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# Systematic Relaxation Training and the Process of Methadone Detoxification

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*Eastern Illinois University*

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Systematic Relaxation Training

and

~~the Process of Methadone Detoxification~~  
(TITLE)

BY  
Dennis Crowley

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
Masters of Arts in Psychology

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY  
CHARLESTON, ILLINOIS

1976

YEAR

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Systematic Relaxation Training  
and  
the Process of Methadone Detoxification

by

Dennis Joseph Crowley

B.S. in Psychology, Eastern Illinois University, 1970

ABSTRACT OF A THESIS

Submitted in partial fulfillment of the requirements  
for the degree of Master of Arts in Psychology at the  
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1976

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## Abstract

This study examined the completion and noncompletion of methadone detoxification of two groups of subjects enrolled in a heroin treatment program. Twenty-six subjects who had been addicted to heroin for a minimum of two years and were receiving methadone were randomly assigned to an experimental and control group. The experimental group was assigned a series of relaxation training sessions. Each subject, at the outset, was receiving 18-22 mg of methadone daily. Two counselors conducted the relaxation training which began at the 18-22 mg dosage level.

Completion of methadone detoxification was defined by the following criteria. (1) The subject ceased to ingest methadone after reaching a plateau of between 1-5 mg of methadone within 20 weeks of being at a dosage of 18-22 mg. (2) The subject did not use a narcotic during the last two weeks of detoxification and the first two weeks of abstinence as verified by urinalysis of three monitored urine specimens per week.

In the experimental group, nine subjects completed detoxification, four subjects did not. In the control group, two subjects completed detoxification and eleven did not. The study showed that a significant relationship existed between the experimental group receiving relaxation training and the completion of methadone detoxification.

The results of this study showed that relaxation training may help manage certain side effects of methadone detoxification and that relaxation training may raise the probability of an individual completing methadone detoxification.

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## Chapter I

## INTRODUCTION

What is known in archeology and history appears to point out that man from the beginning has sought and utilized substances that would either expand or depress consciousness. In today's times, these substances range from coffee, alcohol, and marijuana to narcotics, opium, morphine, and heroin. All are commonly called drugs. The Second Report of the National Commission of Marijuana and Drug Abuse (1973) defines drugs as any substance other than food which by its chemical nature effects the structure or function of the living organism. Over the last twenty years, increasing attention and concern has developed over the "drug problem" or the increasing amount of drug abuse. Blaine, Bozzetti, and Ohlson (1973) define drug abuse as a term (a) that designates inappropriate or excessive use of a drug; (b) that refers to any use of a drug that alters mental functions for nonmedically approved purposes; (c) that describes any drug use which is not socially approved within a given culture and time; and (d) that describes any drug use that implies damage either to the individual directly and/or society indirectly. One drug that has a prominent ranking as a problem drug is heroin. This section will briefly explore the history and development of heroin addiction treatment, and methadone synthesis.

Heroin is a drug with the pharmacologic and toxicologic properties of the class of drugs referred to as opiates, opioids, or narcotic analgesics. Opium is a natural substance obtained from the unripened seed of the poppy, Papaver Somniferum, which is indigenous to Asia Minor. Opium is composed of over twenty alkaloids representing about twenty-five percent drug weight of the juicy substance. Morphine, codeine, and thebaine are phenanthrene alkaloids. Jaffe (1969) states that morphine is the substance which is responsible for the major pharmacologic effects of opium, although all the effects of opium are not due to morphine.

Heroin is derived from morphine. Blaine, Bozzetti, and Ohlson (1973) state that heroin is diacetylmorphine and is easily made by chemical treatment of morphine with acetic acid. Heroin is rapidly converted to morphine in the body and probably morphine is the psychoactive agent. Fraser et al. (1961) and Martin and Fraser (1961) found that experienced heroin users cannot reliably distinguish morphine from heroin when administered sub-cutaneously and that when given intravenously no absolute ability to distinguish existed. The popularity of heroin may be related to its availability on the illicit market, which probably is related to its potency and smaller bulk.

Heroin physiologically is mainly a central nervous system depressant. The phenomenological and psychological effects of heroin are numerous. Heroin and all narcotic

analgesics effectively relieve clinical pathological pain and increase the capacity of an individual to tolerate experimentally induced pain. Other subjective effects are less constant than the rather constant analgesic effects. Blaine et al. (1973) in summarizing consciousness effects of opiates report that (1) drowsiness and mental clouding occur commonly; (2) an inability to concentrate, difficulty in thinking, and lethargy occur; (3) decreased physical activity, and apathy occur; (4) if external stimuli are of low intensity then sleep and dreaming may follow; (5) a person may experience decreased motivation to avoid pain; (6) aggressive acts decrease; and (7) food seeking behavior and sexual behavior are decreased.

Blaine et al. (1973) report that affective mood changes are quite varied. These changes range from a very aversive anxiety, fear, and discomfort to an experience of pain relief. They range from anxiety, discomfort, worry, and tension to an extremely enjoyable euphoria which is an unrealistic sense of well being, peacefulness, and contentment.

Jaffe (1969) and DeLong (1972) describe this euphoria in two parts: "the Rush" and the narcotic "High." The "Rush" is instantaneous and short-lived. This is the initial impact of an opiate on the brain. Frequently, the "Rush" is described by ecstatic sexual images, such as a huge, total body orgasm. The narcotic "High" is long

lasting and frequently described as a dream-like and a pleasant state of consciousness, with a profound heightened sense of well being.

Another important effect of heroin and all opiates is called tolerance. Blaine et al. (1973) simply define tolerance as the process in which an individual's body becomes accustomed or adjusted to the drug's action. Consequently, progressively larger doses are necessary to produce the same degree and duration of effect. Especially in the area of euphorogenic effects, an individual must frequently increase his drug dosage and decrease the interval between administrations to continue to experience the high. Tolerance to heroin develops a few days slower than tolerance to morphine.

Schlicht (1973) reports on the status of the term addiction. He states that the World Health Organization (W.H.O.) in 1965 introduced the concept of "Drug Dependence" to replace the term addiction. This paper accepts the W.H.O. definition as reported by Schlicht:

a state, psychic and sometimes physical, resulting from the interactions between a living organism and a drug, characterized by behavioral and other responses, that always include a compulsion to take the drug, on a continuous, or periodic basis, in order to experience its psychic effects and sometimes to avoid the discomfort of its absence.

Heroin addiction and/or dependence can be both physical and psychological dependence.

The development of physical dependence with repeated

use is a characteristic feature of all narcotic analgesics including heroin. Blaine et al. (1973) state that physical dependence refers to an altered "normal" physiological state of the bodily processes produced by repeated drug use, which requires continued presence of the drug for maintenance of this "normal" physiological state. Discontinuation of use and removal of the drug from the body results in the appearance of a stereotyped characteristic abstinence or withdrawal syndrome which remains until the bodily processes readjust to the previous non-drug state.

Psychological dependence may also develop with the repeated administration of heroin and other narcotic analgesics. Blaine et al. (1973) state that individuals are considered to have psychological dependence on opiates when, after repeated usage, they consider that the effects produced by the drug are necessary to maintain an optimal state of well being. The degree of psychological dependence varies from a mild desire to a "craving or compulsion." Jaffe (1972) states that in its extreme form, this need to be constantly under the influence of a drug leads to behavior preoccupied with narcotic use and procurement (compulsive drug use) and appears to be a chronic relapsing disease. In summary, a person may be physically dependent on heroin and/or psychologically dependent and/or both physically and psychologically dependent on heroin.

## History of Addiction

The history of addiction begins with the use of opium. Richard Ashley (1972) states that the effects of opium have been known from at least the third millennium, B.C. Kritikos and Papadaki (1967) state that opium addiction was not an uncommon phenomena in the ancient world and that in the third century B.C., the Greek physician Erasistratus recommended complete avoidance of the drug because of its addictive nature. Around the seventh century A.D., Arab traders introduced opium to China and by the eighteenth century, China had a serious problem. Cohen (1969) reports that opium eating spread to England and the United States in the late eighteenth and early nineteenth centuries.

The isolation of morphine in 1803, the invention of the hypodermic syringe in the mid-nineteenth century, and the widespread medicinal use of morphine during and after the Civil War produced thousands of morphine-dependent persons. Cohen (1969) reports in the mid to late nineteenth century, an estimated one and one-quarter million persons (four percent of the U.S. population) were habituated to opiates. The opiate dependent population was 2/3 white females in their forties of middle and upper class society.

Ashley (1972) reports that in 1898 the Boyer Company of Germany created a semisynthetic derivative of morphine which they named heroin. Heroin was heralded as the new cure for the opium and morphine habit. Instead, during the early 1900's heroin became the drug of choice among opiate addicts.

In 1914, the Harrison Narcotic Act was passed. Glasscote et al. (1972) report that this act required the registration of the opiate drugs, imposed a tax on these drugs, and eliminated the non-medical availability of opiate drugs. Livingston (1963) and Brill (1973) report that a decade after the Harrison Act's enactment the number of dependent persons was one-half of the original 1,250,000.

Breecher (1972) and Brill (1973) report that as the old drug problem was fading due to the Harrison Act, a new one emerged. A growing number of young users, almost always male, largely urban, and drawn disproportionately from minority ethnic groups began to appear. Another important characteristic of this new group was that they preferred heroin to morphine. The problem of heroin addiction had begun.

Glasscote et al. (1972) report that a less dramatic increase in heroin abuse occurred after World War II. The abusers were characterized as males of minority ethnic groups, of lower socio-economic status, living in urban slums, criminals, and progressively younger (teens to 30). Then, in the mid-60's, heroin spread to the young white middle-class male population.

Reports and statistics on the number of addicts presently in the United States are varied and difficult to accurately obtain. The Bureau of Narcotics and Dangerous Drugs in the April 3, 1972 edition of the U.S. News and World Report estimated a figure of 560,000. Ashley (1972) disagrees considerably with the Bureau of Narcotics and Dangerous Drugs.



Using a formula based on the New York Registry of addicts, he conservatively estimates 750,000 addicts in 1973.

### Heroin Treatment

Kolb (1963) and Musto (1973) report that treatment from 1870-1900 was private, and usually involved withdrawal accomplished either gradually or rapidly. They also report that the rapid withdrawal was dangerous, due to the effects of non-opiate drugs administered by the treating physician to suppress abstinence symptoms. Commenting on the same time period, Brill (1973) reports a very high relapse rate existed for opiate-dependent patients, and that the physicians' response was to look for a new assortment of drugs to administer during withdrawal. Overall, the result was usually to maintain dependence, rather than to cure it.

The Second Report of the National Commission on Marijuana and Drug Abuse calls the years between 1900-1915 the "years of optimism." The medical profession thought that dependence was curable, insisting that the condition had an organic basis, which could be altered through proper withdrawal techniques. By this time, dozens of private sanatoria existed with each promoting their cures.

Within a few years, the organic theories of dependence had been discredited. The Harrison Act, due to inconsistent enforcement, and unclear interpretations, pushed the "script" doctors, who indiscriminately prescribed heroin for profit, and the doctors who ethically thought maintenance was the

only treatment, out of business. During this time, the illegal market grew, and the Treasury Department, in 1919, encouraged local maintenance clinics to be created to serve as feeders for drug free institutions. The clinics, partially due to mismanagement, were unsuccessful, and by 1925 were closed. The treatment approach became to segregate opiate dependent individuals after they committed a crime, and hope a cure could be found.

In 1935, the federal drug treatment hospital, called a "narcotic farm," opened at Lexington, Kentucky. In 1935, a second opened in Fort Worth, Texas. The approach was to remove the patient from the environment that caused the dependence and put him in the therapeutic rural environment. These hospitals were for federal criminals, but also accepted voluntary patients. The medical approach was withdrawal through decreasing dosages of morphine (later replaced by methadone after World War II). The Second Report of the National Commission on Drugs and Drug Abuse states that the follow-up studies on voluntary patients showed that 9 of 10 relapsed. Other follow-up data was not collected.

Brill (1973) reports on the Riverside Experiment established in Riverside Hospital, New York in 1952. Riverside attempted to staff and administer the program along the lines of a psychiatric hospital. Therapeutic failure and widespread conduct disorder quickly tarnished early hopes. Trussel (1970) reports that in 1963, the institution was closed after a study revealed a 95% relapse rate.

The Second Report of the National Commission on Drugs and Drug Abuse states that the inability of the predominantly criminal approach to reduce or contain drug dependence became increasingly clear after punitive policies reached their peak in 1956. By the early sixties, interest in new therapeutic approaches grew, and new treatment methods began to emerge. In 1959, Synanon was born and a new treatment approach was born--the therapeutic community. The treatment was mainly psychological, characterized by group therapy with consistent, intense confrontations between members utilizing a rigid system of positive reinforcement for drug abstinence behavior, and punishment upon relapse. Other communities, patterned after Synanon, but differing in important details soon developed. De Long (1972) states that by 1970, 40-50 therapeutic communities existed with a combined enrollment of between 4,000 to 5,000.

For 1961 and 1962, California and New York established programs of civil commitment for opiate-dependents. Treatment involved withdrawal, psychiatric counseling, group therapy, and mandatory follow-up care. De Long (1972), in the report to the Ford Foundation summarizing the results of the New York Program, found success extremely small, and the results of the California program as maybe 1 of 6 cured.

In 1964, the pioneer work of the use of methadone was started. Nyswander and Dole began an experimental methadone maintenance program. The initial pilot program of 22

patients proved so successful that the program was expanded to 4,000. In 1967, an independent evaluation found the program remarkably successful, with a retention rate of 80%, and markedly improved social functioning of patients. Brill (1973) reports that by 1972, methadone maintenance had by far become the largest single modality of treatment for heroin dependence, with an estimated 70,000 patients.

The Second Report of the President's Commission on Marijuana and other Drugs reports that five common treatment types exist today. The first is hospitalization. This method consists of three stages. In the first stage lasting from one to two weeks, the patient is withdrawn from his or her dependence through steadily decreasing doses of oral methadone. The second stage, which lasts several months, is composed of individual psychiatric counseling, psychotherapy, group therapy, or work therapy. The third stage is supervised outpatient care in the community, where the patient lives. The report also states that this is the most expensive, and least effective method.

Ambulatory drug-free treatment is another method. A patient is withdrawn gradually, with the use of oral methadone. The patient may receive counseling on an outpatient basis, and his urine is monitored to control his drug usage. The Second Report of the President's Commission on Marijuana and other Drugs reports that this method has a similar success rate to hospitalization.

A third method is the therapeutic community. This method is a form of residential treatment which relies primarily on two complementary techniques of group therapy. The first is confrontation, or encounter group therapy. The second technique, a form of milieu therapy, is a hierarchical structure of authority, functioning, and privileges which attempts to internalize and strengthen the community values for a patient. Deitch (1973) reports that overall retention rates of therapeutic communities are low (9-10%) and that therapeutic communities are not significantly more effective than other methods.

Methadone maintenance by far is the most significant form of drug treatment currently available. This is ambulatory, with the patient maintained on a certain dosage of methadone.

The last common method is multi-modality programs which combine two or more treatment methods. Such programs include methadone maintenance, detoxification services, in-patient and out-patient drug-free treatment, and a therapeutic community. Brown (1973) reports that the Illinois Drug Abuse Program, one of the earliest and most diverse of the multi-modality methods, offer all of these methods plus more. He further reports that these programs have a higher retention rate due to being able to move patients easily from one treatment regimen to another.

## Methadone

Methadone is a synthetic chemical belonging to the class of narcotic analgesics. Freedman and Senay (1973) report that the main pharmacological properties of methadone are qualitatively similar to those of morphine. Methadone's analgesic activity is accompanied by sedation, depression of respiration and central nervous system activity, as well as relaxation of smooth muscle. Tolerance develops but at a much slower pace than morphine. Tolerance to methadone includes tolerance to other narcotics. Freedman and Senay (1973) report that a methadone dosage of 80-120 mg per day will block the euphoric effects of heroin.

Methadone can cause physiological dependence. Freedman and Senay (1973) report that the abstinence syndrome is slower in onset, milder, and more prolonged than abstinence from morphine. Blaine et al. (1973) report that other characteristic effects of methadone are longer duration of action, and retention of its effect when administered. Dole and Nyswander (1965, 1966, 1968) found that most individuals do not experience euphoria or other subjective effects. Blaine, et al. (1973) state that the euphoric appeal of heroin and the uncomfortable abstinence syndrome are virtually eliminated for over 24 hours. Due to the physiological properties and the psychological effects, methadone has emerged as a common method in the management of addiction.

Freedman and Senay (1973) report that two major modalities exist which employ methadone. These are detoxification and maintenance.

Isbell and Vogel (1949) were the first to study the effectiveness of methadone in the chemotherapy of narcotic detoxification. Their method was the subcutaneous injection of methadone twice daily, the amount of the drug was decreased in graded amounts over a 7 to 10 day period, after which a physiologically detoxified state was reached by the addict.

Since Isbell and Vogel (1949) many differing techniques of methadone detoxification have developed. Chambers (1973) groups these techniques into two major categories, in-patient withdrawal and ambulatory detoxification. Both require certain basic adjustments to be made for appropriate treatment. Treatment must take into consideration (1) size of habit, (2) existence of multiple drug dependency and (3) the patient's overall physical and psychiatric condition.

Freedman and Senay (1973) state that the goal of in-patient detoxification is to help an individual reach a drug-free state in a supportive and closely supervised environment which protects him from his old environment. For ambulatory withdrawal programs, Freedman and Senay (1973) state that the first major goal is to stabilize a client at a low dosage of 20-40 mg, and then to gradually reduce the dosage until a drug-free state is obtained, During the

treatment process, a great deal of stress is placed on helping the addict to learn or relearn old productive behavioral patterns. During the course of withdrawal, the patient must make a series of decisions to come back for treatment.

Chambers et al. (1973) report on the success rates of in-patient and ambulatory detoxification. They assert that cheating, in the form of administering heroin and illicit drugs can be expected from 50% of all patients in both groups. They state that most programs experience a 40-70% drop-out of therapy. Also, of those patients who complete these programs, less than half do not soon revert back to heroin use.

Freedman and Senay (1973) attribute the origin of methadone in treatment for narcotic addicts to Dr. Vincent P. Dole. They report that through their early work, Dole and Nyswander developed a methadone maintenance model based on the assumption that during the development of addiction to heroin, certain dramatic metabolic changes took place in the addict. Freedman and Senay (1973) report that Dole and Nyswander listed the following advantages of methadone: (1) the drug can be taken orally, (2) it has an extended duration of action (from 24 to 36 hours), (3) no serious side effects are seen at maintenance levels, (4) at sufficient dose levels, methadone will "block" the effects of heroin, and (5) administered therapeutically methadone does not produce euphoric effects. Overall, the Dole-Nyswander approach was high dosage maintenance.



As other programs developed, addicts appeared who did not need high dosages or prolonged maintenance. Brill (1973) reports that in the Philadelphia program, drug craving for several patients could be suppressed at low-dose levels of up to 40 mg. Further along this topic Goldstein (1972) concluded that the dose of methadone is largely irrelevant, that methadone facilitates a behavioral change in people who desire change.

Freedman and Senay (1973) report on a new treatment approach with methadone--the concept of methadone temporary support. This provides short term maintenance at a fix-low dose with slow withdrawal being carried out from six months to a year.

In summary, heroin, heroin addiction, heroin addiction treatment, methadone, and varied methadone based treatment models have been described. The intent is to provide a basic framework and background for this study. Next, is an examination of two specific areas directly related to the study. First, information regarding methadone detoxification, and then information about relaxation training is detailed.

## Methadone Detoxification

In this author's review, the methadone detoxification literature usually appears to fall into the following areas: (1) variables involved in successful withdrawal; (2) variables involved in the failure of withdrawal and; (3) characteristics of the withdrawal process. A considerable portion of the literature is descriptive or case study oriented. Experimental design research is only beginning to be undertaken.

Patients have a variety of reactions to methadone withdrawal, but studies show certain commonalities. Cushman and Dole (1973) report that a subjective syndrome was reported by 93% of 48 patients in their study. Sleep disturbances, restlessness, malaise, pain and fatigue were the predominant symptoms reported. The threshold for the appearance of this syndrome was a 0 to 40 mg dosage.

Kremer and Boyer (1973) found in a study that both those who completed detoxification and those who failed experienced a number of physical and psychological symptoms. These symptoms were not necessarily related to a specific dosage, nor to a specific length of time, but most patients experienced some difficulty at the 20 mg dose level. Eleven of twenty-one reported relief. Seventeen of twenty-one reported sleeplessness. Eighteen of twenty-one reported pain in joints. Sixteen of twenty-one reported weakness. Seventeen of twenty-one reported worry.

Chappel and Senay (1973) in a study of varying techniques of withdrawal from methadone involving 304 subjects,

report several characteristics of the process. They report an apparent lowering of resistance, with the frequent development of colds, strep throats, infections of various kinds, toothaches, and even spontaneous abortions. Secondly, they report psychosomatic problems such as: aching joints, twitching, nausea, and vomiting, itching, and weakness. Thirdly, they report behavioral problems such as: heavy drinking, smoking, eating, use of non-narcotic drugs, a tendency to argue and fight with people, and other impulsive acting out behavior. They also report that underlying the other three are the psychological problems. The psychological problems are anxiety and depression with insomnia, frigidity, impotence, accidents and anger.

Lowinsin and Langrod (1973); Riordan and Rapkin (1972); and Chapel and Senay (1972), found that patients, as their methadone decreases, suffer loss of appetite, depression, insomnia, and irritability. The authors also state that patients' relationships are strained, that many abuse alcohol and other drugs, and several develop personal problems. They state that one cannot assume that symptoms are due to anxiety, although this may be the primary factor.

Williams, Hicks, and Williams (1973), in a paper on physical versus psychological dependency, enumerate symptoms that counselors at an Atlanta, Georgia, drug abuse program saw during a period of six months. They reported that detoxification causes more concern than any other part of treatment.

The primary symptoms were nervous tension, insomnia, crying, and irritability.

The following studies relate variables involved in successful completion and non-successful completion of the detoxification process. Strelinger et al. (1973), in detoxifying 27 patients in a residential setting over 21 days, found a very high readdiction rate. They hypothesized that the high readdictive rate was due to failures in the residential treatment variables. These variables were insufficient preparation for return to the community, failure in redirecting patients, and too lax therapy. Also, another variable was that many patients reported they were still experiencing a withdrawal when discharged.

Jackman (1973) proposes a hypothesis concerning the difficulty of withdrawing from methadone from his experience as director of the Westside Drug Treatment Program in San Francisco. He states that methadone appears to not only block the heroin craving, but more importantly, to provide some type of blockade against the emotional reality of everyday living, including particularly anxiety. Jackman states that extensive talking with eleven different patients revealed that they appeared to be experiencing disorientation, anxiety, and a general high level of stress, which appeared to be quite separate from the notion of withdrawal.

Cushman and Dole (1973) conducted a study to examine the process of detoxification and the fate of patients suc-

cessfully detoxified. Cushman and Dole attempted to detoxify 27 methadone maintenance patients who had ceased participation in the drug sub-culture, and had assumed responsible roles in the drug-free world. Four categories of response were evident. Group I was comprised of 3 patients who discontinued detoxification at doses above 30 mg per day. These patients reported anxieties usually centering around methadone without incidence of the narcotic withdrawal syndrome as the reasons for discontinuing detoxification. Group II was composed of 4 patients who discontinued detoxification at doses between 10-28 mg of methadone. These patients reported the discomforts of the withdrawal syndrome as the reasons for discontinuing detoxification. Group III consisted of 10 patients who successfully completed detoxification. However, all 10 patients in Group III were placed back on methadone within 2 months of completing detoxification. Four were placed back on methadone due to engaging again in illicit narcotic usage. The other 6 were placed back on methadone due to complaints concerning the withdrawal syndrome. Group IV was made up of 10 patients who successfully completed detoxification and were drug-free at the time of the follow-up, which varied from 2-30 months.

Kreme and Boyer (1973) in a study on planned, voluntary long-term detoxification found that 17 of 31 actually completed the detoxification process. They divided their findings into several areas. For the successful group, time

elements were explored. The results were 12 completed detoxification in 1-2 months, 8 in 3-5 months, and 1 in 6-8 months. They found that among the reasons for beginning detoxification, patients who completed detoxification tended to be more concerned with achieving total drug abstinence and more disturbed by the side effects of methadone than those who reversed their decision. Dissatisfaction with rules and program operation seemed to play a lesser role for patients who completed detoxification than those who didn't.

Chapel and Senay, (1973) in a study involving varying techniques of withdrawal created five groups. Group I, with 28 subjects, attempted a non-therapeutic withdrawal against the advice of clinic staff. Group II, with 109 subjects, attempted withdrawal in cooperation with clinic staff with normal support. Group III, <sup>with</sup> 47 subjects attempted withdrawal with normal support, plus a weekly withdrawal group run by a psychiatrist or a psychologist, plus a staff who was a former addict. Group IV, with 60 subjects, attempted withdrawal in residential settings, where they agreed to stay at least 30 days. Group V, with 115 subjects, was a methadone control group. Twenty-nine percent of Group I, 52% of Group II, 51% of Group III, 67% of Group IV, and 35% of Group V successfully completed the detoxification process. No test of significance was reported.

Lowinson and Langrad (1973) in a study of detoxifi-

cation of long term methadone patients, involving 228 patients, found that 28% successfully completed the detoxification process. They reported that detoxification appears most successful with socially well-adjusted patients who have adequate strengths and tolerance to stress.

Chambers, Cushy, and Wieland (1970) assessed the background characteristics of addicted patients who either remained in, or dropped out of an out-patient methadone detoxification treatment program. The study found that 68.6% of the 86 addicts involved did not successfully complete detoxification. Variables in two demographic areas produced evidence of a significant difference. First, the greater amount of formal education, the greater the potential for success. Secondly, those addicts who were married at the time of initiating treatment were more likely to terminate treatment prior to detoxification. The study also found that the subjects who were abusing other drugs with heroin at the initiation of the detoxification process more frequently remained in treatment than the subjects who abused heroin alone.

Lloyd et al. (1973) in a detoxification study of 525 patients found 15.3% successfully completed the detoxification process. They did not explore any variables in relation to the process.

The finding that only a small percentage of patients who enter detoxification successfully complete the detoxification process is consistent in the literature. Cushman and

Dole (1973) found 36% completed. Kremer and Boyer (1973) found 55% completed. Chapel and Senay (1973) found the varying percentages of 29%, 52%, 51%, 67% and 35%. Lowinson and Langrad (1973) found 15.3% completed. Chambers, Cushy, and Wieland (1970) found 31.4% completed

The finding that anxiety is present during withdrawal from methadone, and possibly could be a primary factor in patients' failure to complete the detoxification process is consistent in the literature. Cushman and Dole (1973) cite restlessness and sleep disturbances. Kremer and Boyer (1973) cite sleeplessness and worry. Lowinson, Langrad, and Einstein (1973); Riordan and Rapkin (1972) and Chappel and Senay (1972) conclude that anxiety may be a primary factor in the withdrawal syndrome. Williams, Hicks, and Williams (1973) report primary symptoms of nervous tension and insomnia. Jackman (1973) hypothesizes that anxiety and a general high level of stress are responsible for many detoxifications being incomplete. One might conclude that anxiety and how it is handled during detoxification might have a relationship with the low completion percentage for detoxification.

### Relaxation Training

The pioneer of relaxation training was Edmund Jacobson. Jacobson (1938) concluded that there is tension involved in the effort associated with the shortening of muscle fibers, and that this tension occurred when a person reported "anxiety." Relaxation of muscle fibers was seen as the direct



physiological opposite of tension. Jacobson then concluded that anxiety could be removed by eliminating the tension and that relaxation was a logical treatment for anxiety. He found that a person might completely eliminate muscle contractions and experience a feeling of deep relaxation by learning to attend to and discriminate the resulting sensations of tension and relaxation from a systematic tensing and releasing of various muscle groups. Bernstein and Borkovec (1973) report that as of 1962, basic relaxation procedures involved fifteen muscle groups. Each group was learned during daily sessions of from one to nine hours' duration before proceeding to the next group, for a total of fifty-six sessions of systematic training.

Bernstein and Borkovec (1973) report that the second phase of development of relaxation training began with Joseph Wolpe's work. Wolpe combined counterconditioning and progressive relaxation. Wolpe developed a more efficient relaxation program and placed treatment emphasis on the circumstances surrounding the occurrences of anxiety. Wolpe (1958) outlined systematic desensitization as a process in which relaxation became an aspect of a structured program of reconditioning.

Bernstein and Borkovec (1973) state recent trends have been toward (1) specification of more efficient training situations, (2) more refined measurement of the physiological effects of relaxation, and (3) determination of the

behavioral problems most suited to treatment by relaxation training. These authors state that relaxation is now used (1) in Wolpe's systematic desensitization technique, (2) in covert sensitization, (3) in differential relaxation, and (4) in anxiety relief techniques.

Paul (1969) examined the effects of relaxation training compared with relaxation by hypnotic suggestion and relaxation by oneself. In this study, 1/3 of the total 60 subjects were trained in progressive relaxation, 1/3 received direct hypnotic suggestion designed to produce relaxation, and the remaining 1/3 of the subjects were simply told to sit quietly and relax. Paul reports that progressive relaxation is superior to hypnotically induced or self-induced relaxation based on self-reports and certain physiological measures.

Paul (1969) attempted to assess the relationship between successful relaxation performance and various personality characteristics. The Pittsburg Social Extraversion-Introversion & Emotionality Scales were administered to subjects prior to the experimental procedures. These personality scores were correlated with self-reported anxiety and physiological measures of anxiety which included muscle tension, heart rate, skin conductance, and respiration rate. Subjects were then placed in the 3 experimental groups: relaxation, hypnosis, and self-control. Paul concluded that responsiveness to relaxation or hypnotic procedures

is not related to the personality dimension of extraversion or introversion.

Paul (1969c) attempted to evaluate the use of progressive relaxation in decreasing physiological response to stressful imagery. Imagery data were collected on the sixty subjects mentioned previously, and composite physiological responses to the stress scene, visualized before and after training were examined. Paul concluded that relaxation (progressive or hypnotic) does produce inhibition of physiological response to stressful visualizations.

Paul and Trimble (1970) examined the effect of tape-recorded versus live relaxation training. Thirty subjects were assigned to one of three treatment conditions: progressive relaxation, hypnotically induced relaxation, and self-relaxation control. All training was conducted solely via tape-recorded instructions. Self-reported anxiety and certain physiological measurements were used. The results are compared with previous studies involving live training. The live training approach proved significantly more effective than the taped method in progressive relaxation. No significant differences were found among the outcomes of the other groups.

Bernstein and Borkovec (1973) state that very little experimental research on progressive relaxation as a possible application to various target behaviors has taken place. The authors cite several studies whose techniques resemble

hypnotic suggestion, but due to Paul's studies, one can suggest that progressive relaxation would have similar effects. The studies follow. Straughan and Dufort (1969) investigated the effects of verbally-induced relaxation on the verbal learning and recall abilities in low and high anxiety subjects. The results suggest two implications. First, the studies require clients who are truly anxious and second, verbal learning will be influenced by the anxiety level of the client and the degree of relaxation in the atmosphere provided by the therapist.

Graziano and Kean (1968) applied relaxation techniques to psychotic children. They found relaxation training applied using operant procedures to subjects exhibiting tantrum behavior reduced the frequency, duration, and intensity of tantrum behavior. Operant procedures, alone, reduced duration and intensity, but not the frequency of tantrum behavior.

Kahn, Baker, and Weiss (1968) used self-hypnotically-induced relaxation to treat college students reporting chronic insomnia. Greer and Kathin (1966) reported the successful treatment of severe insomnia via relaxation and systematic desensitization. Steinmark and Borkovec (1973) applied relaxation techniques to a group of college students experiencing sleep disturbances. All these studies report success in remission of symptomology using the relaxation technique. However, the literature does not suggest the precise role played by the relaxation training in producing these outcomes.

Bernstein and Borkovec (1973) proposed using case examples, the types of clients and problems suitable for progressive relaxation training. The authors state that relaxation may be used to (1) reduce tension for therapy communication, (2) aid clients with tension-caused illness, and (3) eliminate insomnia.

High anxiety has been shown to be present during detoxification from methadone and as a possible primary factor in non-completion of the detoxification process. Relaxation training has been shown to reduce anxiety in certain situations. On this basis, the present author concluded that it was appropriate to apply relaxation training to the process of detoxification from methadone.

### Purpose of Study

The purpose of this study was to examine the process of withdrawal from methadone. This study compared two groups of patients slowly withdrawing or detoxing from methadone. The experimental group experienced relaxation training while the control group did not.

## Chapter II

### METHOD

#### Subjects

The subjects were 26 outpatient clients enrolled in Stonehedge Foundation. Stonehedge is a treatment center for drug addiction and drug abuse located in Peoria, Illinois. Stonehedge offers multimodality treatment. These modalities are chemotherapy, methadone maintenance, methadone detoxification, abstinence, vocational counseling, individual counseling, and group counseling. Stonehedge attempts to manage and cure the physical addiction plus provide opportunities for an individual to change his/her drug oriented life style to a drug free productive life style.

The characteristics of the subjects were quite varied. All subjects were residing in Peoria County, Illinois. The age range was from 18-64 with a mean age of 24. The subjects racial composition consisted of 18 blacks, 7 caucasians, and one Puerto Rican. Eleven were employed and fifteen were unemployed. Education level varied from 8 years to 15 years. Each subject was addicted to heroin for a minimum of two years and was receiving methadone at Stonehedge.

## Study Design

This study examined the process of methadone detoxification of two groups of subjects enrolled in a heroin treatment program. Twenty-six subjects were randomly divided and assigned to an experimental or control group. At the outset, each subject was receiving a daily dosage of oral methadone between 18-22 mg. The experimental group was assigned a series of relaxation training sessions, while the control group did not experience the relaxation training. All other treatment program related variables remained constant for clients in the two groups.

The dispensation of methadone followed all Federal Food and Drug Administration regulations. The management of each subject's methadone regimen was characterized by the following procedures. (1) Each decrease in methadone dosage was requested or approved by the client. The client controlled the rate of withdrawal, no dosage schedule was imposed on a subject. (2) Dosage reduction was gradual. Decreases did not exceed 5 mg per week. (3) Subjects were unaware as to their exact dosage of methadone, but were informed of the direction of dosage change. (4) The liquid vehicle was continued after 0 mg was reached for two weeks. All subjects received medical approval and permission before entering detoxification.

Relaxation training began between 18-22 mg dosage level. The training sessions followed the sequence of procedures reported in Appendix I. The relaxation training



sessions were conducted by two staff counselors of the clinic. Subjects in the experimental group were randomly assigned to one of the two counselors. The relaxation training occurred at Stonehedge's heroin treatment unit in Peoria.

Noncompletion of the methadone detoxification process was defined by the occurrence of any one of the following: (1) subject terminated from the program due to no show or expulsion; (2) subject returned to a methadone maintenance regimen by the medical staff; (3) subject's urine specimens during the last two weeks of detoxification and the first two weeks of abstinence showed positive morphine; or (4) subject continued to ingest methadone at a level above 5 mg per day within 20 weeks of being at a daily dosage of 18-22 mg.

Completion of the detoxification process was defined by the following: (1) the subject ceased to ingest methadone after reaching a plateau of between 1-5 mg per day within 20 weeks of being at a dosage of 18-22 mg and (2) the subject's urine specimens during the last two weeks of detoxification and the first two weeks of abstinence showed no positive results for methadone.

Urinalysis was conducted on three weekly monitored specimens. The urinalysis was conducted at Stonehedge by a State of Illinois approved technician and on State of Illinois approved urinalysis apparatus.

## Chapter III

## RESULTS

In the experimental group nine subjects completed detoxification, four subjects did not. In the control group two subjects completed detoxification and 11 did not. The results were analyzed for significance with the chi-square with Yate's correction. A significant relationship was found between the two groups. A significantly higher number of subjects in the experimental group as compared to the number of subjects in the control group completed methadone detoxification. ( $X^2=5.67$ ,  $df=1$ ,  $p .05$ ) Table 1 illustrates these results.

Table 1

Completion and Noncompletion of Methadone  
Detoxification by the Experimental and Control Group

Group	Completion	Noncompletion	Total
Experimental	9	4	13
Control	2	11	13
Total	11	15	26
df	$x^2$	level of significance	
1	5.67	p .05	

## Chapter IV

## DISCUSSION

The fact that this study found a significant relationship between the subjects who received relaxation training and the successful completion of methadone detoxification has several possible implications. Many studies have stated that anxiety is a major symptom of detoxification. Cushman and Dole (1973) reported that 93% of 48 patients experienced restlessness and sleep disturbances as predominate symptoms of methadone detoxification. Kremer and Boyer (1973) reported that 17 of 21 patients experienced sleeplessness and worry. Chappel and Senay (1973) in a study involving 304 subjects reported anxiety as a major symptom. Lowinson and Langrad (1973); Riordan (1972); and Chappel (1972) reported that anxiety may be a primary factor in the detrimental side effects of methadone detoxification. Williams, Hicks, and Williams (1973) reported that a primary symptom of methadone detoxification was nervous tension. Jackman (1973) hypothesized that anxiety was a crucial variable in methadone detoxification. This study showed that systematic relaxation training is a possible therapeutic tool to help an individual deal with the situational anxiety associated with methadone detoxification. Also, this study showed that relaxation training presents an alternative to the present common practice of managing the side effects of methadone detoxification with chemotherapy, i.e. valium, librium.

The present study found that 69% of the group which received relaxation training completed methadone detoxification. In comparison with other studies, this is a significant percentage. Kremer and Boyer (1973) reported that 17 of 31 subjects successfully completed methadone detoxification or 55%. Chapel and Senay (1973) reported these percentages of completion with different groups: Group I 29%, Group II 52%, Group III 51%, Group IV 67%, Group V 35%. (Group IV was in a residential setting.) Lowinson, Langrad, and Einstein (1973) found that 28% of 228 completed methadone detoxification. Chambers, Cusky, and Wieland (1970) found that 32.4% of 86 subjects completed methadone detoxification. Lloyd et al. (1973) found that 15.3% of 525 completed detoxification. The results of the present study showed that relaxation training raised the probability of an individual completing methadone detoxification.

Several limitations existed for this study. No subjects from the experimental group completed all sessions of systematic relaxation training. Table 2 illustrates the number of sessions completed by subjects. This fact raised the possibility that the experimental subjects, being exposed to the fact that anxiety is present during detoxification and that relaxation is important, may have had an effect on the higher completion rate of methadone detoxification. The counselors reported that the subjects in the experimental group did mention on a regular basis the relaxation training

Table 2  
 Number of Sessions of Relaxation  
 Training Completed by Subjects

Sessions	1	2	3	4	5	6	7	8	9	10
Number of subjects	2	5	1	4	0	1	0	0	0	0

and did report that they were using it. The present author believes that an implication from this might be that a shorter and not as elaborate system of relaxation training could be effective.

Another possible limitation of this study was the fact that the groups were not matched but randomly assigned. Certain normative data about each group is illustrated in Table 3.

Table 3  
 Certain Normative Data Concerning  
 the Experimental and Control Groups

Normative data	Control	Experimental	Total
Male	12	12	24
Female	1	1	2
18-25 years old	6	4	10
25-30 years old	3	3	6
30-35 years old	2	4	6
35 & up years old	2	2	4
Married	7	9	16
Divorced	1	1	2

Single	5	3	8
Black	9	9	18
Caucasian	4	3	7
Other	0	1	1
0-6 months on methadone	3	6	9
6-12 months on methadone	5	4	9
12 months on methadone	5	3	8
2-4 years of heroin use	7	6	13
4-8 years of heroin use	1	5	6
8 years of heroin use	5	2	7
8-10 years of education	0	2	2
10-12 years of education	3	4	7
12 years of education	10	7	17
employed	5	6	11
unemployed	8	7	15

In conclusion, it is important that one view this study not as an attempt to find a cure for heroin addiction. Treatment for addiction is very complex and involves many components. This study is an attempt to improve a component, namely methadone detoxification. The present author hopes that this study may stimulate further research. The need for replicating this study plus applying this approach to a larger number of subjects is important.

## Appendix 1

Relaxation training began between the 18-20 mg dosage level. Two training sessions were planned weekly. Two outpatient staff counselors conducted the training sessions. The training sessions took place at Stonehedge's facility in Peoria.

The relaxation training was conducted according to the following procedures. The first session mainly centered around the reason for relaxation training and the rationale supportive of relaxation training. The counselor first explained to the client the reason for the use of relaxation training. The counselor closely followed this explanation, "You are detoxing. This can be a highly anxious time. You can get nervous, uptight, tense, and edgy. You might experience some difficulty in sleeping. These feelings may make it difficult for you to complete detoxification. Since getting off methadone is one of your important goals, we, at the clinic, wish to do everything we can to help you detox. This relaxation training is aimed at helping you handle and control your tension and uptightness." The counselor at this point asked the client if he had any questions. The counselor put off until later any questions specifically about the training. After the counselor ascertained that the client recognized that tension might be part of the problem, he continued with the session.

The second part of the first session centered around a rationale for relaxation training. The counselor related to the client a rationale closely following this one: "Relaxation training has been around since 1930, when a psychologist, first,



invented it. Over the years, relaxation training has been considerably improved. Basically, relaxation consists of learning the difference between the muscles feeling tight and the muscles feeling relaxed.

Learning relaxation is like learning any other skill, such as driving a car, or playing basketball. You get better by practicing, and if you want to learn, you learn quicker. Without your cooperation and regular practice, learning to relax will be very difficult."

Part of what we will be doing in these sessions will be tensing or tightening muscles and then relaxing them. We tighten muscles so that you can learn to know the feelings. Our goal is that when you feel uptight and your muscles are tight, you can recognize the feeling and be clearly aware of what tension feels like in all areas of your body. After tightening the muscles, you will loosen them and feel the difference between tight muscles and loose muscles.

Do you have any questions? (Questions were answered about rationale, but specific procedure questions were deferred until later.)"

The counselor then moved on to the third part of the first session. This part was the beginning of the actual training in relaxation. The counselor followed this procedure.

"Now, I am going to ask you to remove your shoes and any jewelry you have on. Please, lay on this couch and get completely comfortable. The purpose of this first session is to

help you become aware of the feeling of being deeply relaxed. We are going to go over tightening and relaxing 16 different muscle groups. At this point, we have 16, but as we continue and your skills get better, this number will be reduced.

After I tell you to tighten certain muscles, you should tighten them until I say ok relax. Then, I want you to signal me by moving your index finger when these muscles and any muscles we have relaxed all feel completely relaxed. At that point, you should only think about how those muscles feel when relaxed, and the difference between them being tensed and being relaxed. After some time, I will give you instructions for tensing the next group of muscles. You should tense the new group, while leaving the last group as relaxed as possible. We will do this for all sixteen groups. Try to keep your mind from wandering the best you can. Any questions that you have once we get started, save until we have completely finished all groups. Now, do you have any questions?"

At this point, the counselor answered any questions that the subject had. Once the counselor had done this, he then began the relaxation training which closely followed this protocol.

"Ok, let's begin. Now, lay back and close your eyes. Now, I'd like you to focus all of your attention on the muscles of your right hand and lower arms. Alright, by making a tight fist, I'd like you to tense the muscles in the right hand and lower arm now."

At this point, the counselor had the client hold the tension for 5-7 seconds. During this interval, the counselor aided the client in focusing on the feelings associated with tension by making the following statements. "Feel the muscles pull; notice what it's like to feel tension in these muscles as they pull and remain hard and tight."

After the 5-7 seconds of tension, the counselor terminated the tension period with "ok, relax." At this point, the muscle group was released, and the counselor attempted to keep the client's attention focused on the feelings of relaxation. (The relaxation period for a muscle group was 30-40 seconds). The counselor did this by making the following statements. "Just let these muscles go, noticing the difference between tension and relaxation, focusing on the feeling in this muscle group as it becomes more and more relaxed. Relax; let all the tension go, be aware of the muscles and what it feels like as they become more and more relaxed. Notice the difference between these muscles feeling tense and feeling relaxed and loose. Enjoy the feeling of the muscles being relaxed. Let them relax and enjoy." All statements during this period made by the counselor consisted of indirect statements designed to encourage the client to focus attention on the muscle group being relaxed.

After the 30-40 seconds of relaxation, the tension-release cycle was repeated following the same verbal pattern. This time the release or relaxation period was 45-60 seconds long. After the training had begun, the counselor could decide if the

second cycle was necessary.

To determine if the muscles of a particular group were relaxed, at the end of the release period the therapist asked the client to signal with this statement. "Alright, if the muscles in the right hand and right lower arm feel completely relaxed, I'd like you to signal by lifting the little finger on the right hand." For all but the initial hand and forearm group, this was the statement: "If the muscles of \_\_\_\_\_ are as deeply relaxed as the muscles of \_\_\_\_\_, please signal to me."

If the client signaled, indicating that the group was completely relaxed, the counselor said, "Good, just allow these muscles to go right on relaxing, and shift all your attention to the next muscle group, the right biceps." Then the entire procedure was repeated, with each following group, with the appropriate tensing exercise.

The counselor was instructed to look for non-verbal clues to assess the extent of relaxation. These clues were (1) whether or not client was digesting, (2) whether breathing was slow and regular, (3) whether the client was opening or closing eyes, (4) whether the client was attempting to talk, and (5) whether other counter-relaxation clues were present.

In the case of failure to get a relaxation signal after going through two tension-release cycles, the standard procedure was to repeat the tension-release cycle and to request a signal for relaxation. This procedure could be repeated up

to 5 times. If relaxation wasn't achieved, counselor moved on and discussed the problem later.

The counselor followed the above procedure for all sixteen groups, with one exception. The counselor's verbal behavior was modified with the chest, upper shoulders, and upper back muscle group. The counselor added this verbal statement to the relaxation period. "Notice the slow and regular breathing." Also, in the tensing periods from this point, the counselor made the following statement. "Ok, take a deep breath and make these muscles hard. I'd like you to tense the muscles in the \_\_\_\_\_, now."

After the client had signaled relaxation for each of the sixteen muscle groups, the counselor gave a report of the muscles which had been relaxed, and an instruction to allow them to continue to relax with this statement, "Ok, now, we've relaxed the muscles in the arms and hands; just allow them to continue relaxing. We've relaxed the muscles in the face and neck; go on allowing them to remain deeply relaxed. We've relaxed the muscles of the chest, the shoulders, the upper back, the abdomen; allow these muscles now to become even more deeply relaxed. We've relaxed the muscles of the legs and feet; just allow these muscles now to remain deeply and completely relaxed."

Next, the counselor assessed the client's state of relaxation by offering the following statement. "Now, I would like you to signal if you feel the slightest bit of tension in any

muscle group anywhere in the body." If the client did not signal, the counselor said, "Ok, I'd like you to signal if you feel completely relaxed all through the body." If the client signaled, the counselor terminated according to the procedures outlined below.

If the client did not indicate complete relaxation, the counselor began to attempt to locate the muscle group still experiencing tension with the following statements. "I will name separately the sixteen muscle groups. You should signal at the mention of a muscle group which has not achieved complete relaxation." The counselor began to signal the muscle groups until all sources of tension had been located. At this point, the counselor began the specific tension-relaxation procedure for the muscle group (or groups) until relaxation of the group has been achieved. The counselor then obtained a signal whether all muscle groups were relaxed.

When the counselor had ascertained that the client was completely relaxed, he allowed a two-minute period of complete relaxation. During this time, the counselor, at 20-second intervals, made indirect suggestions designed to keep the client's attention focused on the relaxation.

The counselor began to terminate the session with the following statements. "I will count backward from 4-1. On the count of 4, begin to move your legs and feet. On the count 3, begin to move your arms and hands. On the count of 2, move your head and neck. On the count of 1, begin to open your eyes. Then

on the count of 1, I'll ask you to open your eyes, feeling quite calm and relaxed, very pleasantly relaxed, just as if you had had a brief nap. 4....., 3....., 2....., 1, open your eyes; feel quite calm and relaxed, very pleasantly relaxed, just as if you had had a brief nap."

At that point, the counselor began a series of post-session questions. The first question was the following open-ended question. "How do you feel?" The counselor was instructed to pay close attention to the answer and to use the answer as a measure of the client's overall reaction. The counselor next turned to questions about any problems that occurred during the session, for example, "What was the trouble in getting the neck muscles relaxed?" The counselor was instructed to attempt to pinpoint any specific problems.

If the client did have problems, the counselor sought some resolution of them. The counselor was instructed to be concerned with eliminating problems so that the relaxation procedures could become routine and trouble-free.

After the above questions, the counselor asked this question next. "Please describe, in your own words, what relaxation feels like." The counselor was instructed to take note of the client's answer, and incorporate how the client described his feelings into the counselor's verbal indirect suggestion during subsequent relaxation training sessions.

The final part of this session was discussing and assigning homework assignments. The counselor gave the following

explanation. "Now, I am asking you to practice at least once a day for 15-20 minutes what we have done today. Remember, in the beginning I said that relaxation was a skill which you would learn. Learning takes practice. Just as you learned to shoot-up, you can learn to relax.

This practicing on your own gives you the chance to look closely at the sensations in your body. These practices will also help you learn more quickly.

Now we need to talk about where a good place to practice is, and some other things."

At this point, the counselor engaged the client in a discussion concerning the best place in the client's residence for practice. Also, the counselor talked about several conditions necessary for practice. These were (1) the client being in a place where he is unlikely to be interrupted, (2) the use of an appropriate chair or bed, and (3) a time when the least amount of pressure exists for the client.

After this practice was set, the counselor and client agreed on the next meeting, and the session was finished.



The sixteen muscle groups and their tensing strategies are listed below. This was also the order of presentation in a session.

<u>Muscle Group</u>	<u>Tensing Strategy</u>
1. dominant hand & lower arm	making a tight fist
2. dominant biceps	pushing elbow down
3. non-dominant hand & lower arm	making a tight fist
4. non-dominant biceps	pushing elbow down
5. forehead	lifting eyebrows as high as possible
6. central face	squint and wrinkle nose
7. lower face & jaw	bite hard & pull back the corners of mouth
8. neck	pull chin toward chest & keep it from touching chest
9. chest, shoulder & upper back	pull shoulder blades together
10. abdomen	make stomach hard
11. dominant upper leg	counterpose top & bottom muscles
12. dominant calf	pull toes toward head
13. dominant foot	point & curl toes, turning foot inward
14. non-dominant upper leg	counterpose top & bottom muscles
15. non-dominant calf	pull toes toward head
16. non-dominant foot	point & curl toes, turning foot inward

When the client was capable of achieving deep relaxation with tension-release cycles in sixteen muscle groups, the counselor began a series of procedures designed to decrease the amount of time and physical exertion necessary to achieve deep relaxation. The counselor used the following criteria as a measure that deep relaxation had been achieved in the sixteen muscle groups. First, the client's verbal reports were used as a measure. Second, a decreasing frequency of the client's body movements in sessions was used. Thirdly, if relaxation had been achieved, the jaw would be slack, and the feet would turn away at a 45 degree angle. Lastly, the counselor's subjective opinion was used as a measure. If evidence existed that the client had achieved reasonable relaxation, the counselor moved to the next plateau, which was relaxation procedures for seven muscle groups.

The counselor informed the client of the change, and gave an explanation of the new muscle groups. The verbal behavior of the counselor was identical to the tension-release cycles of the sixteen muscle group procedures. The muscle groups and tensing strategies for seven muscle groups are listed in Table II.

TABLE II

1. dominant arm	the hand makes a fist as the elbow presses down
2. non-dominant arm	same as #1
3. face (includes 3 facial areas)	raise eyebrows, squint eyes, wrinkle the nose, bite down, pull corners of the mouth back
4. neck & throat	pull chin toward chest & keep chin from touching chest
5. chest, shoulders, upper back & abdomen	holding a deep breath, pulling shoulder blades back & making stomach hard
6. dominant thigh, foot & calf	lift leg slightly, point toes & turn foot inward
7. non-dominant thigh, foot & calf	same as #6

At the end of the session, the counselor followed a similar line of questioning, as at the end of the sixteen-muscle group session. Also, practice sessions were assigned along the same manner as with the 16-muscle group procedures.

After two sessions, and at least one week of practice sessions, the counselor evaluated whether the client had achieved reasonable mastery of the seven-muscle group procedures or not. The evaluation criteria was the same as for the 16-muscle group procedures. After the client had reasonable mastery of the seven muscle group procedures, the four muscle group procedures began.

The procedures for the four-muscle group were to be identical to the procedures outlined for the 7-muscle groups. These included a beginning explanation, the tensing relaxation part, questioning, and home practice. The muscle groups and tensing strategies are listed in Table III.

TABLE III

1. right & left arms	making fists with both hands & pushing both elbows down
2. face & neck	raise eyebrows, squint eyes, wrinkle the nose, bite down, & pull the corners of the mouth back. pull chin toward chest & keep it from touching chest
3. chest, shoulders, back, and abdomen	same as in Seven group
4. left & right upper legs, calves & feet	lift both legs slightly, point toes, & turn foot inward

After a minimum of two sessions and a week of practice, the counselor was to evaluate whether the client had achieved mastery of the four muscle group procedures. The evaluation criteria was to be the same as for the 16 muscle group procedures. After the client had achieved reasonable mastery of the four muscle group procedures, the four muscle group recall procedures would have been initiated.

In the four muscle group recall procedures, the counselor's first task was to explain the new procedures. The counselor would have closely followed this explanation. "In this procedure, you (client) will not be required to tighten your muscles, but to recall or remember the feelings of relaxation. The muscle groups will be the same as the last set of procedures. We will go from muscle group to muscle group, and I will ask you to focus your attention on a particular muscle group. After you recognize the tension, I will ask you to recall the feelings associated with the release of that tension. Thus, through

you remembering how the group became relaxed, you will be able to relax the group. Do you have any questions?"

At this point, the counselor would have answered any questions which the client might have had.

The counselor as to closely follow the procedures below when he began the training.

"Please make yourself comfortable as you have in other sessions. Ok, now, I'd like you to focus all your attention on the muscles of the arms and hands and very carefully identify any feelings of tightness or tension that might be present now. Notice where the tension is, and what it feels like."

After the client had focused his attention on the tension, the counselor would have begun the relaxation cycle. "Ok, relax, just recall what it was like when you released these muscles; just let them go, and allow them to become more and more deeply relaxed." The counselor would have continued with indirect suggestion chatter for 35-40 seconds. At the conclusion of the 30-45 seconds of indirect relaxation, the counselor would have asked for a signal from the client, ascertaining whether the particular muscle group feels completely relaxed. If the client signaled, the counselor would have proceeded to the next muscle group. If the client did not signal relaxation, the counselor would have repeated the procedures for the particular muscle group.

The session was to be concluded with the counselor asking questions assessing the procedure and assigning this procedure

to practice. The assessment and practice procedures were to be identical to previous muscle groups.

After a minimum of two sessions and a week of practice, the counselor was to evaluate whether the client had achieved reasonable mastery of the four muscle group recall procedures or not. The evaluation criteria was to be the same as for the previous groups. After the client had achieved reasonable mastery of the four group muscle recall procedures, relaxation by recall with counting would have been introduced.

In the recall with counting procedures, the counselor's first task would have been to explain the new procedures. The counselor was to closely follow this explanation, "This procedure will be the same as the four group muscle recall procedures with the addition of something new at the end. This addition will allow you to become relaxed even more deeply. After you become completely relaxed, and we have completed all groups, I will count from one to ten. As I count, I'd like you to allow all the muscles all through your body to become even more deeply and more completely relaxed on each count. Just focus your attention on all the muscles in your body, and notice them as they become even more and more deeply relaxed as I count from one to ten."

The counselor was to begin the training by following the procedures for the four muscle group recall. At the end of those procedures, the counselor was to adhere closely to the following protocol. "As you remain very deeply and completely

relaxed now, I'm going to count from one to ten, and, as I count, I'd like you to allow all the muscles all through the body to become even more deeply relaxed. One...two..., notice the arms and hands becoming more and more relaxed, now; three..., four..., focus on the muscles of the face and neck as they become more and more relaxed now; five..., six..., allow the muscles in the chest, shoulders, back, and abdomen to relax even more deeply now; seven..., eight...; notice the muscles of the legs and feet becoming more and more completely relaxed; nine..., and ten...." The counselor would have paced this counting to coincide with the client's exhalations.

The session would have been concluded with the counselor asking questions assessing the procedure, and assigning those procedures to practice. The assessment and practice procedures would have been identical to previous procedures.

After a minimum of two sessions and a week of practice, the counselor was to evaluate whether the client had achieved reasonable mastery of the recall with counting procedures. The evaluation was to be the same as for previous groups. After the client had achieved reasonable mastery of the recall with counting procedures, the relaxation by counting procedures would have begun.

The counselor's first task was to explain to the client the counting procedures. The counselor would have closely followed this explanation. "Now, we are ready to begin the final part of training. Now, we will attempt to achieve relaxation through

counting alone. I will ask you to make yourself comfortable and then begin to count from one to ten, as at the end of the last procedures, we did."

The counselor was to follow closely the counting procedures as explained previously. The session was to be concluded with the counselor asking questions to assess the procedure and assign this procedure to home practice. The assessment and practice procedures would have been identical to previous procedures.

After a minimum of two sessions and a week of practice, the counselor would have evaluated whether the client had achieved reasonable mastery of the recall with counting procedures. The evaluation criteria was to be the same as for previous groups. After the client had achieved reasonable mastery of the recall with counting procedures, a final session would have been held.

In this final session, no relaxation training was to take place. In this session, the counselor would have encouraged the client to continue to practice, and to apply the ability to situations that make him tense. The counselor would have answered any questions that the client had. With the close of this session, relaxation training would have been completed.



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