reduction at Week 12). The discriminant analysis indicated that these same 3 variables could predict "success" and "failure" with 67 per cent accuracy. The implications of these findings are discussed, with an emphasis on the need for replication.

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INTRODUCTION

It has been known for a long time (Bernhein, 1890; Hilgard, 1965; Faria, 1819) that there are individual differences in hypnotic susceptibility, though there is some disagreement as to how stable they are (Diamond, 1977; Perry, 1977). At present, the evidence suggests that hypnotic responsivity is a relatively stable characteristic of the individual. A large volume of research evidence indicates that 10-15 per cent of individuals are highly susceptible to hypnosis (capable of post hypnotic amnesia and of carrying out a post hypnotic suggestion), a further 10-15 per cent are insusceptible to hypnosis, and the remaining 70-80 per cent are moderately susceptible to varying degrees (see Hilgard, 1965). Though there is some evidence of this characteristic being modifiable to some degree (Diamond, 1974; 1977), methodological weaknesses characterize most modification research. As such, modification data does not as yet challenge the basic assumption of stability (Perry, 1977). Certainly, the extensive modification literature that has accrued to date, indicates that very few individuals have had their susceptibility modified to the upper limits of somnambulism.

One would expect that these apparently stable individual differences in hypnotic responsivity found in the experimental context, would carry over to the clinical setting and that persons possessing higher levels of hypnotizability would be

more amenable to modification by hypnotic means than less susceptible people. At this point, evidence bearing on this question is meagre and often paradoxical.

Much of it is in the form of clinical anecdote. There is a long tradition of belief, stemming from Freud (1970; originally published 1891) that hypnotic susceptibility is unrelated to therapeutic outcome. Freud himself noted frequent failures with deep hypnosis and successes with light hypnosis, where "light" and "deep" are rough clinical equivalents of high and low hypnotic susceptibility. A similar view has been expressed by Weitzenhoffer (1953) and by other investigators who emphasized other ingredients of the therapeutic situation that appear to be more centrally linked with therapeutic success. Thus, Lazarus (1973) regards the client's attitude to hypnosis and his or her desire to be hypnotized as more crucial to therapeutic success than hypnotizability. Alternatively, Sheehan and Orne (1968) argue that the secondary gain attached to symptoms and the nature of the doctor-patient relationship provide better predictions of therapeutic success than the client's degree of hypnotic ability.

Observational data bearing on these clinical impressions is sparse. In the area of pain control, the evidence indicates that hypnotic susceptibility is positively correlated with

the degree of pain control achieved. Some of the existing studies (Evans and Paul, 1970; Shor, 1967) come from experimental settings and need to be treated cautiously since experimental and clinical pain differ in several significant respects. Unlike clinical pain, experimental pain is time limited and episodic in nature, and there are ethical limits on the degree of experimental pain that an experimenter can reasonably request a subject to tolerate. The use of cold pressor pain (Hilgard and Hilgard, 1975) in the laboratory setting is probably the nearest experimental analog to clinical pain that is possible, since in this situation it is the subject who sets limits on the amount of pain he or she will undergo. A study of Hilgard and Morgan (1975) supports the earlier experimental findings of a relationship between susceptibility and pain control using cold pressor pain. These investigators reported a correlation of 0.50 between pain reduction and hypnotic susceptibility. Closer analysis of the data revealed a probablistic relationship between these two variables. It was found that 67 percent of the highly susceptible subjects reduced their pain by one third or more, as opposed to 17 per cent of the medium susceptible subjects and 13 per cent of the insusceptible subjects. The finding thus suggested that a highly susceptible subject is more likely to reduce pain by a significant amount using hypnosis than less susceptible individuals.

A study by Gottfredson (1973), relating hypnotizability to the control of dental pain, supports these experimental findings. Of 25 patients, screened for susceptibility on the Stanford scales, 12 were classed as high susceptible, and the remainder as either medium or low susceptible. All patients received hypnosis as the sole analgesic agent at one dental treatment, and a local anesthetic at another, in counter-balanced order. They reported their pain on a 1-10 scale of intensity, by lifting the requisite number of fingers. It was found that 75 per cent of the highly hypnotizable clients, as opposed to 38 per cent of the less susceptible completed their dental treatment using hypnosis as the sole analgesic agent without chemical supplements. While it should be noted that the highly hypnotizable group experienced less pain when chemical analgesia was utilized, the difference was not substantial, and hypnosis went close to equating chemical analgesia for this group.

On the other hand, Barber (1977) has reported recently a complete lack of relationship between susceptibility and clinical pain in the dental situation for 17 dental students. All subjects, regardless of susceptibility, experienced minimal pain and discomfort when hypnosis was used as the analgesic agent. Since this is the first report ever of hypnosis being 100 per cent effective for anything, and since Barber has not yet presented the methodological and data characteristics of his study, it is difficult to evaluate this study further at the present time.

Rather, the pattern of clinical findings follows those of Andreychuk and Skriver (1975) who collected susceptibility data in the course of treating 33 clients for migraine. Susceptibility was evaluated using the Hypnotic Induction Profile of Speigel (1974). The clients were treated either by alpha feedback, temperature feedback control or hypnosis. There was significant improvement in all groups; however, a closer analysis reveals that 71.3 per cent of the high susceptibles showed significant improvement scores as opposed to 41.4 per cent of the low susceptible clients. The authors concluded that high susceptible clients are apt to respond more favorably to clinical intervention regardless of treatment method - than are the low susceptibles.

There is additional meagre evidence from the literature of medical hypnosis, further supporting this relationship between susceptibility and therapeutic outcome. Asher (1965) using hypnosis to remove warts found that of 17 clients rated as being in "deep" hypnosis, the warts disappeared in 11 of them and were significantly improved in 4 others. For a further 8 clients rated as being in "light" hypnosis, the warts cleared up in 4 of them and were unchanged in the remainder. None of the 8 clients rated an unhypnotized showed any change in the warts.

Collison (1976) rated 121 asthma sufferers as being in

either "deep", "medium" or "light" hypnosis. He found that for 44 per cent of the "deep hypnosis" group, the asthma was cured completely, as compared to 13 per cent of the "medium hypnosis" groups and none of the "light hypnosis" clients. A further 40 per cent of the "deep hypnosis" group, as compared to 45 per cent of the "medium hypnosis" and 6 per cent of the "light hypnosis" group were rated by the therapist as significantly improved. The resulting statistical analysis showed a highly significant relationship between susceptibility and symptom removal ($x^2=51.9$, $p < .001$). In each of these latter studies, however, the evaluation of susceptibility levels consisted of a subjective rating made by the clinician.

All the above studies relating susceptibility variously to pain relief, warts and asthma are in the field of medical hypnosis and may reflect the possibility that hypnotizability functions as a major variable in the behavior modification of medical conditions having a psychosomatic component to them.

One final study has investigated the role of susceptibility in the treatment, by hypnosis, of socially learned behaviors. Perry and Mullen (1975) examined the role of hypnotizability in determining therapeutic outcome using cigarette smoking as the target behavior to be modified by hypnosis. The clients were taught the single treatment method to stop smoking using ancilliary self-hypnosis developed by Speigel (1970). Of 54

volunteer clients, 29.6 per cent dropped out, 13 per cent were totally abstinent at the end of three months, a further 18.5 per cent had reduced smoking by one half or more, and the remaining 38.9 per cent showed no change in smoking patterns at the three month follow-up. Analysis of susceptibility levels of the seven totally abstinent clients revealed no relationship between therapeutic success and hypnotic susceptibility. The distribution of susceptibility for this group was identical to the distribution of susceptibility within the general population.

At three month follow-up, many clients stated that in the course of using self-hypnosis technique they had decided that they really enjoyed smoking and did not want to abandon the habit completely, suggesting that many of them used the technique to reduce rather than quit. When the 15 most hypnotizable were compared with the 15 least susceptible clients, using a reduction criterion of 50 per cent or greater, a relationship between susceptibility and therapeutic outcome was manifest. Eighty per cent of the more highly susceptible clients, as opposed to 33 per cent of the less susceptible had reduced their smoking by at least one half.

All of the above studies suggest a relationship between hypnotizability and therapeutic outcome using hypnosis, despite methodological difficulties with most of them. The data of

Andreychuk and Skriver (1975) suggests additionally that more susceptible people carry this advantage into clinical situations where hypnosis is not utilized. It is of further interest that these empirical studies, whose limitations are acknowledged, contradict clinical impression. Thus, the present study seeks to examine the role of hypnotizability in therapeutic outcome further, by extending the findings of Perry and Mullen (1975).

This latter study was concerned only with the role of hypnotic susceptibility in successful therapeutic outcome among clients treated by an hypnotic technique. The present study sought to extend the earlier findings by evaluating the role of susceptibility both when hypnosis and a behavior modification technique is used. There is evidence (eg. Barkley, Hastings and Jackson, 1977) that indicates a relative superiority for rapid smoking methods as opposed to other methods of behavior modification in the treatment of smoking behavior, particularly when a percentage reduction criterion is used. For this reason, rapid smoking as a form of satiation was utilized in this investigation. Furthermore, a recent review of the evidence (Hunt and Bespalec, 1973) found that hypnosis appeared superior to all other treatment methods in terms of a total abstinence criterion.

While the data on hypnosis and rapid smoking need to be

treated with caution, both because of the selection procedures used in many studies, and the high (and often unreported) drop-out rates in some, the evidence suggests a superiority for these two methods of treating smoking.

Before describing the rationale of the present study in greater detail, the literature on hypnosis and rapid smoking - as they refer to cigarette smoking - will first be reviewed.

Smoking Behavior

Since its introduction in the sixteenth century, cigarette smoking has become an accepted and widely pervasive phenomenon in Western culture. It has been estimated for example that in 1972 alone, there were approximately six million Canadians, 15 years of age and older, who consumed 25 cigarettes or more per day (Statistics Canada, 1972). Interestingly enough, of all the provinces, Québec had the highest proportion of these regular smokers for both males and females. Yet despite the popularity of cigarettes, there has been a growing concern regarding the health hazards associated with smoking. These health scares date back to the early 1960's where the Royal College of Physicians Report (1962), and the 1964 Report of the Surgeon General's Advisory Committee on Smoking and Health indicated unanimously that heart disease, chronic bronchitis, emphysema and lung cancer are strongly associated with the amount of cigarettes

consumed. Statistics Canada (1972) report that in Canada, Great Britain and the United States, the total death rate is, on the average, about 70 per cent higher among male cigarette smokers. In fact, male smokers in the age range 40-49, were three times more likely to have a fatal heart attack than nonsmokers and twice as likely between the ages of 50-59. In Great Britain, it was estimated that over 20,000 deaths in men between the ages of 35-64 are caused every year by smoking. In Canada, it is estimated that cigarette induced diseases take the lives of an estimated 10,000 Canadians each year. The amount of suffering, loss of money and work is immeasurable, although the government saves a bundle on old age pensions.

As such, cigarette smoking constitutes an area of great social concern. In the attempt to develop effective modification methods for treating cigarette smoking in individuals who choose to quit, a proliferation of research has occurred. However, the results have been tenuous and only confirm a fact the cigarette smokers have long known . . . it is difficult to give up cigarette smoking. Even to this point, little is known about the underlying factors which maintain smoking behavior (Bernstein, 1969). Guilford (1966) states that smoking is the result of a "very complex system of physiological, social and psychological needs and within any one individual, one or more, or even all of these needs may exist" (p. 34). Hence, to identify all the factors relevant for even one

individual becomes at the very least, a formidable task. Furthermore, to add to the confusion most studies are plagued by serious methodological shortcomings which ultimately limit the generation of meaningful data. Bernstein (1969) notes, for example, that attentional placebo effects (e.g. therapists contact, attention and interests) and expectational factors (e.g. client's expectation of help and success) are variables that have been traditionally neglected in the design of smoking programs. These variables within themselves can significantly affect the outcome of a treatment program. If not controlled for, accurate assessment of the treatment itself becomes impossible. Bernstein concludes that "this serious deficiency in research design may prove to be more damaging, in terms of meaningfulness of published data, than all other errors taken together" (p. 432). He goes on to say that in order to examine the extent of the behavior change due to these "non-specific treatment effects" requires an analysis of how attention-placebo factors modify behavior with and without the aid of active treatment.

Another commonly encountered methodological difficulty concerns the discrepancies with the criterion used for measuring success. The observed lack of standardization of a success criterion hampers evaluation and comparison of various smoking research programs (Schwartz and Dubitzky, 1967). While "per cent reduction in amount smoked" is now generally

used as the index of behavior change, there is a contraversy regarding how much of a reduction constitutes a successful outcome. On the one extreme, Moses (1964) believed that any reduction whatsoever was benificial to the individual. However, the tide of opinion seems to favor complete abstinence as the requisite criterion. The evidence seems to suggest that clients who do not quit completely are likely to return to pre-treatment levels (Azrin and Powel, 1968; Lichtenstein and Keutzer, 1968). In fact, Lynch (1963) reports that while only 9 per cent of his clients who quit completely relapsed within three months, a 50 per cent relapse rate was noted in those who merely reduced their amounts within that period of time.

The interpretation of the success rate is another factor which is particularly prone to distortion. Some investigators (e.g. McFall and Marston, 1971; Relinger, Bornstein, Bugge, Carmody and John, 1977) calculate success statistics only on those individuals who completed the smoking program. This serves to inflate the magnitude of success, especially if the rate of attrition is high. Alternatively, a more accurate evaluation of the success of treatment would be to include the drop-outs as treatment "failures" (Keutzer, 1968). Moreover, drop-out rates, which have been conspiciously ommited in the past, would then have to be reported. The lack of uniformity in the derivation of the success statistic, once again, restricts subsequent comparisons of the relative rates of success between

studies.

Another methodological concern relates to minimizing the rate of attrition. It is possible, for example, to have drop-out rates as high as 50 per cent (Horn and Waingrow, 1967; Mausner, 1966). As an attempt to combat this, there has developed a tendency to require clients to leave a monetary deposit which is refunded at the end of the smoking program (Keutzer, 1968; Mees, 1966). Return of the deposit is usually contingent upon accurate recording of the smoking behavior. Recording of the smoking behavior is maintained by a simple monitoring procedure where the smoker is required to keep a daily record of each cigarette he or she smokes. Because unintentional recording errors may occur due to such factors as demand characteristics, Bernstein (1969) suggests that instructions prior to the treatment intervention should emphasize the importance of accurate reporting so that an exact evaulation of the smoking modification technique can be conducted.

All of these factors - drop-out rates, success criteria, attentional placebo effects, patient expectancies and motivations, and accurate data recording - make cross comparisons of studies difficult, for both the hypnosis and rapid smoking literature. In addition, as will be seen in the following sections, there is considerable diversity among investigators in the hypnotic and rapid smoking techniques that have been employed to treat cigarette smoking.

Hypnosis and Smoking

Johnston and Donoghue (1971) in their review of the hypnosis-smoking literature note that many clinicians have a tendency to ignore the efforts of others and to pursue their own interests and methodologies. Hence, there is little commonality between techniques and methodologies. Not surprisingly, a great diversity of hypnotic techniques for quitting smoking have been attempted. For example, some clinicians use hypnosis to establish a strong aversion to tobacco smoke (Kroger, 1963; Miller, 1965; Von Dedenroth, 1964) while others use it to weaken the smoker's desire for the taste of the tobacco smoke (Edwards, 1964; Moses, 1964). Hypnotic suggestions range from feeding back the smoker's motivation for quitting (Hershman, 1956; Nuland and Fields, 1970) to suggesting that one cigarette will be as satisfying as many cigarettes (Stein, 1964). Group marathon methods using hypnosis have also been employed in the treatment of cigarette smoking behavior (Kline, 1970). Classification of these various hypnotic formats is almost impossible since many authors employ different combinations of techniques (Johnston and Donoghue, 1971). Similarly, substitute behaviors, planned cut-downs, health pleas, smoking bans during certain periods, inconvenience ploys (Edwards, 1964; Kroger, 1963; Von Dedenroth, 1964) are techniques that have been incorporated

into an hypnosis paradigm. They too, appear in various combinations but again usually never appear the same way in any two studies. Needless-to-say, such a range of methods makes evaluation and comparison of hypnotic procedures difficult. As a result, no attempt will be made here to categorize the hypnotic techniques that have been utilized in the past.

The hypnotic modality has been used with smokers for approximately thirty years. The results thus far have been mixed. The percentage of reported long-term success seems to range from zero to 94 per cent. For example, Cohen (1969) found that hypnosis was unable to induce any alterations in smoking behavior while Von Dedenroth (1964) demonstrated a rather surprising 94 per cent rate of success (although no details were given as to the format of his follow-up assessment). Other authors report percentages between these two extremes (Crasilneck and Hall, 1968; Kroger, 1963; Miller, 1965; Moses, 1964; Speigel, 1970). Such discrepencies appear to be attributable to poor methodological designs and inadequate follow-up procedures, as well as to differences in the therapeutic methods used. In most of the smoking hypnosis literature reviewed, there has been a failure to include control conditions (e.g. Edwards, 1964; Graff, Hammett, Bash, Fackler, Yanovsky and Goldman, 1966; Moses, 1964). More serious errors include failure to control for frequency and amount of experimenter contact (e.g.Graff et al.,1966), lack of control over experimenter variables

such as warmth, empathy, etc. (e.g. Nuland and Fields, 1970) and similtaneous manipulation of two variables in one condition (e.g. Cruickshank, 1963). Problems in interpretation of the data arise since one or more variables, or combinations thereof, may have been responsible for "effective treatment." Bernstein (1969) states that "except for those smokers who are helped, most clinic procedures reported are a great deal of wasted time" (p. 431). Albeit, the treatment question does not revolve around the "effectiveness of hypnosis" but rather, how can it be used in the most effective way (Nunland and Field, 1970). Many approaches have been tried.

High rates of abstinence were reported by Nuland and Field (1970). These authors used hypnosis to emphasize the client's commitment to quit smoking and to heighten the motivation to do so. The treatment program stressed an active and personalized approach in which the smokers reasons for quitting were built upon, amplified, and then fed back during hypnosis. These suggestions also included references to health issues associated with long-term cigarette smoking. Special care was taken to build up a relationship of warmth and respect between the client and therapist. In addition to this lengthy personalized approach, frequent telephone contact, meditation and self-hypnosis were used to supplement the treatment. The results yielded a 60 per cent abstinence rate after

a six month follow-up. No drop-outs were reported from the 84 participants. It is unfortunate, however, that little can be said about the relative effectiveness of hypnosis in this procedure since a multiplicity of factors may have been involved in influencing the outcome. The authors did admit that the therapists attitude probably provided an important underlying motivation for giving up cigarettes and conceded that it was not exclusively the "power of hypnosis".

Crasilneck and Hall (1968) also report high rates of abstinence following hypnosis. They were particularly concerned with assessing the effectiveness of hypnosis in relation to its facility in minimizing the frustration and craving associated with quitting. During four, 40 minute consecutive daily sessions, 75 male adult smokers (with smoking related medical problems) were hypnotized to the greatest possible depth. The hypnotic suggestion employed was aimed at ameliorating the craving and dependence for tobacco. As an additional step to enhance motivation, clients were requested to telephone in their progress for three months following termination of treatment. The results provided a rather encouraging trend. Sixty-seven clients out of 75 responded to the follow-up questionnaire. Of these, 82 per cent indicated that they had given up cigarettes for a mean of two years. Eighteen per cent of those who had terminated smoking cigarettes, substituted it for another oral habit (e.g. pipe, cigar). The remaining 18

per cent were unaffected by the treatment intervention. Again it was difficult to delineate what factors were responsible for "effective" treatment. For example, all smokers in this study were referred by their physicians because of their heavy smoking, and all had medical problems related to cigarette smoking. For this reason, these individuals could have been more motivated to abstain from smoking and could have possibly done so with or without hypnosis.

In an entirely different approach, Kline (1970) required 60 clients to deprive themselves of cigarette smoking for 24 hours prior to a 12 hour hypnotherapy session. During the extended therapy session, hypnosis was used to intensify the state of deprivation and to, therefore, intensify the need to smoke. That is, suggestions were given which emphasized those qualities about smoking that the client himself had described as most satisfying. This was immediately followed by an hypnotic relaxation procedure which attempted to reduce the "psychophysiological" manifestations of the deprivation condition. Kline argued that this form of hypnotic desensitization enables the smoker to anticipate tension states and to deal with this tension in an effective manner. High abstinence rates were also observed in this study. It was found that after one year, 88 per cent of the treated groups were completely abstinent. Of the remaining clients, all but one reported a

reduction in the number of cigarettes smoked. The author, however, did not provide any data concerning how much of a reduction was observed. The drop-out rate was also not reported in this study.

Slightly lower abstinence rates have been reported in other studies which appear to be methodologically more sound. For example, Miller (1965) used hypnosis to induce a strong aversion to the taste and smell of tobacco. In the oral aversion group, 100 clients were given the suggestion in the hypnotic trance that the taste and smell of tobacco would produce a nauseous reaction spreading from the throat to the lips. A further 100 clients were given an oral plus inhalation treatment. In addition to the "oral-alimentary nausea" suggestion, this group was instructed to inhale deeply and to experience the irritating and poisonous fumes of smoke in the lungs. The results of the follow-up indicated that 63 per cent of the oral aversion group and 81 per cent of the oral plus inhalation group were abstinent 72 hours after treatment. Furthermore, three months after treatment the oral group and the oral plus inhalation group had abstinence rates of 37 per cent and 48 per cent, respectively. The drop-out rate was not reported in this study. Miller hypothesized that the hypnotic trance provided an hyperaffective state which allowed a condition conducive to developing strong aversions.

In a similar vein, Moses (1964) used hypnotic suggestions to emphasize the aversive properties of cigarette smoking. This form of hypnotherapy was accompanied by discussion sessions in which smokers were encouraged to ventilate their feelings towards being dependent on tobacco. These discussion sessions usually lasted 20 minutes and were followed by a 15 minute hypnotic induction procedure. It was suggested, on a progressive scale, that all desire for tobacco would be lost and that "liberation from the obnoxious and unsanitary habit" could finally be achieved. Therapy sessions ranged in number between two to three for 75 clients. Fifty clients were available for mail and telephone follow-ups. The results indicated that nine clients (12 per cent) achieved abstinence for two to five years following active treatment. A further thirteen clients reported no change in their smoking consumption as a result of the treatment while the remaining 28 clients reduced their intake to varying degrees. Moses concluded that the clients who were most successful were the ones with whom he had developed the best rapport.

Moderate abstinence rates were also reported by Speigel (1970). He attempted to terminate the smoking habit in 615 clients using a single 45 minute session of hypnosis. Hypnosis, according to Speigel, acts to create a state of "receptive attention" which permits the client to examine his old smoking habits from a new perspective. During hypnosis, rather than

concentrating on the urge not to smoke, the treatment directive is centered on reinforcing the clients commitments to respect and protect his body. The technique therefore requires the smoker to concentrate on three basic points during hypnosis: 1) Smoking is a poison for the body 2) You cannot live without your body 3) You owe your body respect and attention. Clients were then shown how to self-induce this state of hypnosis and were requested to do this exercise every one to two hours, daily. Of the initial 615 participants, only 271 (44%) returned a six-month follow-up questionnaire. The success criterion was defined in terms of total abstinence, six months after treatment. Reductions in cigarettes smoked and non-responders (drop-outs) were considered treatment failures. The results indicated that six months or more after the initial treatment session, 121 clients (20%) reduced their intake to varying degrees while only 29 clients reported no impact to the treatment program. Although Speigel claims that therapy had some impact on those who reduced their intake, no figures were presented indicating the magnitude of the reduction. He concludes that there was a reported impact of treatment on 90 per cent of those who completed the questionnaire. The fact that 20 per cent of the clients were not smoking after 6 months is extremely promising particularly after only one treatment session.

Graff, Hammet, Bash, Fackler, Yanovski and Goldman (1963) were perhaps the first to compare the effectiveness of an hypnotic technique with other popular smoking modification procedures. Unfortunately, this study was plagued by methodological shortcomings. Hypnosis was compared to a group therapy approach and two drug groups (lobeline and chlordiazepoxide). Surprisingly enough, no details as to the content or format of the treatment procedures were discussed, although the authors noted that the group therapists simulated an attitude of a busy general practitioner dispensing drugs. The addition of these extraneous experimenter variables (e.g. attitudes and length of contact) makes the analysis of the relative effectiveness of the treatment methods themselves highly tenuous. After three months, only 24 of the initial 135 respondents completed their respective treatments. The authors failed to discuss the high drop-out rate. Of the 24 who completed the program, 14 were abstinent three months after treatment. Eight of the abstainers were in the hypnosis condition.

Edwards (1964) investigated the efficacy of using hypnosis and lobeline sulfate in the treatment of 40 chronic smokers. Half the clients who comprised the hypnosis group were told during hypnosis that not smoking would be strongly associated with feelings of accomplishment and well being and this would exceed the pleasure of smoking following hypnosis. However, it was suggested that if they did smoke it would be adding to

the risk of disease. The remaining smokers in the lobeline group were given 2mg. lobeline tablets three times a day. They were told that the pills would diminish the craving for cigarettes. All smokers attended three additional sessions where hypnotic clients were re-hypnotized and lobeline clients were given renewed prescriptions. After three months, follow-up results showed that 40 per cent of the clients reduced smoking, 30 per cent quit and 30 per cent remained unchanged. The results further indicated that there were no significant differences in cigarette consumption between treatment conditions three months after treatment. The attrition rate in the hypnosis and lobeline group was high after the three month inquiry (50 per cent and 55 per cent respectively) which tends to limit the interpretability of the results.

As Hunt and Bespalec (1973) have indicated in their review of the various methods that have been used to treat smoking behavior, hypnosis appears to be the most effective, even allowing for the plurality of hypnotic techniques used. They note, however, that treatment populations are often small, and the one-to-one patient-therapist ratio usually employed makes hypnosis costly. Further, the frequent preselection of clients (as in studies using clients referred medically) and the common failure to ignore drop-outs probably inflates success rates spuriously. While this is true also of

the other five techniques for quitting smoking reviewed by these authors, the frequent reports of high success rates using hypnosis need to be treated with caution.

Aversive Conditioning in the Treatment of Smoking

Promising results have been reported also by several investigators using various forms of short-term aversive conditioning, the most recent and popular of which is called "stimulus satiation" (e.g. Lichtenstein, Harris, Birchler, Wahl and Schmahl, 1973; Resnick, 1968a; 1968b; Schmahl, Lichtenstein and Harris, 1972). Utilizing this technique, Schmahl et al. (1972) reported a 100 per cent success rate at treatment termination and a 64 per cent abstinence rate at a six month follow-up. Similarly, Lichtenstein et al. (1973) achieved an abstinence rate of 22 per cent baseline. At a four month follow-up, Resnick (1968a) found a 63 per cent abstinence rate ~~in his~~ satiation group and only a 20 per cent abstinence rate in his control condition.

This form of aversive conditioning has subsequently yielded results far superior to those previously reported in the behavior modification literature on smoking (Lichtenstein et al. 1973; Relinger et al., 1977; Schmahl et al., 1972). However, the issue is by no means clear-cut. As is so characteristic of the smoking modification research, satiation produces outcome data that tends to be quite heterogenous and sometimes uninterpretable. Several attempts have been made to replicate

these propitious findings but the results have been inconsistent and mostly negative (Claiborn, Lewis and Humble, 1972; Dawley and Sardenga, 1977; Lando, 1975; Lublin and Joslyn, 1968; Marston and McFall, 1972; Sushinsky, 1972). These inconsistencies, however, are probably the result of inadequate methodological designs alluded to earlier (e.g. Bernstein, 1969) and will be discussed further in this section.

Notwithstanding, satiation deserves additional experimental and clinical investigation, particularly in view of its potential usefulness.

Satiation as a form of aversion control was first coined by Allyon and Michael (1959) and in later work by Allyon (1963). It was hypothesized that a reinforcer loses its effectiveness when an excessive amount of that reinforcer is made available. Accordingly, it is thought that satiation of a reinforcer serves to weaken the response elicited by that reinforcer. With regards to cigarette smoking, this conditioning process utilizes the cigarettes as the aversive agent. It is assumed that if the cigarettes themselves become a predictable prelude to punishment, the smoker will ultimately choose to do without its rewards (Resnick, 1968a). So for example, the satiation technique consists of having the cigarette smoker inhale the cigarette smoke at a steady and rapid rate until they are no longer able to do so (rapid-smoking paradigm) or smokers are instructed to increase their normal cigarette consumption

by several fold (excessive smoking paradigm). As a result, any positive reinforcing properties of cigarettes experienced prior to the introduction of this treatment, are now counteracted by more negative properties such as sore throat, dizziness, nausea and perhaps vomiting (Horan, Hacket, Nicholas, Linberg, Stone and Lukaski, 1977; Horan, Linberg and Hacket, 1977. The act of smoking in this manner thus becomes aversive. The success of the satiation technique as an aversive conditioning strategy is consistent with the hypothesis that treatment is more effective when the noxious stimulus employed shares the same sensory mode as the behavior to be suppressed (Wilson and Davidson, 1969). Moreover, every instance of the target behavior (smoking) is punished as is recommended in punishment theory (Berecz, 1972). For example, clients are instructed not to smoke between sessions and if they do, they are asked to smoke the cigarettes in the manner which was observed in the "experimental" settings. Assuming that the chain of behaviors constituting cigarette smoking are operant in nature and are maintained by specific environmental circumstances, the continued experiencing of these aversive effects in a wide variety of situations might tend to minimize their discriminative power to evoke the smoking response. In other words, satiation is thought to change the stimulus-response contingencies underlying smoking behavior (Resnick, 1968a).

For the purposes of the following discussion, however, only the literature pertaining to rapid smoking will be reviewed. since it appears to be more effective in modifying smoking behavior than its counter-part, excessive smoking. In fact, the bulk of the evidence suggests that there are no significant differences in treatment outcome between excessive smoking and other various smoking modification treatments. (Claiborn et al. 1972; Marston and McFall, 1972). Indeed, this form of satiation failed to reduce smoking significantly more than even the most minimal treatment procedures (Marston and McFall, 1972; Sushinsky, 1972). In almost every case, the excessive smoking technique reduced smoking behavior during the treatment period but failed to consistently produce long-term effects (Claiborn et al. 1972; McFall and Marston, 1972; Sushinsky, 1972). All in all, these observations seem to cast doubt on the generality and theoretical utility of the excessive smoking paradigm.

Rapid smoking, on the other hand, appears to be more promising (Dawley and Sardenga, 1977; Lichtenstein, Harris, Birchler, Wahl and Schmahl, 1973; Schmahl, Litchenstein and Harris, 1972). Schmahl et al. (1972), for example, utilized the rapid smoking procedure in conjunction with either warm smoky air or warm mentholated air on 28 habitual smokers. It was hypothesized that warm cigarette smoke blown directly in the

faces of participants undergoing the satiation treatment would in effect, sensitize them to cigarette smoke thus increasing the effectiveness of the aversion treatment. Experimental smokers, in the presence of warm smoky air or warm mentholated air, were required to inhale their cigarette smoke every six seconds. A session ended when the smoker could no longer tolerate another inhalation (usually to the point of physical illness). Treatment was terminated only when the client was completely abstinent. The results indicated that all participants in both treatment conditions achieved abstinence (the success criterion) on the average of eight treatment sessions. At the six month follow-up, it was found that the abstinence rate was approximately 57 per cent (16 of 28). Of those who were still smoking, four were smoking less than 50 per cent of baseline intake and the remaining smokers had relapsed to pre-treatment levels. Furthermore, there were no significant differences between treatment conditions. Lichtenstein et al. (1973) as an off-shoot of the above mentioned study, investigated the seperate and additive treatment effects of warm smoky air and rapid smoking on 40 smokers. One group of smokers, who constituted the rapid smoking condition, had to inhale their cigarette smoke every six seconds in a manner described by Schmahl et al. (1972).

The warm smoky air condition consisted of having smokers sit in front of an air blower which directed warm cigarette smoke towards their faces. The combination of rapid smoking and warm smoky air was administered to another group of smokers. Finally, an attention-placebo condition was included in which smokers were given Bantron pills outside of the treatment and were required to smoke two cigarettes for four minutes at their normal rate during the treatment session. At the termination of treatment, it was found that there were no significant differences in mean intake of cigarettes between the four groups. In fact, all except one client achieved abstinence. At the six month follow-up, 60 per cent of the 39 participants contacted (one drop-out) remained abstinent. Once again there were no significant differences in cigarette intake between the aversion groups. However, the minimal treatment group (attention placebo-control) were smoking significantly more than the other treatment conditions and hence had a greater degree of relapse. In view of these results, the authors conclude that rapid smoking was as effective as the combination of rapid smoking and hot smoky air in modifying smoking.

Lublin and Joslyn (1968) also report an encouraging trend with the rapid smoking paradigm. They failed, however, to include the drop-outs in the calculation of the success

statistic. As was observed, the combination of rapid smoking and warm stale cigarette smoke administered in a manner described by Schmahl et al. (1972), yielded a 40 per cent (31 of 40) abstinence rate and/or a 50 per cent reduction in baseline intake at the 12 month follow-up. Of these individuals, 15 were abstinent and 16 were smoking less than 50 per cent of baseline. These figures are impressive but none-the-less, misleading. The picture changes considerably when the 31 per cent attrition rate is included in the data analysis. Recomputed, the one year success rate becomes a mere 15 per cent.

Similarly, inflated success statistics were recorded by Dawley and Sardenga (1977). They implemented, however, a slightly modified procedural change in this aversion conditioning paradigm. Instead of simultaneously blowing smoky warm air in the face of the smoker undergoing satiation, each aversion technique was presented seperately within the treatment session. There were three 30 minute sessions for six weeks. During these sessions, smokers had to inhale cigarette smoke every 6 seconds. Once the subjects had been sated, warm smoky air was directed to their faces, hair and clothing for two minutes. Participants also had to handle a 10 lb. bag full of cigarette butts, ashes etc. and were required to smell the strong noxious oder of the litter. Results yielded

a 41 per cent abstinence rate (5 of 12) at the end of treatment with 5 additional smokers at 25 per cent or less of baseline. At the three, six and nine month follow-ups, the abstinence rates were 33 per cent (4 of 12), 24 per cent (3 of 12) and 16 per cent (2 of 12), respectively. Furthermore, at each of these follow-ups, the mean reduction rate across groups was 38 per cent, 50 per cent, and 50 per cent of baseline, respectively. The authors suggest that aversive cigarette smoking is a promising behavioral approach to the modification of smoking. Albeit, the results, however, do not look as favourable when the seven drop-outs were included in the analysis. The success statistics are once again inflated and misrepresentative of the "true" picture.

For the exception of the Lichtenstein et al. (1973), it is difficult to evaluate the singular effectiveness of the rapid smoking paradigm. As in the case of Lublin and Joslyn (1968) and Dawley and Sardenga (1977), two or more variables were being manipulated in one condition and many studies failed to include the appropriate control conditions (e.g. Dawley and Sardenga, 1977). Furthermore, it is difficult to compare success rates when in one case drop-outs are included in the analysis and in the next instance, they are excluded.

In a more methodologically rigorous design, Sutherland, Amit, Golden, and Roseberger (1975) tested the hypothesis

that there would be a greater and more lasting response suppression due to rapid smoking if there was an alternative unpunished response available. Progessive relaxation was offered as the alternative response. Smokers received training either in progressive relaxation (a shortened version of Jacobson's technique), satiation or the combination of the two techniques over six treatment weeks. The relaxation group practiced the technique during the treatment sessions and had to practice this exercise once a day. If a cigarette was desired, they were told to use the exercise instead. The satiation group had to inhale cigarette smoke deeply every four seconds, for two cigarettes with a 15 minute rest period between cigarettes. All cigarettes smoked outside of the treatment session had to be smoked in the rapid fashion. Another experimental group received the combination of both satiation and progressive relaxation. Two minimal treatment groups were included in which one group (control for record keeping for motivated clients) had to record daily cigarette consumption and to report it in daily by phone (minimal contact). The other group (control for record keeping for unmotivated clients) who comprised of smokers who had no desire to change their smoking behavior had to record daily cigarette consumption. These smokers, however, had to report this data at the end of nine weeks (minimal contact). The results revealed an end of treatment reduction in smoking of

57.4 per cent for the relaxation group, 68.9 per cent reduction for the satiation group and a 15.6 per cent reduction for the combined procedures. There was no change in the control conditions. By the three month follow-up, the relaxation and satiation group had reverted to a 65.0 per cent and 102.4 per cent, respectively, of their original consumption. The relaxation/satiation group, however, were smoking 51.6 per cent of their original consumption. That is, it seems that the latter group was able to maintain a significant reduction in smoking behavior. The authors maintain that the observed reduction was due to the treatment itself since attentional and motivational factors were controlled for. They conclude that of all the behavioral techniques employed, the combination of relaxation and satiation was the most effective in reducing cigarette smoking behavior.

With reference to these findings, there are three points to note. Firstly, do partial reductions of the magnitude reported in this study constitute a "successful" outcome? This is difficult to ascertain as there is no mention of a success criterion. Secondly, there is evidence to suggest that individuals who have cut down their cigarette intake are more likely to "relapse" than persons who have quit totally (Lichtenstein and Keutzer, 1969). Thirdly, the authors fail to include data regarding the rate of attrition. If per cent reductions were based on only those smokers who comp-

leted the treatment program, the findings could be distorted.

Although there have been few attempts to compare rapid smoking to other smoking modification strategies, there are some reported instances (Barkley, Hastings and Jackson, 1977; Beavers 1973; Lando, 1975). Lando (1975) provided a direct comparison between the two forms of satiation: rapid smoking and excessive smoking. He did so with 45 chronic smokers. Smokers in the rapid smoking condition had to inhale cigarette smoke every six seconds for three minutes. Each session consisted of three trials with five minute rest periods. Any cigarettes smoked outside the treatment session had to be done so in the rapid fashion. In the excessive smoking condition, smokers had to smoke continuously for a 25 minute session. Furthermore, they were required to double their daily cigarette consumption as an adjunct to the treatment. A control condition was included where smokers had to inhale cigarette smoke every 30 seconds for a 25 minute session. Treatment was administered to all groups over a one week period (six sessions). Total abstinence was considered the most clinically meaningful measurement of "effective" treatment. The results failed to indicate any significant differences in mean cigarette intake for the two experimental treatment groups at any of the post-treatment intervals (1 and 2 week,

1 and 2 months). This suggests that there is no difference between these two forms of satiation. Although the satiation groups considered as a unit smoked significantly less than the control at the 1 and 2 week follow-up, this suppression did not manifest itself one and two months after the last treatment session. For example, at week two, 60 per cent (17 of 27) of the smokers undergoing satiation had successfully refrained from smoking while 29 per cent (5 of 18) of the controls had done so. At the 12 month inquiry session, however, 28 of the 45 participants were contacted and it was found that the overall abstinence rate was 20.5 per cent (including the 16 drop-outs) while the per cent smoking reduction averaged 36.3 per cent. At that point, cigarette intake for the satiation groups was identical to the intake levels of the controls.

Rapid smoking was also compared to another form of aversion; namely electric shock. Beavers (1973) monitored the effects of a rapid-smoking technique (inhaling every six seconds until sated) on smoking behavior and compared it to two electric shock conditions: 1) Shock paired with the approach steps of preparing to smoke and 2) Shock paired with inhaling. Forty-two smokers underwent six treatment sessions for five weeks. No significant effects emerged at any of the follow-ups as a function of the treatment condition. In terms of a reduction of smoking by 50 per cent or more, a total

of 31 smokers (74 per cent) had done so. This number had dropped to 15 smokers (36 per cent) at the two month inquiry.

Again it becomes apparent that achieving abstinence may be quite unrelated to maintaining abstinence. Except for Relinger et al., (1977), little attention has been directed to this maintenance problem in the rapid smoking literature. Relinger investigated the possible usefulness of two maintenance procedures aimed at prolonging the treatment gains. The two maintenance "enhancing" strategies employed were 1) an in vivo booster session in which smokers were required to return in the weeks following treatment to undergo the aversion procedure again and 2) telephone booster sessions where smokers had to participate in the aversive treatment over the phone if a cigarette was smoked since the last call. As a secondary concern, Relinger was interested to determine if the satiation treatment could be administered effectively in groups in order to minimize the time factor. The rapid smoking procedure consisted of two rapid smoking trials in which smokers had to inhale every six seconds until they could do so no longer. A five minute break was observed between trials. The treatment was administered to two groups of seven and one group of six. Treatment sessions were conducted on a daily basis and were terminated when abstinence was achieved. Smokers in the control condition received only the

satiation treatment and no form of maintenance: Of the 20 smokers that participated in this program 90 per cent (18 of 20) achieved the abstinence criterion within two weeks. The results yielded no significant difference in the mean number of cigarettes smoked between all conditions during the base-line period, and at the one, two and three months follow-ups. Combined data across all treatment conditions (including the controls) denoted a significant treatment effect in the immediate post-treatment phase and the subsequent follow-ups. Despite this, there was considerable relapse for all groups over time. At the 3 month inquiry session, only thirty-three per cent of all participants were still abstinent and the percentage of baseline smoking rates for all smokers was 56 per cent. Drop-outs were not reported in this study. Relinger concludes that neither the in vivo booster session nor the telephone booster session effectively combat the relapse rate. Moreover, it appears that group presentations of the rapid smoking procedure were ineffectual in modifying smoking behavior.

Despite this negative outcome, it is felt that Relinger et al., (1977) would have been more successful had he utilized a more comprehensive maintenance program alluded to by Lando (1977). Lando suggests that a multifaceted long-term maintenance program (which includes in vivo booster sessions, contractual management and structured group contact)

would adequately perserve the therapeutic gains resulting from a satiation technique. Clearly, more research is needed to develop effective maintenance programs to supplement the short-term aversion conditioning.

On a final note, Hauser (1974) warns that satiation (excessive and rapid smoking) may be potentially harmful to individuals with advanced coronary complications. He suggests that an extensive screening procedure (i.e. medical history) should be used in advance of this form of aversion therapy. In fact, Polson and Tattersall (1969) reported several cases of nicotine poisoning resulting in two deaths as a consequence of excessive smoking. Further, Horan, Linberg and Hacket (1977) detected electrocardiogram abnormalities in several individuals undergoing rapid smoking treatment. In a related study, Horan et. al. (1977) contend that nicotine poisoning may be the aversive component in the satiation procedure. The physical symptoms following nicotine poisoning, for instance, closely parallel some of the pronounced symptoms evidenced in most individuals undergoing satiation (i.e. nausea, salivation, dizziness, cold sweat, vomiting, etc.).

The Present Study

To draw together the main points of the foregoing discussion the experimental evidence indicates:

(1) Several studies (Asher, 1965; Collison, 1976; Gottfredson, 1973; Hilgard & Morgan, 1975; Perry & Mullen, 1975) indicate that hypnotic susceptibility plays a role in determining successful therapeutic outcome, when hypnosis is used. Most of these studies used hypnosis to treat medical conditions such as pain, asthma and dermatological conditions. The effect was less clearcut when a socially acquired behavior such as smoking was taken as the target behavior for modification by hypnotic means (Perry & Mullen, 1975), although greater reductions in smoking (as opposed to total abstinence) were obtained by the more highly susceptible subjects. (2) The findings of Andreychuk and Skriver (1975) indicate that high hypnotic susceptibility may play an important role in determining therapeutic success when both hypnotic and non-hypnotic methods of treatment are employed. This study represents the only attempt so far to examine this question, and it should be noted that migraine - a medical condition which has been linked to both psycho and somatic causations - was the condition treated in that study. For a socially learned behavior such as cigarette smoking the situation could be quite different and there is a need to investigate whether similar findings hold when hypnosis, and behavioral modification methods are used to treat such learned behaviors. (3) An examination of the literature indicates that, (allowing for

methodological difficulties with most reported smoking studies), hypnosis and satiation smoking appear to be the most effective methods for treating this behavior. At the time the present investigation was commenced, no study had sought to compare directly the relative efficacies of these two treatment modalities. Subsequently, Barkley, Hastings, and Jackson (1977) have reported such a comparative study, in which it was found that at 9 month follow-up, more subjects from the rapid smoking group (42 per cent) had quit completely than in the hypnosis group (25 per cent).

The data of Perry and Mullen (1975) indicated that many people, in the course of attempting to quit smoking entirely, found that they enjoyed it, and preceeded to reduce substantially (by 50 per cent or more). This suggests that motivation to quit smoking may be as important a variable in determining successful therapeutic outcome as any actual treatment method used, particularly when a socially learned behavior, such as cigarette smoking is involved.

Accordingly, the present study sought to evaluate three questions that stem from the current evidence:

(a) What is the role of hypnotic susceptibility in determining successful therapeutic outcome when an hypnotic or a non-hypnotic method of treatment is used to treat a socially learned behavior?

(b) What is the relative efficacies of hypnosis as opposed to rapid smoking in treating smoking behavior?

(c) Since the motivation to quit smoking is likely to be radically different to that of the person in chronic pain, or suffering asthma, what is the role of motivation to quit among clients presenting themselves for treatment of their smoking habit?

METHOD

Recruiting Procedures

Small advertisements were placed in the Concordia University (Sir George Williams Campus) and the McGill University student newspapers (See Appendix 1). On telephone contact, (see Appendix 2) the format for the treatment program was explained. Since clients had been randomly assigned to either the hypnosis or rapid smoking groups in advance, the experimenter varied his wording according to each client's group allocation. At this initial contact, it was explained that the program was primarily oriented to assist clients to quit smoking, but that the investigator was concerned to evaluate the treatment's success: thus a fee of $20.00 would be required. It was explained that the money would be refunded if the client reported his or her smoking behavior during the next 12 weeks. For those individuals who agreed to participate in the smoking modification program, appointments were scheduled for the single treatment session.

Subjects

Fourty-six clients (20 in the Rapid Smoking Group and 26 in the Hypnosis Group) were taught the respective stop smoking procedures. At the 12 week follow-up, 10 had dropped out, one completed all requirements of the investigation but had transferred to another city and was unavailable for hypnosis testing, and one other, who completed all requirements, refused

to undergo an hypnotic induction. Of the remaining 34 clients (15 men; 19 women) 18 were in the Hypnosis Group and 16 were in the Rapid Smoking Group. They ranged in age from 21 - 54 years (Mean 30.8).

Pre-Treatment Assessment Data

At the first telephone contact, those clients that had volunteered to participate in the smoking modification program were informed that "Smoker's History and Motivation Questionnaires" (Appendix 3) and "Smoker's Intake Cards" (Appendix 4) would be mailed out to them. It was explained that the items on the questionnaire would provide information about current smoking patterns, reasons for smoking, reasons for quitting, etc. Furthermore, clients were required to record their daily cigarette consumption for a seven day period on the Smoker's Intake Card. As such, they were told to smoke normally and not to change their smoking habits during this period. This data was used subsequently as the baseline measure. The clients were then told to return the completed forms at their scheduled treatment session.

The motivation scales included in the Smoker's Questionnaire were taken from Best (1975) and from Leventhal and Avis (1976). Attitudinal factors such as desire to quit or reduce, perceived dependence on cigarettes, smoker's degree of confidence in

succeeding at quitting or reducing, feelings towards smoking etc. were used to define "motivation". For example, motivation items included (a) a semantic differential scale consisting of seven evaluative adjective dimensions describing attitudes towards smoking (e.g. dirty-clean, safe-dangerous) (b) a motivation thermometer that provided an index of the perceived strength of motivation to quit or reduce (c) a desire thermometer that provided an index of the perceived desire to continue smoking (d) questions pertaining to the smoker's anticipated probability of abstinence or reduction following treatment termination and finally (e) questions pertaining to the incentives required for the smoker to give up smoking.

Also included in the smoker's questionnaire were background items related to age, number of years smoking cigarettes, number of attempts to quit or reduce, brand of cigarette etc.

Treatment Session

As far as was possible, the instructions were standardized across the two treatment conditions. Treatment sessions were conducted on an individual basis and were approximately 45 minutes long. Only one treatment session was required.

The completed questionnaire forms and the smoker's

intake forms were collected at this session, as was the twenty dollar deposit. It was emphasized that the present investigation was client-oriented and that the primary objective was to assist smokers in achieving a successful treatment outcome using a simple and rapid treatment procedure. Participants were also informed that as a further objective, an evaluation of the efficacy of the smoking modification program was required. They were advised, therefore, to report their cigarette intake honestly and accurately over the follow-up period.

Treatment

The Hypnosis Group was then taught the Speigel (1970) self-hypnosis technique. During this procedure, the smoker learned a hand levitation to the forehead which once accomplished became a signal to enter a state of meditation. While in this state, they were instructed to concentrate on three basic points: (1) for body, smoking is a poison (2) a person cannot live without his body (3) to the extent that a person wants to live, he owes his body respect and protection. The procedure was then rehearsed several times under the therapists guidance following which the smoker was dismissed and instructed to use the technique once every one or two hours, daily. A camouflage technique was also available so

that the hypnotic procedure could be conducted unobtrusively (e.g. in public places). The rationale for this technique is discussed more fully elsewhere (Speigel, 1970). (See Appendix 5 for full instructions).

The Rapid Smoking Group were taught the rapid smoking technique. It was explained that the long term effects of smoking were negative and that the short term effects were usually positive. Rapid smoking was therefore described as an attempt to change the positive short-term reinforcing effects of smoking to more aversive consequences. Smokers were then instructed to light one of their brand of cigarettes and to smoke it so that they were inhaling deeply every six seconds. Timing was regulated by a metranome and the therapist. After the completion of one entire cigarette, smokers were given a five minute rest and then the process was repeated for an additional three cigarettes or until the individual was completely sated. Smokers were told that if they should smoke a cigarette outside the treatment session, it should be done so in the rapid smoking fashion.

Follow-up

For a period of twelve weeks following the treatment session, smokers in both treatment conditions were required to continue with their treatment regimen and to record their daily cigarette intake. This intake information was mailed

back at weekly intervals on specially provided post-cards. Space was provided to record daily cigarette consumption and the number of uses of the smoking modification technique. At the end of the 12 week follow-up period, participants were seen by the therapist to ascertain present smoking behavior. During this inquiry session, clients in both treatment groups were asked if they would agree to have their hypnotic susceptibility evaluated. It was explained that as a secondary consequence of the smoking modification program, the present investigation was concerned with exploring the possible relationship between hypnotic susceptibility and the extent to which one's smoking behavior was modified by the two treatment methods offered. Hypnotic susceptibility was measured by the Harvard Group Scales of Hypnotic Susceptibility: Form A (HGSHS:A) of Shor and Orne (1962) and was performed on a group basis regardless of treatment condition.

The HGSHS:A consists of a 12 item scale graded in terms of progressive greater item difficulty. The scale consists of a preponderance of ideomotor suggestions such as hand lowering and finger lock, and progresses to more difficult items which require cognitive-perceptual distortions such as post-hypnotic amnesia and post-hypnotic suggestion. The HGSHS:A which was adapted for group administration from the

Stanford Hypnotic Susceptibility Scale: Form A, correlated highly (r= .74) with this latter scale (Bowers, 1976).

Upon completion of the hypnotic induction procedure, clients were required to subjectively rate their hypnotic experience with each of the 12 items of the HGSHS:A. They had to rate each item on a scale of 1 to 10 where 1 represented "completely unhypnotized" and 10 represented "as deeply hypnotized as you feel you could ever be."

These hypnotic depth estimates were recorded to determine the relationship between experimental notions of hypnotic susceptibility and clinical notions of hypnotic depth. A copy of the scoring booklet for HGSHS:A is included in Appendix 6, and the depth report form is contained in Appendix 7. Following the hypnotic testing, the clients' $20.00 deposit was returned to them.

Success Criteria

The data was examined in terms of both a criterion of complete abstinence and of an "improvement" criterion of at least 50 per cent reduction. Since there is considerable disagreement as to what constitutes a "successful" outcome, (Bachman, 1964; Keutzer, 1968; Rapp and Olen, 1955; Speigel, 1970; Wagner and Bragg, 1970) it was decided to analyze the data in terms of both success criteria.

RESULTS

Client Characteristics

Of the 46 clients that had initially volunteered for the stop smoking program, 34 recorded their smoking behavior until the termination of the project. Thus, in the present study, the over-all rate of attrition was 27 per cent: 28 per cent in the hypnotic treatment group and 25 per cent in the rapid smoking treatment group terminated prematurely.

The 34 clients who completed the program (Hypnosis group, N=18; Rapid Smoking group, N=16) were compared with a sample of 38 clients who had completed the requirements of a previous investigation of the role of hypnotizability in determining success in stopping smoking (Perry and Mullen, 1975). Table 1 summarizes the comparisons made between the three groups on a number of smoker-related characteristics.

As can be seen from Table 1[1], there was little difference between the three groups: the clients in the present study were slightly older than those in the study of Perry and Mullen (1975) but not significantly so; they had, however, been smoking longer ($H=7.07$, d.f.=1, $p < .03$). At the 3 month follow-up, the clients in the Rapid Smoking group in the present study had significantly reduced their smoking in terms of a per cent reduction criterion ($H=7.09$, d.f.=1, $p < .03$)

TABLE I

A Comparison of Smoker-Related Characteristics Between The Three Treatment Conditions Used in The Study of Perry and Mullen (1975) and The Present Investigation.

VARIABLE	Perry and Mullen (1975) (N=34) $\bar{X}$	Present Study		H	P
		Hypnosis (N=18) $\bar{X}$	Rapid Smoking (N=16) $\bar{X}$		
Age	27.2	29.4	31.6	2.79	NS
No. Years Smoking	10.1	14.4	13.2	7.07	<.03
No. Attempts to Quit	2.0	1.7	1.9	2.93	NS
Baseline ($\bar{X}$ Cig. per day)	19.1	23.4	22.9	1.07	NS
$\bar{X}$ Cig. per day Week 1	9.8	11.3	7.4	2.69	NS
$\bar{X}$ Cig. per day Week 12	13.4	21.1	16.8	4.25	NS
$\bar{X}$ Technique per day Week 1	4.2	4.3	3.1	1.87	NS
$\bar{X}$ Technique per day Week 12	0.8	1.0	0.7	1.60	NS
Per Cent Reduction Week 12	37.4	27.0	47.14	7.09	<.03

as compared at least to the Hypnosis group of the present study. The data therefore indicate that in spite of the clients in the present study being more confirmed smokers at the time of treatment, the rapid smoking treatment was more effective than hypnosis on a per cent reduction criterion figure. It should be noted that mere per cent reduction can be misleading: hence subsequent sections document the treatment effects in more precise detail.

Hypnotic Susceptibility and Therapeutic Outcome

The first question posed by the present study concerned the extent to which hypnotic susceptibility affects therapeutic outcome when hypnosis is and is not used. To evaluate this question, the clients' percentage reduction of smoking scores were correlated with the two hypnotizability measures (HGSHS:A score and HGSHS:A depth estimate). The results are set out in Table 2.

TABLE 2

Correlations Between Harvard Hypnotic Susceptibility Scores, Hypnotic Depth Estimates and Per Cent Reduction of Smoking Scores at Week Twelve.

	HGSHS:A	Depth
Hypnosis Group	r=0.35	r=0.29
Rapid Smoking Group	r=0.16	r=0.19
Total (Hypnosis and Rapid Smoking Group Combined)	r=0.17	r=0.20

As can be seen from Table 2, no significant relationship was found on any of the comparisons made.

To enable a more detailed analysis, clients in the two treatment groups were classified as either a) quitters (clients were completely abstinent at the 3 month follow-up) b) reducers (clients who had reduced smoking by 50-99 per cent at the 3 month follow-up) and c) failures (clients who had either reduced their smoking by less than 50 per cent or had dropped out). This terminology is in line with the present day thinking: the current literature on smoking indicates a difference of opinion as to the proper success criterion for the treatment of cigarette smoking. As indicated earlier, some investigators (Speigel, 1970) regard complete abstinence as the only valid criterion of success: others (Keutzer, 1968; Wagner and Bragg, 1970) accept a 50-99 per cent reduction criterion as success. Both regard less than 50 per cent reduction as a failure. Thus the present study was concerned to analyze data in terms of both success criteria (in view of the current disagreements) and in terms of the prevailing criterion of failure.

Table 3 sets out mean susceptibility scores on HGSHS:A for the various frequencies of therapeutic outcome across the two treatment groups.

It can be seen from Table 3, that clients in the Hypnosis group were more susceptible than the Rapid Smoking

TABLE 3

Mean Hypnotic Susceptibility Scores on HGSHS:A For Quitters, Reducers and Failures Across The Hypnosis and Rapid-Smoking Treatment Conditions.

	Quitters (100% reduction)	Reducers (50-99% reduction)	Failures (0-50% reduction)	TOTAL
Hypnosis	5.00 (N=1)	7.50 (N=2)	5.07 (N=15)	5.33 (N=18)
Rapid Smoking	4.80 (N=5)	3.20 (N=1)	3.60 (N=10)	3.94 (N=16)
Total (Hypnosis and Rapid Smoking Combined)	4.83 (N=6)	6.00 (N=3)	4.48 (N=25)	4.68 (N=34)
Quitters vs. Reducers and Failures	4.83 (N=6)	5.00 (N=28)		
Quitters and Reducers vs. Failures	5.22 (N=9)		4.48 (N=25)	

group, but a t-test indicated that the difference was not statistically significant ($t=1.48$, $d.f.=32$, $p>.05$). It can be seen also from Table 3 that quitters were no more susceptible than reducers and failures combined; a finding that supports the outcome of Perry and Mullen (1975). In contradiction of these earlier findings, however, quitters and reducers combined were not significantly more susceptible than failures. This finding is confirmed further by an alternative analysis.

In this analysis, clients, regardless of their treatment condition were divided by median split of the hypnotizability scores into a more and a less susceptible group and the per cent reduction scores were compared for the two groups. No significant difference was found using a Mann-Whitney U ($U=0.31$; $p>.05$). The reason for the departure from the Perry and Mullen (1975) finding of a difference between more and less susceptible clients in terms of a per cent reduction criterion, is not clear. The distributions of susceptibility in the present study and in Perry and Mullen (1975) were compared and were found to be identical. A similar distribution has been found in a more recent study (Marcovitch, 1978). In each of the 3 studies, different measuring instruments were used to evaluate susceptibility; Perry and Mullen used the Diagnostic Rating Scale of Orne and O'Connell (1967); the present study used the Harvard Group Scale of Hypnotic

Susceptibility of Shor and E.C. Orne (1962) and Marcovitch (1978) used the Stanford Hypnotic Clinical Scale of Hilgard and J. Hilgard (1975). A cross comparison of distributions can be made by using the cut-off points for high, medium and low susceptibility recommended by the constructors of the respective instruments. The data is presented in Table 4.

TABLE 4

Comparison of Susceptibility Data in Three Studies Using Smokers in a Clinical Treatment Situation.

Susceptibility	Perry and Mullen (1975)		Present Study		Marcovitch (1978)	
	N.	%	N.	%	N.	%
High	5	13.2	5	14.7	5	16.1
Medium	18	47.4	14	41.2	17	54.8
Low	15	39.5	15	44.1	9	29.1
Total	38		34		31	

In all groups, there is the usual percentage of high susceptibles found in experimental studies; however, all three groups contain many more insusceptibles generally encountered in the laboratory.

This suggests that cigarette smokers differ in some (as yet unexplained) way from a student laboratory sample - whether it is in terms of motivation or in terms of reaction to a behavioral modification context in which hypnosis is

dispensed remains to be seen. For the present it is sufficient to note that the lack of relationship between susceptibility and outcome variables cannot be attributed to the manner in which hypnosis testing was performed.

The Effectiveness of Hypnosis and of Rapid Smoking in the Treatment of Cigarette Smoking

In all, of the 46 clients who volunteered for the program, 12 dropped out, 3 reduced from 50-99 per cent and 6 were abstinent at the 3 month follow-up, the remaining 25 clients either reduced by less than 50 per cent or showed no change in smoking patterns. The complete data on treatment outcome, and a comparison with Perry and Mullen (1975) is presented in Table 5.

TABLE 5

Comparison of Treatment Outcome Factors Between The Study of Perry and Mullen (1975) and The Present Study.

	Perry and Mullen (1975)		Present Study Hypnosis Group		Present Study Rapid Smoking Group	
	N	%	N	%	N	%
100% Reduction	7	12.96	1	3.85	5	25.0
50-99% Reduction	10	18.5	2	7.69	1	5.0
49-0% Reduction	21	38.88	15	57.69	10	50.0
Drop-Out	16	29.62	8	30.77	4	20.0
Total	54	99.96	26	100.0	20	100.0

It was found that the 25 per cent abstinence rate in the Rapid Smoking Group was significantly greater than the 4 per cent abstinence rate in the Hypnosis Group ($x^2=4.49$: d.f.=1, $p<.05$). It is to be noted that the comparison was made between the quitters in the two treatment groups versus the reducers, failures and drop-outs combined in each group.

A similar superiority for rapid smoking (see Table 1) was found also in terms of the per cent reduction rate. These findings substantiate, in part, those of Barkley et al. (1977) who likewise found a similar superiority for rapid smoking over hypnosis in the treatment of cigarette smoking.

In a final analysis, the smoking baselines of the 6 clients (13 per cent) who were abstinent at three months follow-up were compared with those of the 50-99 per cent reducers and of the failures. The purpose was to determine whether the reduction rate of the quitters was related to initial smoking baselines. The findings are reported in Table 6.

TABLE 6

Smoking Baselines ($\bar{X}$ Cigarettes Per Day) for Quitters, 50-99 Per Cent Reducers, and Failures.

	Quitters	50-99% Reducers	Failures	H	P
Mean	18.97	17.61	25.38	4.06	$>.05$
Range	4.85-42.14	8.86-22.57	12.57-46.57		
N	6	3	37		

Although it can be seen that quitters and 50-99 per cent reducers smoked an average of several fewer cigarettes per day than the failures, the difference was not statistically significant. Thus the results cannot be attributed to the level of cigarette smoking prior to treatment.

The Relationship between Smoking Habits, Motivation to Quit Smoking and Therapeutic Outcome

It has been indicated by a previous study (Perry and Mullen, 1975) that motivation to quit smoking may be as an important variable in determining successful therapeutic outcome as any actual treatment method. This may be particularly so when a socially learned behavior such as cigarette smoking is involved. At the time of volunteering for the program, clients completed a Smokers' History and Motivation Questionnaire (see Appendix 3). This section is concerned only with the 34 clients who completed the program by furnishing data at the 3 month follow-up. A subsequent section analyzes motivation data for all 46 clients, including the 12 drop-outs.

As can be seen from the smoking motivation questionnaire, the questions were diverse in nature. For example, on question 15, clients were required to rate their smoking habit on a 1-8 scale in terms of the following dichotomies:

awful-nice, beautiful-ugly, dirty-clean; safe-dangerous; good-bad; distastful-tasty; pleasant-unpleasant. Similar problems on scoring existed for questions 16, 17, 18, 19, 20, 23, 24, 25, and 26. It was decided for these items to attempt to obtain a gross measure of "strength of desire to quit." Accordingly, using item 15 as an example, numerical values were given to each of the component rating scales for each question. Thus, for each of the seven subitems of question 15, a number was given to each client rating on each of the 1-8 rating scales. These seven ratings were then summed to give a global measure of the attractiveness of smoking as perceived by the client. A similar procedure was adopted for the other nine items described above. For the two barometer measures, items 21 and 22, the scores were expressed in terms of the 10-point scale used by these items. Item 29 was the factor analyzed version of the Ikard, Green and Hollands (1969) "Reasons for Smoking" (RFS) Questionnaire as described by Leventhal and Avis (1976). From this 29 item scale, it is possible to obtain 2 types of measures: (1) a "strength of motivation" measure can be obtained by calculating a total score for the 29 items. The underlying assumption is that the fewer reasons for smoking, the more favorable the motivation to quit. (2) Leventhal and Avis' (1976) factor

analysis of Ikard et al's (1969) questionnaire yielded seven factors which they identified as indicating different types of smokers. These are pleasure-taste, stimulation, social reward, habit, anxiety, addiction and fiddle. Accordingly, one can obtain a score for each client on each of these smoking "types." In this way, measures of both strength of motivation and smoking type were obtained.

Inter-correlations were performed between the motivation measures, various smoking habit variables and per cent reduction at week 12. The variables and their scoring are described in more detail in Appendix 8.

Because of the large number of variables involved and because of the relatively small number of significant correlations obtained, only correlations which were significant for at least one of the two treatment groups are set out in Table 7.

It can be seen from this Table that none of the motivational and smoking habit variables correlate with therapeutic outcome in any consistent manner.

Analysis of Smoking Motivation

This phase of the investigation sought to obtain data bearing on the observation that a large percentage of people who quit smoking do so without any recourse to the techniques available from psychologists (Premack, 1971).

TABLE 7

Correlations Between Per Cent Reduction Scores (Week 12) and Smoking-Related Variables.

Smoking Variables	Hypnosis Group	Rapid Smoking Group	Total
Nos. Attempts to Quit		+.64	+.37
Nos. Cigarettes Week 1	-.47		-.35
Nos. Cigarettes Week 12	-.81	-.92	-.87
Nos. Techniques Week 1		-.56	-.37
Nos. Techniques Week 12	+.54		
Question 21 Barometer to Quit	+.47		+.31
Question 20 Confidence to Quit	+.45		
Question 29 Stimulation	+.39		
Question 23 Cost of Cigarette		+.46	+.31
Baseline	-.40		
Question 29 Social Reinforcement	+.51		
Per Cent Reduction: Week 1	+.41		+.35

On this view, all that is needed is strong motivation to quit; further it is thought that any technique for modifying smoking will be successful provided that the requisite motivation is present (Hunt and Bespalec, 1973). As indicated in earlier sections, the Smokers' History and Motivation Questionnaire was constructed in an attempt to obtain such a measure of motivation. The hypothesis was that if motivation is relevant, there should be a relationship between at least some of the questions asked on the questionnaire, and therapeutic outcome at 3 months follow-up, regardless of the subject's treatment group. In a sense, this approach to the problem represents a type of control procedure that is, in principle, equivalent to a no-treatment or placebo-attention control. It should be emphasized, however, that no validity data exists for the items which constituted the questionnaire; only the finding of a replicable relationship would constitute such a validation. By contrast, the finding of a lack of relationship would have to be interpreted equivocally; it could mean either that the scale questions are invalid measures of motivation and/or that no relationship exists between smoking motivation and therapeutic outcome and/or that treatment methods for helping people to quit smoking provide unique effects, over and above the subject's desire to quit.

In an initial approach to this problem, per cent reduction at 3 months follow-up and 46 measures derived from the Smoking History and Motivation Questionnaire were intercorrelated and factor analyzed using a principle component solution (Type API) with a varimax rotation. This method seeks to attain "simple structure" by maximizing the tendency towards both large and small loadings in the rotated matrix. The 46 motivation variables were derived in the following manner: questions 15-20 consist of various subquestions yielding 31 measures; 2 further measures were obtained from the smoking "thermometers" in question 21 and 22 and 4 further measures were obtained from questions 23-27. In addition, a total score was obtained from the 29 questions in item 29, and 7 further measures of smoking "type" were derived for each subject following the factor analyzed item clusters reported by Leventhal and Avis (1976). A global measure of "strength of motivation to quit" was included also; it consisted of the sum of subjects' scores on items 23-26. For this analysis, all 46 subjects who had volunteered for the smoking treatment were used, including the 12 drop-outs, who were treated as zero per cent reducers.

The initial analysis sought to determine whether there was any particular constellation of individual questionnaire items loading on a factor on which per cent reduction at 3 months loaded also. This analysis produced 16 factors,

but the outcome measure of per cent reduction at 3 months did not load substantially on any of them. When the eigen values for the 16 factors were plotted graphically, it was found that the plot "scalloped" at factor 3. In conformity with common practice, this was interpreted to mean that the remaining 13 factors could be the result of variance associated with measurement error. In the case of the present study, this hypothesis is particularly likely, given the nature of the measures that were used.

To determine whether the first three factors would continue to emerge when this presumed context of measurement error was removed, the analysis was rerun, this time with the instruction to the computer to solve for 3 factors. Almost identical factors were found when this was done; as before, however, per cent reduction at three months did not load on any of them. Since this exploratory analysis did not reveal any relationship of motivational to outcome variables, its results are not reported.

In a second attempt to link motivational to outcome variables, composite scores were obtained on 10 motivational items of the Smokers History and Motivation Questionnaire. These were: (1) Emotional Response to Smoking (the sum of scores on the 7 subitems of question 15); (2) Current Need for Cigarettes (the sum of scores on the 5 subitems of

question 16); (3) Reasons for Quitting (the sum of scores on the 5 subitems of question 17); (4) Pressure to Quit Smoking (the sum of scores on the 5 subitems of question 18); (5) Expected changes (the sum of scores on the 5 subitems of question 19); (6) Confidence of Success (the sum of scores on the 4 subitems of question 20); (7) Desire to Quit Smoking (the score on the smoking "thermometer of question 21); (8) Love of Cigarettes (the score on the Smoking "thermometer" of Question 22); (9) Degree of Commitment to Quitting (the sum of scores on items 23-26); and (10) Reasons for Smoking (the subject's score over the 29 items of Question 29).

These 10 variables were treated as independent variables in a multiple regression analysis and a stepwise multiple regression analysis of the data, in which per cent reduction at three months was the dependent variable. As in the varimax factor analysis reported at the beginning of the section, the questionnaire responses of all 46 subjects who volunteered for the smoking treatment were used, with the 12 drop-outs again being treated as zero percent reducers.

Since the multiple regression and the stepwise multiple regression analysis produced similar results, only the findings of the multiple regression analysis are reported. It was found that the weighted combination of three of the

10 composite measures significantly predicted per cent reduction in smoking after three months (the dependent variable) ($p \leq .017$). These were: Variable 10 (Reasons for Smoking), Variable 2 (Current Need for Cigarettes) and Variable 7 (Desire to Quit Smoking). The addition of further variables to the multiple regression equation did not add to its predictive power; accordingly the analysis was rerun with instructions to the computer to solve for these 3 variables alone.

Similar results were obtained once more for both the multiple regression and the stepwise multiple regression analysis. Because of this, only the results of the multiple regression analysis are reported in Table 8.

TABLE 8

Multiple Regression Analysis Relating Three Composite Motivation Measures (Independent Variable) to Per Cent Reduction at Three Months (Dependent Variable).

Variable	F	P	Beta	Overall F_e	Overall P
Reasons for Smoking	7.51	.009	.399	3.81	.017
Current Need for Cigarettes	5.25	.027	-.333		
Desire to Quit Smoking	2.19	.146	.203		

Figure 1 provides a graphical representation of each of the 46 subjects' standing on the three variables isolated by the multiple regression analysis, relative to the regression line estimated for this data. As can be seen the line "fits" for 39 of the 46 subjects quite well. It is striking, however, that of the cluster of 7 subjects who are located in the region of plus 2 standard deviations from the regression line, six of them had quit smoking completely at 3 months follow-up. This finding led to a further analysis of the data using a discriminant analysis, in which the 6 quitters were compared to the remaining 40 subjects. This analysis indicated distinctive centroids for the 2 groups but the finding can best be represented in terms of a chi-square analysis (Table 9).

TABLE 9

Discriminant Analysis Comparing Quitters (Group 2) With Reducers and Failures (Group 1) on Three Composite Motivation Measures.

	Predicted Group Membership	
	Reducer/Failure	Quitter
Reducer/Failure	26	14
Quitter	1	5

FIGURE I

Multiple Regression Analysis: Linear Regression of the Dependent Variable (Per Cent Reduction Week 12) on Three Independent Variables (Reasons for Smoking; Need for Smoking; Desire to Quit Smoking).

OBSERVATION	Y VALUE	ESTIMATE	RESIDUAL	-2SD	0.0	+2SD
1.	98.00000	80.66979	17.33021		I	
2.	38.00000	45.98960	-7.989604		I	
3.	60.00000	30.42606	29.57394		I	
4.	0	12.70003	-12.70003		I	
5.	7.000000	31.35222	-24.35222		I	
6.	23.00000	37.83940	-14.83940		I	
7.	34.00000	35.33327	-1.333269		I	
8.	0	14.28774	-14.28774		I	
9.	0	11.89440	-11.89440		I	
10.	0	12.44316	-12.44316		I	
11.	9.000000	1.718049	7.281951		I	
12.	0	11.89440	-11.89440		I	
13.	0	23.05547	-23.05547		I	
14.	0	8.092442	-8.092442		I	
15.	0	30.54659	-30.54659		I	
16.	0	22.79860	-22.79860		I	
17.	31.00000	29.03665	1.963352		I	
18.	15.00000	5.699101	9.300899		I	
19.	0	14.36551	-14.36551		I	
20.	18.00000	28.91612	-10.91612		I	
21.	43.00000	44.29157	-1.291568		I	
22.	0	28.62423	-28.62423		I	
23.	12.00000	3.776748	8.223252		I	
24.	0	16.42421	-16.42421		I	
25.	100.0000	37.83940	62.16060		I	
26.	0	22.87637	-22.87637		I	
27.	100.0000	29.25077	70.74923		I	R
28.	0	50.33132	-50.33132		I	
29.	100.0000	38.17405	61.82595		I	
30.	100.0000	31.72188	68.27812		I	R
31.	0	43.33039	-43.33039		I	
32.	0	-6.279074	6.279074		I	
33.	100.0000	41.19392	58.80608		I	
34.	0	6.325634	-6.325634		I	
35.	0	33.30959	-33.30959		I	
36.	15.00000	37.13510	-22.13510		I	
37.	87.00000	6.325634	80.67437		I	R
38.	100.0000	43.58726	56.41274		I	
39.	28.00000	36.32947	-8.329465		I	
40.	0	24.93507	-24.93507		I	
41.	10.00000	-15.20235	25.20235		I	
42.	0	27.44894	-27.44894		I	
43.	0	15.76265	-15.76265		I	
44.	20.00000	9.680152	10.31985		I	
45.	0	30.13417	-30.13417		I	
46.	0	21.62331	-21.62331		I	

NOTE - (*) INDICATES ESTIMATE CALCULATED WITH MEANS SUBSTITUTED
R INDICATES POINT OUT OF RANGE OF PLOT

For this data, $X^2=5.57$; $p \leq .018$. Put in another way, it can be concluded that if one had used the three motivational variables isolated by the multiple regression analysis, to predict therapeutic outcome in this study, 67.4 per cent of clients (or two out of three) would have been identified correctly. This finding suggests strongly, that motivation to quit as measured by certain inventory items is a significant determinant of therapeutic success.

On the basis of this finding, one final analysis was performed. Table 10 sets out the ranges on the three smoking motivation variables for the 6 quitters, and the 40 reducers and failures whose data have been arranged to correspond with the ranges of the quitters. As can be seen in Table 10, 22 of the reducers and failures fell within the range of 15-29 for the 6 quitters on the Reasons for Smoking item, 36 of them fell within the same range as the quitters on the Current Need for Cigarettes item, and 31 of them fell within the same range as the quitters on the desire to Quit Smoking item.

It was then asked: how many of the reducers and failures fell within the same range as the quitters on all three variables? Table 11 reveals that 15 of them did.

The resulting chi squared is significant ($X^2=8.16$; d.f.=1, $p<.01$). In practical terms, this means that these 3 motivational variables predict correctly the therapeutic outcome for 67.39 per cent of the sample. This finding is

TABLE 10

Scoring Ranges for Quitters Versus Reducers and Failures on (a) Reasons for Smoking, (b) Desire to Quit Smoking, and (c) Current Need for Cigarettes.

(a) Reasons for Smoking		
Range	N. Quitters	N. Reducers and Failures
15-29	6	22
0-14	0	18
(b) Desire to Quit Smoking		
Range	N. Quitters	N. Reducers and Failures
8-10	6	31
1-7	0	9
(c) Current Need for Cigarettes		
Range	N. Quitters	N. Reducers and Failures
13-20	6	36
1 -12	0	4

TABLE 11

Comparison of Quitters With Reducers and Failures on 3 Composite Motivation Variables.

	Quitters	Reducers and Failures
15-20 (RFS) 8-10 (DTQS) 13-17 (CNFC)	6	15
Did not show the above pattern	0	25

identical to that found by the discriminant analysis of Table 9.

One caution is necessary in interpreting these findings. The finding may be idiosyncratic to the clients of the present study. A replication is required to confirm the impression of the present study that motivation to quit is a major determinant of success: perhaps as equally, if not more important than any treatment modality that is used to treat smoking.

DISCUSSION

The present study sought to obtain data bearing on three questions, namely: (1) the role of hypnotic susceptibility in determining therapeutic outcome when hypnosis is, and is not used as a treatment modality; (2) the relative effectiveness of hypnosis and rapid smoking as treatment methods for cigarette smoking; and (3) the role of motivation to quit as a determinant of outcome.

In answer to the first question, the findings supported those of Perry and Mullen (1975) in terms of a total abstinence criterion but not in terms of a 50 per cent or greater reduction criterion. As in Perry and Mullen (1975) there was no relationship between susceptibility and total abstinence at 3 months follow-up. Unlike Perry and Mullen (1975) however, there was no relationship between the two variables when a 50 per cent reduction criterion was employed to examine this question. It is not clear as to which finding is fortuitous. Neither is it clear as to why socially learned behaviors appear to be more difficult to treat by hypnosis than are medical conditions such as clinical pain, asthma and dermatological conditions.

It is clear, however, this lack of a relationship cannot be attributed to the manner in which the hypnotic testing was performed since the distribution of susceptibility scores observed in the present study corresponded to the susceptibility distributions in two other smoking modification programs (Marcovitz, 1978; Perry and Mullen, 1975). It is of further interest, that for some as yet unexplained reason, cigarette smokers differ from the general population in terms of their distribution of susceptibility. Whereas, 10-15 per cent of the general population fall into the low susceptible range, 29-44 per cent of cigarette smokers have fallen within this range, over these studies. Clearly, additional research is needed to investigate this finding more closely.

The enigma of how subject variables determine the response to treatment has been largely neglected. While the present study attempted to elucidate the role of hypnotic susceptibility in treatment outcome, it should be emphasized that susceptibility represents but one aspect of the complex of subject factors that may determine therapeutic success. Indeed, from a broader perspective, more research is required to uncover those subject variables that maximize the effectiveness of treatment procedures that clinicians utilize. At the same time, the finding observed in this study corresponds with the long standing opinion among clinicians

dating from Freud (1891). In light of the reported discrepancies however, the susceptibility-outcome question deserves further investigation.

The second objective of the present investigation was to determine the relative efficacy of hypnosis as opposed to rapid smoking in the treatment of smoking behavior.

At the 3 month follow-up, the Rapid Smoking Group had significantly more abstainers than the Hypnosis Group (25.0 per cent versus 3.8 per cent) and this superiority was found also in terms of the overall per cent reduction rate of the two groups (47.1 per cent versus 27.0 per cent). However, there were no differences in the number of reducers between the two treatment conditions for those who reduced their cigarette intake from 50-99 per cent (See Table 5). It would appear that rapid smoking was more effective in terms of an abstinence criterion but not in terms of reduction by a 50-99 per cent criterion.

The findings suggest that rapid smoking is a more effective method of teaching people to quit smoking than is hypnosis. A similiar finding was observed by Barkley et al., (1977) where at a 9 month follow-up, 42 per cent from the Rapid Smoking Group compared to 25 per cent in the Hypnosis Group, had quit completely. Their higher abstinence rates in both groups may be due to more interpersonal contact between

therapist and client. Indeed, the very reason that Speigel's (1970) technique was chosen in the present study was precisely because it involves minimal interaction between client and therapist.

The abstinence rates in the present study were low, and this may have been due to a number of reasons. For example, clients in this study had been smoking cigarettes significantly longer than those in the study of Perry and Mullen (1975) and they could have been more resistant to change. Furthermore, at the 3 month inquiry session, smokers in both treatment groups of the present study reported that it was difficult to follow though practicing the stop-smoking technique, especially in public places. One client, in the Rapid Smoking Group, said that he felt "particularly foolish puffing away like a maniac in front of his friends." Another common complaint was that the rapid smoking technique was too aversive and as such, many clients had difficulty practicing this procedure outside of the treatment session. As for the hypnotic treatment, a few clients remarked that it was impossible to engage in the hypnotic procedure once every one or two hours in a busy office setting. One other client felt that the hypnotic technique was "too simple...nothing to it" and therefore believed that it couldn't possibly work.

All these reasons taken together may explain the

low abstinence rates observed in the present study. Notwithstanding, one would think that if a client was strongly committed to terminating the smoking habit, he or she would overlook the inconveniences built into the technique. For example, one would think that a person's friends would be supportive in a situation where they knew that he or she was trying to quit smoking, and would not perceive rapid smoking in a social situation as indicative of maniacal tendencies.

The third issue concerned motivation. The present study sought to evaluate and to quantify motivation to quit smoking, using measures taken from Best (1975) and Leventhal and Avis (1976). These measures do not have any known psychometric properties; no data exists for them on reliability and validity nor have norms been constructed. In the present study the motivational measures were intercorrelated with various smoking habit variables and with per cent reduction at week 12. Results indicated that none of the individual motivational variables in the inventory correlated consistently with outcome across the two treatment conditions. It was found however, that clients who smoked for the "stimulant" effects and for the "social reinforcement properties" (Question 29 - Reasons for Smoking questionnaire item) benefited the most when hypnosis was the mode of treatment (See Table 7). Furthermore, those smokers who had a strong desire to quit (Question 21) and were confident of quitting

(Question 20), tended to reduce their cigarette intake in the hypnosis condition. In contrast, the smokers who had a stronger monetary commitment to quit smoking (e.g. it would take more money for them to quit smoking as indexed by their response to Question 24), had more success with the rapid smoking technique. The finding suggests, tentatively, an interaction between motivation and treatment modality. The design of the present study, however, did not permit investigation of this possibility, since no prior data existed as to which motivation variables might be implicated in successful therapeutic outcome.

The study, however, found an interesting relationship between motivation to quit smoking and actual quitting regardless of treatment group, using composite scores obtained on 10 motivational items on the Smoker's History and Motivation Questionnaire. While it is recognized that the measures used were as crude as measures can be, the resulting multiple regression analysis revealed that the weighted combination of three of them correlated significantly with per cent reduction at 12 weeks. The variables were as indicated earlier: the Reasons for Smoking inventory, a measure of Current Need for Smoking, and a measure of the Desire to Quit Smoking. Using these three motivation measures it was found that the regression

line "fitted" all of the failures and all but one of the 50-99 per cent of the reducers. It did not fit any of the quitters (See figure 1). A subsequent discriminant analysis confirmed this finding, and a subsequent analysis (Table 11) indicated that in practice, if an investigator were to use the information provided by these three measures, he or she would be able to predict all 6 quitters and 62 per cent of the reducers and failures. Put in another way, with knowledge of the person's standing of these three variables alone, a clinician would be correct in two cases out of three.

This finding is encouraging, and supports a long standing impression that motivation to quit may be as equably, if not a more important determinant of therapeutic success than anything the therapist actually does (Premack, 1971). It provides a basis for further research since successful replication of the present finding would be important for substantiating this clinical impression.

In all, the findings of the present study, lend strong support to the impression of Hunt and Bespalec (1974). On the basis of a survey of success rates of a number of treatment methods, these investigators concluded: "We are dealing with a complex multivariate problem in which each investigator is concerned with some elements of the problem, but no one encompasses all of them" (p. 635).

Subsequent research stemming from the present investigation should seek to study simultaneously, motivational, susceptibility, subject characteristics and treatment method variables using multivariate designs in an attempt to progress from "concern" to "encompassment". This investigation may have provided some of the clues; only replication will determine if a solution is in sight.

APPENDIX I

Want to QUIT SMOKING?

If you've been thinking of quitting or reducing smoking, you can participate in a treatment program involving a recently developed stop smoking technique. For further information please call Bob Gelfand, Applied Psychology Center, Concordia University, at 879-8080.

APPENDIX 2

First Telephone Conversation

Thank-you very much for calling.

This treatment program for modifying cigarette smoking is being carried out in conjunction with Dr. Campbell Perry at the Applied Psychology Centre of this university. What we will be doing is teaching you a method that is currently proving very successful both with people who wan to quit altogether and with people who want to reduce by a certain amount. Which do you want to do - quit completely or reduce?

* Record answer.

Now the technique we will be using involves hypnosis/behavior modification technique. It will take about an hour to teach you the technique. Our primary objective, as I said, is teaching you how to effectively quit or reduce smoking. However, secondarily, we are also concerned with gathering more information about the effectiveness of this program over a period of time. So the treatment is free. But we do require a $20.00 deposit which will be refunded to you at the end of three months if you will do a few simple things to keep us informed of how you are progressing. At the treatment session, we will give you a dozen stamped self-addressed post-cards and ask you to record your progress by posting us one post-card per week. At the end of the 12

weeks we will ask you to come in to talk to us about how it went and to discuss possible ways that we can make the treatment even more effective. So, would you be interested in participating in the treatment program?

* If yes:

O.K. This is what we'll do. I shall post you a package of materials concerned with your smoking history and your smoking habits. We would also ask you to record your daily cigarette consumption starting the day you receive the package. A smoking record form will be included in the package, so that you may record your intake for seven days. Now I'd also like to make an appointment with you for about 10 days from now. When would be a convenient time?

* Make appointment date.

O.K. So I'll see you on (time and date) at the Applied Psychology Centre (give directions). You'll receive the package on smoking history and habits in a few days. Please fill out the forms and record your daily cigarette intake for seven days. Bring in this information with you to your appointment session on (date). Thank-you very much. Looking forward to seeing you.

APPENDIX 3

Smokers History and Motivation Questionnaire

Instructions: Please answer the following questions as they apply to you in the spaces provided on this form.

NAME: _____

AGE: _____ PHONE NUMBER: _____

1. Does your husband / wife or some other person close to you smoke cigarettes?
2. Do your children smoke cigarettes?
3. What brand of cigarettes do you smoke?
4. At what time of the day do you smoke most heavily?
5. Do you smoke immediately after meals and before retiring?
6. Do you smoke if awakened in the evening or during night hours?
7. When did you start smoking?
8. What feelings do you derive from smoking?
9. What are the benefits?
10. Why do you want to stop or reduce your cigarette intake?
11. Have you ever tried to stop smoking? If so for how long? What caused a return to smoking?
12. Have you ever tried to reduce your smoking? If so for how long? What caused a return to smoking?
13. What would happen if you stopped smoking?
14. What would happen if you reduced your smoking intake?

15. Rate your smoking habit on each scale seperately without regard of the judgements made on the other scale.

awful	___	___	___	___	___	___	___	___	nice
beautiful	___	___	___	___	___	___	___	___	ugly
dirty	___	___	___	___	___	___	___	___	clean
safe	___	___	___	___	___	___	___	___	dangerous
bad	___	___	___	___	___	___	___	___	good
distaste-ful	___	___	___	___	___	___	___	___	tasty
pleasant	___	___	___	___	___	___	___	___	unpleasant

16. Current need for cigarettes.

How much need for:	NONE	SLIGHT	MODERATE	STRONG
a. relieving tension	___	___	___	___
b. after eating	___	___	___	___
c. social support	___	___	___	___
d. relieving boredom	___	___	___	___
e. just straight nicotine	___	___	___	___

17. Reasons for quitting or reducing.

a. financial	___	___	___	___
b. medical	___	___	___	___
c. social (friends quitting, believed dirty)	___	___	___	___
d. challenge	___	___	___	___
e. other	___	___	___	___

18. Pressure for quitting or reducing:

a. % of friends have quit _____

B. % of friends smoke _____

	NONE	SLIGHT	MODERATE	STRONG
c. immediate medical, social concern	___	___	___	___
d. pressure from significant others (wife, kids, doctor, close friend)	___	___	___	___
e. other	___	___	___	___

19. Expected changes.

a. physical (greater energy, food taste better, improved health, mouth not taste)	___	___	___	___
b. at home (spouse not nag, money to buy things)	___	___	___	___
c. at work	___	___	___	___
d. socially	___	___	___	___
e. other	___	___	___	___

20. How confident are you in the chances of your being able to quit or to reduce smoking? Are you completely confident (100% probability of success), certain you will never make it (0% probability of success), or somewhere in between? Express your confidence of success in percentage form next to each of the following.

_____ Probability of not smoking or reducing to the desired amount for one week after the training program.

_____ Probability of not smoking or reducing to the desired amount for one month after the training program.

_____ Probability of not smoking or reducing to the desired amount for 1 year after the training program.

Q. 20 cont'd on next page.

Probability of never smoking again or reducing immediately after the training program.

21. We need an idea of just how strongly you'd like to give up smoking. Would you please indicate on the "motivation thermometer" below how strong you feel your motivation to quit is. Mark the thermometer with a line at the level which your motivation reaches. Make sure you rate your current motivation to quit.

10 An extremely strong desire to quit
9
8
7
6
5
4
3
2
1
0 No desire to quit at all. Perfectly happy with smoking.

22. In a similar way, we'd like to know how much you like the idea of smoking. How strong is your desire to smoke in terms of things you like about smoking? When thinking of your desire do not consider physical cravings you may have from time to time. Rather, tell us how much do you like smoking.

10 Very strong love for cigarettes. (Want to smoke more than anything else, and can't imagine not being able to do it.
9
8
7
6
5
4
3
2
1
0 Never want a cigarette. No desire at all.

23. Would you continue to smoke if a pack of cigarettes cost: $1.00___, $1.50___, $2.00___, $2.50___, $3.00___, $3.50___, $4.00___, $4.50___, $5.00___.

24. If you were offered money to quit smoking, how much would it take for you to quit or to reduce? $10,000___, $50,000___, $100,000___, $250,000___, $500,000___, $750,000___, $1,000,000___.

25. What if today the doctor told you that you had to quit completely for medical reasons. Would you: reduce by 25%___, reduce by 50%___, reduce by 75%___, reduce by 90%___, quit completely___.

26. With regards to the previous question, how long would it take before you reached your goal? Immediately___, one week___, one month___, one year___.

27. Do you want to quit___or reduce___smoking? If reduce, how many cigarettes do you want to smoke per day? ____

28. Why if for, any reason (s) would you want to continue smoking? _____

29. Answer yes or no for the following questions:

    1. If I am without cigarettes for some time, I am not bothered or uncomfortable. _____

    2. Part of the enjoyment of smoking a cigarette somes from the steps I take to light it up._____

    3. I find I smoke cigarettes for their taste alone._____

    4. When I have run out of cigarettes, I find it almost unbearable until I can get them._____

    5. Smoking gives me something to do with my hands._____

    6. I smoke cigarettes in order to keep myself from slowing down._____

    7. When I feel uncomfortable, or upset about something, I light up a cigarette._____

    8. I've found a cigarette in my mouth and didn't remember putting it there. _____

    9. I find cigarettes pleasurable. _____

    10. When I'm nervous in social situations, I smoke._____

Now I propose that in the beginning you do these exercises as often as ten times a day, preferably every 1 to 2 hours. At first the exercise takes about a minute, but as you become more expert, you can do it in much less time.

The exercise is as follows:

You sit or lie down and, to yourself, you count to three. At one, you do one thing; at two, you do two things; and at three, you do three things. At one, look up toward your eyebrows; at two, close your eyelids and take a deep breath; and at three, exhale, let your eyes relax and let your body float.

As you feel yourself floating, you permit one hand or the other to feel like a buoyant ballon and let it float upward as your hand is now. When it reaches this upright position, it becomes the signal for you to enter a state of meditation.

In this state of meditation you concentrate on these three critical points:

One: For your body, not for you, for your body smoking is a poison.

Two: You need your body to live.

Three: You owe your body this respect and protection.

Reflect on the implications of these three points and then bring yourself out of this state of concentration called

self-hypnosis by counting backwards in this manner.

Suppose 1 to 2 hours have elapsed and you want to do a reinforcement exercise, and you do not have privacy. You do not want to attract attention with your hand up in the air. Here is a camouflaged way to do it. Make two changes. Close your eyelids first and then roll your eyes up. This way the upward eyeroll is private. Second, instead of raising your forearm straight up, bring your hand to your forehead in a position of concentration.

Repeat to yourself: For my body, smoking is a poison. I need my body to live. I owe my body this respect and protection. Once you have mastered it, the exercise takes about 20 seconds. An observer would assume that you are concentrating on something, and that is precisely what you are doing. Self-hypnosis is a disciplined concentration.

So far we have discussed the exercise as a basic body defense system. Doing the exercise every 1 or 2 hours is like programming a computer. By imprinting this program on your brain, you have a private computer that sets your primary policy.

Finally, there is a secondary defense. Suppose you find your hand reaching for a cigarette, or you find yourself thinking about smoking. Instead of fighting it, do this quickly. Bring your hand up and stroke your fore-

head. This gesture reactivates the last time you did the exercise. It reactivates the third point, which is: I owe my body this respect and protection. The reason for doing the exercises every 1 to 2 hours is that you always have a recent exercise to which you can refer.

If you fight it, you are missing the message. But if you do keep reinforcing this affirmation to respect and protect your body, you have something going for you. Good luck! (Speigel, H. A single treatment method to stop smoking using ancillary self-hypnosis. The International Journal of Clinical and Experimental Hypnosis. 1970, 18, 235).

RESPONSE BOOKLET – FORM A

APPENDIX 6

HARVARD GROUP SCALE OF HYPNOTIC SUSCEPTIBILITY

by Ronald E. Shor and Emily Carota Orne

The Scale is a standard procedure for estimating susceptibility to hypnosis. An individual's susceptibility to hypnosis may change, however, over time and with differing circumstances. An individual who appears relatively unsusceptible at this time by these standard procedures will not necessarily still be relatively unsusceptible at a later time or under different circumstances.

PLEASE SUPPLY THE INFORMATION REQUESTED BELOW

Name: _____ **Date:** _____

Age: _____ **Sex:** _____ **School:** _____ **Class:** _____

Occupation: _____

Present Address: _____

_____ **Phone:** _____

Permanent Address: _____

_____ **Phone:** _____

Have you ever been hypnotized? Circle: Yes No
If so, please cite the circumstances and describe your experiences. Please be brief:

DO NOT OPEN THIS BOOKLET until the examiner specifically instructs you to do so

CONSULTING PSYCHOLOGISTS PRESS, INC. PALO ALTO, CALIFORNIA

Please write down now briefly in your own words a *list* of the things that happened since you began looking at the target. Do *not* go into detail. Spend three minutes, no longer, in writing your reply.

Please **DO NOT TURN THIS PAGE** *until the examiner specifically instructs you to do so*

PLEASE DO NOT RETURN TO PAGE 2

On this page write down a list of anything else that you now remember that you did not remember previously. Please do *not* go into detail. Spend two minutes, no longer, in writing out your reply.

Please **DO NOT TURN THIS PAGE** *until the examiner specifically instructs you to do so*

PLEASE DO NOT RETURN TO EARLIER PAGES

SECTION ON OBJECTIVE, OUTWARD RESPONSES

Listed below in chronological order are the eleven specific happenings which were suggested to you during the standard hypnotic procedure. We wish you to estimate whether or not you *objectively* responded to these eleven suggestions, that is, whether or not *an onlooker* would have observed that you did or did not make certain definite responses by certain specific, predefined criteria. In this section we are thus interested in your estimates of your *outward behavior* and *not* in what your *inner, subjective experience* of it was like. Later on you will be given an opportunity to describe your inner, subjective experience, but in this section refer only to the outward behavioral responses irrespective of what the experience may have been like subjectively.

It is understood that your estimates may in some cases not be as accurate as you might wish them to be and that you might even have to guess. But we want you to make whatever you feel to be your *best estimates* regardless.

Beneath a description of each of the eleven suggestions are sets of two responses, labeled A and B. Please *circle* either A or B for each question, whichever you judge to be the more accurate. Please answer *every* question. Failure to give a definite answer to every question may lead to disqualification of your record.

I. HEAD FALLING

You were first told to sit up straight in your chair for 30 seconds and then to think of your head falling forward. Would you estimate that *an onlooker* would have observed that your head fell forward at least two inches during the time you were thinking about it happening?

Circle one: A. My head fell forward at least two inches.

B. My head fell forward less than two inches.

II. EYE CLOSURE

You were next told to rest your hands in your lap and pick out a spot on either hand as a target and concentrate on it. You were then told that your eyelids were becoming tired and heavy. Would you estimate that *an onlooker* would have observed that your eyelids had closed (before the time you were told to close them deliberately)?

Circle one: A. My eyelids had closed by then.

B. My eyelids had *not* closed by then.

III. HAND LOWERING (LEFT HAND)

You were next told to extend your left arm straight out and feel it becoming heavy as though a weight were pulling the hand and arm down. Would you estimate that *an onlooker* would have observed that your hand lowered at least six inches (before the time you were told to let your hand down deliberately)?

Circle one: A. My hand had lowered at least six inches by then.

B. My hand had lowered less than six inches by then.

IV. ARM IMMOBILIZATION (RIGHT ARM)

You were next told how heavy your right hand and arm felt and then told to try to lift your hand up. Would you estimate that *an onlooker* would have observed that you did *not* lift your hand and arm up at least one inch (before you were told to stop trying)?

Circle one: A. I did *not* lift my hand and arm at least one inch by then.

B. I did lift my hand and arm an inch or more by then.

V. FINGER LOCK

You were next told to interlock your fingers, told how your fingers would become tightly interlocked, and then told to try to take your hands apart. Would you estimate that *an onlooker* would have observed that your fingers were incompletely separated (before you were told to stop trying to take them apart)?

Circle one: A. My fingers were still incompletely separated by then.

B. My fingers had completely separated by then.

VI. ARM RIGIDITY (LEFT)

You were next told to extend your left arm straight out and make a fist, told to notice it becoming stiff, and then told to try to bend it. Would you estimate that *an onlooker* would have observed that there was less than two inches of arm bending (before you were told to stop trying)?

Circle one: A. My arm was bent less than two inches by then.

B. My arm was bent two or more inches by then.

VII. MOVING HANDS TOGETHER

You were next told to hold your hands out in front of you about a foot apart and then told to imagine a force pulling your hands together. Would you estimate that *an onlooker* would have observed that your hands were not over six inches apart (before you were told to return your hands to their resting position)?

Circle one: A. My hands were not more than six inches apart by then.

B. My hands were still more than six inches apart by then.

VIII. COMMUNICATION INHIBITION

You were next told to think how hard it might be to shake your head to indicate "no", and then told to try. Would you estimate that *an onlooker* would have observed you to make a recognizable shake of the head "no"? (That is, before you were told to stop trying.)

Circle one: A. I did *not* recognizably shake my head "no".

B. I did recognizably shake my head "no".

IX. EXPERIENCING OF FLY

You were next told to become aware of the buzzing of a fly which was said to become annoying, and then you were told to shoo it away. Would you estimate that *an onlooker* would have observed you make any grimacing, any movement, any outward acknowledgement of an effect (regardless of what it was like subjectively)?

Circle one: A. I did make some outward acknowledgement.

B. I did *not* make any outward acknowledgement.

X. EYE CATALEPSY

You were next told that your eyelids were so tightly closed that you could not open them, and then you were told to try to do so. Would you estimate that *an onlooker* would have observed that your eyes remained closed (before you were told to stop trying)?

Circle one: A. My eyes remained closed.

B. My eyes had opened.

XI. POST-HYPNOTIC SUGGESTION (TOUCHING LEFT ANKLE)

You were next told that after you were awakened you would hear a tapping noise at which time you would reach down and touch your left ankle. You were further informed that you would do this but forget being told to do so. Would you estimate that *an onlooker* would have observed either that you reached down and touched your left ankle, or that you made any partial movement to do so?

Circle one: A. I made at least an observable partial movement to touch my left ankle.

B. I did *not* make even a partial movement to touch my left ankle, which would have been observable.

CONTINUE ON NEXT PAGE

**YOU MAY NOW REFER TO EARLIER PAGES –
BUT PLEASE DO NOT WRITE ANYTHING FURTHER ON THEM.**

SECTION ON INNER, SUBJECTIVE EXPERIENCES

(1) Regarding the suggestion of EXPERIENCING A FLY—how real was it to you? How vividly did you hear and feel it? Did you really believe at the time that it was there? Was there any doubt about its reality?

(2) Regarding the two suggestions of HAND LOWERING (LEFT) and HANDS MOVING TOGETHER — was it subjectively convincing each time that the effect was happening entirely by itself? Was there any feeling either time that you were helping it along?

(3) On the remainder of this page please describe any other of your inner, subjective experiences during the procedure which you feel to be of interest.

THANK YOU FOR YOUR COOPERATION

APPENDIX 7

DEPTH OF HYPNOSIS SHEET

NAME: _____

ITEM	DEPTH (1 - 10)
Head Falling	
Eye Closure	
Hand Lowering	
Arm Immobilization	
Finger Lock	
Arm Rigidity	
Hands Moving Together	
Communication Inhibition	
Hallucinated Fly	
Eye Catalepsy	
Post Hypnotic Suggestion	
Before Amnesia Was Removed	
1 = Completely Unhypnotized 10= As Deeply Hypnotized As You Feel You Could Ever Be	

APPENDIX 8

The method for scoring the motivation scales on the Smoker's History and Motivation Questionnaire (Appendix 3) can be illustrated by the following procedure outlined for Question 15 - Attitudinal Response to Smoking Habit.

Question 15 contained an eight point semantic differential scale for seven adjective dimensions describing attitudes towards cigarette smoking. The adjective dimensions were: awful-nice, ugly-beautiful, dirty-clean, dangerous-safe, bad-good, distasteful-tasty and unpleasant-pleasant. A 1 to 8 scoring scale corresponded to the 8-point semantic differential scale in a way described by the following example:

	1	2	3	4	5	6	7	8	
Adjective Subitem: Nice	__	__	__	__	__	x	__	__	Awful

Score = 6

The scores were then calculated in this fashion for each of the subitems in Question 15 and were summed to provide an overall estimate of perceived attitude towards smoking. The underlying assumption was; that the higher the score or the more awful, ugly, dirty, dangerous, bad, distasteful, and unpleasant the smoking habit was, the more motivated the smoker would be in quitting smoking. This assumption was applied to the scoring of all the motivation questions on the Smoker's History and Motivation Questionnaire, except for Questions 16, 23, 24, and 26. The assumption underlying

the scoring of these questions was that higher scores reflect a stronger commitment towards smoking.

Question 16 - Current Need for Smoking, Question 17 - Reasons for Quitting, Question 18 - Pressure for Quitting, Question 19 - Expected Changes were scored on a 1 - 4 scale which corresponded to the four rating categories: none, slight, moderate and strong. Using Question 16 as an example, the scoring was tabulated in the following way:

	1 None	2 Slight	3 Moderate	4 Strong
Q. 16 - Need for Relieving Tension	____	____	x	____

Score = 3

Once again each subitem for Question 16 was scored and totalled to give an over-all estimate of "Current Need to Smoke".

For Question 20 - Confidence of Success, the per cent probability of success scores as rated by the smoker were totalled for the four subitems.

Question 21 - Desire to Quit and Question 22 - Love for Cigarettes were scored on the basis of where the smoker marked his or her response on the thermometer.

Question 23 - Cost of Cigarettes, Question 24 - Money Offer to Quit Smoking, Question 25 - Medical Reasons for Quitting and Question 26 - Time to Reach Goal were scored on a

scoring scale corresponding to the number of response categories for each question. This scoring system can best be illustrated using Question 23 as an example:

Q. 23 - Would you continue to smoke if a pack of Cigarettes

Cost:		Score
$1.00	___	1
$1.50	___	2
$2.00	___	3
$2.50	___	4
$3.00	___	5
$3.50	___	6
$4.00	x	7
$4.50	___	8
$5.00	___	9

Score = 7

The subitems on Question 29 - Reasons for Smoking were scored such that Yes=0 and No=1. It was possible to obtain two types of measures for this question. For example: (1) a "strength of motivation measure was obtained by calculating a total score for the 29 items. The underlying assumption was that the fewer reasons for smoking (hence the lower score), the more favorable the motivation to quit; (2) Leventhal and Avis' (1976) factor analysis of Ikard et al's (1969) questionnaire yielded seven factors which they identified as indicating different types of smokers. These are pleasure-

taste, stimulation, social reward, habit anxiety, addiction, and fiddle. Accordingly, scores were obtained for each client on each of these smoking types.

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