

Evaluating Dream Function: Emphasizing the Study of Patients With Organic Disease

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In spite of a rich heritage of scientific interest in dreams, there is still no known function or meaning of dreams. There are, however, a wealth of carefully worked out hypotheses that were spawned by Freud's work. Because of the lack of answers from dream physiology and because of the maturation of the discipline of dream psychology, it is time to move into the phase of systematic testing of hypotheses to determine the function of dreams. This chapter reviews some methodologic considerations for hypothesis-testing and stresses the importance of data gathering and definition of the independent variable. The Staged Interview Technique is recommended as a way to achieve some control in both dimensions. The study of patients with organic disease is proposed as a way to evaluate biological function of dreaming. Data are cited showing that, in medical patients, the number of death references (men) and separation references (women) correlates with a poor clinical outcome and that patients with no dreams have an even worse prognosis with significantly more deaths. These data indicate that dreams reflect, or are reactive to, biological function. They are consistent with Kardiner's formulation that severe ego distress mediates these changes. This suggests that death and separation are the dream language of severe distress. Finally, this chapter reviews some future research directions with an organic disease approach. It also emphasizes the continued value of studying patients in severe distress, psychological as well as biological, as a way to gain insight into dream function.

Dreams and the dreaming process have long intrigued humankind, scientists and the general public alike. Who in the scientific world, for instance, has not been captivated by Kekule's famous dream depicting to him the structure of the benzene ring (DeBecker, 1968) and who can ignore the prominent role of dreaming in history, religion, literature, and philosophy. For the historically curious reader, Webb (1979) succinctly reviews the rich ancient and pre-Freudian experiences with dreaming, as well as citing important references for further study. He also underscores, as Freud (1900/1953) did, that a strong medical and scientific interest in dreams antedated Freud's work by many centuries.

In spite of this rich heritage, however, it was not until the turn of this cen-

ture that dreaming became established as a subject of scientific merit. With *The Interpretation of Dreams* in 1900, Freud transformed a general interest in dreaming into one which was decidedly scientific. After Freud posited that dreams contained important unconscious messages and that they were the "royal road" to the newly defined unconscious, much scientific attention was drawn to the meaning of dream content and possible functions of dreaming. Freud believed that dream content reflected unfulfilled unconscious wishes. Following his lead, a host of other well formulated theories were proposed, almost all specifying some psychological meaning and function of dreaming. Jung (1974), for example, believed that dreams contained unrecognized information that the dreamer needed to recognize and then integrate into his or her conscious life. Adler, on the other hand, believed that dreams were helpful in problem solving and that they reflected the dreamer's lifestyle (cited by Jones, 1978). There were, in addition, many other theorists and intriguing theories which are well reviewed by Jones (1978). Freud's work had thus spawned the beginning of attempts at a scientific understanding of dreams. The meaning of dreams was no longer in the province of non-scientists—Freud had catapulted dreams into the scientific domain and the discipline of dream psychology was off to a propitious start.

In spite of this initial surge of scientific interest, however, answers about the basic question, the meaning of dreams, did not follow. There are at least two factors that contributed to this. First, with the discovery of rapid eye movements (REM) in 1953 by Aserinsky and Kleitman (1953), a shift in interest from dream psychology to dream physiology occurred; an interest in the physiologic concomitants of dreaming rather than the meaning of dreams themselves blossomed. Although dream physiology provided much important information, it yielded little about the meaning or function of dreams (Fiss, 1979; Foulkes, 1978). At the same time, a second reason for the failure to develop an understanding of dream function was becoming increasingly apparent. While many important hypotheses had been developed, the next step (e.g., Platt, 1964) in the generation of meaningful scientific information, that is, the testing of multiple hypotheses, did not follow (Hall, 1947; Urbina, 1981; Webb and Carwright, 1978). Accordingly, no definitive information about dream function evolved. This led to the unfortunate and unwarranted conclusions that dreaming, at best, had no function and, worse, was not a subject that lent itself to scientific inquiry. It is probable that only careful systematic hypothesis-testing could have eliminated both of these questions. To more fully appreciate the problem, however, it is important to realize that the era of modern empiricists, heralded by the work of Hall (Jones, 1978), was only beginning to develop at this time and it is probable that hypothesis-testing could not have taken place until the fruits of modern dream workers had further developed. At present, however, with dream physiology providing

no answers about dream function and with the accumulated technological and methodological advances in dream psychology, we are in an advantageous position to consider the next phase in the study of dream function. While promising and intriguing new hypotheses will undoubtedly continue to appear, it is imperative, in my opinion, that we begin to systematically test our hypotheses if the science that Freud spawned is to evolve and flourish once again.

In this chapter I will review some methodologic issues, arising from my work with the Staged Interview Technique (Smith 1984a), that may present important considerations when testing hypotheses about dream function. Next I will review my experience studying dream function in patients with organic disease and recommend this approach as a useful way to study biological functions of dreaming which, in turn, may provide clues about dream function generally (Smith, 1984b). The data this work has generated support the hypothesis that dreams reflect, or are reactive to, biological function and this work will be discussed in some detail. Finally, some considerations for future study using patients with organic disease will be presented. There will be no attempt to review the voluminous literature on the meaning of dreams or to address the important physiological and pathological changes associated with dreaming sleep (REM sleep).

Selected Methodologic Considerations

For a review of the many important methodologic considerations in studying dream function the reader is referred to several excellent resources (Arkin, Antrobus, and Ellman, 1978; Gottschalk, Stone, Gleser, and Iacono, 1969; Urbina, 1981; Winget and Kramer, 1979). The intent in this chapter is to focus upon certain methodologic pitfalls I have encountered during studies of dream function and to review efforts to overcome them with the Staged Interview Technique (Smith, 1984a).

First, however, some background on my approach to studying dream function is necessary. After formulating the hypothesis in a precise and testable way, I agree with Kramer (1981) that dream content can be productively employed as an independent (predictor) variable. Association is then sought with a dependent (predicted) variable. Initially, exploratory work can be performed to clarify and refine hypotheses with this format. The final hypothesis can then be tested prospectively. This approach is designed to address the question of what the dream does rather than how it is formed—this latter approach employs the dream as a dependent variable. Failure to elucidate function in the latter context (Foulkes, 1985) should not discourage us from the study of what the dream does in relation to some consequent or concomitant state of the dreamer. As already emphasized, there had been little

systematic testing of this type of dream function. To conclude that no function exists would be premature.

While it is axiomatic that dream material be gathered and rated by people unaware of a particular hypothesis, this is only the first step in limiting and controlling bias of the independent variable. Gathering and defining dream data is subject to additional sources of bias that can seriously distort the independent variable and thereby preclude meaningful prediction based upon it. For instance, bias may occur from external sources such as interviewer or setting. Or bias may occur from imprecise variable definition, i.e., failure to control for the origin of dream material in manifest or associative content, or failure to control for repetition of the dream report. To control extensive bias that occurred during pilot studies, in both gathering and defining dream material, I developed an interview technique which provided a means for controlling factors that otherwise distorted the independent variable so severely as to render it meaningless. A description of the interview, called the Staged Interview Technique, will now be given (Smith, 1984a). Then, the results of work with it will be discussed.

Stage 1. The interviewer states: "Tell me your dream in detail, as much as you can remember about the actual dream itself." Unless the patient does not understand the question, the interviewer is silent during the remainder of this period, which is defined as ending after a total of 3½ minutes or with a 20-second silence, whichever occurs first. The intent and usual result in this stage is the production of both manifest content and associative content.

Stage 2. The next intervention by the interviewer is always: "Run through that dream one more time, starting from the beginning." Except to answer the patient's questions, there is no further participation by the interviewer. This stage ends as defined above, and also generates both manifest content and associative content.

Stage 3. The interviewer asks: "What else comes to mind when you're thinking about that dream?" This stage is defined as ending after a total of 2 minutes or with a 20-second period of silence, whichever comes first. Stage 3 is intended to elicit associative content, although manifest content is occasionally produced.

All three stages of the Staged Interview Technique constitute the index dream material to be rated in a study of dream function. It is represented by whatever dream material the patient first reports; when patients ask the interviewer, he or she instructs them only to report what first comes to mind. Rarely, new dreams may arise somewhere during the three stages, and their manifest and associative content are included as part of the initial manifest and associative content. Each dream interview is rated, by stage, for the number of specific variable references under consideration. I have required that Stage 1 contain at least 100 words as an index that there is sufficient dream material for rating (Gottschalk, Winget, and Gleser, 1969). Each stage is also divided into manifest content (references to the actual dream experience)

and associative content (all other comments about the dream except remarks requesting clarification).

Because each of the three stages is divided into manifest content and associative content, there are six potential sources for dream variables. The most meaningful sources of the dream variables are: Stage 1 manifest content because it is analogous to many clinical and research sources of dream material; Stage 1 manifest content and associative content because it is also analogous to some clinical and research reports; Stages 2 and 3 combined because this shows the contribution from repetition of the dream report; and associative content from all three stages because this shows its contribution beyond that of manifest content alone.

My experience is that the Staged Interview Technique helps in controlling bias in several areas. First, by addressing only the same three statements to each patient it results in a subjective decrease in interviewer bias. It also appears to keep relatively constant that which remains. The explanation for these effects seems to be the limited, constant participation by the interviewer. Nor has there been any decrease in productivity of dream material by this technique. In fact, the interviewer and I were somewhat chagrined to learn, during exploratory phases, that the less the participation by the interviewer the better was the dream material. Thus, while acknowledging the observer effect (Breger, Hunter, and Lane, 1971) and that a dream reflecting only the patient is impossible to obtain (Whitman, Pierce, Maas, and Baldrige, 1962), the Staged Interview Technique minimizes and stabilizes an obligatory degree of uncertainty.

Second, the Staged Interview Technique provides a definite time frame which subjectively allows the production of sufficient dream material by most patients—without creating counterproductive silences or excessive recitation of dream material.

Finally, the Staged Interview Technique generates objective data showing that definitions of the same dream content vary greatly depending upon the source of the dream variable within the interview. A single first report of manifest content, for instance, produces less than one-half of all initial references to a variable while repetition of the report (stage 2 and stage 3) and the use of associative content contribute the remainder. This is important information when using the independent variable in a dichotomous format because designation of the initial occurrence of a variable changes its rating from absent to present. Thus, without careful control, the potential for defining the same dream variable in opposite ways exists! To further confound the picture of variable definition, there is also a lack of correlation of the number of some dream variable references between associative content and manifest content. This suggests that these two sources may not be productive of the same information, reinforcing that failure to control for use of

manifest content and associative content could seriously distort definition of the independent variable.

To digress briefly from our methodologic considerations, it merits emphasis that these data not only provide a strong argument for controlling associative content but also for including such content as dream material. These findings suggest the possibly unique contribution of associative content to definition of dream variables. Freud's (1900/1953) espousal of the use of associative content was very clear in his views that manifest content reflected only the surface meaning in dreams and that deeper understanding was possible only when associative content was evaluated. Hall (1963) and Hall and Van deCastle (1966) argued for the inclusion of associative content in systematic studies of dreams and believed that it could be evaluated as objectively as manifest content. More recently, Foulkes (1978) and Foulkes and Vogel (1974) have emphasized the need to reconsider the possibly unique and important contributions of associative content.

However, the significance of all findings with the Staged Interview Technique is entirely methodologic at this point. Such findings indicate the need to control associative content and repetition of the report when defining an independent variable. Beyond that, because there is no known function of dreaming, it is not possible to say whether it is significant that manifest content alone produces fewer variable references than can be elicited from inclusion of associative content and repetition of the dream report. For instance, to use only one report of manifest content could exclude many important references, depending upon the eventual understanding of dream function. Alternatively, the use of associative content and repetition of the report could introduce spurious references, with a different eventual understanding of dream function. Because there is now no known function of dreaming, there is no reference point to determine how much or which type of dream material is significant in defining dream content. Thus, we can conclude only that the data are important for future studies of dream function. In this context, the data show considerable potential for distortion of any independent variable if the effects of associative content and repetition of the report are not controlled.

These data also indicate that future investigators would be well advised to define independent variables in several different, carefully controlled ways. This is particularly true for the exploratory phases of study to find the best variable definitions for prospective use. It is suggested that the same independent variable be described from, for instance, one report of manifest content, all three reports of manifest content, one report of manifest content and its associative content, and all reports of associative content alone. By doing this, investigators will be able to more fully explore hypotheses by using clearly defined, multiple representations of the same variable.

Although unrelated to the Staged Interview Technique, two additional points are important in defining the source of dream material. First, there is evidence that the production of at least some dream variables may be related to the amount of total dream material from which they were obtained (Auld, Goldenberg, and Weiss, 1968; Urbina, 1981; Winget and Kramer, 1979). This has prompted some to recommend that the number of dream variables be corrected for the amount of the dream material. By dividing the total number of references to a variable by the total number of words of dream material from which it was taken, a "density" score is obtained. In some of my work this has appeared to produce a better correlation with outcome measures than when using the raw score alone. However, caution has also been raised in correcting for the amount of dream material (Antrobus et al., 1978), especially for anxiety related variables (Gottschalk et al., 1969), and I have also found that the number of some variables does not correlate with the amount of dream material (Smith, 1984a). Accordingly, in the light of no known dream function, it is probably wisest to define variables in both ways, at least during exploratory phases of study.

Foulkes (1979) has raised a broader issue regarding the source of dream material. While dreams obtained in the sleep laboratory contain much extraneous bias, this may be the only way to obtain representative dream samples of the patient's overall dream life, although random home awakenings by telephone may be an alternative (Foulkes, 1985). Such generous sampling may be necessary to make a statement about the function of all dreams. While home dreams have the advantage of less inherent bias, they have the disadvantage of being selective (remembered and reported) and possibly not representative of the patient's overall dream life. The possibility exists that the study of this dream material is as much an evaluation of memory and willingness to report as it is of dreaming. Once again, it is probably necessary to consider evaluating dream variables in both ways.

Biological Considerations

The methodologic concerns just presented apply to most hypothesis-testing circumstances when studying dream function. But there has been no mention yet of a specific hypothesis where they might be applied. Although there are many ways to study the meaning of dreams, I will now relate my experience with a biological approach. Using patients with organic disease as an example of severe biological (somatic) alteration, support has been found for the hypothesis that their dreams reflect, or are reactive to, biological function (Smith, 1984b).

Before outlining the specific findings, however, it is necessary to explain the reason for shifting to the seldom considered biological dimension of dreaming. It is not a sufficient explanation to say that study in the psychological

area has not given us answers about dream function. That failure may be due to the paucity of systematic evaluations rather than the fault of either the specific hypotheses or the psychological approach. Why, then, consider a change away from the psychological focus of almost all work?

First, a review of some experiences employing a biological perspective to the question of dream meaning, usually in patients with organic disease, tells us that this is not new and that there have been some meaningful results with this approach in the past. Not only did theoreticians like Freud (1900/1953) and Jung (1974) consider that dreams might be related to somatic stimuli, including those from organic disease, but there also have been several systematic studies that seem to corroborate this association. To highlight a few examples where somatic changes (usually organic disease) have been related to dreams, consider first the work of Alexander and Wilson (1935). Alexander and Wilson showed that peptic ulcer patients and diarrhea patients had prominent intaking and receptive tendencies in their dreams while constipation patients had many fewer of these traits. Moreover, peptic ulcer patients also rated high on aggressive tendencies in dreams. Saul and Sheppard (1956) were able to distinguish hypertensive patients from normals by high scores on hostility ratings of their patients' dreams. Gottschalk, Stone, Gleser, and Iacono (1966) demonstrated that the anxiety scores of REM dreams correlated with simultaneous measurements of plasma free fatty acids, i.e., REM dreams with high anxiety scores were associated with high free fatty acid levels and those with low anxiety scores had low free fatty acids. Finally, Winget and Kapp (1972) showed that dreams laden with feelings of anxiety and threat were associated with shorter periods of labor than in primiparae without them. Although a review of this subject is outside the realm of this chapter, these few examples show that there is precedent for the consideration that dreams reflect, or are reactive to, biological function.

Having proposed that a biological approach to dreams is neither unusual nor unproductive, I further propose that consideration of the biological aspects of dreaming represents not a conceptual change as much as a different look at an identical process. It is important to recall that the separation of the psychological and biological dimensions of dreaming is an artificial division to simplify a complex subject area. These artificially separated aspects are not unrelated but, rather, are intimately related parts of the whole dream and dreamer. Nowhere is this close relationship more apparent than in the dream response to severe stress. Whether due to biological or psychological distress, a single response occurs: dreams of death and destruction (Fenichel, 1945/1972; Kardiner, 1933; Levitan, 1980; Schneider, 1973; Warnes and Finkelstein, 1971; Ziegler, 1962). These dreams have been shown to occur in association with severe heart disease and other organic diseases as well as in the traumatic war neuroses and other conditions of severe psychological stress. We will

return to this subject of dreams of death in conjunction with the findings using an organic disease approach. But, first, some background on this approach is necessary.

An Organic Disease Approach

Pilot studies on the dreams of medical inpatients had stimulated my initial interest in the biological aspects of dreaming. While none of the then hypothesized diagnostic clues were found in their dreams, many patients had dreams of death and destruction which appeared to have prognostic significance. These patients were more severely ill, as determined by a worse clinical course following discharge from the hospital (deaths and readmission), than those without them. These findings were also consistent with the results of Kardiner (1933) and others who reported dreams of death in association with severe illness (Levitan, 1976/77, 1980; Schneider, 1973; Warnes and Finkelstein, 1971; Ziegler, 1962). This led to further study.

In studies of patients with organic disease, the changes which reflect different degrees of severity of organic disease are: (1) different clinical outcomes, such as cure, improvement, worsening, or death; (2) anatomic changes such as differing amounts of coronary artery obstruction; and (3) physiologic changes such as different levels of cardiac output. These measures of disease severity are used as the dependent measures in this organic disease approach. They are compared to the number of, or simple presence of, dreams of death (independent measure) to determine if dreams reflect, or are reactive to, biological function. The specific hypothesis evaluated initially was that the number of dream references to death would correlate with the severity of clinical outcome, as judged by a six point scale (cured, improved, no change, worse without rehospitalization, worse with rehospitalization, death); a dichotomous format was also evaluated where the absence of death references in dreams predicted the patient would not worsen (first three points on the outcome scale) and where the presence of death references predicted they would worsen (last three points on outcome scale).

Utilizing the Staged Interview Technique and the other methodologic considerations cited earlier, 27 men and 22 women were studied to evaluate this hypothesis. Dreams, occurring an average of 5-8 weeks before admission, were rated for the number of references to death, separation, mutilation, guilt, shame, falling, and medical illness. These were then compared to the six point outcome scale. This retrospective study showed significant correlation of the number of death references in men and the number of separation references in women with the six point outcome scale. Using the data in a dichotomous format with a standard two by two table there resulted a significant association of the presence of death (men) and separation (women) dreams with a

worse outcome. An additional finding was that the death rate was significantly higher in the group of patients excluded from study because of lack of dream material. The data thus showed three levels, each with a distinctive dream pattern, in a medically ill population: (1) those without dreams of death and separation also had a good prognosis; (2) those with dreams of death and separation had a worse prognosis but usually did not die; and (3) those who had no dream material also had a significantly higher death rate. This relationship of the clinical severity (biological dimension) of organic disease to dreams suggested that dreams reflect, or are reactive to, biological function.

With respect to the men in the study, Levitan, (1980), Schneider (1973), Warnes and Finklestein (1971), and Ziegler (1962) have clearly established the prominence of death dreams in association with medical disease. Both Levitan (1976/77) and Kardiner (1933) believed that these changes reflected failure of ego compensation and, further, that when disease became very severe, dreams would disappear altogether. This is consistent with the three levels of dream life found in the medical patients described here.

It is important to underscore that the above comments about dreams of death apply only to the men in the study since there was no correlation in women between death references and outcome. In the women, references to separation anxiety correlated with the six point outcome scale. This disparity is explainable if one proposes that women use separation rather than death as their dream language of severe distress. There is indirect support for this in the gender differences reported in the dreams of men and women (Cohen, 1973). Men's dreams are characterized as aggressive, individualistic, and risk-taking which is compatible with death as their language of distress. Women's dreams, on the other hand, are dependent and interpersonally oriented which is also consistent with separation as their marker of distress. To further attempt to resolve the disparity, it is important that the meanings of death and separation are closely related, one often implying the other. They are also closely related by being derived from the initial processes of ego growth and development (Fenichel, 1945/1972).

The relationship of these two types of anxiety to early ego development also suggests a possible mechanism. It is not unreasonable to suggest that such anxieties become part of the dream language at early ages in response to the vicissitudes of ego development and that they are called forth at subsequent times of severe ego distress and serve as a marker of this. This explanation, however, raises additional questions in the case of organic disease. Somehow the severity of the biological process of organic disease has to be communicated. This seems to imply a physiochemical interaction with the dreaming process. Alternatively, severely ill patients could be brooding about their plight although there was no evidence of this during the study; quite the opposite, in fact, was found: almost all patients were optimistic about their prog-

nosis, suggesting that they were not aware of the prognosis at a conscious level. It is tempting to further speculate that the proposed reactivity of dreaming to biological activity has some warning and adaptive function.

Future Study

While speculation is interesting, we can be more productive if we focus upon the immediate future where further study with a biological approach will now be considered. A study population which is more homogeneous would present the opportunity to use comparable parameters of disease severity other than clinical outcome. For instance, I am investigating a group of cardiology patients where, in addition to clinical outcome (six point scale), the following measures of disease severity are available on almost all patients: chest x-ray, EKG, exercise tolerance test, coronary angiogram, and cardiac output. Thus, anatomic and physiologic measures are available which are far more sensitive parameters of the severity of biological change than the inherently difficult measure of clinical outcome which is often made further difficult by treatment interventions; moreover, it takes at least three to six months observation to obtain it. The anatomic and physiologic measures, on the other hand, are immediately available and unfettered by interventions as well as being more precise and more reproducible. Preliminary data with a cardiology population are suggestive of the value of these dependent measures. This is particularly the case with one physiologic measure, the ejection fraction, which is a sensitive indicator of differing levels of cardiac function. Here, the hypothesis that there is a correlation between dreams of death (and separation) and changes in the ejection fraction is being evaluated.

Certain even more homogeneous populations, patients with histiocytic lymphoma or advanced carcinoma of the breast, offer an additional possible advantage for the study of dream function. Subsets of patients in either group are known to pursue two very distinct and disparate clinical courses, one remaining stable and the other rapidly deteriorating. If dreams are reactive to biological function this should be a good place to test the hypothesis with respect to clinical, anatomic, and physiologic measures of severity.

The use of the sleep laboratory to study dream function has always posed the question of bias. As many as two-thirds of patients dream about the sleep laboratory itself (Whitman et al., 1962) and, while there is some habituation, it is never complete (Dement et al., 1965). But, is such dreaming biasing to studies of dream function? This is simply not known at this point. Because patients dream of the sleep laboratory does not necessarily mean that dreams of death, for instance, will be altered. Thus, while the potential of bias suggests a reason to avoid the sleep laboratory, its potential benefits are many and should not be overlooked: more comprehensive samples of dream

material, ease and speed of acquiring dream data, and ready access to concomitant physiological measures. It will still be important, however, to gather dreams in the sleep laboratory in a systematic way such as described by the Staged Interview Technique.

If dreams are reactive to biological function, are other manifestations of the unconscious also reactive or is this phenomenon in dream life unrelated to the unconscious? Evaluating other unconscious sources (open-ended interview, Thematic Appreciation Test, and artistic work) for references to death and separation and then comparing them to dependent measures, as well as to dreams, would help to clarify this question.

Finally, the implication of biological reactivity of dreams is that there is also psychological reactivity, at least if one accepts that the biological and psychological dimension are part of a united whole. A systematic approach of the type discussed here can also be applied in search of psychological function. One might, for instance, test the hypothesis that dreams of death (and separation) are associated with more severe psychological changes in a group of severely distressed patients. The measures of severity could again be clinical, anatomic (body weight), and functional (psychological and psychophysiological testing of ego distress). A study population from a natural or war time disaster would be ideal; or, a universally severely stressful situation such as a mother losing a child could also be used. One would hypothesize that people in these circumstances with dreams of death (and separation) would show significantly more severe changes of psychological distress and psychiatric disease.

If the type of study described here continues to show reactivity of dreams to severe stress, psychological or somatic, it will become important to study less severely stressed patients to determine the dream language for these states. For the present, however, patients with severe distress seem to provide a good population for attempting to understand one type of dream function.

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