

## CONTINGENCY MANAGEMENT RETROSPECTIVE

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Here are some selective recollections of early efforts to apply principles of operant conditioning to people in a systematic, responsible fashion. Let us first explore some of the setting factors involved in my early acquaintance with the field.

During the early 1940's I was working my way through college and studying the physical sciences and engineering. Some campaigns in General Patton's Third Army in the ETO, some hospital time, and the preparation for the invasion of Japan—capped by the dramatic end of WWII following the use of the atomic bombs—resulted in the alteration of my motivation from physical science to social and political issues. Consequently, in September, 1945 I re-enrolled at the University of Oklahoma and earned a BA in Political Science and another in Psychology. A well-developed science of Psychology seemed an absolute necessity for the development of any improvement in government and political philosophy. I was fortunate to study with outstanding scholars in both fields.

Dr. L.B. Hoisington, an outstanding student of E.B. Titchener, was my first professor for General Psychology and also for my first course in Experimental Psychology. He exposed us to the careful, thorough, constrained approach of elementarism, the detailed introspective reports of sensory experience alias receptor processes. In an advanced course on Systems of Psychology, Dr. Hoisington did an equally thorough job of explaining the various systems then extant—including Behaviorism. Other significant influences were Rohrer and Stone. G. Raymond Stone had recently received his Ph.D at Indiana University. He and Dr. John Rohrer explained the merits of Professors Kantor, Bijou, and particularly, B.F. Skinner who had recently become chairman of the department. Although I had already been accepted by some other excellent departments, I left O.U. immediately after graduation to enroll in the Clinical Psychology graduate program at Indiana University. I never regretted this decision. There were many other wonderful faculty members in addition to the three mentioned previously.

### Graduate Studies at Indiana University

As luck would have it, Dr. Bill Verplanck, Assistant Professor and *de facto* Administrator of the Psychology Department, was under the impression that I already had my MS or MA degree. He enrolled me in his Theory Construction and Scientific Method seminar that summer of 1947— my first term in graduate school. In it were Dr. Bill Estes and several very advanced graduate students who had passed their

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comprehensive exams and course work and needed only the PhD thesis to finish. Being a short summer term, we covered a lot in a few weeks. My lack of previous graduate work was somewhat compensated for by the fact that I got to do two complete reports rather than the one required of the others. I was the first presenter and reviewed Pavlov. This was not too bad since two books and a few articles pretty well provided all I needed. I had some friendly help from George Collier, who like Guttman, had studied with Skinner at the U. of Minnesota.

Later in that semester, another student, Herb Dawson, dropped the class. He had been scheduled to report on J.R. Kantor. Since I had already presented my written and oral report, I was assigned Kantor's System of Psychology. There were many, many articles in many different journals, plus several books, including his two volume *Principles of Psychology*, judged by linguists to be among the most difficult readings in our field. I am very thankful for the opportunity. In my opinion, both Pavlov and Kantor influenced Skinner. They influenced Radical Behaviorism, Applied Behavior Analysis and much of Psychology in general. The several courses I had with Dr. Kantor were richer and more meaningful to me for my having read so many of his publications before enrolling in his classes.

Although there seemed to be some differences between those who considered themselves primarily Kantorian and those who were Skinnerian, I did not see it this way. In the early 1970's I had a chance to discuss this publicly (Fuller, 1973). Many of us owe a lot to both of these men, who were not only outstanding scholars and teachers, but were great human beings. I have used their ideas in setting up many, many programs. I am grateful to them both.

The fall of 1947 was even more exciting than the preceding summer had been. There was an influx of new people. Dr. Skinner was at Harvard, lecturing on verbal behavior. In addition to the stimulation of Dr. Verplanck's seminar on Scientific Method, my experience as graduate assistant to Parker Lichtenstein increased my interest in theories of learning. A seminar on Guthrie's learning theory (which stressed contiguity) was offered. Dr. Verplanck sent Dr. Skinner the information regarding the Guthrie seminar, with the statement, "When the cat's away, the mice will play." In studying the main theories or systems regarding learning, it seemed to me that Hull, Guthrie, and Skinner would make somewhat different predictions regarding an experiment I was conducting, under the guidance of Dr. Bill Estes, regarding response acquisition and extinction. The experiments were in the I.U. animal lab where Norm Guttman, Bill Estes and others were friendly and helpful. Some of the pigeons residing there were those which had been in Skinner's PROJECT PELICAN, the pigeon-guided missile program of WW II (1960).

### Acquiring Subjects for Lab Experiments

The other pigeons were "wild" or "common" pigeons. White and hooded rats, and Kellogg's dogs (used for classical or "buzz-shock" conditioning) made up the rest of our non-human experimental subjects. Ingenuity was our way of operating. Skinner's baby tender (air crib) in which his younger daughter spent some time was converted into an environmentally controlled housing project for rats. (Dr. Skinner constructed others for his friends, but that is a different story.)

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Lab animals were not easily or cheaply available. We could buy rats then from local people such as the Kallikaks. We had no money available for pigeons. I constructed a trap for them. I placed it on top of our Science Hall. I could see the trap from the window near the secretary of our department. She became irritated because I checked the trap between each class. If one or more fortunate wild pigeons happened to be trapped, I climbed out the window, went up an iron fire escape, crawled up the slate roof, took the pigeons in my hand and crawled back. This was often on ice-covered slate and steel. Once, with two pigeons in one hand and one in the other, I was sliding down and wondered if it was worth it. I had great rapport with pigeons. From age 13 to 19 years I had bred several types of pigeons, homers for racing and white kings for food—sometimes dressing a dozen squab for delivery to the grocery store or to affluent individual customers. Pigeons are very good behavior packages. They learn fast, they are not easily upset and can resume or continue a high, steady rate of behavior even when involved in a life-threatening situation. Rats are more easily disturbed.

I was teaching a class in Experimental Psychology and wanted to demonstrate a rat in a Skinner Box. When I picked up the rat, a young lady in the front row screamed. For the only time in years of handling rats, I was bitten. The rat was so startled, his teeth went to the bone of my finger. I had to twist his head severely before he let go. Meanwhile, I was nonchalant so as not to stimulate any aversion toward rats on the part of the students. One does not have that problem with pigeons. I placed a handkerchief over my bleeding hand, took another rat, since the first one was too excited to cooperate, continued with the exhibit of the ease of operant conditioning.

### Schedules of Reinforcement

Once I had mastered the lab environment, I proceeded with an experiment to compare short periods of extinction with long periods of non-reinforced behavior of equal total time. There was a reinforcement program available which was pseudo-random or truly random. It was an intermittent reinforcement program which later became known as a variable interval schedule. In order to maximize the number of food reinforcers, the subject had to maintain a steady rate of response. The concept of the "reflex reserve" expressed in Skinner's *The Behavior of Organisms* (1938) was still very much alive. All other factors being equal, this concept should predict the same number of responses would be made in extinction whether they were emitted in short or long periods in the experimental apparatus. If extinction was like learning—response acquisition following the same rules as response extinction—distributed practice should be faster, more effective than massed practice. The exploratory experiment took many weeks for extinction to occur. Massed practice was less effective than distributed practice in extinction. The follow-up, a more complete study, involved continuous reinforcement during response acquisition. The results were comparable.

The following summer, there was a gathering of many scholars from Columbia, Missouri, North Carolina, and other areas—people such as Keller and Schoenfeld, Kellar Breland etc. During one session, John Cotton leaned over and whispered,

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"There is probably no one in the world outside this room who can teach a pigeon to peck a key." It might well have been, because just about everyone who understood operant conditioning was there. Skinner had said that we must be ready to question every concept—even "reflex reserve." When there was time left on the last day, it was asked if anyone had any experiments or other information to discuss. I reported on my preliminary results. Later, Dr. Fred Keller expressed an opinion that my data were significant. I continued the experiments for almost 2 years and used them for my MA research thesis.

We were so fortunate to study classical conditioning with Dr. Kellogg and operant conditioning with Dr. Skinner and the Interbehavioral systems approach with Dr. Kantor. They tended to live, teach and behave according their approaches to Psychology. Skinner did not use aversive control. If a student was asked a question, Skinner would differentially reinforce verbal behavior which was in the right direction until a reasonably appropriate response was emitted; oftentimes, it was not easy to avoid a negative response. Once a somewhat dramatic incident occurred.

Skinner was conducting a seminar in operant conditioning. His plan for the day was to demonstrate how to condition a pigeon to peck a key through shaping, or reinforcing successive approximations. The subject pigeon was not cooperating. As an old pigeon breeder and by now an experimental pigeoneer, I noticed the crow or crop of the bird as well as its behavior, and suggested that the bird might not be sufficiently food-deprived. Skinner turned to the graduate assistant, "You did not feed this bird today, did you?" he asked. The assistant began to blubber and stutter. "Well, maybe just a little bit," he muttered. He had made the professor look ineffectual. Most teachers in those days would have been harsh with the graduate assistant. Not so with Dr. Skinner. He said, "Well since we cannot do anything with this particular subject today, let us talk about how one might be able to create an effective level of motivation on short notice." During this discussion shock and other equally aversive techniques were suggested. I had made some observations regarding insulin therapy and suggested that insulin might be a technique whereby we could produce a strong motivation for food in a short period of time. Later, I conducted my PhD. thesis research on the physiological and psychological effects of sub-shock doses of insulin. I even had one aspect of the research in which I employed sweetened orange juice as a positive reinforcer for pro-social or adjustive behavior.

### Nearly A Half Century Before *The Bell Curve*

From 1947-49 it was my pleasure to work with Bob Urmston in a 2-year, double-blind study of the effects of glutamic acid on intelligence and other patterns of behavior. While working on this research in Muskatuck, Indiana, at an institution where the intellectually impaired of southern Indiana were housed, we became aware of many residents who were not in our study. One was termed a "vegetative idiot" and we and the staff MD discussed the problem of whether or not he could learn anything. The physician said, "Since he has not learned anything in 17 years of life, I doubt he can learn now." Bob and I thought that operant conditioning might be tried. I received permission to feed him his meals. In a few sessions a definite motor response was shaped, conditioned and extinguished. I wrote it up. Dr. Ellson, then

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my major professor, suggested I submit it for publication. Dr. Sid Bijou, my main Clinical Psychology Professor at the time, once told me, "I do not know of anyone who got so much recognition for one little study." It was the first published operant study with a human subject. It was cited or quoted many times. I received requests for reprints for over 40 years. The editor of *The American Journal of Psychology*, Dr. Dallenbach, asked me to eliminate the cumulative learning curve and the extinction curve figures. I regret their elimination. The editor was apparently not familiar with cumulation curves. This study (1949) was incidental but I am glad I took advantage of the opportunity.

The glutamic acid study also had some significant results. They indicated that factors other than the glutamic acid itself could be followed by changes in behavior, including speed and accuracy of responses, and some improvement in cognitive or intellectual functions. The control group which was simply tested and then retested every 9 months did not show improvement. Both the placebo and the glutamic acid group showed changes. In later years, we followed through on the indications of this and other similar studies. The situation seemed pregnant with possibilities for Psychology as a profession in 1950.

The research program on the effects of glutamic acid (1950) had provided for a first publication on operant conditioning of a human organism (1949) and suggested ways in which the level of functioning of impaired youngsters could be improved through environmental changes if not by mass quantities of glutamic acid. Both the experimental (glutamic acid) group and the placebo control group showed improvement in this double blind study. The only statistically significant difference was in speed and errors in the psychomotor tests. The other control group, which was simply tested, retested and retested after 9 and 18 months did not show improvement. Every morning and evening the experimental and placebo control groups went to the kitchen and received either powder A or powder B. This meant more attention, more interaction with those of different age and different intellectual levels. The teachers and other staff knew that some such research was ongoing and were alert to any signs of change or improvement. Therefore, they may well have noticed and socially reinforced any improvements or changes perceived as improvement.

In those years there were few choices of what to do with troubled, neglected, or abused children— it was either the 'reform school' or the center for the 'mentally deficient' or the 'feeble minded' as these institutions were termed then. Some of these children were economically and emotionally deprived and disadvantaged. Some were retained in the home as objects of sexual abuse. The institution was a great improvement for many. They received food, shelter, and schooling. The extra attention of being in the research project was a bonus. We were eager to test and apply these suggested, hypothetical propositions.

Another encouraging factor arose from the summer of 1950 while I was the Psychologist with the Indiana University Travelling Speech and Hearing Clinic. I conducted some audiometric exams and speech testing and evaluations, but mainly I performed psychometric evaluations and conferred with the children's parents, with the children themselves and, in some cases, with their teachers and social workers. Programs were outlined, recommended and demonstrated effectively. I was

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encouraged to see that the knowledge and skills of the Behavioral Psychologist could do some good in a relatively short period of time—compared to the many hours and weeks or months spent in a clinic that utilized the Rogerian or other traditional approaches. But even using traditional psychotherapy methods I was able to add in subtle behavior modification along with structuring many setting factors at home and at school. I described some of these activities in Chapter 3 on *New Ideas In Therapy* (1987).

### Social Reinforcement In The Therapeutic Interview

Ed Hovarka and Joel Greenspoon performed studies with human subjects which demonstrated the effectiveness of operant learning techniques. Joel Greenspoon (1955) demonstrated the effectiveness of verbal or sub-verbal stimuli as reinforcers, while Ed Hovarka used cartoons. Both were very effective, but most of the subjects did not verbalize what had happened in the control of their behavior.

When I started supervised psychotherapy, I discussed some possibilities with the head of the I.U. Psychological Clinic, Dr. Beier. He was shocked. "You are not going to treat a client like your vegetative idiot!" he exclaimed. There are many reinforcers besides consumables one can apply in the clinical situation and also during the clinical interview. I not only saw clients at the clinic, but also I went to their schools and into their homes to find ways in which adaptive, pro-social behavior patterns could be strengthened.

Some psychologists in the late 1940's and the early 1950's were discussing neurotic behavior as learned, and therapy as re-learning of the appropriate behavior and the un-learning or extinction of the counter-productive behavior. Since most psychiatrists at that time were very much psychoanalytic in their thinking, this could stimulate a tirade by the mention of the word "learning." Some of us, including Ira Cohen and Bob Silvermann, learned to communicate with psychiatrists in their language, but to still use sound principles of learning—along with other techniques—in trying to treat patients in the VA facilities in which we spent at least 2 years as interns. We even sold some of the mature psychiatrists on our effectiveness. A few years later and far away, one even offered me a partnership in his very successful practice.

I suppose that the point is that if one has the scientific background, one objectively tries and evaluates—then uses what works. I did it in management, management psychology, space technology and system effectiveness applications as well as in the clinic and classroom. So can you.

### My VA Clinical Internship

A 2-year internship with the Veteran's Administration began at the end of that 1950 summer. At that time, most psychiatrists recognized the value of our group for conducting research and diagnostic testing, but many had reservations regarding anyone but an MD practicing psychotherapy because, "Therapy is [was] the exclusive domain of the physician." The chief of Neurology and Psychiatry at this VA hospital treated us well. We conducted both group and individual therapy as well as intake

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interviews and testing. Our opinions were asked and usually well received. In many ways, we were treated as well or better than psychiatric residents. We observed, but declined to actually perform (i.e., closing the switch) electro-convulsive shock treatment. We could recommend and help evaluate the effects of various medications. As professional courtesy I was allowed to watch the transorbital lobotomy of a patient whom I evaluated before and after surgery. I have yet to be called upon to perform this therapeutic procedure myself.

One of my most interesting therapy groups consisted of all paranoid schizophrenics and true paranoiacs. Our discussions became surprisingly open and lively. Most could distinguish the fallacies in the other's delusions, but did not so easily recognize their own.

My least successful individual therapy case was my first. He was catatonic. If one is Rogerian and only reflects, how many ways can one reflect absolute silence? If one is into operant conditioning, what would function as a reinforcer for a silent catatonic? Likewise, what changes in behavior can be observed to be reinforced? My Chief Psychologist was very much a Jungian who had experienced many years of Jungian Psychoanalysis and was still seeing his analyst. He even went to bed early so he could get started on his dreams, or so we joked with him. However, my client made much more progress when seeing the Jungian than he did when seeing me. I have always found psychotherapy practice tends to keep one humble—perhaps it is because if one is honest with one's self, one finds much about which to feel humble.

### Importance of Social Reinforcement

Greenspoon's doctoral research regarding the reinforcing effects of 'uh-huh' and other verbal and non-verbal stimuli on the percentage of plural nouns enunciated by subjects caused quite a stir, and was quoted in a very popular book (Dollard & Miller, 1950) shortly before he received his PhD from Indiana University. Some did not obtain quite so remarkable results as did Greenspoon, who was a handsome, athletic, deep-voiced instructor. Perhaps 'uh-huh' profoundly uttered by him had more effect than from some small, light-voiced individual.

Years later, I observed analogous events in the behavior modification programs in schools and institutions. Words and gestures of approval, even M&M candy, can have different effects, different *levels* of effectiveness due to difference in tone of voice, sincerity, enthusiasm and the like. These effects can also differ across teachers, child treatment workers, etc., who may not believe in positive consequences, or who are so bored, or 'burned out' that they are barely going through the motions of following the plan of consequence management. (This subject will be discussed later with more assembled data.)

The year 1950 was a time of emergence for the proposition that since neurotic behavior tends to be learned, the studies of the learning process and the principles of learning would have implication for the treatment and even avoidance of neurosis. This resulted in a strong outburst during a seminar in which a prominent psychiatrist attacked this idea when it was presented by a young I.U. faculty member. A senior professor from Purdue tried to smooth things, but for months,

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'learning' was a dirty word. We I.U. interns tried to translate our observations and ideas into accepted lingo of the place and time. This is a good learning experience in that one observes the data, examines the constructs used by various psychoanalysts and others in describing, classifying and 'explaining' the facts, then one uses the principles of learning to understand and to program treatment. Here some of us learned to understand and communicate with the patient in the patient's language. We were progressing very well. Our Chief Psychiatrist backed us as psychotherapists although he was severely attacked for so doing. He was very much results oriented.

The fighting in Korea began. We even had a few Korean veterans in our hospital. I spent a tour with the VA Mental Health Clinic under the direction of a lovely 'mother figure' psychiatrist and other young professionals. A new beautiful VA hospital was built in the Indianapolis Medical Center and allied with the Medical College. It was referred to as the Dean's Committee Hospital. Having professors of medicine come in and essentially take over our operation was quite a 'learning experience'.

Highly experienced, highly qualified VA physicians who had utilized and got along well with our famous, distinguished consulting physicians, became pitifully intimidated by the medical professors. A perfect example of classical conditioning. Some were able to verbalize the fear and intimidation which was experienced by them so many years after they had graduated from medical school. The Dean's Committee ordered all psychotherapy and most other therapy halted. Some psychotherapists became very distraught; most of them eventually sought and found employment elsewhere.

### Clinical Psychology at Florida State University

Meanwhile, I had accepted an Assistant Professorship at Florida State University (FSU) and was able to complete my doctoral thesis and receive my Ph.D before going to Florida, where I became so deeply involved in building the Ph.D program in Clinical Psychology that I wonder how long it would have been before I could have returned to I.U. to defend the thesis and graduate.

My only regret regarding the research is that my committee advised me to eliminate the research on the effects of sweetened orange juice as a reinforcer for behavior of subjects undergoing sub-shock dosage insulin therapy. It was probably no great loss to humanity, since sub-shock insulin treatment did not continue in vogue for many years in the USA. Years later, Greenspoon showed similar effects using food with food-deprived subjects. Government regulations might hinder this type program now.

Florida State University was a great opportunity, a great experience in many ways. The person in charge of the new Ph.D program in Clinical Psychology was Andy Sweetland, an accomplished pianist, lots of fun, and most accepting of my intrusion in his space, figuratively and literally. Before he left to join the Rand Corporation, we obtained the initial approval for our Ph.D Clinical program from the American Psychological Association. We were busy. A mental health clinic had been started through the joint efforts of the FSU Department of Psychology, the School of Social Work, and the Leon



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County Health Department. Our FSU psychiatrist had held a significant position in Canada. During WWII he had been the chief psychiatrist in the Royal Canadian Air Force (so I was told, anyway). When a member of our faculty, Rogerian Theron Alexander, was concerned that a person he was consulting was suicidal, he called the psychiatrist for help, at least to see if the student could be admitted to the FSU hospital. He was told that he should not be attempting this sort of treatment and "If I were you, I would be very deeply concerned!" The psychiatrist hung up and no longer answered his phone. The patient and Dr. Alexander survived so far as I know. However, subsequently, I did hear that there were three Canadian patients of the psychiatrist who had successfully committed suicide in the same week. No wonder he had come to gentle, warm, Tallahassee and FSU for a little "R and R."

This made for some stressful situations with our graduate students working in the clinic. We worked carefully to extinguish threats of suicide, to avoid the shaping of more and more serious threats, then suicidal gestures, then apparent suicidal attempts. We received strong support from Dr. Kranz whom we were fortunate in obtaining as the next FSU Psychiatrist. A third generation MD, he was an asset and a good friend.

Our clinical graduate student population was made up of a wide range of ages, socio-economic backgrounds, and ethnicity. We were working hard to 'raise standards.' It was not always pleasant, but we learned some valuable lessons. Our graduate students interned in a wide variety of settings, including VA hospitals and clinics. We tried to train them scientifically, including the applications of empirically established principles of contingency management, of testing of response-response relationships, prediction of behavior, objective observation, the relationship of constructs and data. etc. They were also made aware of the various systems and theories they might encounter in the non-objective, psychoanalytic, and other mentalistic environments, even some bizarre practices which were extinct. They learned; they made it. I have always found it socially reinforcing to see or even read about these good people.

For some time we had been exploring the issue of applying the knowledge and skills we had developed in assisting people to overcome pain, maladjustment and underachievement to persons who were adequate, or above, so that they could become even better—more outstanding. Joel Greenspoon had agreed to join the FSU Clinical Psychology team, the program in Clinical was doing well, we had branched out into School Psychology and things were at an opportune time for me to leave. It was painful in many ways. I feared Joel would never forgive me, but he did. He built the FSU program to new heights.

### On The Road Again

I joined Rohrer, Hibler, and Replogle, moved to Atlanta, GA. and spent the next several years in development of top management in research, educational, business and industrial organizations. That was real behavior modification.

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### Into The Wild Blue Yonder

By late 1959 I gave up traveling coast to coast as a Psychologist to top management in order to conduct research in space medicine and bioastronautics. Behavior modification techniques abounded—from training non-human and human astronauts to managing a team composed of all sorts of engineers, scientists, and technicians trained in a to z, Astronomy to Zoology. We conducted research, wrote books and papers—most of which were 'classified' and are not readily available. We did make a difference—but that is another story in itself.

During the dozen years in space, I kept my feet on the ground, maintained my licenses as a Psychologist and taught in colleges and universities as an adjunct or part-time faculty member, and attended post-doctoral special courses.

### From The Moon Back To The Ivory Tower

In 1970 I joined the Psychology Department at Western Michigan University (WMU) to build the School Psychology graduate program. I phased out of space gradually, completing my chapters of an Engineering Design Guide by the end of 1970. The space program was such that I would have had to move my family, who had really become well rooted in a home where we had lived seven years—longer than in any other. WMU's Psychology Department consisted of several old friends and acquaintances, such as Fred Keller, Paul Mountjoy, Neil Kent and their lovely wives. We received positive recognition in *Psychology Today* (1972). Reactions to the article were mixed, but it seemed a positive event for WMU Psychology Department.

Some of the faculty's approach gradually evolved into an emphasis on aversive control; these clinicians accepted the proposition 'Positive reinforcement is effective, but it is punishment that makes the world go round.' The department is still active and innovative—23 years later without some of us who were mentioned in the *Psychology Today* article.

### WMU's EdS Degree

The WMU School Psychology program was very successful. Other states sought out our graduates. The animosities which were the result of earlier events (e.g., removal of the program from Special Education to Psychology; the relationship with the school systems where we needed to place our interns; etc.) By 1974, our program for the MA had received 10-year accreditation, and our EdS program, 5-year national accreditation. The EdS, Specialist in Education degree, required approximately 90 semester hours of graduate course work, plus a research paper only somewhat less demanding than the doctoral thesis.

Our close cooperative relationship with school systems enabled us to set up comprehensive contingency management programs which were very successful in attaining their goals. In Michigan, the School Psychologists had originally been termed 'School Diagnosticians.' They were used to test children (based for the most part on I.Q.) for placement in Special Education. I had taught many of them in

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extension classes for the University of Michigan. I took advantage of WMU's outstanding behavior management programs to produce School Psychologists who could and would set up programs to do something, remediate and correct the deficiencies which the psychometric examinations indicated needed to be done. They also set up programs to improve and enrich the learning for all—not just the Special Education students. These behaviorally trained School Psychologists could give positive suggestions and assist school counselors and social workers.

The success of this program was made possible, in part, through the excellent work of graduate assistants and the cooperation of Dr. Robertson, who headed the Clinical Psychology program. We were allies, not competitors.

### **That's One Way of Doing It**

There is a tendency for things to start well but to gradually deteriorate. Words such as entropy, negative entropy and the like are thrown around in this regard. It is frequently observed with new systems, approaches, and techniques. The selection of crews for atomic submarines was initially greatly successful, but gradually became less so. A new teaching technique or therapy is initially acclaimed, but later fades out. So it can be with behavior management.

The first demonstration projects are conducted by those who really know the scientific principles, who are positively motivated. As the program grows, people are 'trained' but not 'educated.' Examples are numerous. These examples have been observed by me many times. A token economy seems not to be working. A boy is given his token but does not seem to respond to it. He is becoming more uncooperative. I suggest that he has not made the connection between the token, or 'play money' and what it can be exchanged for. A short training period is all that is necessary, a brief behavior rehearsal wherein he is prompted to put forth the token and is given orange juice, then a little generalization training and he is fully cooperative. So often, the workers have been exposed to the techniques, but not to the principle of learning on which the technique is based.

The director of social service agency asked me to check a boy in a residential treatment facility. He was 'spending too much time in the time-out room.' He had been grossly abused (cigarette burns, etc) and neglected by his parents. When 'misbehaving' he was told to go to time-out. He would sit down, refuse to move. The child treatment worker was a loving, caring, attractive young woman. She would pick up the child, clasp him to her capacious bosom and carry him to the time-out room. What neglected person would not be glad to spend some time in a quiet room if they received that much kind and gentle closeness? We altered the program. First, he must not be carried to the time-out room. If he was required to go, a worker would take hold of his hand, one on each side, and the two workers lead him walking to the room. Second, more importantly, a special plan was instituted to catch him being good. When he was cooperating, doing the 'right thing' he received not only verbal praise or tokens, but would be appropriately patted, hugged and otherwise treated with warmth, affection, and appreciation that he could understand. He never had to go to time-out again.

Other puzzling situations were solved by moderate changes. A colleague

encountered a lad who refused to really try in his school work. Food, candy, praise, tokens, etc. seemed to have little or no effect. As I had recommended for years, one does not have to use operant learning with most people like one does with a non-verbal organism. If your subject can talk, use talk—find what is or might be an effective consequence. This bright youngster was asked, "What would it take to get you to do your assignments?" He readily answered, "I would like my papers sent to Mr. \_\_\_\_\_." This man was a person who had been a helper in a previous placement. The boy wanted him to know what progress he was making, how he was doing. Once his work was reported as requested, the lad became nearly perfect in his cooperation. How often one might ask, "I would like to know what I could do for you if you would do this for me?" There are many types of behavioral contracts.

The case of this boy brings up another point. For a given individual, it makes a difference who knows, who approves. In traditional psychotherapy it is often necessary to have some meaningful aspects of the relationship in order for the therapist to have much influence directly or indirectly. Call it transference, rapport, mutual confidence—whatever, the same overt behavior by different persons affects one differently.

### Cooperative Behavior Management

Just as it is sometimes very useful to ask the person to be helped just what would be effective consequences, even instituting a behavioral contract, it is useful to build a program in which the agents of behavior modification, the organization are also involved from the first.

A county in Michigan provides an example. The school administrators expressed an interest in improving the academic achievement of the students as well as building more socially acceptable behavior patterns. We first met with the curriculum committees of the school districts. The concepts of contingency management and some of the techniques thereof were explained and discussed. Some were skeptical that it would work. Some expressed fear that it would be so effective that the students would be so controlled that each individual could not have an individual growth experience, blossom in his own way and just be one's self. These objections were all handled and worked through in an amicable and intellectually honest way. A slightly more challenging even unique objection was raised by a lady who readily recognized that extinguishing non-desired behavior and reinforcing desired behavior would be effective. Her religious belief was that "God has ordered that we punish wrong-doing." This issue was handled to everyone's satisfaction so far as it is humanly possible for us to know.

An extension graduate course was started for the teachers. They received academic credit while learning more about the theories and techniques they were to use in the program. As the term progressed, they could bring day by day problems to the seminar and all could learn from them. I paid a fee to advanced graduate students from WMU to monitor and help the teachers. These WMU students had up to 5 or 6 years of intensive behavior modification training and indoctrination and were very helpful. It was also a new and beneficial experience for them. They had implemented the programmed college classes at WMU, but the variety of students,

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both Special Education and mainstream, provided new challenges, allowed improvisation and the development of a wide variety of new techniques.

Depending on the age of the public school students, as well as other setting factors, the students themselves participated in the programming and individual behavior contracting. This was particularly useful in making changes. A class of fifth graders worked with the teacher to devise a token economy. The number of points (tokens) earned per achievement and improvement as well as the price of privileges, pay-offs, etc. were set by consensus. After several weeks, some pay-offs were much more in demand than had been anticipated, others were less so. The teacher used this situation to teach some basic economics. The students were asked if they had heard of 'inflation' from their parents or other sources. This was discussed and the matter of supply and demand recognized; there was then another consensus reached as to the price paid for the social and tangible resources. As academic and social behavior goals were met, new goals were set and achieved. The results in all classes were highly significant statistically as well as in what could be perceived in every day observations.

This county school system program was a good example of how one could combine the systems approach we developed in the space program with the behavior modification techniques first used in the laboratory and then gradually applied elsewhere.

Not everything worked perfectly every time. For example, teen-agers who used earned free time to drink beer. This required an iterative approach to make some changes—even some changes in their teacher's drinking behavior. Not only did the students learn more, behaved better, but the teachers, the observer-coaches and the program manager all gained intellectually.

### Modification of One's Own Behavior

Serendipity plus ingenuity can yield results. In the early 1960's I was teaching classes in Grand Rapids for the University of Michigan. When teaching learning courses, I had always had a laboratory available, so that the students could be conducting learning experiments with animals and with human subjects. In the Extension Center there was no lab. I suggested that the whole world could be their lab. They could set up objective studies to apply learning principles to their pets, children, family, fellow workers, etc. It was of course required that those subjects able to do so had to consent to the program as well as there being prior approval of the program by the instructor. Some chose to construct paper mazes for children, some were in a position to introduce new techniques in their factories, some chose to plan a program of changing their own behavior.

While self-improvement programs are as old as the USA itself, these were slightly different. The subject chooses what was to be modified, worked with the instructor on the design of the experiment, appropriately used the principle(s) of learning presented in class. The grade attained in the project was a significant contribution to the semester grade. What was learned in planning and executing the project helped in the overall academic achievement.

In addition to the hundreds of successful weight change cases, substance abuse

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elimination, toilet-trained children, and trained pets, etc., there were some impressive instances of people who eliminated psychiatric disorders for which they had spent thousands of dollars on conventional psychotherapy, only to gain 'insight' but still have the problem. This is somewhat analogous to what has been observed in individual therapeutic practice. After a 'relationship' and 'insight' have been gained, a decision made as to what the client wants to do, then a program to achieve the goals can be set up. If a person accepts responsibility and control of one's life, plans (with the therapist's help) just how to reach the goals set, there exists a responsible self-identification and the great reinforcement of achievement, of doing it 'myself.' There is not the strong possibility of dependence so often observed, wherein more therapy sessions are used in weaning the client than were spent related to the presenting factor or complaint.

At WMU in the early 1970's I discovered that some colleagues taught that it is impossible for a person to differentially reinforce one's own behavior. The control has to be outside the organism. However, when I presented at a scientific meeting a report based on a mass of data obtained in ten years of continuous research, some changed their opinion and the next semester were offering credit courses in 'self-behavior modification.' Being scientists, they were amenable to the implications of scientific, objective data.

In my files are thousands of case studies from colleges and universities, public and private schools, psychological clinics, hospitals, criminal justice centers and juvenile courts. I am still trying to integrate these data. A quarter century ago at a meeting of behavior systems scientists, I predicted that the development of the high-speed digital computer, the evolution of such things as system control theory and our experience and knowledge of behavior, we could develop a truly comprehensive, effective, productive, socially beneficial approach to prediction and control of behavior. There has been progress. Some of us are still working on the problem.

Thanks for reading these reminiscences—give yourself a powerful reinforcer.

## REFERENCES

- Dollard, J., & Miller, N. E. (1950). *Personality and psychotherapy*. NY: McGraw-Hill.
- Ellson, D. G., Fuller, P. R., & Urmston, R. (1950). The influence of glutamic acid on test performance. *Science*, *112*, 248-251.
- Fuller, P. R. (1949). Operant conditioning of a vegetative human organism. *American Journal of Psychology*, *62*, 587-590.
- Fuller, P. R. (1973). Professors Kantor & Skinner—"The Good Alliance" of the 40s. *The Psychological Record*, *23*, 318-324.
- Fuller, P. R. (1987). From the classroom to the field and back. Chapter in D. H. Ruben & D. J. Delprato, *New ideas in therapy* (pp. 23-36). NY: Greenwood Press.
- Goodall, K. (1972, November). Shapers at work. *Psychology Today*, *6*, 53-63.
- Greenspoon, J. (1955). The reinforcing effect of two spoken words on the frequency of two responses. *American Journal of Psychology*, *68*, 409-416.
- Skinner, B. F. (1938). *Behavior of organisms*. NY: Appleton-Century-Crofts.
- Skinner, B. F. (1960). Pigeons in a pelican. *The American Psychologist*, *13*, 28-37.