Hypnosis, Behavioral Theory, and Smoking Cessation

Nicholas A. Covino, Psy.D.; Melissa Bottari

Abstract: Although nicotine replacement and other pharmacological treatments head the list of popular interventions for smoking cessation, approaches based on psychology can also assist smokers. Hypnosis, suggestion, and behavior therapies have been offered to patients and studied experimentally for several decades. Although no single psychological approach has been found to be superior to others, psychological interventions contribute significantly to successful treatment outcome in smoking cessation. This article describes common hypnotic and behavioral approaches to smoking cessation and critically reviews some of the findings from clinical and experimental research studies. The authors also offer suggestions regarding treatment and future research.

Dr. Covino is Assistant Professor, Department of Psychology, Harvard Medical School, and Director, Psychology Division, Beth Israel Deaconess Medical Center, and Ms. Bottari is Research Assistant, Fairfield University, Fairfield, CT. Direct correspondence to Dr. Covino at Department of Psychiatry, Beth Israel Deaconess Medical Center, 330 Brookline Ave., Boston, MA 02215; 617-667-2579 phone; 617-667-5575 fax; ncovino@caregroup.harvard.edu e-mail.

Key words: hypnosis, behavior modification, smoking cessation, suggestion, behavioral medicine

It is one of the oldest treatment techniques in clinical medicine, yet researchers and health care providers who assist patients with smoking cessation often neglect hypnosis. Many will cite the incredibly dramatic claims of hypnotists and patients,[1] the mysterious nature of the phenomena, or the strangeness of the technique as reasons for this disregard. On the other hand, while there is some empirical support for the use of hypnosis in the treatment of cigarette smoking,[2] a review of this research indicates that the hypnosis community commonly ignores the contribution of nicotine replacement and other psychological interventions to smoking cessation. Behavior modification interventions, in contrast to hypnosis, have become standard elements of smoking cessation programs. This review will indicate some common ground shared by suggestion, hypnosis, behavior theory, and cigarette smoking and will advocate the wisdom of integrating treatment approaches in clinical practice and future research on smoking cessation.

Hypnosis

Hypnosis can be defined as an altered state of consciousness in which a person is able to bypass certain aspects of reality, tolerate logical inconsistency, experience distortions of perception and memory as real, and feel a compulsion to follow cues from an outside source.[3] Not all subjects respond to the experience of hypnosis with equal intensity. A subject's trance capabilities, motivation, the context, and the relationship between subject and operator can influence the outcome of hypnotic suggestion.[4] The ability to be hypnotized is a somewhat normally distributed trait, with 15 percent of the population being highly suggestible and 25 percent resistant to hypnosis. Yet, even those with exceptional responsiveness will reject inappropriately presented or unacceptable suggestions.[5] The essential elements of hypnosis include the use of suggestion, focused attention (absorption), and the therapeutic relationship to alter a person's behavior, thoughts, and/or emotional state.

Suggestions cause people to react without critical reflection and accept a communicated proposition with conviction in the absence of logically adequate grounds.[6] Suggestions can originate from persons or circumstances, and the subject must be free to make choices among alternative responses.[7] Psychological research has identified certain conditions as favorable to the acceptance of suggestion.

Experimental subjects who are given directions by a casually dressed graduate student while seated in a college classroom will evidence a modest galvanic skin response to the presentation of electric shock. Those subjects who are instructed by the same person who is dressed in a laboratory coat, in a room with a crash cart and a sign clearly labeled "panic button," will experience a more intense reaction.[8] Visitors to a new country search for models of be-

havior; and emotionally charged, unfamiliar situations such as emergency wards, police stations, and dentist offices are often settings for directed compliance.

Familiar, repetitious messages and those placed in association with desirable images form the basis for the advertising industry's hope for uncritical acceptance and unreflective purchase. When a stimulus response or context is uncertain, novel, vague, or emotionally charged; when the subject is imaginative, fantasy-prone, expectant, or motivated; when the context contains models or other signals, group pressure or demand characteristics, a subject is likely to be easily influenced to think, feel, or behave in a proposed direction.[7-9]

Most people have had the familiar experience of becoming absorbed in a fantasy, daydream, feeling, book, or a thought. In such a state of focused attention, peripheral stimuli are ignored, time seems to pass without notice, and imaginings take on a certain reality. Curiously, opposite conditions such as the increased alertness accompanying prolonged vigilance, prayer, or study and decreased alertness as occurs in relaxation, meditation, sunbathing, and listening to music can precipitate a shift in consciousness from alert attention to passive concentration. Likewise, reduced sensory-motor stimulation as occurs with confinement, stimulus deprivation, or highway driving and increased arousal such as occurs with stimulus overload, religious frenzy, mob activity, or long-distance running often do the same.[10]

For many years, physicians and dentists have invited patients to relax, to distract their attention and become imaginatively absorbed in a subjective experience of analgesia when undergoing a painful procedure. When people in pain are encouraged to alter their cognitive and sensory perception with hypnosis, anxiety levels decline, physiological discomfort is better tolerated, and analgesic medicines are requested less.[11,12] Although hypnoanalgesia is underutilized in dentistry and medicine, clinical and experimental research finds it to be an efficacious technique in reducing anxiety and pain, and broader application is recommended.[13]

Sigmund Freud, himself an early practitioner of hypnosis, was fascinated by the influence of the hypnotic relationship on another's thinking, feeling, and behavior. He wrote:

> Hypnosis endows the physician with an authority such as was probably never possessed by the priest or the miracle man since it concentrates the subject's whole interest upon the figure of the physician; it does away with the autocratic power of the patient's mind which as we have seen, interferes so capriciously with the influence of the mind over the body.[14]

The hypnotic subject seemingly surrenders his individual will, critical judgment, and personal interests in favor of following the lead of the hypnotist. Freud fashioned his understanding of the therapeutic relationship after this emotional tie,[15] and social psychologists have sought to understand its expression in everyday life. Ordinary relationships such as those of doctor, teacher, parent, group leader, and employer typically invite compliance from most people. Attractive, authoritative, confident, prestigious persons are more likely to invite an unreflective response to their proposals than their anxious, unattractive, inexperienced counterparts. Face-to-face communications are also more likely to be followed without critical judgment.[7, 9]

Suggestion and Smoking

When the mystery is stripped away, hypnosis is merely the use of suggestion, focused attention, and a therapeutic relationship to assist a patient to alter perception, emotion, and/or behavior. The elements of hypnosis are highly involved in the problem of tobacco use. Cigarette advertisers utilize repetitious, familiar, imaginative symbols presented by confident, attractive, individuals in pleasant situations to invite the public to imaginatively associate a hazardous product with some of the finer aspects of human life. Those who linger longer over such appealing images have more opportunity to encode and memorialize them. In contrast to the tobacco industry, health care promotions often employ ailing individuals, diseased lungs, and frightening messages that encourage very little pause for imaginative absorption on the part of smokers.

Primary care physicians and other health care providers have been encouraged to take an active role in advising patients to stop smoking. The provider's involvement often can be as brief as three to five minutes and usually entails some instruction about smoking risks, education about withdrawal symptoms, and the role of nicotine replacement. Patients are then asked to select a specific date to quit and are often provided with a prescription for nicotine

replacement and a brief follow-up call from the physician's office. When the overall results of studies of such approaches are analyzed, about 2 percent of patients have been found to stop smoking as a direct consequence of physician advice.[16] Since this intervention typically offers little in the way of new information or treatment to the smoker, other factors must be considered to understand its efficacy. To a hypnotist, the simplicity of the message delivered by a prestigious, confident authority at a time when the patient is likely to be feeling a great deal of emotion in an unfamiliar medical context goes a long way to explain the positive influence of physician advice in smoking cessation.

Hypnosis and Smoking Cessation

Clinicians commonly employ hypnotic strategies that invite smokers to imaginatively associate cigarettes with unpleasant sensations such as bus fumes and dry mouth or negative outcomes such as cancer.[17,18] They also use suggestions to encourage smokers to believe that they will lose the desire to smoke and cope well during withdrawal.[19,20]

Most smokers come to treatment with the idea that hypnosis will obliterate their desire to smoke and often carry with them the hope that this will happen in one visit. A brief review of the published reports finds that the modal hypnosis intervention mirrors this wish. Spiegel's method[21] acknowledges that there are some unarguable pleasures to smoking. Instead, he encourages hypnotized smokers to concentrate on three ideas: 1) smoking is a poison for your body; 2) you need your body to live; and 3) to the extent that you want to live, you owe your body respect and protection. Patients are taught self-hypnosis and encouraged to repeat these ideas every one to two hours and any time they experience an urge to smoke. These suggestions are generic ideas that hopefully connect to a common set of human values. The implicit assumption of this technique is that motivation is the salient variable in smoking cessation and that concentrating on the protection of body and life is powerful incentive for abstinence.

A number of studies have employed this one-session strategy and found about 45 percent of smokers were abstinent at eleven months,[22] 20-25 percent at six months[21,23] and two years,[24] and 13 percent quit while another 18 percent reduced their smoking at three months.[25] Single-session interventions are economical and time-efficient and have an apparent advantage over unassisted efforts at quitting. Unfortunately, methodological problems such as the lack of randomized or other control conditions, small sample sizes, and the absence of objective measures of smoking cessation limit the conclusions that can be drawn from these studies.

In randomized controlled studies, hypnosis has been tested against rapid or forced smoking,[26-28] counseling,[29-31] acupuncture,[29] relaxation,[32] waking suggestion,[33] desensitization and other behavioral techniques.[34-37] Treatments have been offered as group or individual sessions and vary from one session to six or ten meetings. The results of these experiments permit promising but cautious conclusions.

Among the controlled studies, the most popular hypnotic strategy is, again, the Spiegel[21] technique.[25,27,28,33-35] Some conclude that hypnosis thus employed serves to accelerate the process of quitting, but contributes less to the maintenance of nonsmoking behavior since the suggestions target motivation and behavior common to the initial stages of quitting.[34,38] There is some debate as to whether the ability to be hypnotized (hypnotizability) provides an advantage to patients who are treated with hypnosis or a similar intervention such as relaxation.[24,25,28,36,39] Hypnotic interventions in these studies fairly consistently produce cessation rates of approximately 25 percent and are frequently superior to placebo[29,40] and nontreatment control conditions.[22,33] However, almost all of the controlled studies found that the hypnosis interventions were equal to behavior modification techniques and no better than other interventions. Two studies that found failure for the hypnosis techniques determined that rapid smoking interventions were more successful for college students[26] and that pregnant smokers who were offered hypnosis without declaring themselves interested in stopping were no more successful than controls.[32] Whereas the latter findings are easily understood, it is possible that aversive conditioning more easily influences smokers who have less experience with tobacco.

Viswesvaran and Schmidt[41] conducted a meta-analysis of the forty-eight available studies on smoking cessation that employed hypnosis and found a mean quit rate of 36 percent. These results were su-

perior to the quit rate of programs that limited treatment to the prescription of medications alone (about 17 percent). Another meta-analysis of nine randomized controlled trials of hypnotic interventions examined subject selection, randomization, control and comparison groups, outcome measures, and other methodological issues.[42] Compared to advice, counseling, rapid smoking, and group psychotherapy, these authors conclude that hypnosis showed a significant treatment effect, but no clear superiority over other approaches to smoking cessation. When studies are held to more relaxed criteria (e.g., the absence of randomized control conditions, smaller sample size, the inclusion within hypnosis of other cognitive-behavioral techniques), hypnosis is judged to be superior to wait list or no-treatment conditions and as effective as many of the behavioral strategies.[2] However, many conclude that a multi-session approach that combines hypnosis with behavioral techniques would be easy to achieve and likely of more benefit to patients.

The methodological problems that limit the conclusions that can be drawn from published studies also influence evaluation of the impact of hypnosis interventions on smoking cessation. Among the abundance of case reports are too many studies with small sample sizes, inadequate control groups, and a general failure to obtain objective measures of smoking cessation in this literature. The elements of the hypnotic intervention employed are rarely outlined, and subjects range in age, circumstance, and type, making comparison and replication difficult. The absence of standardized treatment protocols and measures of hypnotizability, the integration of behavioral and other psychotherapeutic techniques into the hypnotic approach, and the failure to include placebo controls or to adequately differentiate hypnosis from relaxation and similar interventions make it difficult for us to conclude that it was hypnosis rather than some other factor that was the basis for a successful outcome. Many studies start with large numbers of subjects and then rapidly lose them. Most authors assume an intention to treat these smokers and consider them treatment failures, but they might represent a very different subject. Previous reviewers of this literature[2,39,43,44] have felt some optimism about the use of hypnosis for smoking cessation, but have wisely called for more rigorous studies along the lines indicated above.

Behavioral Theory

Behaviors can be shaped by certain stimulus conditions. Generally speaking, a stimulus is a situation that precedes a certain behavior, and the behavior is considered to be the response. While it is true that the same stimulus can elicit different responses in different people or may elicit a different response from the same person in different circumstances, there is generally a great deal of order and predictability to human behavior. Two distinct theoretical positions have emerged in psychology to explain how behaviors are learned.

In the late 1800s, Pavlov made a systematic study of the power of a stimulus to elicit a response. In laboratory experiments, he discovered that when two stimuli are repeatedly presented in pair-wise fashion to a subject, the organism associates the two and will respond to either as if they were the same. Thus, dogs can be trained to salivate at the sound of a bell but in the absence of food. The strength of associations increases with time and repeated pairings and will generalize to other stimuli with similar characteristics. Likewise, the failure to pair the original stimulus (unconditioned stimulus) with the second (conditioned stimulus) periodically causes the association to extinguish and the learned behavior to fade. Behavior can then be understood and manipulated by controlling the stimuli that precede it. This theory of behavior is variously called associational learning, respondent conditioning, or classical conditioning.

The American psychologist B. F. Skinner was the primary developer of operant conditioning in the 1930s and following years. In this learning model the emphasis is largely, although not exclusively, focused on attending to the conditions that follow, rather then precede, the emission of a behavior. Skinner observed that when an individual experiences a consequence to a behavior that is rewarding (positive reinforcement), relieving of an aversive state (negative reinforcement) or punitive (aversive) the frequency of that behavior is directly affected. A reinforcer is any situation or stimulus that strengthens a given response or behavior that precedes it.

Certain schedules and types of reinforcement serve to shape the behaviors of human beings more and less reliably. We are most familiar with the benefits of positive reinforcement or the application of

rewards as well as the power of punishment to influence human and animal behavior. However, when organisms are reliably relieved of a noxious feeling or an experience by performing a certain behavior, the frequency of that behavior will also increase. Furthermore, when a behavior is reliably rewarded in the presence of a certain stimulus, the organism learns to anticipate that outcome and evidences the same behavior upon the mere presentation of the cue to perform (discriminative stimulus). As with classical conditioning, when stimulus-response (S/R) connections are broken, the strength of the conditioned response is diminished and extinguished. Exposure to difficult situations permits the individual to develop coping mechanisms to alter or correct maladaptive behaviors, and avoiding problematic situations tends to solidify failure and increase anxiety.

Learning Theory and Smoking

The assumption underlying the application of behavioral techniques to smoking cessation is that smoking is a learned behavior and, as such, is subject to the influences of learning theory. As with our understanding of suggestion, the advertising industry capitalizes on the principles of classical conditioning to pair seemingly unrelated items in the hopes of associating the positive properties of one with another. Some of the most powerful stimuli in our culture involve sex and food. It is not surprising to see an abundance of advertisements associating these with the smoking of cigarettes. Leisurely lifestyles, intimate moments, hypermasculinity, emancipated femininity, and a few "cool" cartoon characters have all been linked in space and time to an essentially unpleasant and harmful substance to make it widely appealing.

Physiologically, the stimulation of nicotine is often positive reinforcement for fatigued smokers who experience improved concentration and alertness after ingesting the drug. On the other hand, cigarette smoking also serves as a potent negative reinforcer for anxious and depressed people who can experience a momentary escape from their negative mood. This escape is partly due to neurological mechanisms and partly to the opportunity for the smoker to take slow breaths and distract the mind from its conflicts. When smoking occurs regularly in the company of certain "rewarding" stimuli, these circumstances can become discriminative stimuli or cues to smoke. Such circumstances can be as familiar as the sight of an ashtray, another person smoking, or the feel of the pack of cigarettes in the hand, or it could be more remote, like a cup of coffee or the time of day. For many smokers, the psychological conditions are as controlling of their behavior as the addictive properties of nicotine in their ability to preoccupy the smoker's mind and stimulate a craving.

Behavioral treatments for smoking cessation draw upon both the classical and operant theoretical positions in an effort to break associations between cigarettes and pleasant events and to alter behavioral contingencies (extinction). Classical conditioning principles are employed to link cigarette smoking to unpleasant sensations and ideas (aversive conditioning). Operant principles are used to encourage smokers to monitor their behavior in order to identify and alter the emotional and environmental cues that trigger the urge to smoke along with the reinforcers that support the habit (stimulus control, contingency management). When threats to smoking abstinence are identified in advance, patients are encouraged to imaginatively rehearse adaptive coping strategies that might include desensitization to cues, avoidance strategies, relaxation training, or seeking support or self-assertion in an effort to maintain abstinence (relapse prevention, cue exposure).

Behavioral Interventions and Smoking Cessation

A substantial amount of research has identified several behavioral techniques as helpful in modifying cigarette smoking. This literature is too vast to be adequately discussed in this paper, but the interested reader is directed to several excellent reviews.[16,45-49]

Behaviorists employ aversive and punishment techniques in an effort to modify the smoker's attitude and experience of the substance. In the same way that advertisers associate pleasurable experiences, behaviorists link unpleasant experiences, feelings, and consequences to the substance in an effort to turn people away from smoking. Clinicians and experimenters have placed iodine, silver acetate, and other unpleasant substances on the tips of cigarettes to create an unpleasant taste. Electroshock and other

punishing stimuli have been paired with smoking, but not surprisingly these techniques are associated with a high incidence of treatment dropouts although some patients report coming to enjoy, or at least tolerate, the taste of iodine! One of the most successful aversive approaches requires smokers to inhale more rapidly (about every six seconds) and/or to smoke more often (sometimes twice as much) and/or to concentrate on the unpleasant smells, tastes, and temperature of cigarettes. These approaches have been variously called rapid smoking, focused smoking, smoke holding, and rapid puffing techniques. Such interventions typically cause mild to moderate nicotine toxicity and the accompanying nausea, dizziness, and other physical discomfort create an aversion to the substance and intensify a wish to stop smoking.

Contingency management techniques are an effort to manipulate the consequences of smoking behavior. Simply stated, smokers develop a concrete reward to reinforce not smoking and apply a punishment for times when they do smoke. These consequences can be monetary, the opportunity to experience some pleasure, or the requirement to undertake some unpleasant task in an effort to increase self-control and adherence to cessation.

Cue exposure and relapse prevention techniques work to increase the patient's control over discriminative stimuli that trigger smoking behaviors. These interventions encourage smokers to imagine or truly experience a situation in which they know that they are likely to have a strong urge to smoke (e.g., at a bar; during an angry interaction). In the safe confines of the treatment situation, patients are invited to have an exaggerated experience of the thoughts and feelings associated with an urge to smoke while not smoking so as to extinguish the power of the cue to evoke the desire to smoke. Like dogs that find the missing link between the bell and meat and stop salivating or like phobic persons who discover that they do not die when seated on an airplane, the environmental and internal triggers to smoke begin to lose the power to influence behavior with this corrective experience.

In other approaches, visual reminders such as ashtrays and cigarette packs are removed from view. Smokers are encouraged to refrain from smoking in cars and after meals or sex and to limit this behavior to an inconvenient place. Timers and other random prompts are used to signal acceptable times for smoking in an effort to disconnect the behavior from emotional and environmental cues.

Relapse prevention techniques[50] involve anticipatory, problem-solving strategies. Smokers in recovery plan adaptive coping behaviors for situations and feelings likely to lead them to return to smoking. High-risk conditions may be avoided entirely, experienced briefly, or engaged in only with social supports or after a well-rehearsed plan for successful adaptation. Patients are encouraged to think about failures in smoking abstinence as lapses that often accompany any newly acquired skill (which nonsmoking behavior represents) rather than as evidence of addiction and treatment failure. Clinicians believe that this mindset, together with the opportunity to anticipate problems, improves the probability of successful behavior change.

As with hypnosis research, behaviorists have placed considerable emphasis on developing treatment strategies that might motivate people to stop smoking. The early psychological research in this area was dominated by studies on aversion techniques such as rapid smoking and counter-conditioning interventions. Although there has been some concern expressed regarding the risk of these techniques for patients with cardiac disease, most studies find these interventions successful. The challenge is to establish a supportive enough treatment relationship to facilitate the patient's adherence to the treatment protocol. While theoretically sound, contingency management techniques (rewards, punishments) and cue exposure strategies have not been very effective at facilitating behavioral change for smokers in randomized, controlled trials. Likewise, conceptually appealing approaches developed for relapse prevention and coping skills training have not demonstrated consistent success.[51,52]

A meta-analysis of 633 controlled and uncontrolled studies of smoking cessation methods found support for the use of aversive techniques.[51] While there was a difference related to treatment setting, between 25 percent (in a workplace program) and 29 percent (in a clinic) of patients treated by these methods reported cigarette abstinence after three months. Law and Tang[16] conducted a systematic review of randomized controlled experiments of smoking interventions that provided a minimum of a six-month follow-up and included the use of a biochemical marker of treatment outcome. The effectiveness of an intervention was calculated based upon the difference between the proportion of the treated and control subjects who stopped smoking. Of thirty studies that employed contingency man-

agement, cue exposure, and relaxation techniques, the combined estimate of efficacy was about 2 percent. This is similar to the outcome of studies in which physicians advise patients to stop. Aversive therapies such as rapid smoking were considerably more effective with about 14 percent combined efficacy ($p<0.001$) in the same number of studies. However, these studies showed considerable heterogeneity in outcome suggesting that factors other than the specific treatments might be involved in treatment success. The use of silver acetate gum and other specific aversive interventions were not found to be efficacious. No clear benefit was found for the manner in which these methods were offered to patients; group treatments led by psychologists were as effective as those led by health educators.

Although promoted as an efficacious treatment by many, including the United States Agency for Health Care Policy and Research (AHCPR),[53] research on relapse prevention techniques offers very modest support for such approaches. Several studies find only a weak treatment effect for relapse prevention training,[52,54] and a meta-analysis of twenty-six published and unpublished reports concludes that this training contributes little to recovery from most addictions.[55] While the training time allowed for mastering these techniques might be too short in most programs, some conclude that it is more cost-effective to permit relapsing smokers to start smoking and then make another attempt to quit.

Concluding Remarks

A great deal of attention has been paid to the efficacy of hypnotic and behavioral interventions for smoking cessation. It is clear that although no specific approach is superior to another in terms of treatment outcome, hypnosis and rapid smoking techniques have succeeded in motivating smokers to undertake a cessation effort. It is also clear that suggestion and behavioral principles are involved in the acquisition, maintenance, and treatment of this disorder. While there are a number of methodological weaknesses to the research on treatment outcome, especially in the hypnosis literature, there is reason to hope. Recent work indicates that people may require different treatment approaches at various points in a smoking cessation intervention.[56] Most of the previous research has been limited to testing the efficacy among treatment options or within a specific treatment type. The current trend in treatment appears to be overly preoccupied with medical interventions. A multidimensional intervention that employs nicotine replacement, behavioral, and hypnotic techniques at the motivational, action, and maintenance phases of treatment has conceptual appeal. Research on this is long overdue.

REFERENCES

1. Von Dedenroth TEA. The use of hypnosis with "tobaccomaniacs." Am J Clin Hypn 1964;12:230-8.
2. Green JP, Lynn SJ. Hypnosis and smoking cessation. Int J Clin Exp Hypn 2000;48:195-224.
3. Orne MT. The nature of hypnosis: artifact and essence. J Abnorm Soc Psychol 1959;58:277-99.
4. Frankel FH. Hypnosis: trance as a coping mechanism. New York: Plenum Medical Books, 1976.
5. Hilgard ER. Personality and hypnotizability: inferences from case studies. In: Hilgard ER. Hypnotic susceptibility. New York: Harcourt Brace Jovanovich, 1965.
6. McDougall W. Introduction to social psychology. London: Methuen, 1908.
7. Gheorgiu VA. The development of research in suggestibility: critical considerations. In: Gheorghiu VA, Netter P, Eysenck HJ, Rosenthal R, eds. Suggestion and suggestibility: advances in theory, research and application. New York: Routledge, 1989.
8. Orne MT, Evans F. Social control in the psychological experiment: antisocial behavior and hypnosis. J Pers Soc Psychol 1965;1:189-200.
9. Lundy RM. Measurement and individual differences of suggestibility: some comments. In: Gheorghiu VA, Netter P, Eysenck HJ, Rosenthal R, eds. Suggestion and suggestibility: new advances in theory, research and application. New York: Routledge, 1989.
10. Ludwig AM. Altered states of consciousness. Arch Gen Psychiatry 1966;15:225-34.
11. Lang EV, Benotsch EG, Fick LJ, et al. Adjunctive nonpharmacological analgesia for invasive medical procedures:a randomised trial. Lancet 2000;355:1486-90.
12. Patterson DR, Everett JJ, Burns GL, Marvin JA. Hypnosis for the treatment of burn pain. J Consult Clin Psychol 1992;60:713-7.
13. Montgomery GH, DuHamel KN, Redd WH. A meta-analysis of hypnotically induced analgesia: how effective is hypnosis? Int J Clin Exp Hypn 2000;48:138-53.
14. Freud S. Fragment of an analysis of a case of hysteria. Standard Edition 1905;7:3-122.
15. Borscht-Jacobsen M. The emotional tie. Stanford, CA: Stanford University Press, 1991.
16. Law M, Tang JL. An analysis of the effectiveness of interventions intended to help people stop smoking. Arch Intern Med 1995;155:1933-41.
17. Nuland W, Field PB. Smoking and hypnosis:a systematic clinical approach. Int J Clin Exp Hypn 1970;18:290-306.
18. Watkins HH. Hypnosis and smoking: a five-session approach. Int J Clin Exp Hypn 1976;24:381-90.

19. Crasilneck HB, Hall JA. The use of hypnosis in controlling cigarette smoking. South Med J 1968;61:999-1002.
20. Stanton H. A one-session hypnotic approach to modifying smoking behavior. Int J Clin Exp Hypn 1978;26:22-9.
21. Spiegel H. A single treatment method to stop smoking using ancillary self-hypnosis. Int J Clin Exp Hypn 1970;18:235-50.
22. Williams JM, Hall DW. Use of single session hypnosis for smoking cessation. Addict Behav 1988;13:205-8.
23. Berkowitz B, Ross-Townsend A, Kohberger R. Hypnotic treatment of smoking: the single-treatment method revisited. Am J Psychiatry 1979;136:83-5.
24. Spiegel D, Frischholz EJ, Fleiss JL, Spiegel H. Predictors of smoking abstinence following a single-session restructuring intervention with self-hypnosis. Am J Psychiatry 1993;150:1090-7.
25. Perry C, Mullen G. The effects of hypnotic susceptibility on reducing smoking behavior treated by an hypnotic technique. J Clin Psychol 1975;31:494-505.
26. Barkley RA, Hastings JE, Jackson TL. The effects of rapid smoking and hypnosis in the treatment of smoking behavior. Int J Clin Exp Hypn 1977;25:7-17.
27. Hyman JG, Stanley RO, Burrows GD, Horne DJ. Treatment effectiveness of hypnosis and behavior therapy in smoking cessation: a methodological refinement. Addict Behav 1986;11:355-65.
28. Perry C, Gelfand R, Marcovitch P. The relevance of hypnotic susceptibility in the clinical content. J Abnorm Psychol 1979;88:592-603.
29. MacHovec FJ, Man SC. Acupuncture and hypnosis compared: fifty-eight cases. Am J Clin Hypn 1978;21:45-7.
30. Pederson LL, Scrimgeour WG, Lefcoe NM. Comparison of hypnosis plus counseling, counseling alone and hypnosis alone in a community service smoking withdrawal program. J Consult Clin Psychol 1975;43:920.
31. Pederson LL, Scrimgeour WG, Lefcoe NM. Incorporation of rapid smoking in a community service smoking withdrawal program. Int J Addict 1980;15:615-29.
32. Valbo A, Eide T. Smoking cessation in pregnancy: the effect of hypnosis in a randomized study. Addict Behav 1996;21:29-35.
33. Javel AF. One-session hypnotherapy for smoking: a controlled study. Psychol Rep 1980;46:895-9.
34. Frank RG, Umlauf RL, Wonderlich SA, Ashkanazi GS. Hypnosis and behavior treatment in a worksite cessation program. Addict Behav 1986;11:59-62.
35. Rabkin SW, Boyko E, Shane F, Kaufert J. A randomized trial comparing smoking cessation programs utilizing behavior modification, health education, or hypnosis. Addict Behav 1984;9:157-73.
36. Schubert DK. Comparison of hypnotherapy with systematic relaxation in the treatment of cigarette habituation. J Clin Psychol 1983;39:198-202.
37. Sorenson G, Beder B, Prible CR, Pinney J. Reducing smoking at the workplace: implementing a smoking ban and hypnotherapy. J Occup Environ Med 1995;37:453-60.
38. Lambe R, Osier C, Franks P. A randomized controlled trial of hypnotherapy for smoking cessation. J Fam Pract 1986;22:61-5.
39. Holroyd J. The uncertain relationship between hypnotizability and smoking treatment outcome. Int J Clin Exp Hypn 1991;39:93-102.
40. Pederson LL, Scrimgeour WG, Lefcoe NM. Variables of hypnosis which are related to success in a smoking withdrawal program. Int J Clin Exp Hypn 1979;27:14-20.
41. Viswesvaran C, Schmidt F. A meta-analytic comparison of the effectiveness of smoking cessation methods. J Appl Psychol 1992;77:554-61.
42. Abbot NC, Stead LF, White AR, Barnes J, Ernst E. Hypnotherapy for smoking cessation. Cochrane Database Syst Rev 2000;2.
43. Johnston E, Donohue J. Hypnosis & smoking: a review of the literature. Am J Hypn 1971;13:265-72.
44. Lynn SJ, Neufeld V, Rhue JW, Matorin A. Hypnosis and smoking cessation: a cognitive behavioral treatment. In: Rhue JW, Lynn SJ, Kirsch I, eds. Handbook of clinical hypnosis. Washington, DC: American Psychological Association, 1993:555-85.
45. American Psychiatric Association. Practice guideline for the treatment of patients with nicotine dependence. Am J Psychiatry 1996;153(10-Supp):1-30.
46. Baillie A, Mattick PP, Hall W, Webster P. Meta-analytic review of the efficacy of smoking cessation interventions. Drug Alcohol Rev 1994;13:157-70.
47. Fisher EB, Lichtenstein E, Haire-Joshu D, Morgan GD, Rehberg HR. Methods, successes, and failures of smoking cessation programs. Annu Rev Med 1993;44:481-513.
48. Glasgow RE, Lichtenstein E. Long term effects of behavioral smoking cessation interventions. Behav Therapy 1987;18:297-324.
49. Schwartz JL. Methods of smoking cessation. Med Clin North Am 192;76:451-76.
50. Brownell KD, Marlatt GA, Lichtenstein E, Wilson GT. Understanding and preventing relapse. Am Psychol 1986;41:765-82.
51. Irvin JE, Bowers CA, Dunn ME, Wang MC. Efficacy of relapse prevention: a meta-analytic review. J Consult Clin Psychol 1999;4:563-70.
52. Lichtenstein E, Glasgow RE. Smoking cessation: what have we learned over the past decade? J Consult Clin Psychol 1992;60:518-27.
53. Fiore MC, Jorenby DE, Baker TB. Smoking cessation: principles and practice based upon the AHCPR Guideline, 1996. Ann Behav Med 1997;19:213-9.
54. Curry SJ, Marlatt GA, Gordon J, Baer JS. A comparison of alternative theoretical approaches to smoking cessation and relapse. Health Psychol 1988;7:545-56.
55. Irvin JE, Bowers CA, Dunn ME, Wang MC. Efficacy of relapse prevention: a meta-analytic review. J Consult Clin Psychol 1999;67:563-70.
56. Prochaska JO, Diclemente CC, Norcross JC. In search of how people change: applications to addictive behaviors. Am Psychol 1992;47:1102-14.