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## MY EARLY DAYS OF BEHAVIOR ANALYSIS WITH SKINNER: LIGHT AND HEAVY MEMORIES Ogden Lindsley, University of Kansas

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- 1950 - Harvard** I received my Masters in electro-physiology with Carl Pfaffman at Brown, but had to leave because a new graduate dean said no more three degrees at Brown. I obtained a scholarship to study single-nerve-fiber micro-electrode recording with Robert Galambos at Harvard. In the other end of the laboratory Skinner was operantly conditioning pigeons and rats, but I didn't know it then.
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- 1951 - Sampson** Skinner asked me to assist him in teaching Natural Sciences 114. The class notes were published later as *Science and Human Behavior*, 1953. Skinner asked me to train a high jumping rat for a class demonstration. One rat pulled the bar rather than jump it. I added weight to the bar and he was lifting 250% of his body weight in 2 weeks! Sampson was the hit of the class and made me a life-long free-operant conditioner.
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- 1952 - Hunter** As my dissertation research options, Skinner suggested studying drug effects on pigeons with Otto Kryer at Harvard Medical School, or studying irradiation effects on dogs with Walter Jetter at Boston University Medical School. I chose the dogs because I thought them closer to humans than pigeons. I conditioned 65 male Beagle dogs to tell time, discriminate a light, and fear a loud noise. The immediate effect of irradiation extended the fear without changing the temporal or visual discriminations or rate of work.
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- 1951 - Cathy** Our youngest daughter, Cathy, slept in an air crib during her first two years. Many other of Skinner's students had raised their children in air cribs, but no one had put in a lever. I built a toy panel and recorded Cathy's playing over 24 hour periods. This, my first human free-operant research, was presented at the Eastern Psychological Association meeting and written up in *Newsweek*.
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- 1953 - Behavior Research Laboratory, Metropolitan State Hospital** When meeting to discuss my dissertation research, Skinner and I talked about how exciting it would be to work with psychotic patients. We had ideas like reinforcing a catatonic out of his stupor, thinking the stupor to be merely the result of total behavioral extinction. We agreed to apply for a grant and I would give it 5 years of my life. We obtained funds from the Office of Naval Research, and construction started 5 July. Our first patient was studied on 28 September. We first called our laboratory "Studies in Behavior Therapy." From 1953 through 1964 we had 940 professional, and 1850 student visitors.
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- 1953 - Reinforcer search** A wide range of reinforcers - food, candy, cigarettes, money, nude male and female pictures, even the opportunity to feed a hungry kitten, were tried to generate useful rates of response in withdrawn patients; all with no real luck.
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- 1954 - Hallucinating, pacing, and lever pulling** Simultaneous recording on 3 separate cumulative recorders of hallucinating symptoms (talking to no one), pacing symptoms, and lever-pulling for reinforcers, provided interactions between symptoms and work. These sessions were excellent for screening psychotherapeutic drugs. None were found that decreased symptoms without also decreasing normal work.
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**1957 -  
Conjugate  
Reinforcement**

A device that increased the intensity of a visual or auditory television signal directly with the rate of response was built to present narrative reinforcers. Narrations lost their reinforcing power when interrupted by episodic reinforcement schedules. In conjugate reinforcement the video wasn't interrupted if the patient slowed down, it merely dimmed, or went out of focus. The conjugate schedules went more deeply into sleep, anesthesia, and coma than episodic schedules and could be used to measure the depth of sleep and anesthesia. Conjugate schedules also analyzed simultaneously both auditory and visual channels of movies, TV commercials, and psychotherapy sessions.

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**1960 -  
Simultaneous  
discrimination  
and  
differentiation**

By having 2 levers and 2 lights, and reinforcing pulling the lever under only one light we could monitor developing discrimination (telling the lights apart) and differentiation (telling the levers apart). This research showed that some psychotics and some retarded persons had very unusual behavioral deficits.

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**1961 -  
Seven hour  
drug screening  
sessions**

Daily recordings of the behavior of over 70 chronic patients revealed marked 20 to 35 day rhythms which were not related to phases of the moon, or barometric pressure. These rhythms severely interfered with measuring the effects of psychoactive drugs, which took a month to take effect when taken orally. We went from 1 hour to 7 hour daily sessions, and from oral to intramuscular injections of the drug after 30 minutes base-line responding within the session. This permitted us to record drug onset, full effect, and final decay on the vocal symptoms, pacing, and work. Screening new psychoactive drugs was our major source for laboratory costs which were up to \$250,000 per year.

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**Some light  
memories**

**Floods:** every month or so patients in the three floors above us would stuff torn blankets down their toilets. These jammed in the sewer lines below our lab and suddenly we would have about 2 feet of sewage over our floors - no warning!  
**Skinner's hands:** if he inadvertently touched a door handle, Fred would hold his hand out to his side until he could disinfect it at the nurses station. It was great fun to try to get him to touch a door handle, and to tease him about this!  
**Cockroaches:** Working late at night I went through dark basements to get coffee from the night supervisor's office. Giant cockroaches scampered before me, and I stamped on them. I developed the superstition that each one killed was another thousand dollars in next year's grant. This kept me in the corridors until I got the 100 we needed. Was Skinner right? Was it catching?

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**Some heavy  
memories**

**Politics diverted psychosis money to retardation:** Our builder told us Rosemary Kennedy was really psychotic and made defective by a pre-frontal lobotomy. Convinced that he would not get elected with a psychotic sister, Jack Kennedy called her retarded and supported retardation as a smoke screen.  
**Psychotic episodes were catalyzed** by calling a patient's name over a hidden microphone. But, the patient asked the "voice" a silent question, and if it wasn't answered, the patient knew the "voice" wasn't his.  
**Behavior analysts dropped rate of response** in copying our methods and success, preferring to use percent correct or percent of time behaving.  
**Drug screening an impossible gamble** since we were getting only 1 new drug a year after thalidomide. The Curies screened hundreds of metals, their salts, and compounds before finding pitchblende. Edison screened over 1600 materials before finding carbon coated cotton for his incandescent lamp. If we were sixteen times luckier than Edison we'd find a drug for schizophrenia with our 100th try. That would be in the year 2065! We closed our lab.

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