

Hypnotic Suggestion as a Technique
for the Control of Dreaming¹

Charles T. Tart

Laboratory of Human Development,
Stanford University

Scientific research is carried out with two basic kinds of procedures. One is the observational or correlational approach, where we observe "what happens naturally" and try to make sense out of it by finding relations or correlations between various aspects of our observations. This approach leads to statements of the order, "...subjects classified as Sensitizers report recalling dreaming significantly more frequently than those classified as Repressors" on the MMPI (Tart, 1962a). The other approach is the functional method, where we actively manipulate one factor or variable and note the effect on some dependent variable. This approach leads to statements of the order, "A large dose of alcohol reduces the amount of EEG stage 1 - REM time and inferred dreaming in normal Ss...." (Gresham et al., 1963). Both approaches are used in most fields of science, as they complement one another.

Dream research, on the other hand, has been almost exclusively a matter of correlational research, ignoring, for the moment, the last decade's research

1

Presented in a symposium on "New Frontiers in Dream Research," American Psychological Association Seventy-second Annual Convention, Los Angeles, September 5, 1964.

using the EEG (electroencephalograph) and rapid eye movement (REM) technique. Researchers asked subjects (Ss) how often they dreamed in color, whether their dreams were mainly pleasant or unpleasant, and the like, and then attempted to correlate these observed characteristics with personality traits, intelligence, age, etc. Or the patient brought in a spontaneous dream and the therapist-researcher attempted to "interpret" it in the light of what he knew about the patient.

We have, of course, learned a great deal about the nature of nocturnal dreaming as a result of correlational studies, and I have no doubt that we will continue to learn a great deal from them. If we could supplement correlational studies with functional studies, however, we could probably progress a good deal faster in our understanding of dreaming. What I would like to discuss with you today are some attempts of mine to develop hypnotic suggestion or, more precisely, posthypnotic suggestion as a powerful and precise technique which would allow functional studies of dreaming, and, since this is a symposium on New Frontiers in Dream Research, engage in some speculation about the usefulness of such a technique and where it might lead us.

I will limit myself today, by reason of time limitations, to stage 1 nocturnal dreaming, and not consider so-called dreams occurring in a hypnotic state (although I am working extensively with them), nor dreamlike experiences in other states of consciousness, nor the type of "thinking" that seems to go on in the other stages of sleep. The basic theoretical assumption I have made, underlying my discussion, is that an experientially distinctive type of mental activity occurs during stage 1 sleep (whether recalled or not), and this activity is what we customarily think of as dreaming.

There are two convenient categories under which attempts to influence stage 1 dreaming can be subsumed. One is attempts to influence the content of dreaming, what is dreamed about. The second is the process of dreaming, independent of the particular content, by which is meant the starting and stopping of dreaming, its duration, its cyclical nature, and the mental and physiological processes which comprise and accompany it. Thus in the first case you may attempt to have your S dream about driving a red convertible, while in the second you might try to have him begin stage 1 dreaming immediately after falling asleep, instead of the usual 90 minutes later.

There have been a number of studies in the past decade, using the EEG and REM technique, to influence the process, and to some extent the content, of stage 1 dreaming. Most famous, perhaps, is Dement's dream deprivation technique (Dement, 1960), where the S is awakened every time he begins stage 1 dreaming. Others have worked with total sleep deprivation (see, e.g., Berger & Oswald, 1962); West et al., 1962), presenting stimuli to dreaming Ss (Dement & Wolpert, 1958), social isolation (Wood, 1962), and various drugs, such as alcohol, caffeine (Gresham et al., 1963), and amphetamine (Rechtschaffen & Maron, 1964). So the question arises, "Why try hypnosis?"

The main reason is that hypnotic suggestion, judging by some earlier literature, offered a hope of a much more precise type of control than these other variables, all of which tend either to disrupt the sleep-dream cycle completely or to have rather nonspecific effects. It should be emphasized, though, that hypnosis is not the only psychological technique which might be useful for affecting dreaming, and, certainly, many of the effects which are customarily produced by hypnotic suggestion can probably be produced, to some extent, and with

some Ss, without it. But hypnosis is known to be a powerful psychological technique, which is fairly easy and convenient to use in the laboratory, so it seemed a good place to start in the search for a powerful and precise psychological technique for affecting dreaming.

Historical Background:

Prior to 1961, almost all the literature on the effects of posthypnotic suggestion on nocturnal dreaming consisted of studies carried out by psychoanalysts, more for the purpose of demonstrating Freudian principles than for an open observation of what happened naturally. This literature all purported to show that some Ss would dream at night in accordance with the posthypnotic suggestions given them, and that most of the dreams distorted these suggestions in accordance with Freudian principles of disguise, displacement, etc. Besides being rather anecdotal, this literature suffers from the drawback that all the dreams reported might have occurred in a hypnotic state at night, rather than being stage 1 dreams. There had been no EEG recording. Indeed, Schiff, Bunney, & Freedman (1961) using EEG monitoring, reported that when they gave a posthypnotic suggestion to dream about a certain topic during sleep to their S, she actually "dreamed" in a hypnotic state, although she thought it was during sleep. Thus the best conclusion that could be drawn in 1961 was that posthypnotic suggestion might influence stage 1 dreaming, but there was no proof of it. The other results reported in these psychoanalytically oriented studies might apply only to hypnotic dreams, and are of dubious validity anyway for a variety of other reasons (discussed more fully in Tart, 1962b; Tart, unpublished ms.).

Shortly after I had begun working with posthypnotic suggestion to influence stage 1 dreaming, late in 1961, I discovered that the basic question of whether it would work at all had been answered in a pioneering dissertation, completed that year, by Johann Stoyva at the University of Chicago. Stoyva (1961) showed that posthypnotic suggestion could, for some Ss, markedly influence the content of their stage 1 dreams. He would suggest, e.g., that they dream about climbing a tree, and these Ss would report that they were dreaming about climbing a tree when awakened from stage 1 dreaming. There was considerable variation from S to S in the extent to which their reported dreams were influenced by the suggestions, of course, but this work was the first concrete illustration of the promise of posthypnotic suggestion as a powerful and precise tool for affecting stage 1 dreaming.

Affecting Dream Content:

In the fall of 1961 I carried out a study designed to compare responses to hypnotic suggestions to dream about specified topics during hypnosis to responses to posthypnotic suggestions to dream about the same or similar topics² during stage 1 sleep. This design also tested the extent to which posthypnotic suggestion could affect stage 1 dreaming, which is our primary interest today.

Ten Ss were selected from a much larger group of students by means of suggestibility tests and trained to reach a deep hypnotic state. Each S then participated in two, individual experimental sessions. In the one of interest to-

2

There were actually two equated narratives, used in counterbalanced orders, but in terms of our interests today and the results, it will be simpler to speak as if they were a single stimulus narrative.

day, he was hypnotized and told to dream during his natural sleep that night about a narrative, which was immediately played on a tape recorder. The narrative placed the S in a threatening situation which evoked a realistic fear of bodily injury or death. It was emphasized that he would dream about the stimulus narrative in his natural sleep that night, and not in a hypnotic state; in fact, amnesia for the whole hypnotic session was suggested. No suggestions to disguise the dream about the stimulus narrative were given, explicitly or implicitly. The S was then dehypnotized, and slept in the lab for the night. Whenever his EEG and REM patterns indicated stage 1 dreaming, it was allowed to go on for a few minutes and then he was awakened for a dream report. A reliable method for judging how well the reported dreams conformed to the stimulus narrative in detail was worked out (judges correlated .99 with each other), and all these dreams scored on it.

For five of the ten Ss, not a single element in their reported stage 1 dreams corresponded directly to anything in the stimulus narrative, nor did any of these dreams appear to be disguised or distorted versions of the stimulus narrative. This is a moot point, of course, as no free associations were obtained from the Ss, and the dreams may have been so thoroughly disguised that I couldn't see the connection. But, if this was the case, it is atypical compared to the earlier psychoanalytic reports, in which the sophisticated reader could see a connection between the "disguised" dreams and the stimulus narratives even without the benefit of the free associations. Thus, for half the Ss I concluded that the suggestions had failed to affect their stage 1 dreaming.

The other five Ss' dreams were affected, ranging from a minimal effect of two elements of the 23 in the stimulus narrative appearing in a reported dream

to a high of 13 of the 23 elements appearing in another reported dream. Two of the five Ss had only a single stage 1 dream of the night affected, two others had two stage 1 dreams affected, and the fifth S had all five of his stage 1 dreams strongly affected.

These bare figures do not capture some important characteristics of the data, however, so I must add some qualitative impressions. The reported dreams, even those showing the greatest effects of the posthypnotic suggestions, were not straightforward reproductions of the stimulus narrative. Rather, there was considerable addition of extraneous detail and considerable embellishment. The best S, in fact, constantly added a happy ending to the dreamed about stimulus narrative, rather than being left stranded in a fearful situation! At the low end of the response continuum, we have a few details of the stimulus narrative appearing in a dream that seems otherwise unconnected with the experimental situation. At the high end, the complete outline and theme of the stimulus narrative dominates the dream, yet there is still considerable embellishment and modification. It is as if the resulting dream were a product of a conflict between the suggested narrative and an autonomous, natural dream process which has, as it were, material of its own to present during the time of dreaming.

Details may be found in the original study (Tart, 1962b).

These findings were confirmed and extended to some extent a year later when I did some further work (Tart, 1963; in press) on this, using the one S who had responded so well before and one new S. An emotionally neutral stimulus narrative was used this time, but the results were essentially the same: the dreams dominated by the theme of the stimulus narrative, but considerable addition and modi-

fication by the autonomous dreaming process. It was interesting to note, however, that the new S's reported dreams showed much less modification and embellishment than the other S's; they were much more a "straight playback," and this seemed to parallel the lack of initiative and passivity that this S displayed in all his relations to me and others. This suggests some interesting future studies.

Granted that posthypnotic suggestion does indeed offer considerable promise as a powerful and precise tool for affecting stage 1 dreaming (of good hypnotic Ss), where do we go next? Certainly the degree to which waking suggestion can produce the same results is of interest, especially in view of the conflicts in the current literature over just what effect hypnotic induction has. My own interests, however, lie in exploring the limits of what can be done in this area, and its possible effects and applications. For example, can posthypnotic suggestion completely control the content of some Ss' stage 1 dreams? If so, will this result in an increasing "pressure" from the "autonomous dream process," similar to what occurs in dream deprivation? Might suggestions to dream about particular topics result in recall, during the dream, of relevant information which might not be accessible to conscious recall? And, to look way ahead, what are the effects on waking behavior and personality of having had certain dream experiences, as experiences, regardless of their "meaning" or "interpretation?" Some therapists (e.g., Progoff, 1963) feel that dream experience per se has important and sometimes beneficial effects on personality and behavior, so we may speculate that controlling dreaming through posthypnotic suggestion may some day have therapeutic applications.

Affecting the Process of Dreaming:

Leaving speculation now, and coming back to data, let me outline my initial attempts to influence the process of dreaming with posthypnotic suggestion. Some basic aspects of any process are its starting, stopping, and duration, so in the latter part of 1962 I worked very intensively with two Ss, attempting to start, stop, and modify the duration of their normal stage 1 dreaming (Tart, 1963). Both of these Ss were good hypnotic Ss, and could have the content of their dreams strongly affected by posthypnotic suggestion.

It is well established now that the sleep-dream cycle of most normal Ss is quite stable for each S, and essentially unaffected by normal variations in day to day activities. Each stage 1 dreaming period begins at approximately 90 minute intervals after the start of sleep, each dreaming period gets longer than the previous one, and the total amount of time spent in stage 1 dreaming (20-30% for young adults) is constant from night to night within a few percent, for a given S. For the two Ss in this study, one showed a mean of 30% dream time with a standard deviation of 3%, the other a mean of 28% dream time with a standard deviation of 5%. These data are based on eight baseline nights for each S in which the only posthypnotic suggestion was to sleep normally.

The design called for each S having two nights each³ on four types of posthypnotic suggestion: (a) wake up at the end of each dream; (b) wake up at the beginning of each dream; (c) dream all night long; and (d) don't dream at all.

Let us look at the results of the wake up suggestions, taken together, first.

³

One of them had three nights of dream all night and only one night of don't dream, so the result later noted for the dream all night suggestions is based on this S's three nights.

This was a powerful effect. The two Ss never awakened on their eight baseline nights, but awakened a total of 27 times, or an average of three awakenings per experimental night, on the wake up nights. The precision of this effect is a little more difficult to evaluate, due to such ambiguous responses as awakening from periods when body movement had obscured the EEG record for some time, or awakening from non-stage 1 sleep on wake at start nights at a time when a stage 1 period was expected, so a variety of criteria were used to evaluate the precision of compliance with the wake up suggestions. By the most stringent criteria, 31% of the awakening represented perfect compliance with the suggestions; by the most generous criteria, this figure is 90%.

The don't dream suggestions had no significant effect with either S, and the dream all night suggestions had no significant effect with one S. For the other S, however, there was an increase in stage 1 dream time, on the order of half an hour per night, a 21% increase over baseline nights, which was statistically significant by a variety of tests. This is still far short of dreaming all night, though. Stoyva (1961) noticed a shortening effect of approximately equal but opposite magnitude to this one as a result of suggestions designed to affect content, and Rechtschaffen and Verdone (in press) found an effect of about the same magnitude as a result of offering Ss cash rewards for increasing or decreasing the amount of time they spent dreaming. Although we need more data on this, one can speculate that the timing and duration of stage 1 dreaming is basically under physiological control, and the sorts of psychological variables one can use in the laboratory may not be able to modify this physiological control more than about 20%.

The technique needs further development, of course, but at present we can

conclude that posthypnotic suggestion is a powerful tool for terminating stage 1 dreaming by arousal, and shows promise of being fairly precise as to whether it occurs at the beginnings or ends of the dreams. Insofar as affecting dream duration, though, it does not seem to be a powerful tool, and the results are not very impressive.

As with the content effect, some intriguing aspects of the data are not encompassed by these figures. Granted that Ss were able to awaken at the beginnings and ends of their dreams fairly well, how did they do it? How did they discriminate the beginnings and ends of their dreams, and how did they arouse themselves into wakefulness?

The physiological measures (EEG, REMs, and basal skin resistance) suggest that some of the discriminations may have taken place in an awake or half-awake state, as some of the awakenings were preceded by long stretches of body movements, obscuring the EEG record and making it impossible to be sure the S was physiologically asleep. But a number of arousals took place within a few seconds from clear stage 1 dreaming, so we must turn to our only other source of data, the dreams reported from these awakenings.

Before starting the study, I suspected that the dream content would show some sort of change just prior to the S's awakening, perhaps a report of a change in "dream consciousness" or a symbolization or representation of a change of consciousness - going through a door, climbing a ladder, hearing an alarm clock, or the like. Much to my surprise, I could find nothing in the reported dreams which shed any light on the discriminative or arousal processes. The dream action would be going along at its own pace, and all of a sudden the S was awake and saying to me, "I'm awake now." Judgements of the "completeness" of the re-

ported dreams indicated that those reported from wake-at-end nights were significantly more complete than those from wake-at-start nights, as well as taking significantly more words to describe, but aside from this, I have no idea of how the Ss discriminated the beginnings and ends of their dreams and aroused themselves. It is tempting to speak of some process of judgement dissociated from dream consciousness, but this really explains nothing at this stage of our knowledge, although suggesting some intriguing research problems.

Where do we go from here in affecting dream process by posthypnotic suggestion? To speculate on a few possibilities: The wake at start suggestions could be used as a sort of dream deprivation technique, and its effects investigated. The nature of the thought processes within dreaming might be modified and one could test many Freudian ideas about the nature of disguise, symbolization, etc. Appropriate posthypnotic suggestion might overcome the stimulus incorporation barrier that now seems to block out most stimuli from the dreamer's consciousness, and make it possible to give instructions to the S while he is dreaming. Finally, a possible practical application, those suffering from nightmares might benefit from the posthypnotic suggestion to wake up as soon as a dream became frightening, rather than suffering through it. All this is speculation, of course, but it shows some directions research could take.

To sum up briefly: Posthypnotic suggestion, although fully applicable with only a limited number of Ss, shows great promise as a technique for affecting and controlling the content of stage 1 dreaming and at least one aspect of process, viz. awakening. The effects are fascinating in themselves, and of use,

once they are perfected, in a variety of functional studies of dreaming.

Speculations:

Most of us, and I am no exception, are somewhat reticent about getting away from our "hard" data and speculating very far ahead in public. Since this symposium is concerned with the new frontiers in dream research, though, I will conclude my presentation with a "tall tale" about a "treasure" which may lie just over the border. This particular "treasure" may lure some of us on into new territory, and some of the effects I have been describing today may be the tools which an exploring party will need to discover this "treasure."

From several sources which the psychologist is not likely to run across in his normal course of activity (although Freud, in the Interpretation of Dreams does give a single line to mentioning, and then promptly forgetting, it), one hears of a very curious and intriguing phenomena which has been called the lucid dream. The sources I primarily refer to are an old article and book by a Dutch physician and man of letters, Frederick van Eeden (1913; 1918), and an old book by an English gentlewoman, Mary Arnold-Forster (1921). Both of them report having experienced many hundreds of "dreams" (and I use the word dream in quotation marks now) in which they felt they were perfectly conscious, lucid, and in possession of all their mental faculties. In addition, they had the ability, not present in real life, to markedly modify the "dream world" in which they found themselves by acts of will. Throughout these lucid "dreams" they were continuously conscious of the fact that they were dreaming, yet the "dream world" remained just as vivid and palpable to their "senses" as ordinary reality.

To give you the flavor of such a "dream", let me quote briefly from van Eeden:

"On September 9, 1904, I dreamt that I stood at a table before a window. On the table were different objects. I was perfectly well aware that I was dreaming and I considered what sorts of experiments I could make. I began by trying to break glass, by beating it with a stone. I put a small tablet of glass on two stones and struck it with another stone. Yet it would not break. Then I took a fine claret glass from the table and struck it with my fist, with all my might, at the same time reflecting how dangerous it would be to do this in waking life; yet the glass remained whole. But lo! When I looked at it again after some time it was broken!

It broke all right, but a little too late, like an actor who misses his cue. This gave me a very curious impression of being in a fake world, cleverly imitated, but with small failures....." (van Eeden, 1913, p. 448)

What do we make of such a report? We have a strong tendency to discount it as the ravings of the mentally ill, yet careful reading of these authors cannot help but give the impression that these were exceptionally intelligent, successful, and sane people. I have since found several college students who have had "dreams" of varying degrees of lucidity, and even a psychologist or two! While probably rare, the experience of the lucid "dream" seems quite real, and to me offers some exciting ideas of what may be the ultimate that can be achieved in the control of dreaming (if, indeed, lucid "dreams" occur in stage 1 sleep). Much of what I have reported on earlier can be thought of as the initial steps toward a technique or training system which could culminate in the production of lucid "dreams" in the laboratory, and exploration of the nature of dreaming itself by means of the lucid "dream."

Since time is running short, I shall purposely say no more about the lucid "dream," and methods of studying it scientifically, and perhaps this lack of closure will stimulate you to think about this phenomena, and the use of post-hypnotic suggestion generally in this area, that will give me the benefit of your thoughts in later discussion.

References

- Arnold-Forster, Mary. Studies in Dreams. New York: Macmillan, 1921.
- Berger, R., & Oswald, I. Effects of sleep deprivation on behavior, subsequent sleep, and dreaming. EEG clin. Neurophysiol., 1962, 14, 297.
- Dement, W. The effect of dream deprivation. Science, 1960, 131, 1705-1707.
- Dement, W., & Wolpert, E. The relation of eye movements, body motility, and external stimuli to dream content. J. exp. Psychol., 1958, 55, 543-553.
- Freud, S. The Interpretation of Dreams. Trans. by James Strachey. London: Allen & Unwin, 1954.
- Gresham, S., Webb, W., & Williams, R. Alcohol and caffeine: effect on inferred visual dreaming. Science, 1963, 140, 1226-1227.
- Progoff, I. The Symbolic and the Real. New York: Julian Press, 1963.
- Rechtschaffen, A., & Maron, Louise. The effect of amphetamine on the sleep cycle. EEG clin. Neurophysiol., 1964, 16, 438-445.
- Rechtschaffen, A., & Verdone, P. Amount of dreaming: effect of incentive, adaptation to laboratory, and individual differences. In press.
- Schiff, S., Bunney, W., & Freedman, D. A study of ocular movements in hypnotically induced dreams. J. nerv. ment. Dis., 1961, 133, 59-68.
- Stoyva, J. The effect of suggested dreams on the length of rapid eye movement periods. Unpublished doctoral dissertation, University of Chicago, 1961.
- Tart, C. Frequency of dream recall and some personality measures. J. consult. Psychol., 1962, 26, 467-470. (a)
- Tart, C. A comparison of suggested dreams occurring in hypnosis and sleep. Unpublished M.A. thesis, University of N.C., 1962. In press, Int. J. clin. exp. Hypnosis. (b)
- Tart, C. Effects of posthypnotic suggestion on the process of dreaming. Unpublished doctoral dissertation, University of N.C., 1963.
- Tart, C. The influence of the experimental situation in hypnosis and dream research: a case report. Amer. J. clin. Hypnosis, 1964, in press.
- Tart, C. The hypnotic dream: methodological considerations and a review of the literature. Unpublished ms.

- van Eeden, F. A study of dreams. Proc. Soc. Psych. Res., 1913, 26, 431-461.
- van Eeden, F. The Bride of Dreams. New York: Mitchell Kennerley, 1918.
- West, L., Janszen, H., Lester, B., & Comelisoorn, F. The psychosis of sleep deprivation. Ann. N.Y. Acad. Sciences, 1962, 96, 66-70.
- Wood, P. Dreaming and social isolation. Unpublished doctoral dissertation, University of N.C., 1962.