

A METHODOLOGICAL STUDY OF THE EFFECT OF EXPERIMENTALLY
INDUCED DEMAND CHARACTERISTICS IN RESEARCH
ON NOCTURNAL DREAMS

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University of Cape Town, in fulfilment of the
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SUMMARY

This experiment tested the hypothesis that demand characteristics, as outlined by Orne (1962), may affect dream content. Twelve subjects, allocated to two matched groups balanced for age and sex, were selected on the basis of good dream recall from 94 volunteer psychology I students. Subjects were involved in the study for 15 consecutive nights, three of which were laboratory recording nights, when subjects were woken to report their laboratory dreams during rapid eye movement (stage REM) sleep. Night 1 served as an habituation night (Hall, 1967). On nights 2-7 subjects recorded their home dreams on blank diary forms, from which baseline measures were derived. Night 8 served as the laboratory baseline night prior to the introduction of the independent variable on the following morning. The independent variable was a simple form administered to each group requesting that the subjects in the respective groups pay special attention to either the outdoor/nature or urban settings of their nocturnal dreams. The forms were administered in sealed envelopes and the experimenter was blind as to which form and thus to which group subjects were assigned. The remaining nights served as the treatment condition. Home dreams were again recorded on nights 9-14 whilst night 15 served as the third laboratory night.

A post experimental enquiry was conducted in the week following night 15. Subjects did not consciously construe the forms as representing an attempt to influence their dreams. Nevertheless in the treatment condition, the dream settings of both groups changed significantly

in the predicted direction as assessed by two quantitative indices; a scale giving a global impression of the dream and a content analysis of words in the dream text. The implications of these findings are discussed with reference to both laboratory dream research and psychotherapy.

INTRODUCTION

"The interpretation of dreams", Freud wrote, "is the royal road to the unconscious activities of the mind" (1976, p. 769). This psychoanalytic proposition is pertinent to a variety of theoretical schools of thought inasmuch as the dream is generally considered as being reflective of the deeper recesses of the personality. To many psychologists working in the first half of this century the dream, however, remained an enigma that was veiled in theoretical abstractions which were not amenable to scientific verification.

It is against a background such as this that the discovery by Aserinsky and Kleitman (1953, 1955) of an objective indicator of dreaming should be appreciated. The identification of stage REM sleep opened the doors to a hitherto inconceivable plethora of research dealing with sleep and dreaming. Much of this research however, has focused upon the physiological parameters of the dream state to the exclusion of the psychological concomitants of the REM dream. This is testimony to the fact that the phenomenological investigation of the dream is still considered to be the province of the consulting room rather than of the laboratory.

This state of affairs may perhaps be attributable to the findings which indicate that dreams which are collected at home are more "dreamlike" than those collected in the laboratory (Domhoff, 1969). The laboratory dream is, in other words, atypical. It is this state of affairs which prompted Domhoff and Kamiya to write that

"... the effect of the experimental situation on laboratory dreams is one of the most important methodological issues that must be resolved before objective indicators of dreaming can be exploited as a method for collecting a more complete and representative sample of dream narratives" (1964, p. 525). If the role of the laboratory is to be facilitated such that a 'representative sample' of dream narratives can be collected it is necessary to delineate, and accordingly design controls for experimental settings which may act as extraneous variables. A variety of studies have been directed towards this end which identify both the laboratory environment itself (Dement, Kahn and Roffwarg, 1966; Hall, 1967) and the experimenter (Fox et al., 1968; Keith, 1962) as variables which may affect and contaminate dream content.

The present study is designed to isolate a variable which may affect dream content both in the laboratory and the therapeutic situation. Demand characteristics as outlined by Orne (1962) emphasise the fact that the subject is not merely a passive responder to the experimental stimuli. He responds to the cues of the experimental situation (setting) in such a way that his behavior might be construed as being motivated by the desire to perform well in the experimental task and thus, to be a "good" subject.

These considerations have merited a good deal of attention in experimental psychology and in general, in designing experiments

attempts are made to control for demand characteristics. As yet however the effect of demand characteristics has not been empirically tested in research on dreams, although it has been supposed that this variable may be operative (Tart, 1964, 1969). The present study then is specifically designed to test whether dreams collected experimentally in the laboratory and at home are susceptible to the influence of demands inherent in the experimental situation.

The second problem concerns the fact that the reportage of the dream is furthermore dependent on memory. As Freud has written, "... what we remember of a dream and what we exercise our interpretative arts upon has been mutilated by the untrustworthiness of our memory" (1976, p.656). The remembering of a dream differs from the memory of work-a-day events in that there is no Archimedian point of reference with which to determine whether the account is correct. Freud has drawn attention to this fact in chapter VII of The Interpretation of Dreams. What he has written need not concern the present endeavour but, it is important to note that within psychoanalytic theory the forgetting of dreams, or dream elements is psychically determined.

These two problems are germane to any objective research devoted to the study of dreams. They cannot be obviated by the researcher. Nevertheless, it is important to be aware of the limitations they impose upon any investigation of the dream process.

REM and NREM mentation

In 1953 a discovery was made by Aserinsky which was to dictate the future of sleep research and open the doors to an unprecedented study of the dream state (Aserinsky and Kleitman, 1953). Aserinsky noticed, whilst studying the sleep cycles of infants that there were periods during the night when the eyes appeared to exhibit rapid bursts of activity under closed lids. The eye movements were found to be binocularly synchronous and to occur periodically

every 90 minutes. Aserinsky and Kleitman (1955) found that dream-like mental activity was frequently recalled when subjects were awakened during rapid eye movement periods (REMP). Dement and Kleitman (1957), on the basis of the presence or absence of rapid eye movements divided sleep into two stages, REM sleep and non-rapid eye movement (NREM) sleep.

NREM sleep was divided into four stages which provide an account of the architecture of the night's sleep. These are well documented phenomenon (Berger, 1969; Dement and Kleitman, 1957; Feinberg et al., 1967; Foulkes, 1966; Oswald, 1970; Web, 1968). Stage I is characterized by an irregular mixture of theta waves (4-8 cps), alphoid activity, and occasional alpha waves (8-13 cps). Stage 2 contains predominantly spindle activity (14 cps), whilst stages 3 and 4 contain an increasingly larger portion of delta waves (1-3 cps, high amplitude). The exact division between stages 2,3 and 4 are arbitrary, based on the percentage of alpha waves in any given epoch. Stage I pattern is distinguishable from the other stages by its total lack of spindles and delta waves. REM sleep then was recognized as a distinct stage of sleep, which resembles stage I but it is characterised by presence of rapid eye movements.

For normal subjects stage REM and NREM sleep alternate in regular cyclic fashion which is referred to as the sleep dream cycle. In the normal young adult the descent from wakefulness through stages 1,2,3 and 4 takes approximately ninety minutes. After approximately

seventy of these minutes having been spent in stages 3 and 4 (slow wave) sleep, the first REM period generally occurs (Berger, 1969). This REM period can be distinguished from the later ones by its brevity and fewer rapid eye movements (Feinberg et al., 1967; Verdone 1965). Each subsequent REM period is generally of larger duration than the preceding one. The first REM period may last 10 minutes; the fourth or fifth may last as long as 50 minutes. As the presence of stage 4 sleep diminishes throughout the night that of stage REM sleep increases (Dement, 1965). While the exact percentage of time spent in the various stages of sleep during the night vary from subject to subject, the sleep-dream cycle is generally stable from night to night (Dement, 1960; Dement and Kliezman, 1957).

Subjects who were awakened from the two types of sleep (stage REM, stage NREM) and asked to report what they had been experiencing, revealed that the reports could be classified into two distinct types. NREM reports were found to be less elaborate, more everydayish, than REM dream reports (Foulkes and Rechtschaffen, 1964; Foulkes, 1967; Goodenough et al., 1965). Moreover it was found that dream reports were obtained more frequently when subjects were awoken from REM periods than from NREM periods (Dement and Kliezman, 1957). It should be emphasised however that this early finding, 74% REM reports as opposed to 7% NREM, has not been entirely supported. Recent research indicates that although there is always a higher rate of REM reports, NREM reports are obtained

more frequently than was originally thought possible (Castaldo and Shevrin, 1970; Foulkes, 1962; Foulkes and Rechtschaffen, 1964).

The question as to whether the mentation obtained from awakenings during stage REM sleep can be called a dream is the source of considerable controversy. There are two problems. Firstly, if mentation can be obtained from all stages of sleep, is it possible to call one type of mentation a dream and the other a non-dream? Secondly, even if this problem is resolved, can the mentation obtained from stage REM sleep be called a dream, and can it be assumed that this form of mentation is commensurable with dreams spontaneously recalled at home.

Foulkes (1962) has defined a dream as "... any occurrence with visual, auditory, or kinesthetic imagery" or "... any phenomenon lacking such imagery but in which the subject either assumed another identity than his own or felt he was thinking in a physical setting other than that in which he actually was" (p.15). Defining the dream thus Foulkes obtained a relatively high NREM dream recall rate of 54%. This type of reasoning by Foulkes drew the attention of many sleep researchers to the importance of providing a more precise working definition of the dream. The resultant was the evolution of a diverse series of scales on which the researcher could situate any type of nocturnal mentation on a continuum (Foulkes, 1970; Foulkes and Rechtschaffen, 1970; Foulkes, Spear and Symonds, 1966). On the basis of these and other scales, it

was apparent that REM sleep mentation was associated more with vivid and distorted mental themes called dreams than was NREM sleep.

REM dreams and 'home' dreams

It is evident that there are problems entailed in equating the REM dream with dreams recalled at 'home'. Lairy (1975) for example writes ... "This confusion results from an oversimplification and generalisation of ... psychophysiological data, which have since been modified and even contradicted; these operations constitute semantic barbarisms which prevent a comprehensive approach to the psychophysiology of sleep" (p.365). Two problems present themselves with particular perspicacity.

Firstly it is contended that the dream cannot be restricted in duration to precise periods of sleep which are pinpointed by neurophysiological indicies (Bourguignon, 1975; Lairy, 1975; Malcolm, 1959). This argument is lent credence by the consideration of NREM mentation as discussed above. Secondly, and more relevant to the task at hand is that there have been shown to be differences between dreams collected in the laboratory when compared to those spontaneously recalled at home. Laboratory dreams tend to be more prosaic, while home dream reports are more dramatic, containing a significantly greater amount of sex, aggression, success, failure and misfortune (Domhoff and Kamiya, 1964; Hall and Van de Castle, 1966). A detailed discussion of this body of evidence will be presented presently. What is of import here is whether owing to

these differences, the dreams collected under different conditions can be considered to be cognate.

The theoretical position taken in this study will be that the two types of dreams can be considered cognate. This position adheres to some extremely cogent points made by Sampson (1969). He writes as follows: "I believe ... that we must accept the fact that dream reports are complex psychological products inevitably influenced by the conditions under which they are dreamed and reported. Dreams are not distorted by inhibitory laboratory factors as by selective recall at home, but rather are complexly shaped by these and other conditions" (1969, p.221). Sampson's contention then is that the laboratory can suitably be used to study the psychology of dreaming rather than only the psychology of dreamers.

In order to facilitate this aim it is necessary to be aware of the complex environment as it impinges upon the dreamer constituting part of his waking imagery and impressions. This is the problem to which this investigation is addressed. Before proceeding however and, by way of summary, it is necessary to outline the theoretical position that will be taken in this study.

It will be assumed that an experientially distinct type of phenomenon occurs concurrently during stage REM sleep. This experience is taken to be ongoing whether the subject can recall it or not. It is recognized that the 'actual dream experience' can only be

conveyed through a verbal report which may be subject to various types of vicissitudes. Nevertheless 'dream content' as used in the following pages will refer to the actual dream experience unless otherwise stated. A REM dream report will be defined as the "... mental activity which occurs during REM sleep and is sampled by waking the sleeper during the REM state and asking him what was going through his mind" (Freeman, 1972, p.23). The mental phenomenon of NREM sleep will not be considered in this study.

With this in mind, attention can now be turned to the central focus of this study: demand characteristics and their effect upon dream content. As has been noted above, no research has been conducted on the phenomenon. In reviewing the field, it is thus necessary to situate demand characteristics under the general rubric of studies which have dealt with the manipulation of dream content. The discussion will be limited to experiments which have been conducted in the sleep laboratory. This direction will largely exclude studies of an ideographic nature dealing with personality differences and concomitant variations in dream content.

Two broad types of studies may be identified. Firstly there are those which deal with situational and experimental factors which affect dream content and are thought to be germane to the laboratory. These factors are identified and then manipulated as the independent variable. Secondly there are those studies which explicitly deal

with the manipulation of dream content by the use of various techniques. These studies will be reviewed under four convenient, but not necessarily mutually exclusive headings, namely: (I) Situational and experimental variables affecting the content of dreams, (2) pre-sleep manipulation, (3) manipulation during REM, and (4) hypnotic suggestion.

I.I SITUATIONAL AND EXPERIMENTAL VARIABLES AFFECTING THE CONTENT OF DREAMS

During the 1960's a great deal of attention was focused upon methodological problems involved in psychological experimentation with both human and animal subjects. A body of research was directed at locating factors which could inadvertently contaminate the measurement of the dependent variable. These factors inherent within the experiment, could, as Badia, Haber and Runyon (1970, p.2) reason, be analysed in terms of the experimenter, the subject, and the experimental setting.

Experimenter and situational variables

The experimenter, as McGuigan (1963) points out has seldom been studied as an independent variable: "... we have typically regarded the experimenter as necessary, but undesirable, for the conduct of an experiment. Accordingly, in introductory textbooks on experimental psychology we provide prescriptions for controlling this extraneous variable; but seldom do we consider the experimenter variable further, and the extent to which we actually control it in our experimentation can be seriously questioned" (p.421).

The experimenter can be seen to interact with treatment on the basis of such factors as: personality, experience and sex gender (Kintz et al., 1965). Moreover the experimenter is susceptible

to bias in that he may contaminate data by the expectancies he entertains as to the outcome of the experiment (Rosenthal, 1965) or by information accrued in early data returns (Rosenthal, et al., 1963). As Kintz et al. (1965) point out it is not yet certain as to how the experimenter may contaminate his data although it is suggested that cues may be inadvertently transmitted by the general manner with which the experimenter presents himself, both verbally and through non-verbal behaviour.

The experimenter does of course not act in isolation. The impact that he may have, as far as the subject is concerned, is contingent upon his role as scientific investigator. This role is defined within the context of what is known as the experimental setting, or situation (Rosenthal, 1966).

The use of the EEG and the sleep laboratory has enabled researchers to pinpoint the dream experience within the duration of the night's sleep. This, as has been mentioned, was a great innovation but it was one that was not without attendant problems. A primary question that needed to be answered concerned the representativeness of dreams collected in a laboratory situation when compared to those collected at home. There are certain very important differences in the two environments. It may be assumed that the home environment is an environment with which the dreamer is totally familiar. Any dreams that are remembered in the morning, or on awakening during the course of the night, may be considered representative of his

normal dream experience.

The laboratory situation on the other hand is unfamiliar. Firstly, and perhaps most importantly the subject is exposed to the stresses and subtle impositions contingent upon being a subject. He is subjected to a strange environment which contains complex equipment, the workings of which he is probably ignorant (1). He is required to go to sleep with various electrodes glued to his scalp after being told that he will be awakened at various times throughout the night. Moreover he goes to sleep with the knowledge that the experimenter will be in constant surveillance throughout the night. As Whitman et al (1962) mention, this position is one of vulnerability, in that the experimenter remains awake. The situation is thus one of inequality, embodying all the aggressive potential that the differences in these two states imply.

These very obvious differences have of course not escaped the notice of researchers who have explored both situational and experimenter variables as they impinge upon dream content. These two variables will be considered separately. Dealing first with situational factors, two types of studies may be identified. Firstly there are studies which assess the influence of the laboratory, as a variable, on dreams collected therein and, secondly, there are studies which use content analysis to compare the content of dreams collected in different settings. It is important to note that these distinctions, as outlined, are by no means clear cut and, are cert-

ainly not mutually exclusive. They are used merely to facilitate clarity.

Whitman et al. (1962) conducted one of the first studies which attempted to assess the subjects' reactions to being in an experimental situation. 10 subjects' dreams were collected during 40 nights of recording. Dreams were classified into 3 groups, the content of which (1) dealt directly with the experiment, (2) dealt with the experiment in a disguised way, and (3) did not deal with the experiment. It was found that of the 111 dreams collected 36 fell into (1), 40 into (2) and 35 into (3). The experimenters stress that almost all the subjects at one time or another had anxious dreams about how they would "acquit" themselves during the experiment.

Several studies were conducted to further Whitman's research. It was realized, that if it were to be established that there is a lack of habituation to the laboratory situation, it would have far reaching implications for dream research. The studies, however, reveal somewhat contradictory findings. Dement, Kahn and Roffwarg (1965) found that much of the influence that is exerted by the experimental setting on the manifest content of the laboratory dreams occurs during the first night in the laboratory. In other words, once the subject is habituated after the first night in the laboratory, there was a marked decrease in 'laboratory dreams'.

(The incidence fell from 24,7% on night 1 to 3,9% on night 2. Thereafter representation of laboratory settings did not change in any systematic way.) This finding is to some extent corroborated by what is known as the 'first night effect' (Agnew et al., 1966; Rechtschaffen and Verdone, 1964; Schmidt and Kaebling, 1971) which indicates that sleep patterns are disturbed during the subject's first night in the laboratory.

This assumption relating to dream content habituation is not, however, supported by research which indicates that there is no adaptation effect inasmuch as laboratory dreams persist over time even though their incidence may be lower (Hall, 1967; Domhoff and Kamiya, 1964; Whitman et al., 1962).

The second group of studies that can be distinguished employ content analysis to assess differences between laboratory and home dreams. Once again the literature reveals somewhat contradictory findings. Firstly, evidence has been presented which indicates that there are no fundamental differences in the content of laboratory and home dreams (Foulkes and Shepard, 1972; Weiz and Foulkes, 1970). The relevance of these two studies are, however, questionable in that they did not employ REM awakening procedures in the laboratory; the subjects were awoken by an alarm clock.

Secondly, there is evidence provided by Domhoff and Kamiya (1964) and Hall and Van de Castle (1966). In both studies laboratory dreams were characterized as being more prosaic. Some of the more important differences were as follows: (1) Home dreams had a greater proportion of aggression than laboratory dreams. (2) Home dreams had a greater proportion of sexual interaction than laboratory dreams. (3) Home dreams had a greater proportion of castration anxiety than laboratory dreams and, (5) Home dreams had a greater amount of aggression, friendliness, sex, success, failure, misfortune, and good fortune than laboratory dreams (Domhoff, 1969).

In a paper on home and laboratory dreams subtitled "Home dreams are better", Domhoff (1969) outlines the problems inherent in the empirical data collection of laboratory dreams. Three factors are seen to account for the differences between laboratory and home dreams. Firstly, at home, dreams are selectively recalled. Secondly, an inhibitory effect is created by the laboratory and, thirdly there are differences in the method of reporting; home dreams are written down, whilst laboratory dreams are recorded. Domhoff concedes that the matter is by no means clear and like many other psychological problems the variables are multi-determined. He however tends to support the idea of psychological vigilance on multiple awakenings as a major inhibitory factor in the laboratory.

Domhoff concludes his paper by stating that dream content analysts

should concentrate their efforts on home dreams. The laboratory, he claims, is the proper place for the study of the sleep and not the dream process (1969, p.216). This is not a position which is adhered to in the present study. The theoretical viewpoint that is adopted here is lent empirical status by a finding in the Hall (1967) study. Hall contended that the inclusion of the laboratory setting in dreams is merely a facet of day residue, no less susceptible to inclusion than other types of day residue. Experimentally, it was found, that the laboratory situation had in fact a smaller overt influence upon the dreams of college student subjects than other types of waking activity. A similar conclusion is reached by Weiz and Foulkes (1970) who conclude their investigation by writing that "... there is apparently nothing in a laboratory setting that renders it inherently unrepresentative for the study of many important questions relating to the nature of dream content or for the investigation of many of the basic dimensions of the dream experience" (p.596). A similar conclusion is reached by Sampson (1969) which has already been referred to above.

In an important study Baekeland (1971) set out to test whether subjects' dreams that dealt with the laboratory were related to stress. Two pre-sleep laboratory conditions were used. One group of subjects slept in the laboratory for 5 non-consecutive nights under standard conditions, Their only pre-sleep stimulation being the placement of electrodes. A second group underwent a half-hour pre-sleep association period, under conditions of partial sensory

isolation, which was anxiety provoking and served to focus the subjects' attention on laboratory procedures. It was found that the latter group had significantly more dreams related to the laboratory situation. The laboratory itself, as Baekeland points out, may be thought to constitute, under certain conditions, a stressful situation.

It has been suggested that the laboratory could be made less threatening by housing it in an 'apartment' where the subject could live for an extended period of time (Domhoff and Kamiya, 1964). This suggestion has been taken heed of and, to some extent confirmed in reference to sleep patterns recorded in a laboratory resembling 'a good hotel in a middle price range' (Coble et al., 1974). The expenses involved, however, make this form of control prohibitive to most researchers.

The experimenter variable, the second factor mentioned above will now be considered. In a study by Fox et al. (1968) the experimenter effect was looked at directly in terms of the differential effects of a male and female experimenter upon a male and a female subject. It was hypothesised that the subjects would respond to the person of the experimenter in an idiosyncratic way (p.700). Results indicated that there were differences in dream content, especially with the male subject, when responding to either male or female experimenters. It appeared the male subject perseverated upon dreams concerning being hurt or vulnerable (his flirtatious

advances had been rejected by the experimenter). In contrast his dreams with male experimenter concerned activities performed before others, providing him with a sense of satisfaction. The female subject's dreams differed in terms of dependency or resentment manifested in the presence or absence of the male experimenter. The authors concluded by saying that the experimenter-subject relationship provides a constant source of stimulation for the elaboration of dream content. In other words the dream may be structured around the stimulation provided by the presence of the experimenter.

It has been suggested by Keith (1962) that the relationship between experimenter and subject determines such crucial factors as dream recall. Using three hospital night workers as subjects with poor education he was able to show a high degree of transference. He writes that the tendency of some subjects participating in any research is to transform the researcher into a parent-surrogate with which a transference relationship is established (p.256). A study by Whitman et al. (1963) further demonstrates the effects of transference on the dreams of the experimental subject. Using both a laboratory experimenter and a psychiatrist, to which the subject recalled dreams at a later stage, the authors were able to show that certain dreams were recalled selectively. Sometimes the subject told dreams to the psychiatrist which were not told to the experimenter or vice-versa, depending on the particular relationship established with either person. Although the implications of this study are

primarily of importance for dream narration in therapy, they do serve to indicate the way in which the laboratory dream can be distorted.

One of the ways in which the experimenter interference has attempted to be controlled for is to let the subject exhaust his narrative. Witkin (1969) refers to this narrative as the "dream text". Any further thoughts or images that are probed by the experimenter are not considered to be part of this text, for, it is obvious that at this stage of reporting it is easy for the experimenter to put words into the subject's mouth. This is particularly likely when the subject is inarticulate.

To summarise: it appears that dreams may be readily affected both by situational and experimenter factors. This however need not deter the researcher from studying psychological factors relating to the formation and structure of the dream. In other words both the laboratory and the experimenter should be construed as sources of stimulation that will, at some level, inevitably be incorporated into the dreams.

Subject factors and demand characteristics

The subject factor, alluded to above, has been the focus of several studies in psychological experimentation. These studies have been summarised in a paper by Rosenthal (1965). He integrates a number of findings to show that the volunteer subject is constituted by a variety of traits, including such attributes as greater need for

social approval, greater unconventionality and, greater intellectual ability. These distinguishing factors lend some credence to the claim that the psychological experiment does not have what Brunswick (1947) calls, ecological validity.

In laboratory dream research there appears to be a paucity of work on the subject as a variable, save for one study, where it was found that volunteer subjects find dreams more meaningful than non-volunteer subjects (Roth, Kramer and Trinder, 1971). This finding is important, inasmuch as the subject is perhaps likely to expect the experimenter to provide him with edifying insights and, thus, would be readily susceptible to experimenter cues in the reportage of dreams.

The characteristics associated with the volunteer indicate that the subject in psychological experimentation is to some extent motivated by factors which are best discarded at the front door of the laboratory. Orne (1959, 1962) has explored the source of these motivations in relation to the experimental setting and it is his work which is particularly relevant within the context of the present study.

Orne argues that the subject participating in psychological research is not merely a passive responder to experimental stimuli. Rather his responses may be construed in terms of problem-solving behaviour within a certain environment. This environment is the experimental

setting which defines a role within which the subject must situate himself ... "Once a subject has agreed to participate in the psychological experiment, he implicitly agrees to perform a very wide range of actions on request without inquiring as to their purpose, and frequently without inquiring as to their duration" (1962, p.776). The subject moreover recognizes that he is expected to perform in some manner which will support the hypothesis that is being tested. The totality of the cues which convey the experimental hypothesis to the subject, are referred to by Orne as the demand characteristics of the experimental situation. In other words, every subject who enters into the contract entailed in the experimental situation, seeks to define for himself an hypothesis, or a series of hypotheses which will govern his behaviour. The demand characteristics of the experiment help to articulate these hypotheses and insofar as the subject is able to meet these demands, they also define the role of "good experimental subject".

Orne stresses the fact that the subjects compliance with perceived demands is not necessarily a conscious act of compliance, indeed it is more probably operative on a 'non-conscious level'. Similarly the demands are most potent when they are conveyed "effectively but not obviously". The subject's response to the demand characteristics of an experiment can confound and thus contaminate the variables the study is designed to investigate. The psychological experiment may therefore be seen as a form of social interaction in which the subject's behaviour is a function not only of the experimental

variable(s) but also of the demands perceived as implicit in the experimental situation (Orne, 1962).

Although it has been contended that demand characteristics may represent a confounding factor in laboratory dream research (Tart, 1964, 1969), this contention has not yet been empirically demonstrated.

There are two possible reasons for this omission. Firstly, it is obviously not an easy matter to design an experiment which tests the effects of demand characteristics upon dream content. Secondly, there is a generally accepted notion that the dream has invariant psychological properties, which are not amenable to direct external influence, as would be the case, for example, in a behavioural or verbal response. In other words, it is assumed that it is not experimentally possible to 'produce' a dream. Nevertheless several empirical studies indicate that the dream is indeed susceptible to experimental modification. This evidence is derived from a variety of sources which will now be discussed.

I.2 PRE-SLEEP MANIPULATION OF DREAM CONTENT

Pre-sleep manipulation as it is used here refers to a methodology embracing a spectrum of diverse variables which influence dream content. Although much of the research that will be reviewed falls under one common rubric, three implicit and sometimes explicit aims may be distinguished. Firstly, there is an attempt to ascertain whether pre-sleep stimuli are incorporated symbolically, or otherwise, into the content of ensuing dreams. In these studies the pre-sleep stimuli is often affective-laden and variables such as violent or erotic films are used. Secondly, there have been attempts to simulate and structure day residue and thus trace the incorporation of the residue into the dream. Thirdly, there have been attempts to influence dreams by stimulating the dreamer during sleep.

It must be emphasised that these divisions are by no means clear cut as there is often considerable overlap of methodology and aims. The present discussion is limited to manipulation which is of a psychological rather than of a physiological nature. Several studies have been carried out, for example, to investigate the effects of drugs on dream content to which the interested reader is referred (Whitman et al., 1960; Carrol et al., 1969; Firth, 1974; Lesse, 1959). Furthermore the discussion is limited to effects on dream content rather than on indices such as recall, REM density and the like (see for example Baekeland et al., 1968;

were exposed to controlled pre-sleep stimuli. On one experimental night they saw a violent television film, on the other a non-violent episode. REM dreams were collected on both nights. It was found that REM reports following the violent film were longer, more imaginative and vivid than those following the non-violent film. There was however no specific incorporation of film material into the dreams and therefore there was no significant increase in hostile elements in dreams following the showing of the violent film.

The findings of this study are somewhat inconclusive. Perhaps the reasons for this are best outlined by the authors: The subjects were students and their disdain for commercial television films was apparently made quite obvious by a post-film questionnaire. "With a few exceptions, viewer involvement in the plots of the films seemed to be minimal" (1964, p.999). A further reason put forward by Witkin (1969) in a paper that is discussed below is that the films allowed their own aggressive forms of discharge during viewing and thus, did not lead to a build up of anxiety which would be manifested in subsequent dreams.

The most extensive study yet carried out on influencing dream content by pre-sleep stimulation was conducted by a research team including Witkin, Goodenough, Lewis, Shapiro and Koulack. This research attempted to cover a wide number of variables dealing with both psychological and physiological factors. The discussion

is limited to the psychological factors which have been presented in two sources; Witkin (1969) and Witkin and Lewis (1965). The data available from both these sources is of an ideographic nature and, as far as the author knows, at the time of writing, statistical analyses have not yet been published. The research will be discussed in detail as it serves to illustrate some fundamental concepts and methodological issues involved in influencing dream content.

As Witkin and Lewis write ... "The main feature of this procedure is to have the subject undergo an arousing experience just before he goes to sleep; this pre-sleep event then serves as one reference point or "tracer element" for studying transformations" (1965, p. 846). The tracer element in this study, as in the Foulkes and Rechtschaffen (1964) study, consisted of two emotionally charged films and two neutral films shown in counterbalanced order on four experimental nights. * Twenty-eight subjects spent five nights in the laboratory. Each subject was intensively studied before participating in the research as well as being interviewed in post-experimental enquiries at the end of each experimental session.

* One of the emotionally charged films is as follows: it begins with a description of the Malmstrom vacuum extractor and discusses its advantages as a method of delivery. The next part shows the exposed vagina and thighs of the woman, painted with iodine. The arm of the obstetrician is seen as inserting the vacuum extractor into the vagina; the gloved hands and arms of the obstetrician are then shown pulling periodically on a chain protruding from the vagina. The cutting motion of the episiotomy is also shown. The baby is then delivered with a gush of blood. The film ends by illustrating that only a harmless swelling of the skin of the baby's head results from the vacuum-extraction method (Witkin, 1969 p. 305).

Further information was gathered in biographical interviews at the end of the series of experimental sessions. This collection of personal information was important because it supposed that each subject would respond to the films in an idiosyncratic fashion.

As was found in the Foulkes and Rechtschaffen study (1964), incorporation of the film material was not direct. The methodology of the Witkin study however, enabled the researchers to 'trace' the ways in which the dreams of their subjects underwent transformation during the process of symbolization. The example chosen here is quoted at length. It is derived from a subject (a plumber by trade) after having seen the Malmstrom Vacuum Extractor birth film.

On his fourth REM awakening he reported having dreamt of "... some kind of writing on the kitchen sink, an old kitchen sink ... (the sink was) one of the old brown types. No cabinet... with faucets against the wall, wall faucets." It was thought that the kitchen sink wall faucets symbolized the female reproduction system. Later associations obtained from the subject in the post-sleep enquiry seemed to confirm this. The subject spontaneously recalled a fragment ... "There was an inscription on it (the sink). I think something like 'a woman's toil is never done' ... But the sink was really worn out." Further associations went as follows ... "The sink? (laugh) what's that got to do with it? Well, maybe one time in that room, when I was working as a plumber I went to the maternity ward and I stopped a sink that was all charged up full 'n blood

like that ..." (Experimenter): "From?" (Subject): "Well I don't know from what it was. It was cogulant (sic), you know. The blood was like jelly." (E): "And it really got stuck in it?" (S): "That's what it was. I just put my fingers in there and I washed it away." (laughs) ... (E): "Which part of it (the film) struck you particularly?" (S): "He grabbed the baby by the head and he pulled him out and he came out just like, it's like as if you open a faucet, and all the blood came shooting out after it." (1969, pp. 305-307).

Witkin's experiment has attracted a good deal of attention as it has important implications for dream research methodology, as well as for psychoanalytic theory. Methodologically the study was extremely sophisticated and measures were taken on numerous indices in order to assess the influence of the pre-sleep stimuli. Further studies have been conducted which use modifications of the Witkin design. These studies serve to corroborate, in general terms, the finding that the dream is susceptible to pre-sleep influence (Konink and Koulack, 1975; Cohen, 1972; Berger, 1971; Cartwright et al., 1969; Collins, 1967; Foulkes et al., 1967; Goodenough, 1967).

In psychoanalytic terms the Witkin experiment may be construed as an attempt to structure what Freud called 'day residue'. According to the psychoanalytic theory of dreams, elements derived from the waking state of the previous day are incorporated into the

manifest content of the dream. As a rule day residues are displaced and appear in the dream in symbolic form. Witkin's findings are consonant with this general theory. It was found, furthermore, as in the above example, that the symbolic equations which were most transparent to the observer are frequently those which the dreamer himself denies. Asked whether the film had influenced his dreams, the subject quoted above, reported that the film had no effect on his dream whatsoever.

Day Residue

The explicit research of day residue effects in the laboratory is limited, in that it is almost impossible to provide a laboratory environment where there is a homogeneous field that will control for the multifarious effects of the day's events. Furthermore, it is extremely difficult, if not impossible, to control for the subject's responses to any form of stimulation. Tart(1969) has drawn attention to this. He argues that any form of pre-sleep stimulation is not perceived so much, as apperceived by the subject. Apperception is influenced by conscious and unconscious factors, both of which serve to make the subject's response to the stimulation idiosyncratic. The problem is further compounded by the fact that day residue does not simply refer to the events of a single day. Thus, although one could perhaps attempt to control, over a short period of time, the various inputs that constitute part of the subject's experience, it is near impossible to do this over a period of several days.

Modern dream research has also tended to concentrate its efforts on the objective realm of the dream process where variables may be manipulated. As has already been mentioned, it has been advocated that laboratory dream research need not be limited in this fashion. In a recent paper by Foulkes and Vogel (1974) it is argued that research should re-establish the study of the dream in relation to the individual dreamer and his past. "We suggest", they write "That there be a study of a few subjects' serial dreams in great detail, with due attention to their private meanings and their context in the dreamer's life history ... We need to know more about the baseline properties of the phenomena from which the (experimental studies) produce their generally small increments or decrements in some segmented dream variable" (p.10).

Although ideographic data is extremely scarce, there have been several attempts to study the continuity of waking mentation as it impinges upon the mentation of the dream. These studies are not however directly reflective of day residue incorporation, nevertheless they are important in that they illustrate that certain thought structures are integrated into the dream.

Hunter and Berger (1967) used as their pre-sleep condition a group therapy session. One third of the subjects' dreams on therapy nights, directly included other members of the group. Therapy night dreams also showed more unpleasant interactions between characters, inadequate or unsuccessful roles for the dreamer, and

undesirable outcomes.

Furthermore, it has been found that mentation derived from a pre-sleep hypnogogic association period can be related to REMP reports. The degree of representation was also found to be related to time of night, as the contribution of the association period declined as the night wore on (Baekeland et al., 1968; Herman et al., 1968; Verdone 1965). A continuity has also been established between immediate pre-sleep, and sleep onset mentation that was to a certain extent co-existent with waking fantasy, as determined by the T.A.T. (Foulkes and Vogel, 1965; Vogel et al., 1966; Foulkes 1966; Vogel et al., 1972). Wood (1962) found that social isolation for a period of one day affected the content of his subjects' dreams recorded that night. Compensation appeared to take place inasmuch as there was an increase in 'social intercourse' in their dreams.

It has been hypothesised by Poetzl that the incorporation of day residue takes place subliminally. Poetzl, a Viennese physician of psychoanalytic leaning, used a tachistoscope with which he showed unfamiliar colour slides. Subjects were then asked to 'watch' their hypnogogic experiences and dreams that night. The following day they returned to Poetzl's laboratory and were required to make sketches of their dream images. Poetzl thought that these sketches demonstrated the 'law of exclusion'; that is, none of the consciously assimilated aspects of the slide could be seen in the dream sketches, only those elements that the subject did

not recognize seeing. Unfortunately no statistical treatment was used and controls were not employed to obviate bias. Nevertheless the 'Poetzl phenomena', as it has come to be called, has generated considerable interest. Foulkes (1966), in his influential book has advocated further research, even though no study has yet confirmed the phenomenon (Johnson and Eriksen, 1961; Fisher, 1960; Pulver et al., 1963; Waxenberg et al., 1962), which is testimony to the intrigue provoked by the concept.

Stimulation during REM

Finally, although it is only peripherally related to the present endeavour, it is worthwhile to make mention of studies which attempt to influence dreams by the imposition of some extrinsic stimulation during REM. There are many anecdotal accounts of this in the literature. Freud (1900) cites a dream of Maury's. Having been struck in his sleep on the back of the neck by a piece of wood he recalled a full-fledged detailed and lengthy dream of execution by guillotine during the French Revolution. Freud supposed that Maury's dream represented a fantasy which had been 'stored up' and which was recovered at the moment he was aroused (p.637). This type of explanation is particularly pertinent in the light of modern research. Freud reasoned that the dream could not have been composed with such rapidity, an assumption which now is experimentally supported (Dement and Kleitman, 1957).

Dement and Wolpert (1958) were able to show that stimulation during

sleep did not initiate dreams. Various forms of stimulation were used such as drops of water, a pure tone and a bright light. These forms of stimulation were presented during NREM sleep, and when subjects were awakened a few minutes later they had no recollection of the stimuli, or of having dreamed. It has been shown however, that incorporation of stimuli does take place during REM sleep, but that it is not greatly effective in modifying dream content (Berger, 1963; Berger, Castaldo and Holtzman, 1967; Foulkes and Shepard, 1972).

I.3 HYPNOTIC SUGGESTION AND SUGGESTION

Hypnotic suggestion

Experimentally, the most powerful method of influencing dream content has been via the use of post-hypnotic suggestion. Schrotter (1911) demonstrated that post-hypnotic suggestion could affect both the process of symbolization and dream content itself. He hypnotized a subject to dream that in the first part of the dream, objects would be abnormally small, whilst in the latter part they would be abnormally large. The subject was then de-hypnotized and on the following morning asked to report the content of his dreams. The dream contained images of the subject being able to crawl through the eye of a needle at the beginning of the dream and later, images of being extremely large. Similar results can be found in Nachmansohn (1925) and Roffenstein (1951).

A criticism that can be levelled against these studies however, is that the subjects were not dreaming but were merely experiencing a nocturnal hypnotic state (Tart, 1964). The development of the sleep monitoring techniques has enabled researchers to test the efficacy of post-hypnotic suggestion against REM sleep. Several studies have been conducted in recent years (Barber et al., 1973; Stoyva, 1965; Tart, 1964, 1966, 1967; Tart and Dick, 1970; Torda, 1975). The designs employed in many of these studies are essentially similar. Stoyva's (1965) experiment may suitably illustrate the methodology employed.

From a population of 71 Stoyva selected 16 males who were "hypnotizable"; they had shown complete post-hypnotic amnesia after a trance period and had also demonstrated the ability to follow post-hypnotic suggestion. Subjects were brought into the sleep laboratory and were hypnotized after electrode placements had been attached. The following suggestion was given ... "You will dream in every dream tonight that you are climbing a tree. You will dream of this in every dream tonight. You will dream only of this - that you are climbing a tree." Subjects were then de-hypnotized and left to lapse into natural sleep.

Dream recall, scored only if the dream contained similar or identical images, was high. 44% of the subjects reported frequent dreaming on the suggested topic. For example one subject reported the following dream (16 minutes into REM 2): "There is this old maple in front of our house in Philadelphia. It used to scratch against the window and ah, sometimes we had to cut off the branches. So I don't know, usually we just go out on the roof, but we were all going up the tree by the base to do it. All of us ... " (1965, p287).

Further studies by Tart (1964) and Tart and Dick (1970) independently confirmed Stoyva's findings. Three important points emerge from these studies. Firstly, not every subject dreamed in conjunction with the hypnotic suggestion. Even in those subjects who did dream in accordance with the suggested dream, not every element was reproduced. The number of stimulus narrative elements appearing in

in the dream reports was positively correlated with hypnotizability (Tart and Dick, 1970). Secondly, the suggested topics did not enter the dreams as separate entities, but were embedded in an unpredictable context that would constitute the subject's dream experience. As Tart (1964) writes ... "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" (p. 223). Thirdly, it was found that the suggestion was not restricted to REM reports, but that NREM reports were similarly affected (Stoyva, 1961).

Suggestion with non-hypnotic subjects

It is clear then that dream content can be influenced by hypnotic suggestion in certain subjects and, that the stimulus input is modified in ways which are peculiar to the individual subjects. It has however, also been shown that pre-sleep suggestion given without hypnotic induction, can influence dream content. Fisher (1953) presented the first evidence in this field. Using a variety of subjects, he found that the proportion of dreams that were clearly related to the specified topic ranged from 12 to 33 percent. These results were however not treated statistically, so it is difficult to assess their significance.

More recent studies by Barber and Calverly (1962) and, Barber, Walker and Hahn (1973) using REM awakening procedures have con-

firmed that dream content can be influenced by suggestion on non-hypnotic subjects. Cartwright (1974) has also demonstrated that a conscious wish, in the form of self-induced suggestion, can affect dream content.

A question which arises from these studies, and one to which researchers have addressed themselves, concerns the factors which facilitate the optimum conditions in which suggestion may have effect. Fisher (1953) was able to show that the relationship between the experimenter and subject has an effect on the process of suggestion. Fisher used three groups of subjects; personal friends, one hypnotic subject and psychoanalytic patients. The proportion of dreams that were clearly related to the specific topic was highest for the personal friends (33%) and lowest for the psychoanalytic patients (3%). These suggestions, as has been previously mentioned, were conducted without the aid of hypnotic induction procedures. Fisher was able to conclude therefore that the relationship between subject and experimenter plays a crucial role in the response to dream suggestions.

In the Barber, Walker and Hahn (1973) study Fisher's findings were explored in more detail. Hypnotic, and non-hypnotic subjects were exposed to two types of suggestion. (1) Authoritative suggestion: "You will think about and dream about the death of President Kennedy." (The suggestion in this case.) (2) Permissive suggestion: "I want you to try very hard and to the very best of your ability to think

about and dream about the death of President Kennedy. Please try." It was found that there was a significant interaction between the type of suggestion and the hypnotic and non-hypnotic conditions. Pre-sleep suggestion had the greatest effect on dreams when given authoritatively to hypnotic subjects, and, conversely, the permissive suggestion had the greatest effect when given to non-hypnotic subjects. These findings indicate that extremely subtle cues can influence the process of suggestion. To some extent the findings would appear to substantiate Fisher's results, in that his suggestion was best able to influence the dreams of personal friends, with whom he presumably had the best (and least authoritative) relationship.

Demand characteristics of hypnotic suggestion and suggestion

It has been recognized that there are extremely important methodological problems compounded in the research on suggestion (Barber, Walker and Hahn, 1973; Tart, 1964; Troffer and Tart, 1964; Walker and Johnson, 1974). Firstly, it has been suggested that subjects may fabricate their dreams. This is a difficult hypothesis to confirm, but it has been found that subjects would wake up during the night and have thoughts about the suggestion that they had been given (Barber and Calverly, 1962). Secondly, it has been suggested that demand characteristics may be playing a crucial role where suggestion is thought to be operative. Tart (1964) has emphasised the importance of defining the relationship between experimenter and subject. He argues for a permissive as opposed to an

authoritarian relationship in the hope of minimizing demand effects.

These demands are rampant in many of the suggestions given to subjects. For example, the following suggestion was given to non-hypnotized subjects ... "Tonight when you are in bed asleep you will have a dream about riding a bicycle. Some time tonight when you are in bed asleep you will have a dream in which you will ride a bicycle. When you wake up in the morning write the dream on a piece of paper and bring it to me (Barber and Calverly, 1962, p.380, emphasis added). It appears that in this type of suggestion, the subject can equally be impelled by the very obvious demands made upon him, as by the nature of the suggestion. If this is the case, then it is quite possible that demand characteristics may be affecting dream content and acting as a variable.

The above proposition can be raised in a wider context; that of the effects of demands upon dream content. Tart (1964, 1969) as has already been mentioned, contended that this variable may represent a confounding factor in laboratory dream research. He has written about this variable in relation to Witkin's study in which he believes that there was clear demand made on the subjects to "dream about this film" (1969 p.349). Tart further suggests that the demands may be operative in a wide variety of contexts, including, dreams recorded at home but given to an investigator who is studying dreams, as well as dreams collected in therapy. Tart's suggestions are extremely provocative, but as yet the effect of

demand characteristics on dream content has not been empirically demonstrated.

The general hypothesis of the present study

The present study, therefore, was designed to test the hypothesis that demand characteristics can influence dream content. In order to do this, it was necessary to construct an experiment in a sleep laboratory in which implicit demands were made upon the subjects. This was done by giving the subjects forms that simply requested that they pay particular attention to the localities in which the dreams were set. In other words, demand characteristics were employed as the independent variable within the simulated framework of what appeared, to the subjects, to be a conventional experimental situation.

Framing the hypothesis in general terms it was predicted that the dream settings of two groups of subjects would become either more urban or outdoor/nature in character, according to the demands implicit in the respective forms they were administered.

CHAPTER II

METHOD

2.0 QUESTIONNAIRES

The Marlowe-Crowne Social-Desirability Scale

This scale indicates the extent to which the subject evaluates himself in terms conditioned by the acceptance of others. It further indicates the extent to which a subject would endorse socially desirable items on self-report inventories. The authors have also presented evidence to suggest that the strength of the subjects' social-desirability response set is related to the individual's more general need for self-protection, avoidance of criticism, social conformity and social approval. The scale is modified from Edwards and Walker (1961) and has 33 items. A number of personality inventories were consulted in order to devise the items.

Normative data has been obtained from introductory psychology students at the Ohio State University, U.S.A. 666 males and 752 females provided an overall mean score of 15,9 (S.D.5,5). The internal consistency coefficient for the scale was ,88. A test-retest reliability was taken on 57 subjects with one month interval and a correlation of ,88 was obtained (Crowne and Marlowe, 1964)(appendix I).

Larson Interview schedule

This schedule comprises a series of questions which are used to standardize the method of eliciting dream reports from the subject (Larson, 1969) (appendix 2).

Personal Information and Dream Recall Questionnaires

The Personal Information Questionnaire (adapted from Touyz, 1976) is a self-report form which is used to obtain relevant information from the subject as regards his health, hours of sleep and normal bedtime. This form also requires a signature from the subject indicating his consent to participate in the study (appendix 3).

The dream recall questionnaire (adapted from Cohen, 1973) is a self-rating scale which determines how frequently the subject has recalled dreams in the last two weeks, and asks how representative this is of his normal dream recall frequency (appendix 4).

Post-experimental Enquiry Form

This form is filled in by the experimenter during a post-experimental interview with the subject. There are six questions on the form which are directed at probing the subject's reactions to the study (appendix 5).

2.1 SUBJECTS

Six males and six females were selected from a group of 94 volunteer

introductory psychology students. Subjects with a good frequency of dream recall were selected on the basis of a standard dream report questionnaire (adapted from Cohen, 1973) designed to discriminate frequent from infrequent dream recallers. Subjects ranged in age from 18-24 years ($\bar{X} = 19,7$ years). No subject had a history of psychiatric disorder, as determined by the Personal Information Questionnaire. Subjects were randomly divided into two groups, balanced for age and sex. The Marlowe-Crowne Social-Desirability Scale (Crowne and Marlowe, 1960) was administered to both groups. Both means ($\bar{X} \pm$ S.E. = $10,3 \pm 1,37$ and $11,5 \pm 1,65$ respectively) fell within one standard deviation of standardised scores. The difference between the means of the two groups was not significant ($t = 0,50$, $df = 10$, $p < 0,30$). Subjects were paid RI2 for participation in the study.

2.2 EXPERIMENTAL DESIGN

The author acted as principal experimenter and, throughout testing and scoring procedures, was blind as to the identity of the subjects and unaware of the group to which they were assigned. The aid of a second experimenter was enlisted to help deal with the problem of subject anonymity. Subjects were given coded numbers and allocated to their respective groups by this second experimenter who himself made no personal contact with them and did not participate in the experimental routine or scoring of data.

The design of the experiment is illustrated in Fig. I. Subjects were involved in the study for 15 consecutive nights, three of which were laboratory recording nights, spaced seven nights apart so as to obviate any REM deprivation and rebound effect (Kupfer et al., 1974) when subjects were woken to report their dream during rapid eye movement (stage REM) sleep. Women commenced the study on the fourth day of the menstrual cycle to control for the increase in REM sleep prior to menstruation (Hartmann, 1966) as well as changes in dream content associated with the menstrual cycle (Swanson and Foulkes, 1968). Night I was an habituation night and data were discarded to control for the atypical dreams characteristic of the first laboratory night effect (Dement et al., 1965).

On nights 2-7 subjects recorded their home dreams on blank diary forms. Baseline measures were derived from these dreams. Night 8 served as the laboratory baseline recording night prior to the introduction of the independent variable on the following morning. The independent variable was a Dream Content Setting Form (DCSF) which requested that the subjects "pay special attention" to the locality in which their dreams might take place. Each group received one of two types of DCSFs dealing with either urban or outdoor/nature localities. Forms were administered in sealed envelopes to ensure that the principal experimenter remained blind as to which form, and thus to which group, each subject was assigned, throughout the experimental and scoring procedures. The remaining nights served

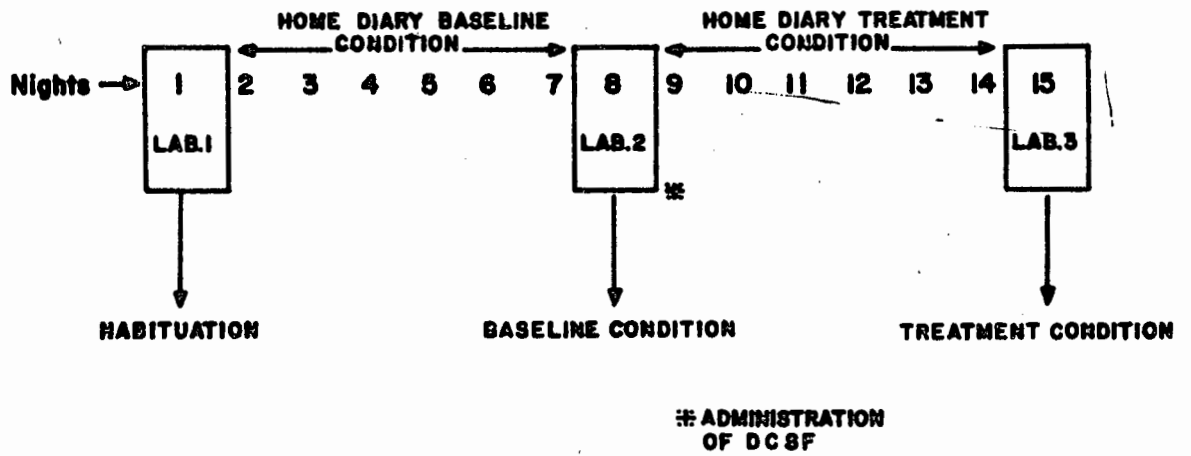


Fig. 1. Experimental design for the assessment of the effects of demand characteristics upon nocturnal dreams.

as the treatment condition: home dreams were again recorded on nights 9-14. Night 15 was the third laboratory recording night.

2.3 PROCEDURE

Structure of the Experimental Situation

Recordings were made in a private, partially sound proof, air conditioned sleep laboratory (Fig. 2). Electroencephalograms (EEG's) and electro-oculograms (EOG's) were monitored continuously throughout the night on a Beckman Type R Dynograph situated in an adjacent laboratory (Fig. 3). In addition visual monitoring was made possible by an eight channel Ampex type EO18 oscilloscope with a multi-trace display unit.

The electrode placements, which were kept constant for each subject, were obtained from the C3 - C4 and O1 - O2 positions (Jasper, 1958) (Fig. 4). EOG recordings of horizontal eye movements were obtained from electrodes placed 1-2 cm. lateral to the outer canthus of each eye. A forehead electrode served as ground.

Silver chloride disc electrodes were used. They were attached by means of collidon adhesive, which is quick drying and can easily be dissolved with acetone. DB electrode paste was used as the conducting paste. A blunted hypodermic needle attached to a syringe filled with DB paste was used to scratch away dead hornified skin cells from the electrode site. The hole in the centre of the electrode was then filled with DB paste. Electrodes that were attached to the outer canthus of the eye were additionally secured with micropore surgical tape.



Fig. 2. The sleep laboratory

Dynograph settings were kept constant for all subjects. The time constant of the type 9806 A A/C coupler was set at 0,3 and the high frequency filters at 3. For the EEG records, the type 48I B Pre-amplifier setting was at 0,5 millivolts per centimetre, whilst the time setting for the type 482 M 8 amplifier was at X0,1 giving a net resultant amplification of 50 microvolts per centimetre on the recording paper. For the EOG recordings the type 48I B Preamplifier setting was at 1 millivolt per centimetre whilst the setting for the type 482 M 8 Amplifier was 0,1 giving a net resultant amplification of 100 microvolts per centimetre. The write-out medium consisted of ink on prefold Beckman No. 344-206569 rectilinear paper. The paper speed used was 1cm/sec.

Subjects reported to the laboratory 45 minutes prior to their normal retiring times and were formally received by a white-coated experimenter. Night I differed from other laboratory nights in a number of respects. Firstly, it was an habituation night and subjects were acquainted with laboratory equipment and procedure. Although the full REM awakening schedule and collection of REM dream reports was carried out, dreams were discarded as ~~data~~ (Hall, 1967). Secondly, subjects were required to undergo a perceptual test before retiring. The Rod and Frame Test (Witkin and Ash, 1948) was conducted in the darkened sleep room and four standard trials were completed. The entire procedure merely served to simulate a rigorous laboratory testing situation, presumably alien to the subjects, and thus no data were collected. The subjects were then told the following:

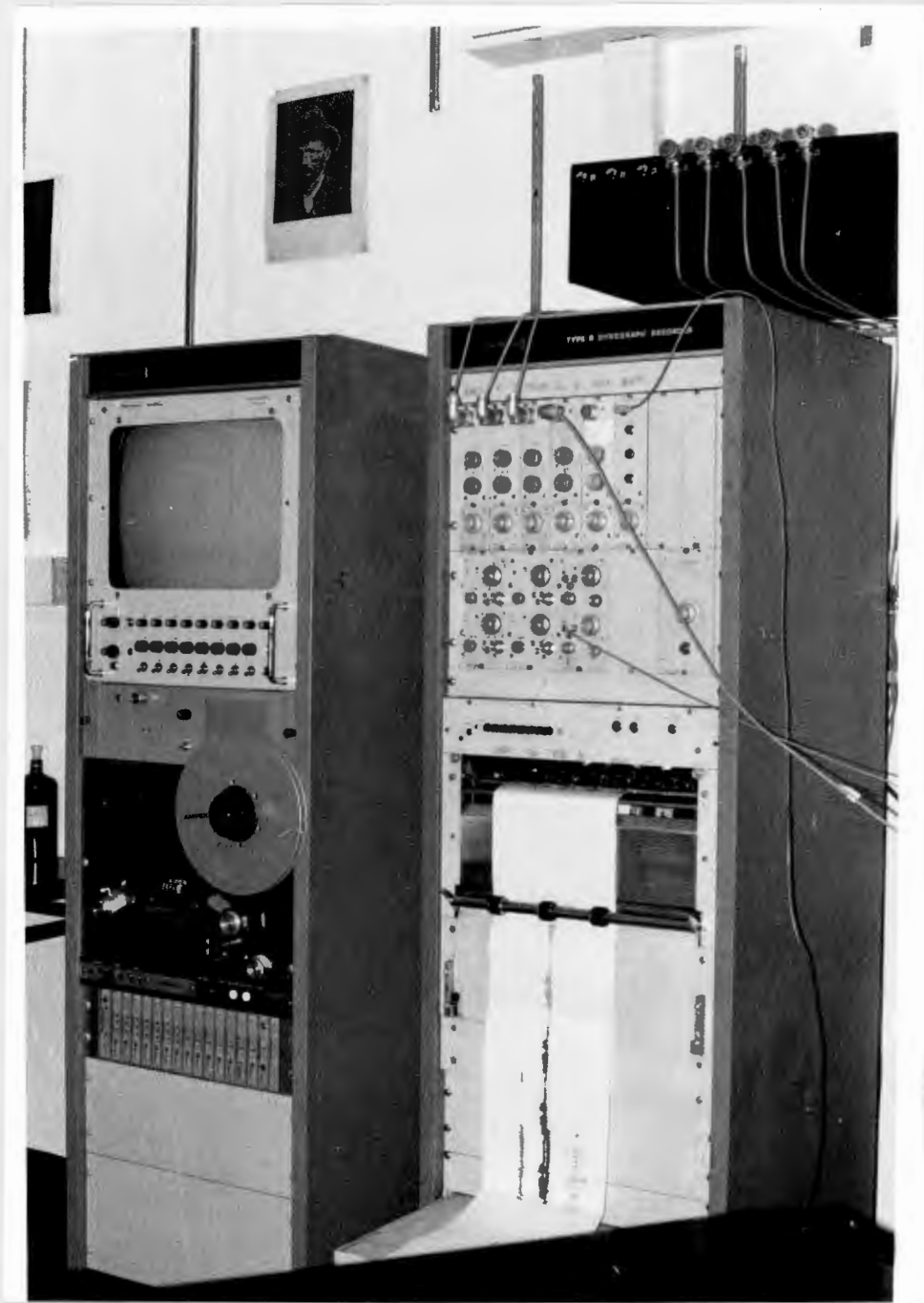


Fig. 3. Electroencephalographic equipment.

"The aim of this study is to correlate dreams with certain physiological measures determined by the EEG machine. I also need to collect your home dreams for comparative purposes. I would rather that you do not ask me any more about the study until it is completed, when we will discuss it in depth. Please also be sure not to discuss the study with any other subject whom you may know is participating, as your impressions could affect his."

The electrode placements were then made and subjects were informed that they would be awakened at intervals throughout the night and asked to report their dreams. The nature of the waking procedure was also described. Subjects were awakened 5, 10, 15, 20 and 25 minutes into REM periods I-5 respectively (Foulkes and Rechtschaffen, 1964), by the experimenter entering the sleep room and calling the subject by name (Kales et al., 1967). The Larson (1969) interview schedule was used to obtain dream reports, which were recorded on a bedside JVC type I610 Nivioco portable cassette tape recorder with a built-in electro-condenser microphone. Nights 8 and 15, the remaining two laboratory nights, were conducted according to standard procedure: the electrode placements were made when the subject arrived at the laboratory and he retired immediately thereafter. In the week following night 15 an intensive post-experimental enquiry was conducted with each subject.

Dream Content Setting Forms

There were two DCSFs viz outdoor/nature and urban. The forms were

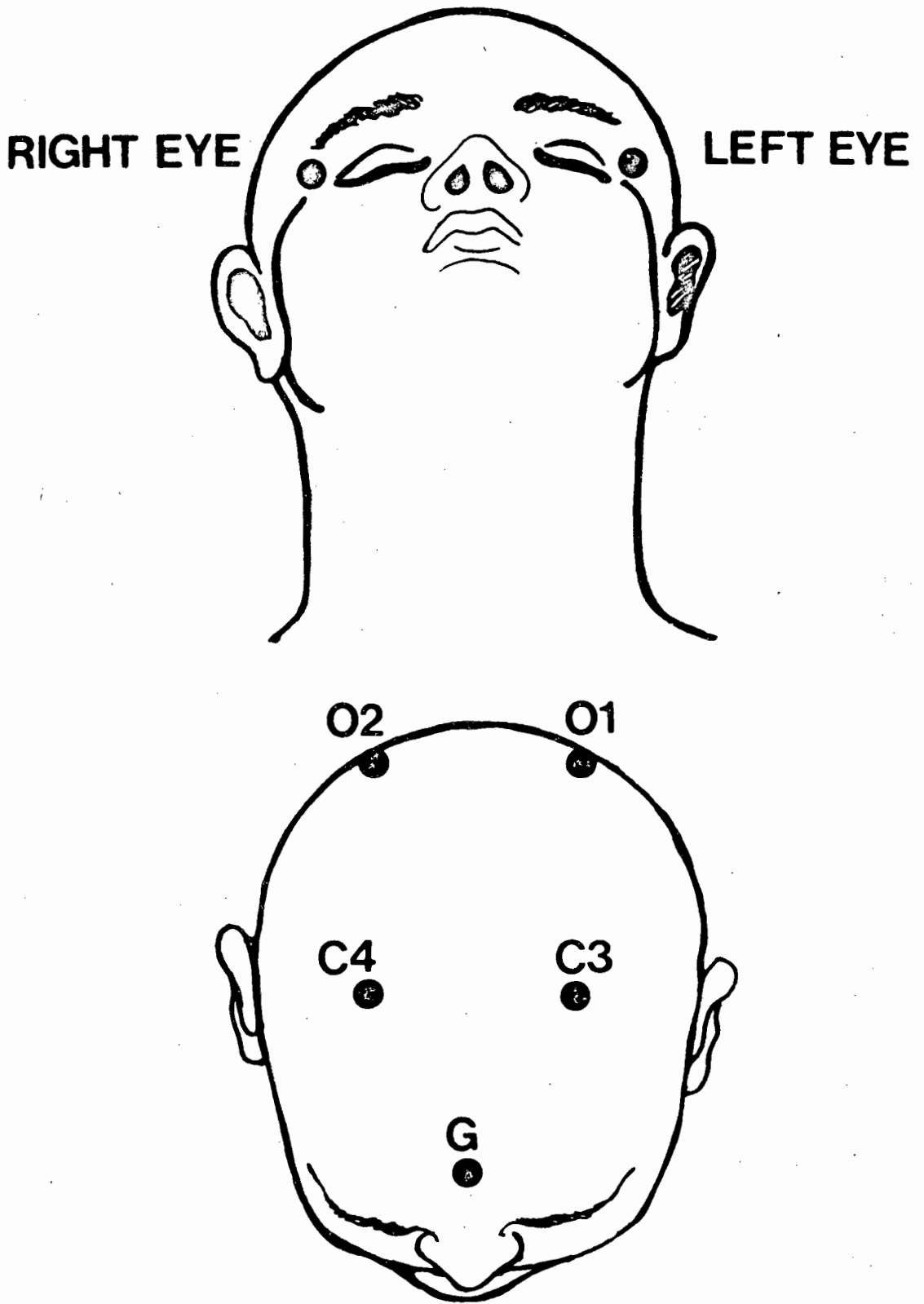


Fig. 4. The EEG and EOG electrode placement sites.

adapted from the Hall and Van der Castle (1966) scale of physical surroundings. The forms implied to the subjects that, on the basis of the tests previously administered, they would be likely to dream of certain types of localities. An overt demand was not made to the subject that they should dream of either outdoor/nature or urban localities, but they were merely requested to " ... pay special attention to the following points dealing with the locality in which the dream may take place ...". These points were delineated by four separate subheadings relevant to the two types of forms. The subheadings contained in the two forms describing the types of objects likely to be encountered in either outdoor/nature or urban environments were as follows: In the outdoor/nature form, groups of words were suggested under the following category headings (i) plant life (ii) terrain (iii) natural bodies of water and (iv) rural settings, whereas, in the urban form, the categories comprised (i) urban vehicles (ii) systems of communication (iii) urban buildings and (iv) suburban settings. It was emphasised that these were not exhaustive lists of descriptive objects but merely examples of objects characterising the respective localities (appendices 6 and 7).

Scoring of Dreams

Two independent measures were developed to assess, by quantitative means, any possible influence of the DCSFs upon the manifest content of dreams. These measures are outlined below. Detailed instructions of scoring procedures can be found in Appendix 8.

(i) Dream locality scale. This was a 1-7 point rating scale ranging from unambiguous urban settings at the lower end of the scale (score 1) to unambiguous outdoor/nature settings at the higher end (score 7). Ambiguous and fluctuating settings were catered for by intermediate points of the scale, with the mid-point (4) indicating an equal proportion of both urban and outdoor/nature elements. Each dream was rated on this scale and thus assigned a value according to the overall impression gained of the dream's primary location.

(ii) Word count index. This measure permitted a numerical count of relevant locality words as they occurred in the dream text, and thus provided a precise quantitative index to supplement the more global impression derived from the Dream Locality Scale. Index words were defined as words which (a) occurred in the categories of the respective DSCFs (b) were synonymous or belonging to an extensive variety of words pertaining to the same category and (c) pertained to an exhaustive variety of objects which clearly and unambiguously fell within the general frame of reference of either outdoor/nature or urban localities. Thus, each index word of each dream text was given a numerical score of 1 and scores were then summed to provide two separate indices reflecting both outdoor/nature and urban dream settings.

In order to control for the variable length of dreams, both within and between subjects, it was necessary to make these scores

proportional to the total number of descriptive object words distinguishable in the dream. A numerical count of total object words was therefore similarly derived by assigning a score of 1 to all objects in the dream which were characterised by clearly definable, objective and tangible characteristics. Hence, total object words included not only all scores attributed to either the outdoor/nature or urban categories but all other clearly definable objects as well. Thus, for each dream, two separate word count indices were given as

$$\frac{\sum \text{Outdoor/nature scores}}{\sum \text{Total object scores}} \quad \text{and} \quad \frac{\sum \text{Urban scores}}{\sum \text{Total object scores}}$$

Inter-scorer Reliability.

A random sample of 26 dreams (16% of the total number of dreams collected), balanced over the entire range of scores for both subjects and groups, was selected by the second experimenter and submitted, together with the detailed scoring procedure, to an independent, experienced judge, not associated with the study, who scored the dreams blind. Pearson product moment coefficients correlation and t tests were conducted to assess the reliability of scoring procedures.

Statistical Treatment of Results.

Scores, on both the Dream Locality Scale and Word Count Index, were summed and expressed as rates to account for the variable number of dreams collected per subject. Results were tested for significance

using a two, or, where appropriate, a three factor analysis of variance with repeated measures (Winer, 1962). Requirements for homogeneity of variance were met in each analysis. Simple main effects analyses were conducted when interaction effects proved to be significant (Kirk, 1968). Data were processed by a Hewlett Packard HP2114B computer.

CHAPTER III

RESULTS

3.0 INTER-SCORER RELIABILITY

The estimates of agreement between the two independent scorers of the dream locality scale, outdoor/nature and urban index words are shown in Table I. The significant correlation coefficients indicated a high degree of agreement between the scorers. Moreover, there were no systematic or significant differences between the means.

3.1 THE DREAM LOCALITY SCALE

The effects of the DCSFs upon the environmental settings of laboratory and home dreams are shown in Table 2. The two-way analysis of variance with repeated measures yielded no significant main effects: groups $F = 0,882$, $df = 1/10$, $p > 0,25$; experimental conditions $F = 0,135$, $df = 1/10$, $p > 0,25$).

However, there was a very highly significant interaction between the two factors ($F = 17,17$, $df = 1/10$, $p < 0,005$). This interaction is illustrated in Fig. 5. Simple main effects analysis indicated that there was no significant difference in the environ-

TABLE I

ESTIMATES OF AGREEMENT BETWEEN TWO JUDGES (X AND Y) IN THE SCORING OF THE DREAM LOCALITY SCALE AND WORD COUNT INDICES (N = 26).

	X*	Y*	r	p	t	p
Dream locality scale	3,85 [±] 0,41	3,85 [±] 0,42	0,80	< 0,01	0,283	> 0,3
Outdoor/nature index words	1,50 [±] 0,30	1,54 [±] 0,39	0,91	< 0,01	0,067	> 0,3
Urban index words	1,54 [±] 0,19	1,04 [±] 0,20	0,70	< 0,01	0,213	> 0,3

*Means ([±]S.E)

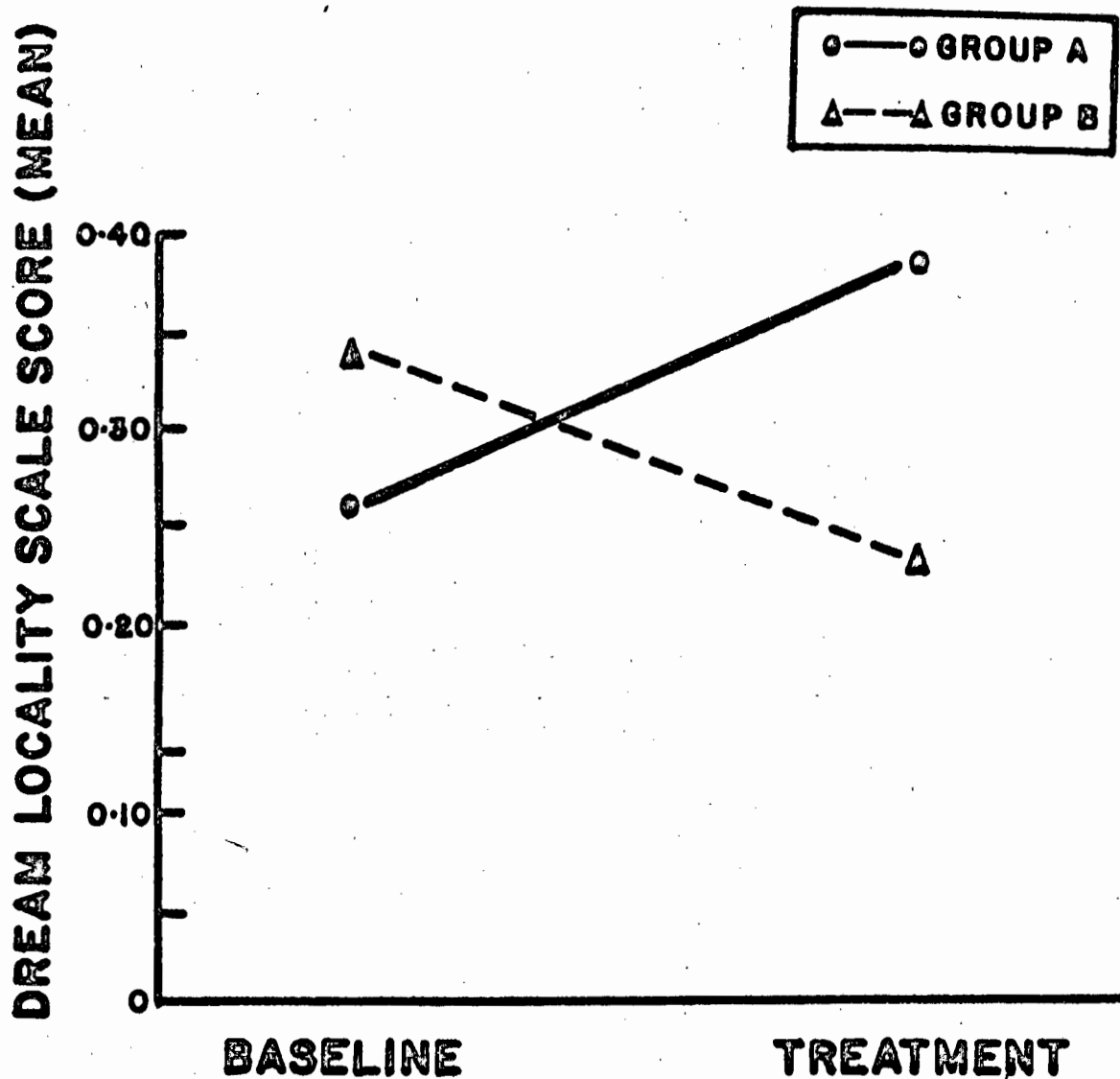


Fig. 5. The effects of two Dream Content Setting Forms upon dream environments. In Group A, administered the Outdoor/nature Form, reported dream settings became significantly more rural (upper end of scale), whereas in Group B, administered the Urban Form, reported dream settings became significantly more urban (lower end of scale).

mental settings of the baseline dreams of the two groups, prior to the introduction of the experimental treatment ($F = 2,014$, $df = 1/20$, $p < 0,25$). The means of both groups were located below the midpoint, at the urban end of the scale. However, there were significant differences in the predicted direction between baseline and treatment conditions for both group A (outdoor/nature settings) ($F = 10,174$, $df = 1/20$, $p < 0,005$) and group B (urban settings) ($F = 7,126$, $df = 1/20$, $p < 0,025$). In group A, the settings of the dreams shifted to relatively more naturalistic environments, whereas, in group B, the opposite effect occurred and the dreams were located in environments characterised as significantly more urban. Thus, the difference between the scaled scores of the two groups during the treatment condition was highly significant ($F = 9,042$, $df = 1/20$, $p < 0,01$).

3.2 WORD COUNT INDEX

The effects of the DCSFs upon the frequency of occurrence of index words in groups A and B respectively are shown in Tables 3 and 4.

Outdoor/nature Index Words (Group A).

The means of the outdoor/nature word count index are compared across groups A and B during baseline and treatment conditions in Table 3. The main effects of the two-way analysis of variance were not significant: groups $F = 0,871$, df = 1/10, $p > 0,25$;

TABLE 3

THE EFFECT OF THE DREAM CONTENT SETTING FORM UPON OUTDOOR/NATURE WORD
 FREQUENCY AS MEASURED BY THE WORD COUNT INDEX (MEANS \pm S.E.)

	GROUP A (Outdoor/nature settings)	GROUP B (Urban settings)
Baseline condition	0,057 [±] 0,017	0,100 [±] 0,040
n = *	39	42
Treatment condition	0,258 [±] 0,096	0,097 [±] 0,043
n = *	41	38

*n = total number of dreams

TABLE 4

THE EFFECT OF THE DREAM CONTENT SETTING FORM UPON URBAN WORD FREQUENCY
AS MEASURED BY THE WORD COUNT INDEX (MEANS \pm S.E.)

	GROUP A (Outdoor/nature settings)	GROUP B (Urban settings)
Baseline condition	0,282 \pm 0,046	0,133 \pm 0,037
n = *	39	42
Treatment condition	0,185 \pm 0,035	0,405 \pm 0,106
n = *	41	38

*n = total number of dreams

experimental conditions $F = 3,93$, $df = 1/10$, $p < 0,10$. The interaction between the two factors was not significant ($F = 4,197$, $df = 1/10$, $p > 0,05$).

However, as predicted, the outdoor/nature word count index in group A increased in the expected direction (Fig. 6, upper part). Simple main effects analysis revealed that this increase was significant ($F = 8,12$, $df = 1/20$, $p < 0,01$). Thus, although there was no significant difference between the two groups during the baseline ($F = 0,287$, $df = 1/20$, $p > 0,25$) or the treatment conditions ($F = 4,007$, $df = 1/20$, $p < 0,10$), the word count index of the treatment group increased significantly.

Urban Index Words (Group B).

The means of the urban word count index are compared across groups A and B during baseline and treatment conditions in Table 4. The main effects of the two-way analysis of variance with repeated measures were not significant: groups ($F = 0,424$, $df = 1/10$, $p > 0,25$); experimental conditions ($F = 1,57$, $df = 1/10$, $p < 0,25$). The interaction between the two factors, however, was significant ($F = 6,97$, $df = 1/10$, $p < 0,025$). This interaction is illustrated in Fig. 6 (lower part). Simple main effects analysis revealed that there was no significant difference between the two groups during the baseline condition ($F = 2,79$, $df = 1/20$, $p < 0,25$), nor was there any significant difference for group A between baseline and treat-

last experimental night revealed that some subjects had developed their own personal hypotheses concerning the aims of the experiment, some of which were at variance with the nature of the study as outlined to them by the experimenter. However, no subject perceived that the DCSFs formed the major focus of the actual experiment. In other words, subjects had not consciously conceived that the demands made upon them were intrinsic to the hypothesis of the investigation. In all cases, subjects denied that at any point during the experiment they had construed the forms as an attempt to influence their dreams. However, eight subjects stated that the DCSFs might have influenced their home dream reports by alerting them to the environmental settings of dreams, and that they might thus have selectively emphasised certain elements of the dream narratives.

CHAPTER IV

DISCUSSION

If, as the results of this study suggest, demand characteristics implicit in the experimental situation exert a significant effect upon the reported manifest dream content, then the findings presented in this investigation have some important implications. Firstly, the failure to control for demand characteristics in empirical investigations of dream content renders interpretation of the findings suspect, inasmuch as implicit demands may be a more important determinant of dream content than the formal independent variable. Secondly, there are theoretical implications for psychotherapeutic strategies employing differing methods of dream analysis and interpretation.

However, it may be asked whether the methodology employed in the present study does indeed test the demand effects of an experiment. It was shown that significant changes occurred in the reported environmental settings of the dreams of two independent matched groups of subjects, as assessed by two quantitative indices and powerful statistical tests. Moreover, the experimenter was blind as to both the groups and to the DCSFs assigned to individual subjects and thus could not influence either the subjects in accordance with the experimental hypotheses or inadvertently contaminate

the scoring of the data. As would be expected on the basis of selection procedures, equal numbers of dreams were collected from both groups under both baseline and treatment conditions (Table 2). Thus, the possibility was eliminated that the differential effects were attributable merely to a higher recall rate in one group of subjects and therefore to a concomitant increase in material inadvertently containing target data.

Under these conditions, the two types of DCSFs differentially affected the dreams of the two groups of subjects. In group A, following the administration of the outdoor/nature form, the environmental settings of the dreams became significantly more rural in character ($p < 0,005$) (Table 2, Fig. 5) whilst the incidence of outdoor/nature words increased significantly as measured by the word count index, which controlled for variable dream length ($p < 0,01$) (Table 3, Fig. 6). Similarly, in group B, following the administration of the urban form, the environmental settings of the dreams became significantly more urban in character ($p < 0,025$) (Table 2, Fig. 5) whilst the incidence of urban words increased significantly ($p < 0,025$) (Table 4, Fig. 6).

Environmental setting was selected as the target in this study because of its presumably neutral emotional connotations. This was important so as not to confound results by inter-individual variability in response to possible affect-laden stimuli. It

was also necessary to keep constant the propensity of individual subjects to endorse socially desirable options. For this reason, subjects were balanced with respect to their scores on the Marlowe-Crowne Social-Desirability Scale, all of which fell within one standard deviation of normative scores. This procedure therefore ensured that the groups were equally composed of individuals who were unlikely to differ in their desire to endorse the expectations of the experimenter.

Within the context of the present study, the effects may be attributed to the administration of a simple form which merely requested that attention be paid to certain environmental details. The contents of the DCSFs were never verbally elaborated upon, and thus the request was neither emphasised nor reinforced. It is important, then, to distinguish between the nature of this form and the use of direct suggestion in studies dealing with the manipulation of dream content. Suggestion depends upon specific instructions given to the subject to dream of particular items or themes. The subjects, in other words, must fully comprehend the instructions given to them. It has already been indicated that these instructions may be seen to embody implicit demands that are made upon the subject. Barber, Walker and Hahn (1973) showed that the effects of suggestion were strongest when used in a permissive fashion with non-hypnotised subjects. However, even this type of suggestion represents a direct and explicit request when

compared to the subtle demands made in the present study. These demands, it is proposed, suitably replicate demand characteristics that may inadvertently be imposed upon subjects in standard dream experiments.

A naive interpretation of the findings of this study may perhaps be construed as follows: The subjects interpreted the demands implicit in the DCSFs as being at variance with the explicit objectives of the study as outlined to them. That is, they construed the forms as betraying the "true" aims of the study. Consequently, compliance with the imagined aims of the experiment was consonant with their role as "good" experimental participants - by virtue of their validating experimental assumptions. As Orne (1962) has written ... "The subject's performance in an experiment might almost be conceptualized as problem-solving behavior; that is, at some level he sees it as his task to ascertain the true purpose of the experiment and respond in a manner which will support the hypotheses being tested (p.778).

This interpretation might suitably explain the outcome of psychological experiments in which the dependent variable, such as a behavioural response, is subject to conscious control by the subject. It is complicated in the present study inasmuch as the dream is, theoretically, a spontaneous product of the unconscious and, as such, is not subject to voluntary control. Moreover, as

determined by the post-experimental enquiry, none of the subjects consciously construed the situation as it has been stated above. Furthermore, subjects, without exception, denied that the DCSFs had had any effect upon the formation or structure of their dreams. The question therefore arises as to the level at which the demand effect may be operative. Two possible levels may be discussed: (i) the dream narrative as reported by the subject and (ii) the dream as experienced by the subject.

At the waking level, dream narratives may be manipulated by the experimenter, since Ritter(1965) has demonstrated that it is possible to influence reportage of certain elements of dream texts by selective reinforcement. This possibility is excluded in the present study since the principal experimenter was blind as to the groups to which the subjects were assigned. Secondly, the subjects may themselves have distorted the dream reports by confabulation in accordance with perceived demands. This would appear to be unlikely because, as has been noted above, the subjects did not consciously perceive the DCSFs as making demands upon them. Furthermore, if the subjects are to be believed, they, without exception, stated that they did not consciously distort any dream material. However, the possibility cannot be discounted that the effect was due to the selective emphasis, during reportage, upon certain dream elements, as outlined in the DCSFs. Indeed, the post-experimental enquiry suggested this as a possibility. How-

ever, the explanation is not favoured that the effect was entirely due to confabulation at the level of reportage, since the effect took place equally in both home and laboratory dreams. If confabulation at the level of reportage was the major factor, one might expect a significant difference between home and laboratory dreams, since home diary dreams were written up at the subjects' leisure. However, the effect was equally operative in dreams reported when subjects were immediately awakened, in accordance with standard laboratory procedure, during stage REM periods.

This then necessitates a consideration of the dream as experienced by the subject. As has been pointed out there is no direct knowledge of this realm of experience and thus the issues raised here are both complex and problematic but, it is interesting to speculate as to the mode of operation of the perceived demand effect. As it is argued above, we paradoxically imply that the subjects were unaware of the demands placed upon them and yet propose that the DCSFs acted as an extremely powerful form of suggestion. There are two possible explanations.

Firstly, the dream itself may have been subject to manipulation in the process of formation. Indeed, Freud was well aware that the analyst might influence the dreams of his patient and Ritter (1965) has drawn attention to this in relation to the verbal reportage of the dream. Freud (1950) reasoned as follows: the manifest content

of the dream is susceptible to the influence of the analytical session because it comprises a most significant part of the waking material (day residues) that is incorporated into the dream. Furthermore Freud argues that the latent dream thoughts can also be influenced via suggestions by the analyst: "For, a portion of these latent dream-thoughts correspond to preconscious thought-formations, perfectly capable of being conscious with which the dreamer might quite well have reacted to the physician's remarks in his waking state too ..." (Freud, 1950, pp.141-142, emphasis added).* The structuring of these latent elements may give rise to what Freud calls "confirmatory" dreams. These are dreams which disclose "forgotten experiences" that have been invoked pre-consciously when previously reconstructed by the analyst on the basis of symptomatology.

The confirmatory dream, as described by Freud, can perhaps be understood in terms of demand characteristics which are embedded in the analytical situation. The patient, as Haley (1963) points out, is offered an interpretation of his behavior which he must accept in order to effect cure. The implicit demands placed upon him are to accept this interpretation. Psychoanalysis, however, as a non-directive therapy, does not make these demands explicit.

* It is important to note at this juncture that Freud did not contend that the dream-work proper could be influenced in any way. As he wrote in The Introductory Lectures on Psychoanalysis ... "It is often possible to influence dreamers as to what they shall dream about, but never as to what they shall dream" (1974, p.277).

The patient, as Haley writes, "... must initiate new behavior. Yet an essential paradox lies in this goal of therapy: one cannot induce someone to voluntarily behave differently" (p.82). How is the patient then induced? In the context of the present study it is inferred that the demands may be incorporated by the patient at a preconscious level. Although this is not necessarily an explanation that would meet with Haley's approval it is consistent with one that is pertinent to the present investigation: it is assumed that the demands were incorporated preconsciously by the subjects and it was at this level that they acted upon the formation of the dream. Indeed the subjects' dreams could almost be construed as "confirmatory dreams" in accordance with Freud's hypothesis.

A second possible explanation must be mentioned, namely, that the subject during reportage, unconsciously fabricated dream elements which he himself believed to be an intrinsic part of the dream. The present study does not however permit one to distinguish between these two alternative explanations.

The present study does, however, demonstrate that demand characteristics represent an extremely potent factor in influencing dream content. The effect is all the more important in that, unlike explicit suggestion, it may creep insidiously into research where it may operate as a variable affecting dream content. In the present study the effects were produced by a simple form: it is quite

possible that an equal effect - or perhaps one of even greater magnitude - may be produced by verbal cues inadvertently transmitted by the experimenter in the course of his interactions with the subject in the laboratory.

In this investigation, moreover, the incentive of the subjects was sustained by a relatively small sum of money and their interest, as students, in psychological research. These incentives are mild when compared to those normally associated with the analytical or psychotherapeutic encounter. As Tart (1969) has written, "... the therapist by asking for dreams and using them in therapy creates an implicit demand that the dreams express the patient's problems and defences ... Further this understanding is not used for impersonal scientific goals but to change the patient, to enable the therapist to attack the patient's defences and alter his personality" (p.352). Bearing this in mind, it is highly likely that the impact of demand characteristics is that much greater in the therapeutic encounter than in the laboratory.

The confirmatory dream is a case in point, in that it may highlight the part played by suggestion in the confirmation of psychoanalytic interpretation, and, hence, in the validity of psychoanalytic theory. Freud himself draws attention to this question (1950, p.142-143), but argues that the authenticity of these confirmatory dreams can be corroborated since they are later seen to be woven into the

tapestry of the analytical interpretations. This begs the question as Ritter (1965) points out, because different schools of therapy, with differing theoretical positions, may equally use the efficacy of interpretations to validate their divergent theoretical assumptions. This tautologous position is perhaps attributable to the fact that the validity of psychoanalytic interpretation, as a mode of explanatory understanding, is necessarily determined by the patient's openness to, and comprehension of the analyst's interpretation. Insofar as the patient understands it, or can come to understand it, a causal explanation of some kind is achieved.

To some extent the efficacy of interpretation is also dependent on the material that the patient produces for analysis. It has been shown in this study that a crucial aspect of that material - the dream - is malleable in the sense that it is susceptible to subtle demands. It has been argued that it is highly likely that these demands are active in a therapeutic situation. If this is the case, it can then be inferred that it is quite possible for the analyst, operating within a therapeutic context, to inadvertently make demands on the patient to 'produce' dreams in accordance with theoretical assumptions; dreams that contain 'relevant' material amenable to analysis. In other words there may indeed be some truth in the rather cynical statement that Freudians get Freudian dreams, whilst Jungians get Jungian dreams.

APPENDICES

1. Marlowe-Crowne Social Desirability Scale.
2. Larson Interview Schedule.
3. Personal Information Questionnaire.
4. Dream Recall Questionnaire.
5. Post Experimental Enquiry Form.
6. Urban Form.
7. Outdoor/nature Form.
8. Instructions to Scorers.

APPENDIX I

MARLOWE-CROWNE SOCIAL DESIRABILITY SCALEUNIVERSITY OF CAPE TOWNDEPARTMENT OF PSYCHOLOGY

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally.

TRUE FALSE

- I. Before voting, I thoroughly investigate the qualifications of all the candidates.
2. I never hesitate to go out of my way to help someone in trouble.
3. It is sometimes hard for me to go on with my work if I am not encouraged.
4. I have never intensely disliked anyone.
5. On occasion I have had doubts about my ability to succeed in life.
6. I sometimes feel resentful when I don't get my way.
7. I am always careful about my manner of dress.
8. My table manners at home are as good as when I eat out in a restaurant.
9. If I could get into a movie without paying and be sure I was not seen, I would probably do it.
10. On a few occasions, I have given up doing something because I thought too little of my ability.
11. I like to gossip at times.
12. There have been times when I felt like rebelling against people in authority even though I knew they were right.

TRUE FALSE

13. No matter who I'm talking to, I'm always a good listener.
14. I can remember "playing sick" to get out of something.
15. There have been occasions when I took advantage of someone.
16. I'm always willing to admit it when I make a mistake.
17. I always try to practise what I preach.
18. I don't find it particularly difficult to get along with loud-mouthed, obnoxious people.
19. I sometimes try to get even, rather than forgive and forget.
20. When I don't know something I don't at all mind admitting it.
21. I am always courteous, even to people who are disagreeable.
22. At times I have really insisted on having things my own way.
23. There have been occasions when I felt like smashing things.
24. I would never think of letting someone else be punished for my wrongdoings.
25. I never resent being asked to return a favour.
26. I have never been irked when people expressed ideas very different from my own.
27. I never make a long trip without checking the safety of my car.
28. There have been times when I was quite jealous of the good fortune of others.
29. I have almost never felt the urge to tell someone off.

TRUE FALSE

30. I am sometimes irritated by people who ask favours of me.
31. I have never felt that I was punished without cause.
32. I sometimes think when people have a misfortune they only got what they deserved.
33. I have never deliberately said something that hurt someone's feelings.

APPENDIX 2

LARSON INTERVIEW SCHEDULE

What was going through your mind just before I called you?

(If something) Would you tell me about it? (Spontaneous Report)

(If nothing, don't remember, or don't know)

Was there any visual imagery?

Would you think for a moment or so and see if anything comes back to you?

(If yes) Would you please describe it?

(No) OK, is there anything else?

Can you remember anything now?

At the time you had these images, did you feel you were really seeing them portrayed, or were you aware that it was just a mental image passing through your mind? (i.e., did it seem real, or did it really seem to be happening?)

Thank you. You may go back to sleep now.

(If something) (If nothing)

OK, would you say that you felt there was a mental experience but you forgot it, or did it seem that there just wasn't anything at all to recall?

OK, thank you, you may go back to sleep now.

Is there anything else?

OK, thank you, you may go back to sleep now.

APPENDIX 3

PERSONAL INFORMATION QUESTIONNAIRE

UNIVERSITY OF CAPE TOWN

DEPARTMENT OF PSYCHOLOGY

PERSONAL INFORMATION

SURNAME:

INITIALS:

AGE:

SEX:

MARITAL STATUS:

PRESENT OCCUPATION:

DEGREE FOR WHICH REGISTERED:

BRIEFLY DESCRIBE PHYSICAL HEALTH:

WHAT TIME DO YOU USUALLY GO TO SLEEP?

DO YOU NORMALLY HAVE ANY DIFFICULTY GOING TO SLEEP?

HOW MANY HOURS DO YOU NORMALLY SLEEP A NIGHT?

WHAT TIME DO YOU USUALLY AWAKE?

ARE YOU AT PRESENT TAKING ANY DRUGS OR MEDICATION? PLEASE SPECIFY:

HAVE YOU EVER SOUGHT PROFESSIONAL PSYCHIATRIC OR PSYCHOLOGICAL HELP?

PLEASE SPECIFY:

I undertake to be a subject in this sleep study. I realise that I am required to sleep for 3 nights in the laboratory, these nights being one week apart, for which I shall be paid R4,00 a night (R12,00 for the duration of the study). I realise that if I do not sleep in the Lab. for the 3 nights, I shall not be paid for nights completed.

Signature:

Date:

4. Did you feel that the form that you were given after your second night in the laboratory influenced your dreams in any way?

5. Do you feel that the dreams that you had in the laboratory were of a different quality to the ones you have had at home? If 'yes' briefly explain why you think this is so.

6. Please add any other relevant comments you may have.

APPENDIX 6

URBAN FORM

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Thus far you have been keeping a record of your dreams in the diary provided. Please continue to do this. However, on the basis of the tests I have administered, I want you to pay special attention to the following points dealing with the locality in which the dream may take place.

Urban settings in which the dream may take place. Pay special attention to objects that exist in the city. Including ...

- (a) All forms of urban communication such as trains, buses, cars, trams.
- (b) All types of roadways such as streets, roads, alleys, driveways, and train tracks.
- (c) All types of buildings such as residential dwellings, civic buildings, office blocks, flats, cinemas, hospitals, restaurants, etc.
- (d) All forms of suburban life such as shops, cafes, homes, schools, etc.

When these elements occur in your dreams, please describe them in detail, presenting as much descriptive information as can be recalled. Pay particular attention to all types of buildings and specify whether the action of the dream takes place indoors or out-of-doors.

Please attempt very briefly to assess the significance of any of the above elements which may occur in your dreams.

APPENDIX 7

OUTDOOR/NATURE FORM

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Thus far you have been keeping a record of your dreams in the diary provided. Please continue to do this. However, on the basis of the tests I have administered, I want you to pay special attention to the following points dealing with the locality in which the dream may take place.

Outdoor settings in which the dream may take place. Pay special attention to objects that exist in nature. Including...

- (a) All forms of plant life, such as trees, flowers, grass, vegetation.
- (b) Terrain, such as mountain, plateau, beach, cliff, cave, valley, field, meadow, swamp, forest, and desert.
- (c) Natural bodies of water, such as ocean, lake, river, and waterfall.
- (d) All forms of rural settings such as farms, vineyards, plantations, and estates.

When these elements occur in your dreams please describe them in detail, presenting as much descriptive information as can be recalled. Pay particular attention to all types of landscape in which the action of the dream takes place.

Please attempt very briefly to assess the significance of any of the above elements which may occur in your dreams.

APPENDIX 8

INSTRUCTIONS TO SCORERS

Word count Index

Each index word is given a numerical score of one as it occurs in the dream text. A simple example would be as follows ... "I am driving down a street in my car. There are flowers on the side of the pavement. Then I pass a tall building with a white car parked outside. Next to the building there is a very tall oak tree." In this example there are five urban index words: street, car, pavement, car and building. There are two outdoor/nature index words: flower and tree. Thus the scoring is: urban - 5; outdoor/nature - 2.

It must first be noted that in the scoring of the word count index the context of the dream is not taken into account. The context is dealt with by the scale (see below).

Although the method outlined above may be followed without difficulty in most cases, there are instances where this method cannot be easily employed. Below, in note form, are listed several points dealing with categorization pertaining to the definition of the index word and to the numerical score attached to these words.

(1) The dreamer does not have to be present in the dream for the index word to be scored. E.g. "My friend went to a house in another town although I didn't go."

(2) The particular object must be 'present' in the dream text and not merely used in a descriptive sense. E.g. "My friend from university came to see me." The word university would not be scored here.

(3) The particular object must be 'present' in the dream text and not merely used in the negative sense. E.g. "There were no trees around." The word trees is not scored here.

(4) Words that are repeated are not scored more than once unless they are used within a different descriptive context. If, however, a different intervening event or set of events occur the word may be scored more than once.

E.g. "The shop was painted blue on the outside. I went into the shop." Here shop is only scored once. However, "The shop was painted blue. I went down the road and had lunch with a friend of mine ... (later) I went back to the shop." Here shop is scored twice.

(5) If two words are used to describe the same object only one of the words is scored. E.g. "I was at a place rather like Tech.; I was a lecturer at this college." Only the word Tech. is scored. Or, "There was a hill rather like Signal Hill." Hill is only scored once.

(6) Elaboration of a particular index word: descriptive words such as big, green, etc., are not scored. Greater complication occurs in constructions such as the following: "It was a hilly valley." or "It was hilly where we walked." In the former use of the word hilly, a score is not given as the word valley can stand alone. However the latter use of the word hilly merits a score as it does describe a particular terrain that is not otherwise qualified. Similarly, "The trees were leafy": in this case leafy does not merit a score. However, "where we walked it was leafy." Here the leafy gets a score.

(7) People or groups of people are not scored as index words. E.g. farmers, policement, traffic officers etc.

(8) Animals are given a score in the outdoor/nature category if

it is unambiguous that the animal is part of a rural/country setting. E.g. cow, sheep, deer, shark, etc. Not included would be animals such as dogs or cats, which are likely to be found in an urban setting.

(9) Names of towns or rural areas. A score is only given here if the case is clear. Simply to mention Cape Town, for example, would not merit an urban score as the reference could be to any part of the area. The usage of the words would have to be qualified. The same rule is applicable to the names of rural areas.

(10) Roads are scored as urban index words unless it is indicated that road is in an outdoor/rural setting, in which case it is scored as an outdoor/nature index word. E.g. "I was driving down a dirt road with green hedges along the sides." The simple mention of 'dirt road' however would be scored urban unless there is evidence to indicate otherwise.

(11) Names of areas in urban localities which would normally be thought of as having buildings, or being an urban phenomenon are scored as urban index words. E.g. Docks, airport, building site etc.

(12) There are certain words which are ambiguous in the sense that they may possibly fall into either category. E.g. house, depending where the house is situated, may be either a rural or an urban object. There are however other words which are not mobile in the sense that they are not applicable to both categories. E.g. park. The word may be rural but its use must be qualified otherwise the word is not scored. A score is given to the category to which it is most applicable (urban) unless otherwise qualified.

Dream Locality Scale

The scale has been developed in order to provide a balanced picture of the total dream, and the context in which it takes place. The word count does not take this into account. The scale is used to assess the quality of the dream, and this should not be affected by a quantitative measure. In other words the scale should be scored on an impressionistic basis.

The scale has 7 points (1-7), with 4 as the midpoint.

1. Unambiguously occurring in a city setting.
2. Predominantly occurring in a city setting (one may either be unsure of the unambiguous nature, or there may be one or two elements of an outdoor/rural setting).
3. The dream appears to occur in a city setting, but the case is somewhat unclear (although the dream appears to occur in a city setting there may be several elements of an outdoor/rural setting).
4. There is an equal occurrence of both city and outdoor/rural elements. Or there may be a greater proportion of one, but there is a transition from one setting to the other in the course of the dream. It may be said, in other words, that the dream takes place in both settings. This category (4) may also include those dreams which do not lend themselves to scoring on the dimension of locality. The dream may take place in a room and it may be impossible to ascertain just where this room is.
5. The dream appears to occur in an outdoor/rural setting, but the case is somewhat unclear (although the dream appears to occur in an outdoor/rural setting there may be several elements of a city setting).
6. Predominantly occurring in an outdoor/rural setting (one may be unsure of the unambiguous nature, or there may be one or two elements

or a city setting).

7. Unambiguously occurring in an outdoor/rural setting.

Each dream must be placed somewhere on the continuum of the scale.

No dream is unscorable.

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