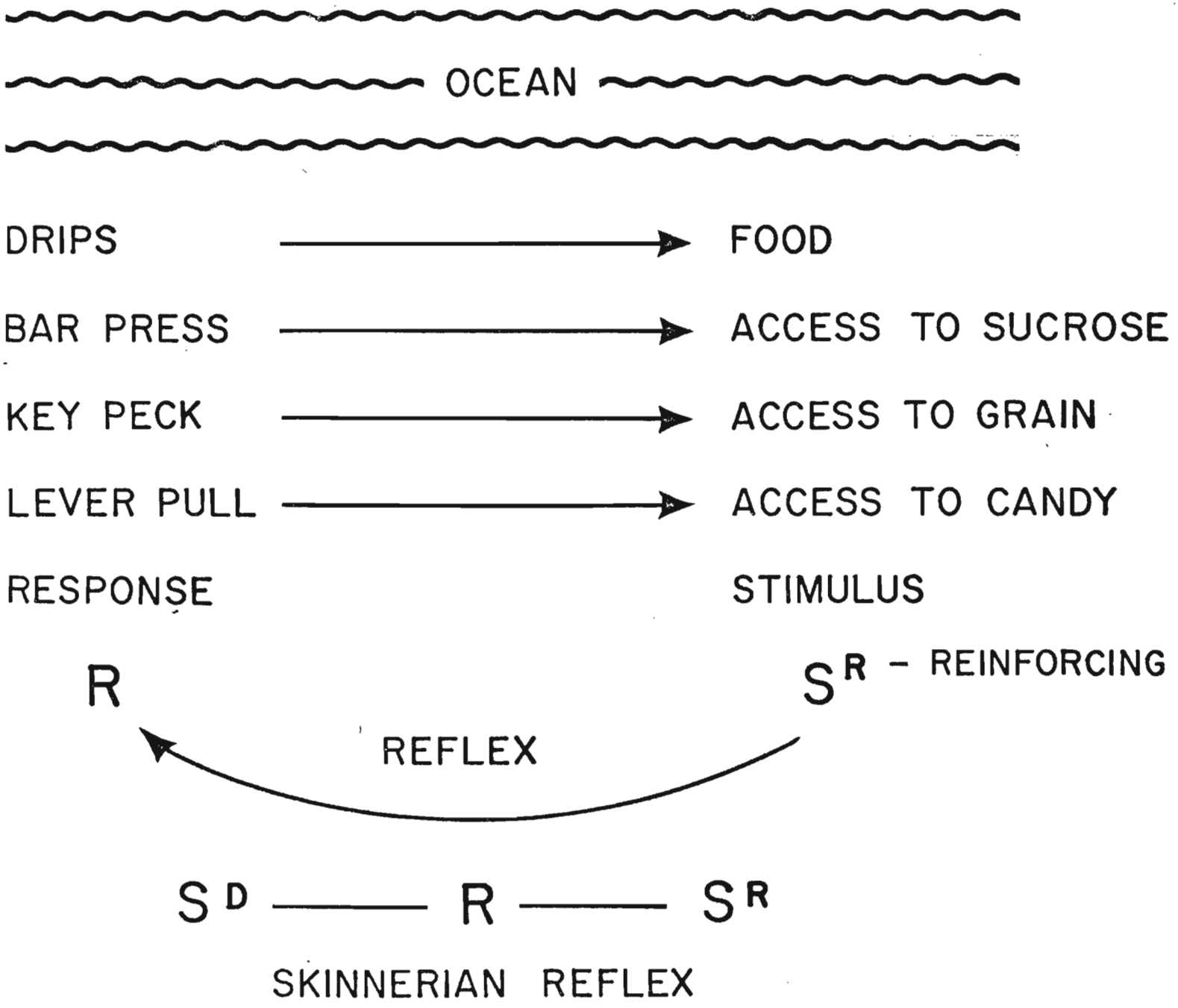
to merely describe things. They must also push the things around, and so in translation from Russian to English, the Americans used the term conditioned in place of Pavlov's descriptive conditional. They are so proud to have conditioned it! And now we have the Experimental Psychologists thinking they are supermen because they can make dogs drip to bells. The Big Conditioners! (Is it possible that Behavior Modifiers are in a similar superman demonstration in their current need to push behavior around in their unnecessary demands for reversing behavior changes--sometimes two or three times?)

Meanwhile, across the ocean (drawn at the top of Figure 3), Skinner started studying the effects of things that followed drips. Actually, it wasn't drips. He used pecks and presses and pushes and pulls. And he found that if he followed these with food, they increased in frequency. But Skinner also was an academician and trying to steal graduate students from physics, so he also used symbols to diagram his experiments as did Pavlov. Figure 3 shows the Skinnerian Reflex. He also used the terms stimulus and response. But his stimulus followed its response which was the main way it differed from Pavlov's stimulus. I think Skinner called the procedure that followed the movement a stimulus because he wanted to gain strength from Pavlov's recent demonstrations. He wanted to stay descriptive and not be swept into the law-of-effect and expectation jungle. And also, Skinner had worked with Crozier and Lashley and was influenced by Behaviorism which stuck in the words stimulus-and-response. Now times are different and we can use other, more subsequential words without falling into the abyss of mentalism.

Insert Figure 3 about here

Skinner's stimulus just follows its response; he adds a superscript 'r' for reinforcing to the S and then he can say it is nothing new. It's just a reflex like Pavlov had, but a

Figure 3. Stimuli came both before and after responses in Skinner's early descriptive system.



Lindsley. Operant Behavior Management. Figure 3

following reflex. I think that is why we have this terrible paradigm of reinforcing stimuli which follow responses and added stimuli to precede responses and had S delta's and SD's and all kinds of things. We end up with a teacher, a university professor, teaching three things with two letters, S,R, and SR. That is a very primitive IQ test. But it served the purpose. It kept the bad people out of experimental psychology. The slow pokes who didn't have high Miller Analogy Test scores couldn't get on to the operant formula. The difficult language kept the dumbos with only average verbal skills out of the exclusive Club of Experimental Psychology.

But this isn't any way to speak to psychiatric aides or teachers or parents. If we are serious about teaching Mr. and Mrs. America, we can't teach them about stimuli that follow the things they stimulate.

A Common Language for Analyzing Behavior

Figure 4 names our common language for analyzing behavior. "COLAB" is in the mid twentieth century tradition like fortran and cobal, the computer languages, the common business languages. It is a common language for analyzing behavior. It is in common with people who use that language, such as parents, teachers and psychologists.

Insert Figure 4 about here

One of the most important contributions of Skinner and the operant conditioning point of view is the functional definition of consequences, the separation of the accelerating effect of a phenomenon from its structure form or content. Food is not a reward to a person who has just eaten. And Skinner very clearly states that a reinforcer is that which increases the probability of the occurrance of the response on a future occasion. Now, I had trouble teaching that phrase, "increase the probability

Figure 4. "COLAB"

A "COLAB"

COMMON

LANGUAGE

FOR

ANALYZING

BEHAVIOR

Lindsley. Operant Behavior Management. Figure 4

of a response on future occasions," so I looked in the dictionary for a word. I couldn't find one so I finally made up a single word to use in place of, "increasing the probability of a response on future occasions." The word I made up was "accelerate." A reinforcer is something that accelerates behavior. But we also had reinforcers that didn't accelerate. It was at this point that I decided that everything had to have its own name. Each meaning or set of things had to have its own word so that there would no longer be confusion between a procedure and its effect. One way is to divide this into three catagories, a) Potentials, b) Components, and c) Distinction Processes.

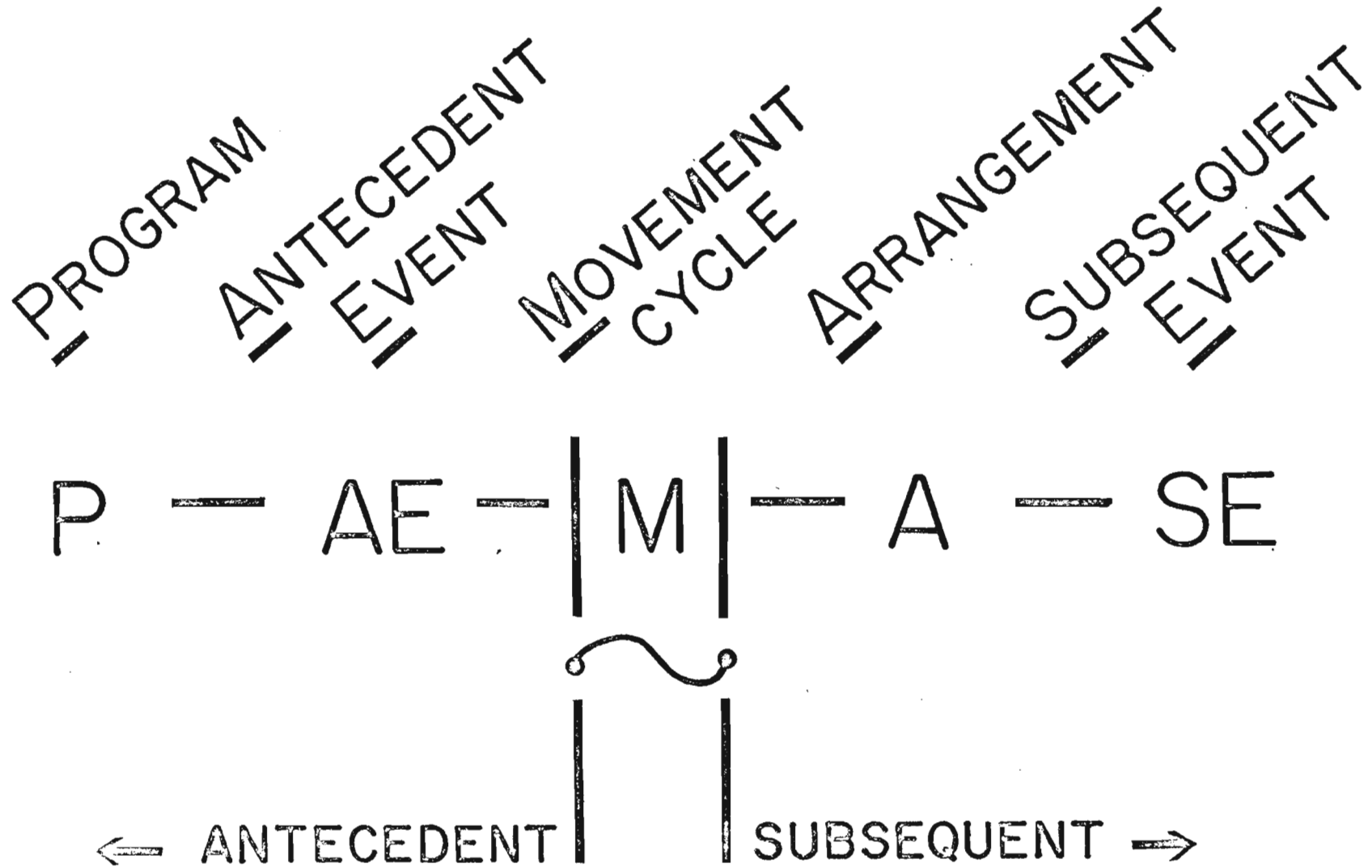
Figure 5 illustrates the words we use to describe behavior potentials. These are things that may have an effect on behavior or have a potential to affect behavior. Keep in mind that they are distinctly different from things that have a demonstrated effect on behavior. Those will be defined later. A potential response is called simply a movement cycle. It has not been shown to be under some form of control. Events which follow movement cycles are called subsequent events, and those which precede movement cycles are called antecedent events. You can program the antecedent events or arrange the subsequents, but their behavioral potential has not yet been demonstrated. In analyzing the behavioral defects of a retarded child, you may say that you have yet to find a subsequent event that will be a consequence for this child. That is how to use this language. That means that you don't have an accelerating consequence yet.

Insert figure 5 about here

Figure 5. Potentials are procedures whose effects or functions have not yet been demonstrated on the behavior you are analyzing.

POTENTIALS – EACH HAS POTENTIAL, BUT NOT YET DEMONSTRATED FUNCTION.

(PROCEDURES)



Lindsley. Operant Behavior Management. Figure 5

When these potentials acquire function, they earn new names. We have one set of words for the potential and another for the demonstrated function. Figure 6 describes components. These are words we apply to potentials when they have behavioral effects. If a subsequent event accelerates behavior, it becomes an accelerating consequence. An arrangement which links a consequence to a behavior becomes a contingency. But if a retarded child did not work on a ten to one arrangement, it would not be a contingency for him. You might be able to make it a contingency by starting him with a candy every time he did it, and then a candy every other time until you worked him up from a one to one to a ten to one contingency. You can start with something that is already a contingency and shape up to a higher one.

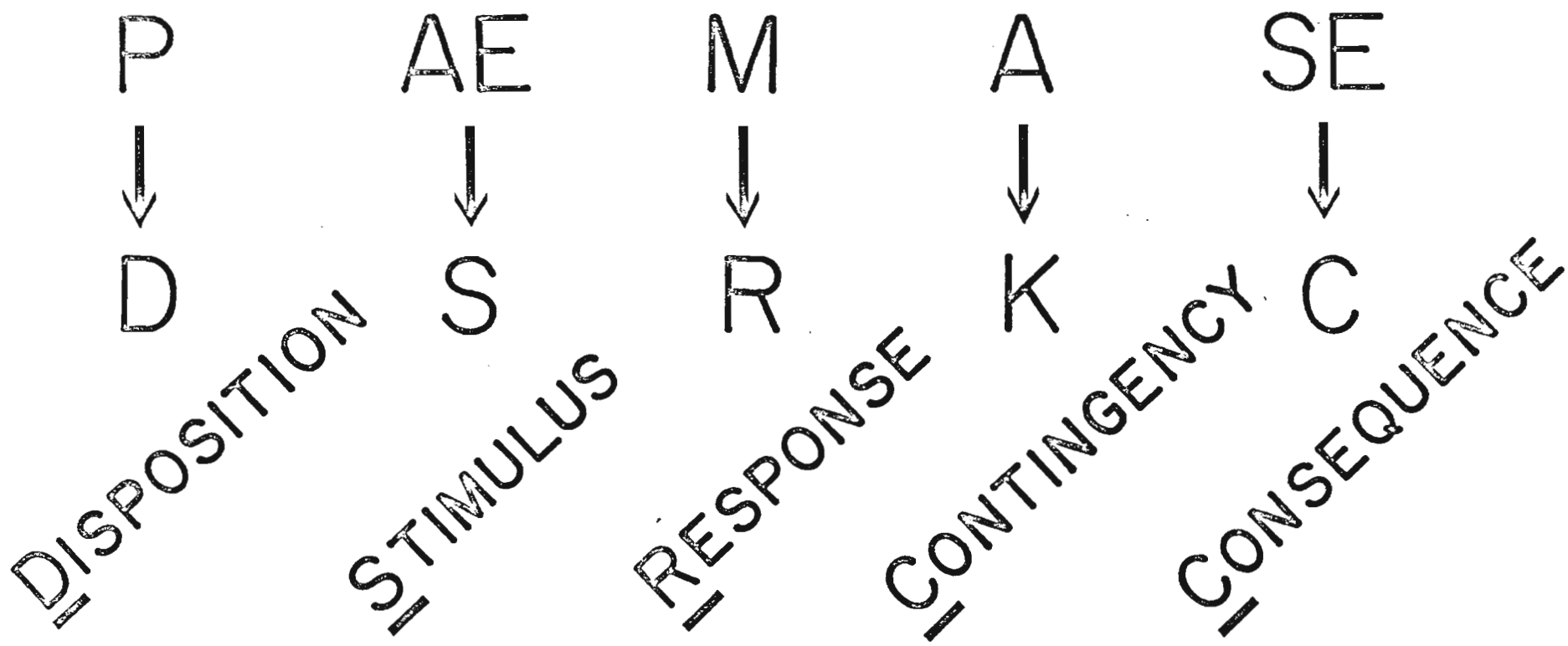
Insert figure 6 about here

Each of the five components can be built or shaped up just like we have always built or shaped up responses alone. Simply take something related and drift over to the desired component in easy steps. You can convert antecedent events into stimuli by pairing techniques and fading and shaping. Disposition is a good way to handle what we used to call temporal discriminations. For example, if a child had been taught to go to recess when the bell rang and the bell was programmed to ring each day at 10:15---one day the bell didn't ring, but the child ran out to recess at the right time. The bell was not necessary to accelerate him---it was no longer controlling his behavior. He was reacting directly to the program---an effect we call a disposition.

Figure 7 refers to distinction procedures. I have used the DI for distinction and applied it to these other terms. Dicontination is essentially what Skinner's and Ferster's

Figure 6. These are components which have already demonstrated their behavioral effects. Their effects can be used to change behavior. That is why they are called components or building blocks.

DISCERNMENT PROCEDURES – COMPONENT SHAPING OR BUILDING



COMPONENTS – EACH HAS DEMONSTRATED BEHAVIORAL FUNCTION

Lindsley. Operant Behavior Management. Figure 6

entire work has been on. They held movements constant (a key peck by a hard nosed pigeon) and subsequent events constant (five seconds access to grain). They didn't compare reinforcement or consequences. They had only one or two consequences in all their work. However, they were the world's experts on differential effects of arrangements or contingencies when these had effects. This distinguishing of contingency effects is dicontination. Ferster and Skinner could show the difference between a ten to one arrangement and a twenty to one arrangement or a thousand to one arrangement. Their vast body of work almost exhausted dicontination effects.

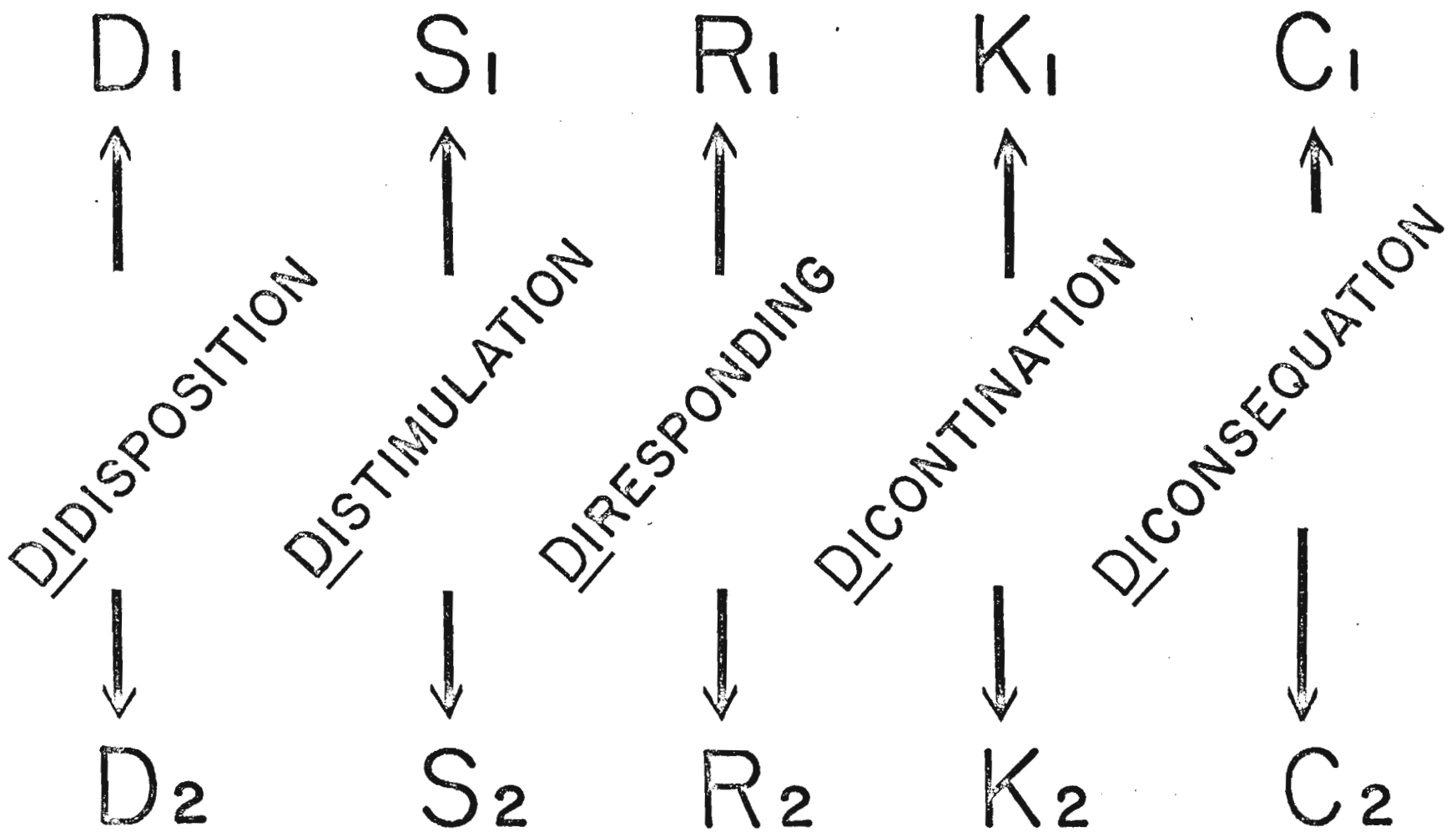
Insert figure 7 about here

There is one other more complicated problem, and that is to describe the difference between response distinction and stimulus distinction. The term discrimination has been used to refer to the latter, but it is clearer to call it distimulation. Diresponding is more consistant to use for response distinction. These terms were developed very recently, so you can see that even COLAB is still in a process of modification. There has not been much work on di disposition in the operant field and only a small amount in conditioning work. Actually, few of our behavior managers ever get into all this, but I just want to show how this language can describe some of the complexity that experimental psychology hasn't been able to describe clearly.

We behavioral management researchers are far beyond this already complicated language. We have had to use adjectives to describe the directions of the effects of these components. There is probably confusion among some of the nation's best operant conditioners about positive and negative reinforcement. For Skinner who started with

Figure 7. DI stands for distinction and represents distinguishing two or more of the same components by different behavioral effects.

DISTINCTION PROCESSES



Lindsley. Operant Behavior Management. Figure 7

rats that wouldn't do anything except sit in a box, all effects were accelerating. He defined everything in terms of accleration. Food presentation was positive acceleration, and food was called a positive reinforcer. Shock effects also had to be defined by acceleration. So it was withdrawn. Shock withdrawal was negative acceleration and called negative reinforcement. Deceleration or punishment was never in Skinner's system. The trouble with this is that the positive and negative signs gradually came to mean good and bad instead of present and withdraw. Hedonism crept back in. It crept into Ivar Lovaas, into Bijou's and Baer's book, and into Bachrach's book. I don't blame them. I blame our outmoded language.

Now, departmental chairmen in operant conditioning can't even talk our language accurately. This is an accurate statement, and it is tragic. So how can we lead or teach anyone when we can't even read our own signs accurately. Our signs are that confusing. I got out of this by going back to the dictionary again. I said, "We will throw away the positive and negative signs. We are not trying to look like mathematics or physics, and we will go back to the English language. We will use adjectives and initials will be their symbols." Figure 8 shows how this was done. In order to show the nature of the agency that presents or withdraws the variable, we label it S for self, or T for teacher, etc. The direction of the alteration is also described by initials. P stands for present, and W for withdraw. It is easy to describe the direction of the effect in the same way. A is for accelerating, D for decelerating, and so forth. Now, we can have things like self presented accelerating consequences (SPAC).

Insert figure 8 about here

Figure 8. Basic English words describe the nature of the altering agency, the direction of the alteration, and the effect on the response rate. The initials of each adjective are used to abbreviate them symbolically.

ADJECTIVES TO DESCRIBE:

NATURE OF AGENCY —
- SELF — S
- PEER — P
- TEACHER — T
- ETC.

DIRECTION OF ALTERATION —
- PRESENTED — P
- WITHDRAWN — W

MODIFICATION OF RATE —
- ACCELERATING — A
- DECELERATING — D
- STABILIZING — S
- FLUCTUATING — F
- MAINTAINING — M

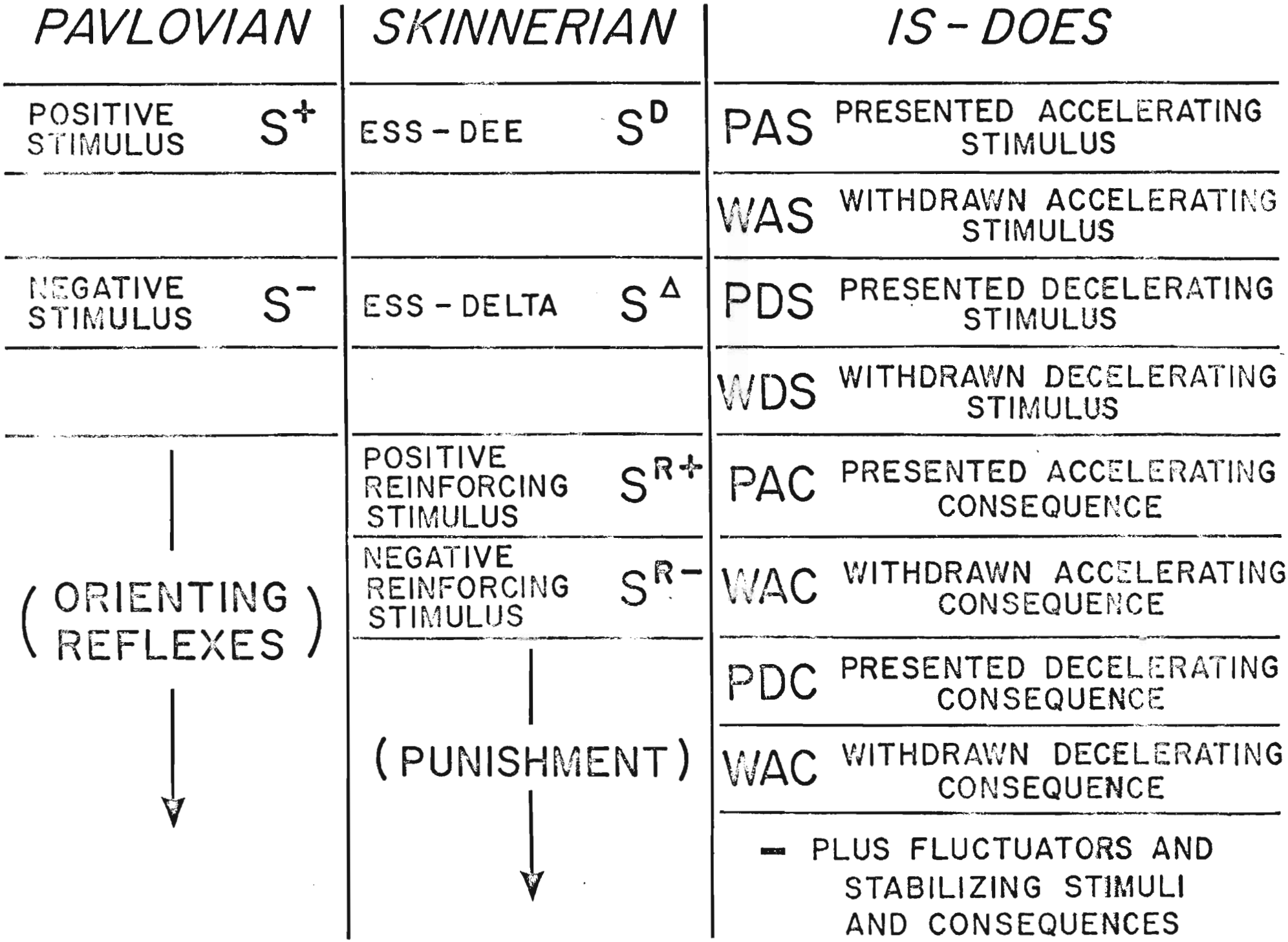
Lindsley. Operant Behavior Management. Figure 8

Behavioral history often is hard to override. Hal Weiner, who is one of our most creative operant conditioners, has actually done some excellent work showing that history is sometimes more of a determiner of behavior than the immediate environment. For a long time, I was very proud of my progress and for "consequence, type accelerating," I wrote, "C superscript A, (C^A)." Then, in giving a lecture to some high school students at a summer institute at Grinell College, I said it is silly to put learning blocks between you and the student. You should say it is an accelerating consequence, (C^A), not a stimulus 'r' for reinforcing (S^r). Then, I suddenly realized that I had been going backwards! In English the adjective goes in front of the noun, not after in superscript. So, from then on, AC has been just like it is in physics, alternating current, the adjective before the noun. In physics, the superscript or exponent indicates the power to which a number is raised (the number of times it is multiplied by itself), a fantastically mature science. Look at the job that Hull and Skinner were pulling off. They seduced students away from physics very well, but it was such a transparent seduction. Their exponents were falsies. They were not powers, but merely simple medieval adjectives. We are still discovering our adjectives, like it or not!

In getting back to the present, Figure 9 compares COLAB with the traditional Skinnerian and Pavlovian terms. Most of us understand the Skinnerian, but the Pavlovian is much worse. It's S- is Skinner's S delta, etc. Who knows what a positive reinforcer is in Pavlovian terms? (It's actually the positive stimulus for an orientation reflex.) This is an accelerating stimulus, a stimulus in the presence of which the rate of response accelerates. This is a decelerating stimulus, an antecedent that decelerates a movement rate. The SR plus or positive reinforcing stimulus is a presented accelerated consequence.

Insert figure 9 about here

Figure 9. Pavlovian, Skinnerian and COLAB terms are compared.



Lindsley. Operant Behavior Management. Figure 9

Almost everyone of us is sitting on data that we can't publish because it isn't reversible. What does it mean to sit on data that you can't publish? It means that operant conditioning at that time is no longer inductive. We become hypothetico-deductive and join Hull, Pavlov, and all the other transient and outmoded descriptive systems. The beauty of Fred Skinner and us in our youth was that the "rat knew best," and could get us to change our system with three hours of data or two weeks at the most.

Telling Parents How to Avoid Developing Operant Crying in their Children

But time moves on and the hour grows late, and the behavior modifiers are way ahead of the laboratory people. We are now having to face initial versus long term effects. How does operant crying develop? What does the mother do to cause the whining child? What is her error? My working hypothesis was that she lollipopped him. That was my working term. She "lollipopped" crying. She got a temporary reduction in rate from the lollipop, because he ate it and stopped crying while he did so. But when the lollipop was finished, the crying rate would increase.

For about three or four months, I searched for the word to describe the procedure of lollipopping crying. I couldn't find it and reported this to our graduate students hoping they would help me find it. Ron Holzschuh was a post-doctoral trainee with me at the time, and on a Sunday afternoon, he found the word. He called me at home and talking to my wife said,"Tell Dr. Lindsley I have found the word, and the word is 'appeasement.' No, I don't want to talk to him--I don't have all afternoon. Just give him the message!" He said he had found the word, and he was right! The word was 'appeasement'. Chamberlain appeased Hitler when he let him nibble on Poland. It is funny how you can search for a word for three months, and then, when you find it you instantly recognize it as right--as fitting your needs.

In Figure 10, appeasement is diagrammed. This shows the same consequence producing two different effects, the initial effect of decelerating crying and the long term effect of accelerating it. This is something that the animal free-operant conditioners just haven't had to face as yet.

Insert figure 10 about here

Now we can tell prospective parents, "Thou shalt not appease!"

The Backward Habit of Reversing

> "I won't know I have gone," the
> Hatter said, "until I come back
> again....."
>
> .....Alice in Wonderland.

There is something else to consider, and the behavior modification people will recognize this. Figure 11 shows the traditional operant experiment. The publishers of JEAB and other journals look for, welcome and seek this type of experiment. Many of us are still advising our students that they must reverse the variable or they won't have a thesis. But if you think about it, where would physics be if they studied only reversible variables? Still trying to reconstitute matter so they could publish combustion? Estimate the number of physical variables that are reversible compared to those that are irreversible.

Insert figure 11 about here

Figure 10. Appeasement: Some consequences may initially decelerate the movement they are arranged to follow, but their long term effect is to accelerate it.

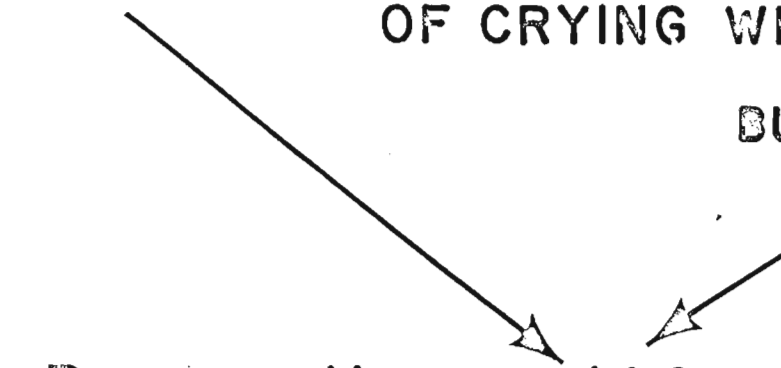
INITIAL AS OPPOSED TO LONG-TERM EFFECTS

ie: GENERATION OF OPERANT CRYING BY LOLLIPOP APPEASEMENT

— INITIAL EFFECT OF LOLLIPOP IS DECELERATION (d) OF CRYING WHILE CHILD SUCKS IT

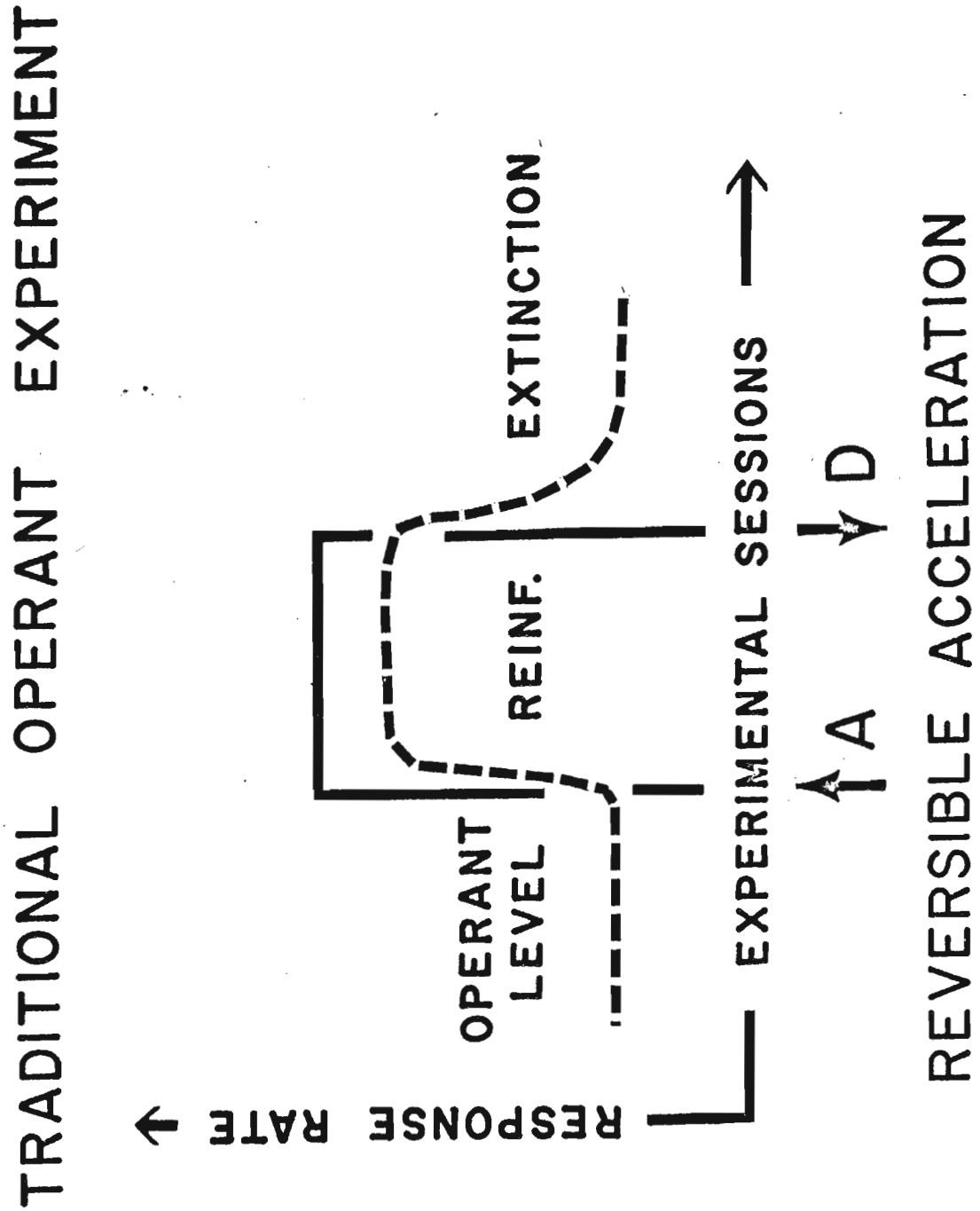
BUT!

— LONG RANGE EFFECT IS ACCELERATION OF CRYING



Lindsley. Operant Behavior Management. Figure 10

Figure 11. This is the traditional free-operant experiment of the early nineteen-fifties.


TRADITIONAL OPERANT EXPERIMENT
RESPONSE RATE
OPERANT LEVEL
REINF.
EXTINCTION
EXPERIMENTAL SESSIONS
A
D
REVERSIBLE ACCELERATION

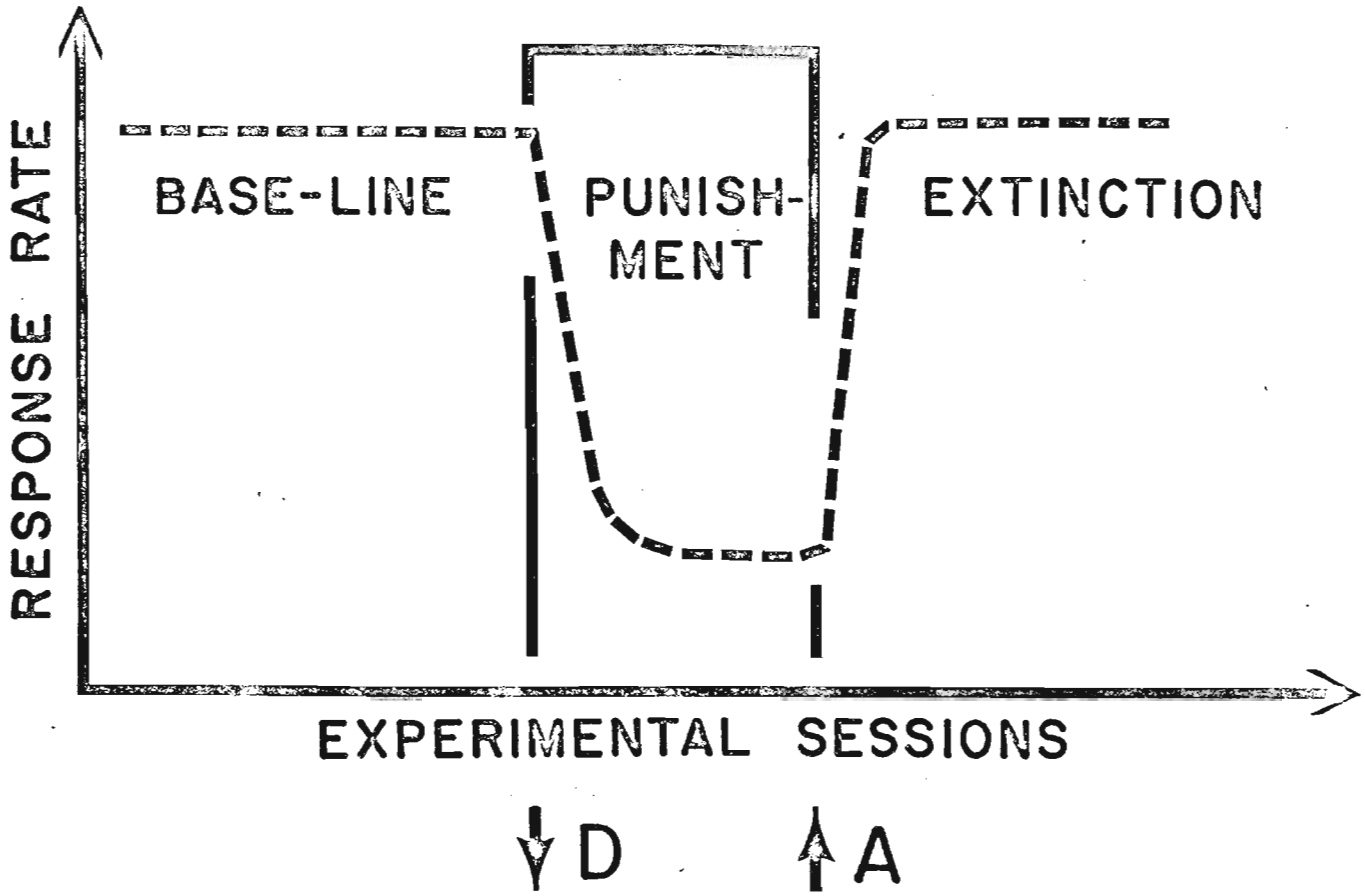
In the traditional free-operant experiment of the early fifties, we used to collect an operant level and accelerate it with some consequence which we called reinforcing. Then we took away the reinforcer and watched it exponentially wane and wander off. That was extinction. In COLAB language, the effect of introducing the variable is accelerating, and the effect of removing it is deceleration. This is a reversible acceleration.

But we people in behavior modification got into a problem. We were decelerating behavior rather than accelerating it. Figure 12 illustrates the traditional modification experiment. We began to call the operant level a baseline. This was a euphemism for "I don't know what is going on." It took me three years to discover that. We decelerated it with a variable which we called punishment. Then we took away the punishment and looked for the "extinction of punishment." Some of us were more careful like Nathan Azrin who called it noise contingent behavior. He wouldn't call it punishment or negative reinforcement. But this would be a reversible deceleration. Now, most behavior modifiers have gone hypothetico-deductive and are ignoring their data. They use these two procedures and get maybe two out of five cases which they can publish. These are the AD cases, reversible acceleration, and the DA cases, reversible deceleration. Well, we have those two cases all right, but we also have several more types which we hide in our data cabinets because they don't fit any theories or expectations or journal requirements.

Insert figure 12 about here

Figure 12. This is the traditional modification experiment of the late nineteen-fifties and early sixties. Some geriatric cases still require this research design.

TRADITIONAL MODIFICATION EXPERIMENT



Lindsley. Operant Behavior Management. Figure 12

What about all these other kinds of cases? They are the ones that are sitting around unexplained, unpublished, and actually outnumbering the theory. There are actually eight possible effects. Figure 13 shows what these are. We have variables that accelerate (A) when they are put in and do nothing when we take them out. The behavior maintained (M). That's really a pretty good thing. It's therapuetic. Of course, the patient doesn't get hooked on that kind of treatment, and you may have to get another patient to make a living, but that's another problem. There are also variables that don't have any effect when presented, but when removed, they do. Then, there are beautiful things that accelerate when you present them and accelerate when you remove them. This is going back to descriptive behaviorism. The same things happen with deceleration, so the traditional operant conditioner is blinded to seventy five percent of the possible effects. Worse than that, the tweny five percent he collects data on are those that cost the public the most money and have the least therapuetic or medical value.

Insert figure 13 about here

Teaching Parents and Teachers to Precisely Manage Behavior

We felt that COLAB, the language we use would help solve these problems. But in teaching parents and teachers, we found that it confused them. We decided not to teach them even COLAB. We gave them no language. We chased them out into the world to collect children's behavior and change it and gave them a term only when they asked for it as a tool. The object was to design the lightest load possible. And the only way to empirically design the lightest mountain pack is to send the guy out into

Figure 13. There are eight possible effects of behavior modification treatments. Traditional operant and modification research study only the least practical 25% of these (Sic transit gloria--sick, anyway!).

EIGHT POSSIBLE EFFECTS OF TREATMENTS

REVERSIBLE (PROSTHETIC) – (25%)	A D	– ACCELERATION – (REINFORCEMENT)
	D A	– DECELERATION – (PUNISHMENT)
IRREVERSIBLE (THERAPEUTIC) (75%)	A M	– ACCELERATION
	M A	"
	A A	"
	D M	– DECELERATION
	M D	"
	D D	"

Lindsley. Operant Behavior Management. Figure 13

the woods with nothing and then bring him only what he desperately needs. You don't send him to Abercrombie and Fitch and say, "Outfit a mountain climber." And you don't send him to a word maker like me and say, "Outfit a behavior manager." I would sell him every one of those terms you just saw. He probably doesn't need them all, and would forget the ones he needed by the time he eventually needed them.

Figure 14 shows the terms that they really need to start. This is for real hard rock behavior management alley, not for basic research but for practice. These are for parents and teachers, and what they wanted to know most was how to handle their children. Pinpoint the behavior, record the rate, consequate, and try and try again. The last step is very important. You can guarantee success if they will just try and try again. I call this "Grandma's Law."[3] It's like rediscovering an aphorism or something. Our data in Kansas City shows that about eighty five percent of our teachers succeed with the first try. The first consequence they pick decelerates or accelerates the target. And then on the second try another ten percent succeed, and the last five percent succeed by their third attempt. So far, out of three or four hundred cases, one hundred percent have succeeded by the third try.

Insert figure 14 about here

Now, Figure 15 proves that we don't follow our own advice. It shows a class of graduate students trying to learn behavior modification. The period of time covered is Spring 1965 through Spring 1966. This is a performance graph. I picked the target. It was to change a child's behavior. Thirty percent of my students modified with success in Spring of 1965, (S65), Fall of 1965 (F65), and in Spring of 1966 (S66). Others

Figure 14. These are the four steps necessary to precisely train parents and teachers. It is very essential not to skip recording!

- [ ] PINPOINT
- [ ] RECORD
- [ ] CONSEQUATE
- [ ] TRY AND TRY AGAIN

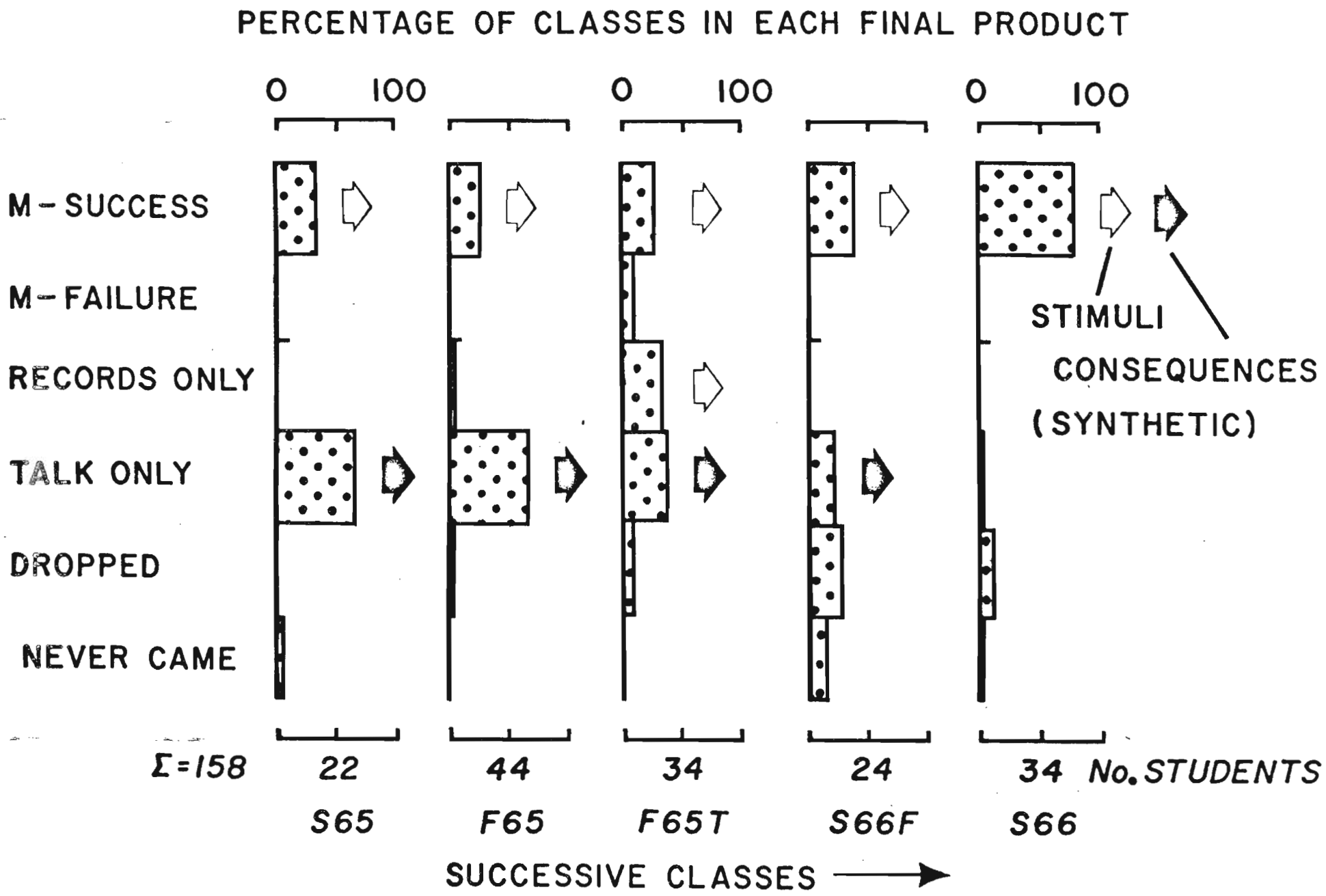
modified with failure, took records only, dropped the course or never came to class.

Insert figure 15 about here

Notice that I was begging them, pleading, saying that if they didn't get out there and change a child's behavior, they were irresponsible. That really worked! Oh Yes!! Thirty percent tried and succeeded and the rest of them said that their projects fell apart because they didn't have a conditioned reinforcer for the mother, and she stopped recording. They always gave the "right kind" of excuses--in operant terms--but always excuses. Then it suddenly occurred to me, (S66), that I was stimulating people to consequate others. I was begging them to arrange the environment of other people but I was not arranging theirs. So I went in the next day, and said, "The jig is up. From now on, two grades are going to be used, I for incomplete modification and F for falsified data." All those educators did a successful modification for two hours credit at Kansas University. Better than 54 percent turned in two or more cases, and one guy turned in eight. If I had said to turn in one case and you get a grade, two cases an incomplete, I would have gotten one case from everybody. I got what I consequated, not what I asked for. Each semester, I raised the required number of cases, and now it is up to six.

The next few figures will illustrate some of the cases that were done in my class of Spring 1966. We are using a new kind of graph paper now, six cycle semi-logarithmic to record behavior. With this type of paper, we can record behaviors of different

Figure 15. When final grades in a University course were made contingent upon successfully modifying a child's behavior, successful modifications more than doubled. Moral: practice what you preach!



Lindsley. Operant Behavior Management. Figure 15

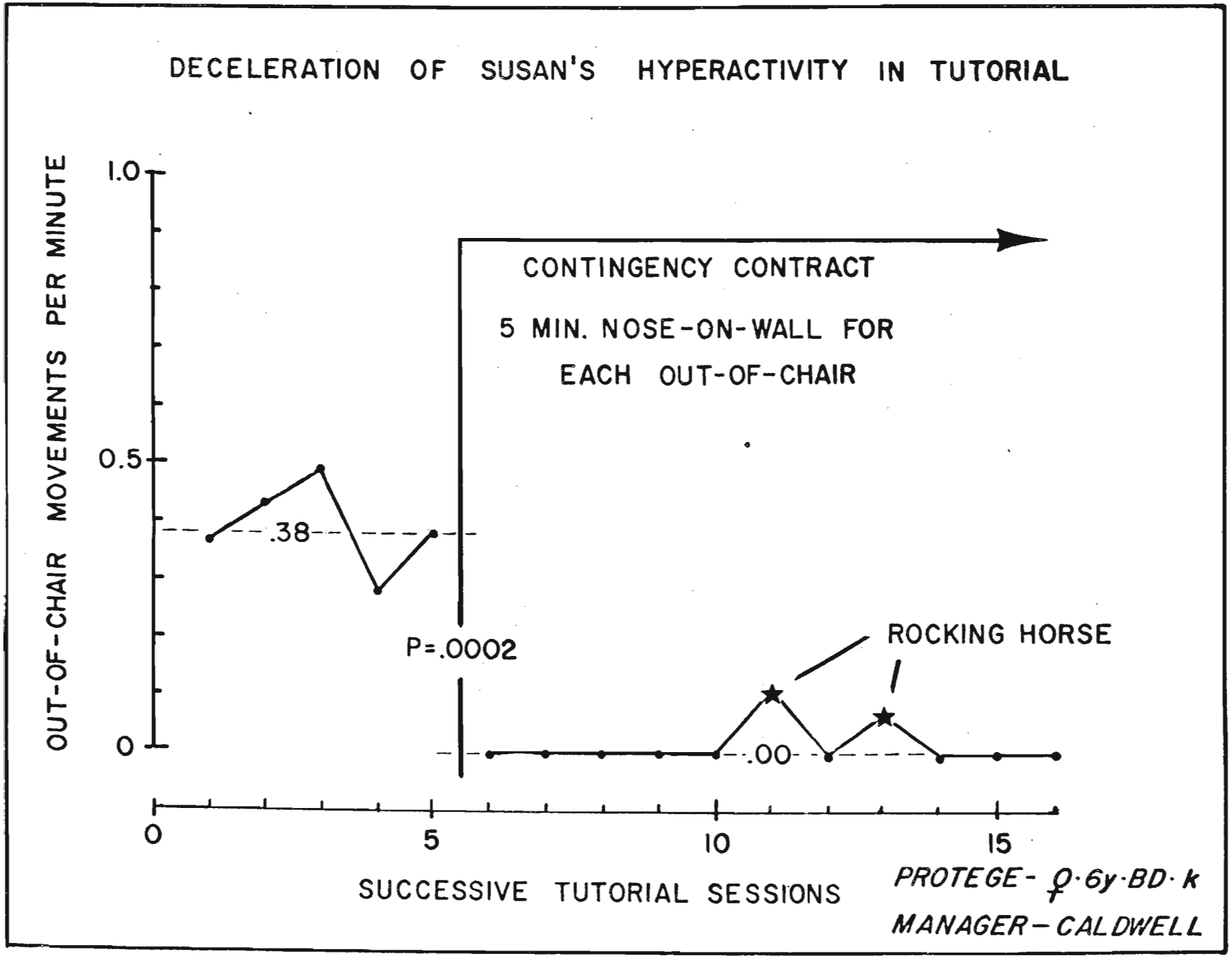
frequencies and compare them. But when these cases were done, we didn't have log paper. We also use an extrapolation from Fisher's Median test of exact probability. Ours is the Mid-Median test of exact probability. We put P values on single cases so we can summarize and compare across cases.

Figure 16 illustrates a contingency contract made by Tom Caldwell, one of our graduate students. He was tutoring a six year old braindamaged kindergarten level girl who was hyperactive and out of her chair 38 times per minute. Tom announced to Susan that she would receive five minutes of nose-on-wall for each time she got out of her chair.[4] We learned about the consequence of nose-on-wall from teachers. It decelerates behavior.[5] Acutally, if you look closely in Figure 16, it isn't even a consequence, because Susan's out of seat behavior was decelerated without ever having to put her nose on the wall. This was a funny kind of stimulus, a contingency announcement. There is one validating point. A rocking horse was in the room on two days, and it generated a little out of chair behavior which was decelerated with nose-on-wall consequences.

Insert figure 16 about here

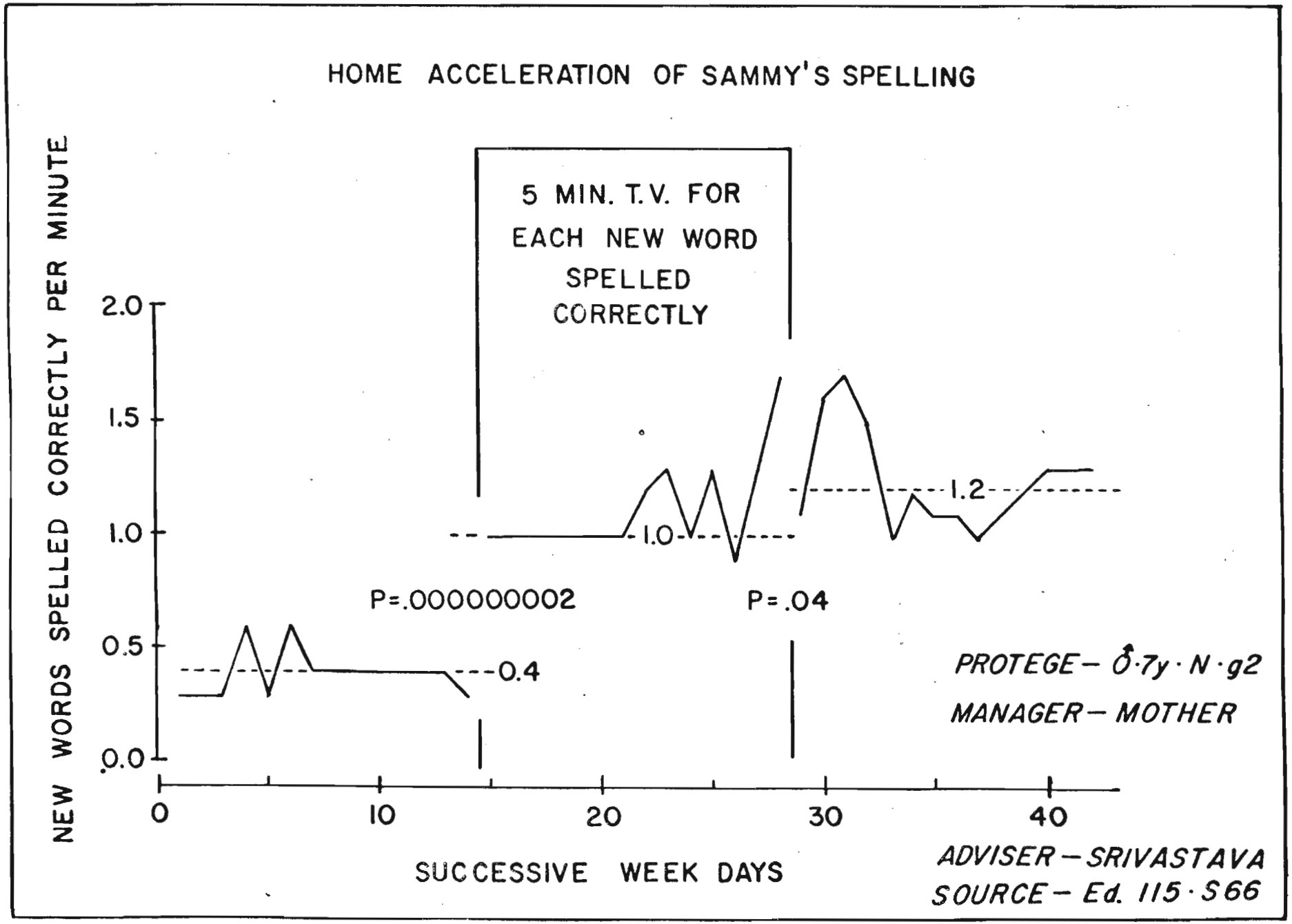
Figure 17 shows the acceleration of Sammy's spelling using TV as a consequence. Sammy was seven years old, in second grade, and the manager was his mother.[4] The adviser was a foreign student taking my course. A new word spelled correctly is quite a wide movement cycle. Sammy had a spelling level of .4 words per minute. He earned five minutes of TV for each new word spelled correctly. His spelling rate jumped up from .4 to 1.0 words per minute. The P value is two out of one hundred thousand (.00,002) that this could happen by chance. Now, we must ask ourselves, is that the effect of a

Figure 16. Susan's out of chair behavior was decelerated immediately by the announcement of the contingency contract of five minutes nose-on-wall for each out of chair.



Lindsley. Operant Behavior Management. Figure 16

Figure 17. Sammy's spelling was accelerated immediately by merely announcing the contingency of five minutes T. V. for each new word spelled correctly. When the contingency was removed the rate went even higher, showing that the synthetic accelerating consequence was left in too long.



Lindsley. Operant Behavior Management. Figure 17

contingency? The spelling rate jumped up immediately without any need for the consequence to be consumed. So here again, just as with decelerating Susan's out of seat behavior in Figure 16, we have the effect of merely announcing an arrangement. So the acceleration was due primarily to words, to the announcement, to stimulation. The consequence and contingency maintained this acceleration in sort of a double function. Notice that on about the 27th day, the spelling rate began to decrease and break up. Tom removed the TV contingency and the spelling rate accelerated again. Four out of one hundred times this could occur by chance alone. This was an AA effect. My interpretation of this is that the behavior was under synthetic consequences (TV), and later came under the control of natural consequences of using new words. Or it may have been accelerated at school.

Insert figure 17 about here

Figure 18 illustrates a case of self management. I tell my students to go out and find a behavior to modify. I do not supply that behavior for them. In this case, the student chose a self-deceleration of fingernail chewing. She was a housewife and the stars indicate the nights that her husband worked late. This was very clearly anxiety ridden behavior. She used a self applied consequence of ten minutes of wearing a glove for each chew. The probability was four out of ten thousand times that this deceleration could have occurred by chance. Within four days, the nail chewing had disappeared. This zero rate was maintained for over 60 days (with only four set-backs) even after the consequence was removed. This was a DM effect.

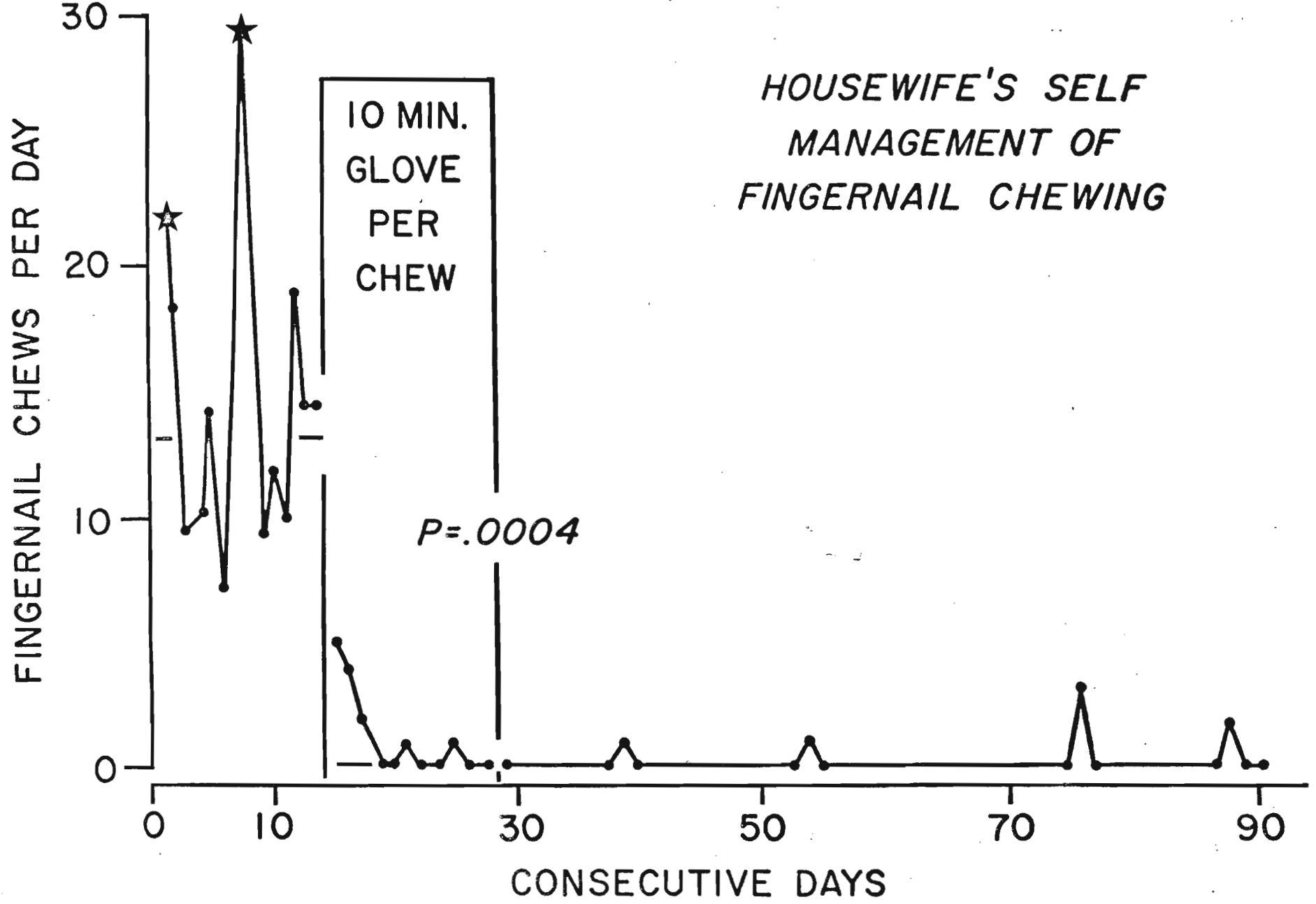
Insert figure 18 about here

Summary

In summary, let me say that I am trying to put behavior modification in the hands of parents and teachers where it will do the most good. So far, our science has failed to keep pace with its success and itself. Behavior modification techniques must be described more precisely and taught more directly and efficiently. Since professionals are too scarce to reach even a small portion of our children in need, we must train parents and teachers today! They are the only ones (outside of the children themselves) in great enough supply to work on a one to one basis with all our children.

I have simplified our language in order to teach these parents and teachers. Parents do not need theoretical language; they need procedural language. This is why we designed COLAB, and why we teach Pinpoint, Record, Consequate, and Try and Try again. We need to find still more tools to make recording easier, less time consuming, more accurate and descriptive. The six cycle graph paper is such a tool. We need easy statistics to use for describing a single behavior change because that is our basic result. And above all, we must stay practical, and check everything out in practice--always remembering that.....the child knows best!

Figure 18. A housewife self-decelerated her fingernail chewing with ten minutes of wearing a glove after each chew.



Lindsley. Operant Behavior Management. Figure 18

Footnotes

1. This is an edited transcription of an extemporaneous lecture delivered at the Brecksville Institute, Brecksville, Ohio, in May 1967. Research was supported by Training Grant NB-05362-01, National Institute of Neurological Diseases and Blindness and Research Grant HD-00870-01, National Institute of Child Health and Human Development from the U.S. Public Health Service, Dept. of Health, Education, and Welfare to the Bureau of Child Research, University of Kansas.

2. The writer is indebted to his classes of fathers of retarded children and to his graduate students in Education for providing the records of precise behavioral management.

3. "If at first you don't succeed, then you just try and try again," Mrs. James Ogden Lindsley, Personal Communication, 1932.

4. The children and their records are real, but I have changed their names to protect their identity.

5. Actually it is just as good as a time out room for most children. They are really more restricted than when in a time out room because they cannot see or move very much. Incidentally, nose-on-wall is much less expensive and much easier to build than a time out room.