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ANXIETY AND THE CONTENT OF DREAMS

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BACHELOR OF PHILOSOPHY DISSERTATION

UNIVERSITY OF WAIKATO 1970

While one is in the state of dream, the golden, self-luminous being, the Self within, makes the body to sleep though he himself remains forever awake and watches by his own light the impressions of deeds that have been left upon the mind. Thereafter, associating himself again with the consciousness of the organs of sense, the self causes the body to awake.

While one is in the state of dream, the golden, self-luminous being, the Self within, the Immortal One, keeps alive the house of flesh with the help of the vital force, but at the same time walks out of this house. The Eternal goes wherever he desires.

The self-luminous being assumes manifold forms, high and low, in the world of dreams. He seems to be enjoying the pleasure of love, or to be laughing with friends, or to be looking at terrifying spectacles.

Everyone is aware of the experiences; no one sees the Experiencer.

Yagnavalkya in the
Brihadaranyaka Upanishad

A. INTRODUCTION AND SURVEY OF THE LITERATURE

In recent years there has been an increasing interest in the relationships between dream content and the personality characteristics of the dreamer. While studies in this area have generally supported the assumption that personality variables exercise a controlling or constraining influence on the material that appears in dreams, much work remains to be done before the nature of these controls or constraints is understood.

A survey of the literature in which the relationships between personality characteristics and the manifest content of dreams are investigated reveals a variety of classification systems for the content analysis of dreams. It has only been through the application of content analysis to dreams, as it is applied to other verbal or symbolic material, that quantitative measures have been obtained, allowing the relationships between dreaming and other human behaviour to be determined.

Beck and Hurvich (1959), using a small sample of female private patients, confirmed the hypothesis that consecutive dreams of neurotic-depressed patients in psychoanalytic therapy show a greater incidence of manifest dreams with masochistic content, (where masochism is defined as a need to suffer), than a series of dreams of a matched group of non-depressed patients. In order to test this hypothesis a scoring manual was developed by formulating a number of categories reflecting the need to suffer.

Several hundred dreams of patients diagnosed as depressed and non-depressed were studied and compared for content that reflected a need to suffer and which was differentially represented in the two samples. This provided the basis for expanding and refining the scoring categories. To determine the scoring reliability, the two authors independently scored the total sample of 240 dreams. A dream was scored as masochistic if it had at least one masochistic element in it. The authors agreed on the presence or absence of a masochistic element in 229 of the dreams, which is 95% agreement.

Beck and Ward (1961) replicated this study using a relatively large random sample of psychiatric patients, whom they measured for depth of depression by a depression inventory, (Beck, Ward, Mendelson, Mock, and Erbaugh (1961), and by clinical ratings. Each patient reported the most recent dream he could recall. Patients with high clinical ratings for depression and/or high scores on the depression inventory reported more dreams with a masochistic element in them than did patients with low ratings and/or scores. Scoring reliability for presence or absence of a masochistic element between the two authors for the 216 dreams was 96%.

This study raised issues concerning the general significance of masochistic dreams. Since many individuals who have never had a clinical depression or any other psychiatric illness state that they frequently have dreams of this nature, the dream itself is not necessarily a sign of illness. In addition, many patients with cyclical depressions continue to report the masochistic dreams with

the same frequency during the symptom free intervals. Also, some patients recall having had repetitive dreams of this nature long before having been depressed. Consequently the masochistic dream cannot be construed as being associated only with the state of depression. It is more likely to be related to certain personality characteristics of individuals who may develop depressions. As Beck and Hurvich (1959) pointed out, these individuals appear to have discernible masochistic trends in their characteristic behaviours.

The relationship of the masochistic dream to depression may be further examined by comparing the typical dream themes with other behaviours observable in the depressed patient. For example, the dreams of being reproached, rejected or punished may be compared with the depressives verbalized self-reproaches and his belief he is deserving of punishment. Similarly, dreams of being injured or dead, which are also characteristic of depressives may be compared with verbalized desires for self-destruction.

The authors state that a noteworthy aspect of the investigation is that it illustrates the possibility of subjecting the manifest dream to objective measurement and relating the scores to clinical diagnoses or other quantitative data obtained from personality tests.

Rychlak (1960) investigated the relationship between the dream themes of affiliation, reward, and tension and scores on the Cattell Junior Personality Quiz and a sociometric measure of popularity. Subjects were 30 fifth grade and 29 eighth grade elementary school children.

Dreams were collected in writing on the same day of each week over a three month period.

Each dream was scored for one of the themes. More than 95% of the dreams could be scored for one of the themes and scoring reliability was obtained by having two trained scorers independently classify 32 dreams. Agreement was obtained in 94% of the cases.

Manifest dream themes showed relationships with the personality test scores and sociometric measures. The Reward dreamer seems to be either outgoing and affable or fairly dominant and achievement-oriented. Passive-conformity, inhibition and a preference for close interpersonal relations seem to typify the affiliative dreamer.

Rychlak and Brams (1963) in a second study using college students and the same dream themes of affiliation, reward and tension (plus a miscellaneous category) correlated themes with scores on the Edwards Personal Preference Schedule, the MMPI and the Taylor Manifest Anxiety Scale. One change was made in the scoring manual for adults as compared to that for children. Sex dreams were classed under the Affiliative theme. Dreams with none of the three themes were put into the miscellaneous category.

Repeated reliability checks with two raters independently scoring dream themes showed in excess of 70% agreement in all cases.

A scale for measuring what Rychlak and Brams term reactive content in dreams was also developed. They define it as anything in the dream that is unusual, peculiar, or distorted.

When subjects were grouped as high or low scorers on the personality dimensions a number of significant relationships appeared between dream themes and personality dimensions. The current dreams reported by adults were distributed in roughly the same way as those reported by children, children tending to have more reward dreams and adults more affiliative dreams. The recurring dream reported by adults was nearly always a tension dream. The findings on the relationship of reactive content to personality dimensions were not extensive. However, the hypothesis that scores derived from a series of adult recalled dream themes could be related to independent measures of personality was supported.

The purpose of a study by Meer (1955) was to attempt a verification through dreams of the difference in handling emotional ambivalence between highly authoritarian and non-authoritarian individuals. The general proposition tested was that highly authoritarian persons need to categorize people into ingroup and outgroup in order to solve the problems of emotional ambivalence toward authorities, while non-authoritarian individuals need not do so. The general design was to obtain two groups of subjects differing significantly in their attitudes as measured by the F or authoritarianism scale, and to test hypotheses deduced from the theory of authoritarian personality by a comparison of the subjects dreams. The author states that dreams were used as the dependent variable to test the hypotheses because dreams are an important area of personality expression, and because dreams are independent of the kind of data used originally to test the theory of the authoritarian personality.

The specific hypotheses, that authoritarian subjects would have more aggression with outgroup than with ingroup characters in dreams whereas there would be no difference in aggression between ingroup and outgroup characters in the dreams of non-authoritarian subjects and authoritarian subjects would have more friendly acts with ingroup characters than with outgroup characters whereas there would be no difference in friendliness with ingroup and outgroup in the dreams of non-authoritarian subjects, were all confirmed. It was concluded that those findings lent support to the theory of the authoritarian personality as formulated by previous investigators.

Goldhirsh (1961) tested and confirmed the hypothesis that male sexual offenders show a greater incidence of sexual and sex crime dreams than do other convicts, for a small imprisoned sample. Two scorers agreed as to the presence or absence of a sexual element for 158 of the 160 dreams and the presence or absence of a sex crime for 156 out of 160 dreams.

Framo, Osterweil and Boszormenyi - Nagy (1962) tested and confirmed the hypothesis that if threat in the manifest content of the psychotic's dreams is directed toward the self, the overt behaviour of the patient will be largely characterized by overactivity, and if threat is directed toward others in the dream, the overt behaviour will be largely characterized by pathological passivity. The patients were rated by nurses and aides for active and passive behaviour. At least one dream was related verbally by each of 92 patients

in a research and training psychiatric hospital and their manifest content evaluated by a Dream Threat Scale. All of the 189 dreams were independently classified for the presence or absence of threat by the three authors who agreed on 169 dreams or 89% of the cases. Using dreams containing a threat, scorers agreed on the direction of threat 92% of the time.

Hall (1966) compared the dreams of four groups of hospitalized psychiatric patients with each other and with a normal population for 46 content variables. The groups were, (a) patients both schizophrenic and alcoholic, (b) patients schizophrenic but not alcoholic, (c) patients alcoholic but not schizophrenic and (d) patients neither schizophrenic nor alcoholic. The 46 content variables consisted of dream length, eight scores for classes of characters appearing in dreams, eleven scores for aggressive encounters, ten scores for friendly encounters, five scores comparing aggression and friendliness and a miscellaneous set of scores including sex, success, failure, good fortune, misfortune, oral incorporation, castration anxiety, castration wish, and penis envy. A full description of these content categories and rules for scoring them are given in Hall and Van de Castle (1966).

In comparisons among patient groups only three significant differences were found, (a) dreams reported by non-schizophrenics were significantly longer than those reported by schizophrenics, (b) alcoholics had more dreams in which an oral incorporation occurred than did non-alcoholics, (c) non-alcoholics had more dreams in which sexual interaction occurred than did alcoholics.

When dreams of the hospitalized sample were compared with those of a sample of male college students the principal difference found was the smaller number of friendly interactions between the dreamer and the female characters in patients' dreams. This finding was discussed in relation to the ontogenetic hypothesis of the child's feelings of being rejected by the mother and it was hypothesized that these feelings make the person more vulnerable to the development of psychopathology.

The scoring was done by the author and rechecked by him. Scorer reliability had previously been found to be satisfactorily high for the classes scored in the study. (Hall and Van de Castle 1966).

In the investigation of the relationships between dreams and projective tests, such as the TAT and Rorschach, the systems of scoring devised for them are often imposed upon dreams. Gordon (1953) used an adaptation of the need-press system of scoring TAT stories devised by Aron (1949), for scoring both stories and dreams. Bolgar (1954) used a system of scoring used for Rorschach responses in a comparison of dreams and Rorschach responses. In studying the consistency of affect and symbolic expression, dreams and Rorschach responses were scored by a method developed by De Vos (1952).

McReynolds, Landes, and Acker (1966) tested two hypotheses relating dream content and the personality characteristics of the dreamer. The first hypothesis was that perceptual material a person has not adequately assimilated,

hence causing him to feel "unsettled", has an increased likelihood of appearing in that person's dreams and the second hypothesis was that content that is incongruent with a person's personality structure has a decreased likelihood of appearing in that person's dreams. Thirty male college students were given two specially constructed tests. The first was an Unsettledness Inventory of 189 items representing topics about which individuals might possibly be concerned e.g. "Being separated from my family", "What to do after graduation", and "An argument I had with some one". The inventory yielding a total score and 10 subscores in the areas of sex, hostility, body, family, interpersonal relations, money, school, work, mental health, and abstract problems. The second instrument, an Incongruency Test, measured personality incongruency in the areas of sex and hostility with 24 items concerning sex and 24 items concerning hostility. Each item was a situation that the subject was to imagine being in and a way he was to imagine reacting. For each item, the subject rated the degree to which the indicated reaction would be in accord with his own standards, his parents standards, the way other men would react, his desired immediate feeling, and his desired long-term goals. Discrepancies among the subjects' ratings on each item were assumed to reflect the amount of incongruency in his cognitive structure in the content area sampled. Dreams collected over a mean of 18.30 nights for each subject were scored for sexual and hostile content by two raters who used symbolic as well as manifest cues.

Two other raters scored each dream, on a present or absent basis, on each of the 10 sub-areas of the Unsettledness Inventory using manifest cues.

Inter-rater reliability was 90% for hostility rating, 85% for sexual content rating, and 95% for the sum of all 10 ratings on the unsettledness content area. The first hypothesis was confirmed. However, with the second hypothesis, neither the sexual content nor the hostility incongruency scores were significantly related to the corresponding dream ratings. Since they correlated significantly, the scores were combined and this correlated significantly with the summed hostility and sexual content ratings from the dreams.

Because of the low magnitude of the coefficients and the conclusions of earlier investigators, the authors conclude that day residues - memories of the myriad events of little consequence that are perceived by a person during the day - are of relatively greater importance and deep, anxiety-laden problems are of relatively lesser importance in determining dream content in college students than in psychiatric patients. If this is so, then the hypotheses tested might have been more strongly supported had psychiatric patients rather than college students served as subjects.

This survey of the literature, although not exhaustive, is representative of the approaches to an objective and quantitative analysis of dreams and the acceptance of the reported dream as a significant form of behaviour.

The hypotheses tested in the present study are.

(a) The greater the total anxiety (as a summation over all classes of anxiety) manifested by a person in the waking state, the greater the total anxiety manifested in that person's dreams.

(b) Material about which a person feels anxious in the waking state has an increased likelihood of appearing in that person's dreams.

These hypotheses are related to those tested by McReynolds et al (1966) which are derived from McReynold's (1956) theory of motivation. However, the present hypotheses are derived from the more general hypothesis put forward by Breger (1967), (and similar hypotheses put forward by French (1954), Ullman (1958, 1959), Hall (1959), and Jones (1962) that dreams serve to integrate affectively aroused material into structures within the memory systems that have previously proved satisfactory in dealing with similar material. That is, dreams are uniquely adaptive insofar as they provide the conditions allowing for the integration of aroused material that is not so readily integrated in the waking state. These conditions would consist of the greater availability of memory material (stored information), the greater fluidity of associational processes, the freedom from "critical" processing for social acceptability, and, in general, a greater variety of means of manipulating symbols or processing and transforming the stored information.

B. METHOD

1. Subjects.

The subjects were 12 male students, aged between 18 and 20, from a first year class in general psychology at Waikato University. All subjects volunteered to participate in this study.

2. Procedure.

The purpose of this study dictated that two sets of data be obtained concurrently and independently so that the dream material could be related to the material from the waking state. A description follows of the procedure utilized for obtaining each set of data and the scoring of these using an anxiety scale applicable to verbal samples devised by Gleser, Gottschalk and Springer (1961).

(a) Collection of verbal samples.

Over the period in which dreams were recovered each subject was required to give two 5 minute verbal samples, one approximately 6 weeks after the commencement of the period and the other approximately 4 weeks before the termination of the period. These verbal samples were obtained by asking the subject to speak for 5 minutes without interruption about any interesting or dramatic life experience he may have had. The subject spoke into a tape recorder and the material was later transcribed verbatim by the writer.

(b) Scoring the verbal samples.

The written material was scored by the writer, each grammatical clause whose content is covered by one of the

categories in the scale (see Table 1) being noted and scored. In this way the number of references to each content category and the type of reference was determined. The score for any particular category was obtained by summing the weights of all the verbal references made within that category during the allotted time period. The total raw score for any affect is the sum of scores over all categories.

TABLE 1. An anxiety scale applicable to verbal samples.

1. Death anxiety - references to death, dying, threat of death, or anxiety about death experienced by or occurring to:
 - a) Self (3) *
 - b) Animate others (2) *
 - c) inanimate objects destroyed (1) *
 - d) Denial of death anxiety (1) *
2. Mutilation anxiety - references to injury, tissue or physical damage, or anxiety about injury or threat of such experienced by or occurring to:
 - a) Self (3)
 - b) Animate others (2)
 - c) Inanimate objects (1)
 - d) Denial (1)
3. Separation anxiety - references to desertion, abandonment, ostracism, loss of support, falling, loss of love or love object, or threat of such experienced by or occurring to:
 - a) Self (3)
 - b) Animate others (2)
 - c) Inanimate objects (1)
 - d) Denial (1)

4. Guilt anxiety - references to adverse criticism, abuse, condemnation, moral disapproval, guilt, or threat of such experienced by:
 - a) Self (3)
 - b) Animate others (2)
 - c) Denial (1)
 5. Shame anxiety - references to ridicule, inadequacy, shame, embarrassment, humiliation, overexposure of deficiencies or private details, or threat of such experienced by:
 - a) Self (3)
 - b) Animate others (2)
 - c) Denial (1)
 6. Diffuse or non-specific anxiety - references by word or phrase to anxiety and/or fear without distinguishing type or source of anxiety:
 - a) Self (3)
 - b) Animate others (2)
 - c) Denial (1).
-

* Numbers in parentheses are the scores or weights.

NOTES:

1. In the above scale the reference is not scored if the speaker is the agent and the injury, criticism etc., is directed to another.
2. When "we" is used, score as "I".

3. Death, injury, abandonment, etc., may come from an external source or situation.
4. In any of above the weight should be increased by one if the statement of anxiety or fear is modified to indicate that the condition is extreme or marked.
5. The following is an abbreviated list of words of the kind that may be scored in category 6 if the type of anxiety is not explicitly stated and in any one of the other categories if the stimulus source of the reaction is denoted. Any grammatical form of the word may be scored.

The following list is intended mainly to provide examples of scorable word concepts.

(adjectives)	(nouns)	(adverbs)	(verbs)
fearful	fear	fearfully	to fear
desperate	desperation	desperately	to despair
scared		scarily	to scare
dangerous	danger	dangerously	to endanger
threatened	threat	threateningly	to threaten
weird	weirdness	weirdly	
anxious	anxiety	anxiously	
tense	tension	tensely	to tense
panicky	panic		to panic
agitated	agitation	agitatedly	to agitate

Three assumptions have been made in constructing the scale, which is presumed to measure the amount of anxiety experienced by the individual in a given interval of time. Firstly, it has been assumed that statements of a particular type reflect an equivalent amount of anxiety whether they

refer to feelings or events occurring, or potentially occurring, in the past, present or future. Secondly, it has been assumed that the more anxiety a person is experiencing at a given moment, the more likely it is that he will speak of incidents in which he is or has been directly threatened. When the anxiety is less potent he may express it more indirectly and hence refer to others as being hurt or in a dangerous situation and even more remotely in terms of objects being destroyed. Therefore, progressively less weight is given to remarks about the experience of others and about inanimate objects than is given to experiences in which the speaker is directly involved. Thirdly, it has been assumed that the greater the anxiety of the speaker over a given unit of time the more references he will make to experiences of the type being categorized relative to all types of statements he may make. Therefore, the scores for all statements falling into a particular sub-category are summed, which is equivalent to multiplying the weight for the sub-category by the number of statements in the verbal sample assigned that code.

Individuals differ considerably in rate of speech and the same individual may vary in rate of speech from one occasion to another. In comparing scores derived from different verbal samples, it is necessary to correct for the number of words spoken. The method used is that of Gottschalk, Gleser and Springer (1963) and is a modification of the original method of Gleser, Gottschalk and Springer (1961) where the total raw score was divided by the number of words

spoken and multiplied by 100. The correction of all raw scores for correlation with number of words by using as the corrected score the difference between the observed score and the score linearly predictable from the number of words was investigated. When suitably scaled, these differences give a more continuous distribution than does a simple ratio score, when the raw scores include many zeros (signifying no relevant content items were spoken). However, correlations still persist between the corrected affect score and number of words in some samples unless the correlation is determined separately for each sample. It was finally decided that the most satisfactory and simple way to take into consideration rate of speech is by adding 0.5. to the raw score, multiplying by 100, and dividing by the number of words spoken.

This method avoids the discontinuity occurring whenever no scoreable items have occurred in some verbal samples. It also provides a uniform transformation over all samples, and with very few exceptions, reduces the correlation between the affect score and number of words essentially to zero.

Consequently, this method was employed in the present study.

(c) The generalization of anxiety scores.

The anxiety scores derived are seen as indicating the psychological state of the individual on a particular occasion i.e. for only a short interval of time. However, it may be expected that the amount of anxiety displayed by a person on a particular occasion is related to some extent to the amount displayed on other occasions, so that some generalization to the typical anxiety level of the individual should be possible.

In this study the scores from the two 5 minute verbal samples were combined to give an average score on each content category of the anxiety schedule for each subject over the duration of the study. This procedure appeared justified for two reasons. Firstly, the scores from the first and second verbal samples for total anxiety were correlated, Spearman rank correlation coefficient, $r_s = +0.63$, significant at $p < 0.05$ level. Secondly, the average total anxiety scores of both verbal samples were highly correlated, Spearman rank correlation coefficient, $r_s = +0.84$, significant at $p < 0.01$ level, with scores from the Taylor Manifest Anxiety Scale, administered to each subject approximately 3 weeks after the commencement of the period in which dreams were recovered. The TMAS seems to measure an enduring personality characteristic - test retest reliability has been found to be 0.89 over a three week period, 0.82 over a five month period, and 0.81 over nine to seventeen months (Taylor, (1953)). The high positive correlation of scores from the TMAS and the average anxiety scores used in this study and the high intercorrelation of the scores from the two verbal samples suggest that generalization to a typical anxiety level for the duration of the study is a valid procedure.

(d) Scoring reliability for verbal samples.

Ten verbal samples, 5 from each session of verbal sampling were selected at random from the 24 samples collected. They were coded independently by the writer and by a graduate psychology student who had been instructed in the use of the

coding system. The two sets of total anxiety scores were found to correlate, $r_s = + 0.82$ (significant $p < 0.01$, Spearman rank correlation coefficient). This indicated a good agreement in scoring for total anxiety. Separate scores for each content category from the same data were also compared. Several categories had too few non-zero scores to give a stable indication of the reliability of scoring. These were death, separation and guilt anxiety. The correlations are given in Table 2.

TABLE 2. Inter-rater reliability for verbal sample scoring.

Death anxiety	0.74	(sig. $p < 0.05$)
Mutilation anxiety	0.89	(sig. $p < 0.01$)
Separation anxiety	0.58	(sig. $p < 0.05$)
Guilt anxiety	0.78	(sig. $p < 0.01$)
Shame anxiety	0.74	(sig. $p < 0.05$)
Non-specific anxiety	0.83	(sig. $p < 0.01$)
		Spearman rank correlation coefficient.

Probably the best estimate of reliability of scoring for a category from these data is the median, 0.76 and this was considered to be a satisfactory level of inter-rater reliability.

(e) Collection of dream reports.

Dream reports were collected from the subjects over a period of 20 weeks. At the commencement of this period each subject was given a number of 5" x 8" cards for recording dreams and an instruction sheet for the recording of dreams

according to the system devised by Hall and Van de Castle (1966) (p.313) with some modifications. The instructions were:

"At the top of each dream report card please give the following information; name, date of dream, place, date of this report, age, sex. Then, please describe the dream exactly and as fully as you remember it. Your report should contain, whenever possible, a description of the setting of the dream, whether it was familiar to you or not, a description of the people, their sex, age, and relationship to you, and of any animals that appeared in the dream. If possible, describe your feelings during the dream and whether it was pleasant or unpleasant. Be sure to tell exactly what happened during the dream, to you and the other characters. Continue your report on the other side and on additional cards if necessary.

In addition please indicate at the end of your dream report if you had taken any of the following prior to sleeping; sedatives (including alcohol), tranquillizers, anti-depressants or stimulants, and in what quantities.

All information given will be held in strict confidence."

In addition to the original instructions the subject was required to indicate if he had taken any psychotropic drugs prior to sleeping. The effects of some drugs on the content of dreams have been investigated (Whitman, Pierce, and Maas (1960), Whitman, Pierce, Maas, and Baldrige (1961)). If the subject indicated he had taken any, that particular dream report was not used in the study.

Similarly, dream reports of less than 70 words were not used as these tend to be strongly biased toward a very few content categories and may have led to unreliable estimates of affect in dreams. Also, comments by the subject on the dream, contained in the dream report, were deleted prior to scoring.

Of the dream reports received, five were selected at random (after the previously mentioned conditions had been met) for each subject. The 60 dream reports obtained were then scored.

(f) Scoring the dream reports.

The dream reports were scored using the same schedule as was used for the 5 minute verbal samples. This schedule had been used previously for scoring reported dreams by Gottschalk, Stone, Gleser, and Iacano (1966) where anxiety levels in dreams were related to changes in plasma free fatty acids.

The mean scores on each subscale and the total anxiety scale were computed to give one set of scores for the dreams of each subject.

(g) Scoring reliability for dream reports.

Scoring reliability was again estimated by selecting 10 dreams at random from the total of 60. Spearman rank order correlation coefficients were computed for each subscale and the total anxiety scale using the writers scores and those obtained independently from the same graduate student instructed in the coding technique. The correlations are given in Table 3.

TABLE 3. Inter-rater reliability for dream report scoring.

Death anxiety	0.82	(sig. $p < 0.01$)
Mutilation anxiety	0.83	(sig. $p < 0.01$)
Separation anxiety	0.60	(sig. $p < 0.05$)
Guilt anxiety	0.71	(sig. $p < 0.05$)
Shame anxiety	0.77	(sig. $p < 0.01$)
Non-specific anxiety	0.68	(sig. $p < 0.05$)
Total anxiety	0.79	(sig. $p < 0.01$)

Spearman rank correlation
coefficient.

Again, these were considered to indicate a satisfactory level of inter-rater reliability.

C. RESULTS.

Data were analysed using a non-parametric measure of correlation, the Spearman rank correlation coefficient r_s , since it was apparent that the total anxiety scores from the verbal samples and the dream reports were not normally distributed but "J-shaped" with a high positive skew. This occurs in many other content categories as evidenced by the norms set up for dreams by Hall and Van de Castle (1966). Gleser, Gottschalk, and Springer (1961) and Gottschalk, Gleser, and Springer (1963), in order to reduce this skewness, made a further transformation by taking the square root of the corrected score so that parametric statistics could be used. However, this was not done in this study. The residual skew

was still large enough to make the use of parametric statistics seem inappropriate.

The first hypothesis, the greater the total anxiety (as a summation overall classes of anxiety) manifested by a person in the waking state, the greater the total anxiety manifested in that person's dreams, is confirmed. (See Table 4).

TABLE 4. Total anxiety scores for verbal samples and dream reports.

<u>SUBJECT</u>	<u>VERBAL SCORE</u>	<u>DREAM SCORE</u>
1	5.41	4.40
2	12.76	7.04
3	2.68	1.03
4	2.30	3.04
5	2.24	2.51
6	3.38	3.80
7	8.44	8.95
8	3.85	4.76
9	3.64	4.96
10	5.72	3.64
11	2.84	2.52
12	6.54	5.36

$r_s = +0.86$ (sig. $p < 0.01$,
1 tail test)

The second hypothesis, that material about which a person feels anxious in the waking state has an increased likelihood of appearing in that person's dreams receives some support in the area of mutilation anxiety, where scores from verbal samples correlate $+0.60$ (sig. $p < 0.05$), 1 tail, with scores from dream reports. (See Table 5).

TABLE 5. Mutilation anxiety scores for verbal samples and dream reports.

<u>SUBJECT</u>	<u>VERBAL SCORE</u>	<u>DREAM SCORE</u>
1	0.25	0.58
2	7.13	3.16
3	0.83	0.41
4	0.22	0.52
5	1.38	1.13
6	1.03	2.05
7	4.44	1.06
8	1.04	1.12
9	2.00	1.91
10	0.97	2.71
11	1.04	1.24
12	4.32	2.78

$r_s = +0.60$ (sig. $p \leq 0.05$
1 tail test)

However, in the areas of death, separation, guilt and diffuse or non-specific anxiety, there were no significant correlations between scores from verbal samples and scores from dream reports. These scores are outlined in Tables 6 - 9 respectively.

TABLE 6. Death anxiety scores for verbal samples and dream reports.

<u>SUBJECT</u>	<u>VERBAL SCORE</u>	<u>DREAM SCORE</u>
1	0.25	0.30
2	0.24	1.19
3	0.28	0.26
4	0.22	0.33
5	0.30	0.77
6	0.31	0.52
7	2.28	4.86
8	0.19	1.26
9	0.89	1.38
10	0.09	0.25
11	0.67	0.18 $r_s = +0.49$ (not sig).
12	1.12	1.50

TABLE 7. Separation anxiety scores for verbal samples and dream reports.

<u>SUBJECT</u>	<u>VERBAL SCORE</u>	<u>DREAM SCORE</u>
1	2.48	1.39
2	0.91	1.39
3	0.28	0.26
4	1.20	1.18
5	0.30	0.28
6	0.79	0.52
7	0.25	1.02
8	0.19	1.86
9	0.60	0.94
10	1.14	0.25
11	1.04	1.24 $t_s = +0.18$ (not sig.)
12	0.15	0.30

TABLE 8. Guilt anxiety scores for verbal samples & dream reports.

<u>SUBJECT</u>	<u>VERBAL SCORE</u>	<u>DREAM SCORE</u>
1	0.50	1.20
2	3.24	1.76
3	0.28	0.26
4	1.31	1.17
5	0.30	0.64
6	0.31	0.52
7	0.25	0.77
8	0.19	0.83
9	0.17	0.35
10	2.67	0.25
11	0.17	0.18 $t_s = +0.47$ (not sig.)
12	0.15	0.36

TABLE 9. Non-specific anxiety scores for verbal samples and dream reports.

<u>SUBJECT</u>	<u>VERBAL SCORE</u>	<u>DREAM SCORE</u>
1	0.25	0.98
2	1.02	0.90
3	0.59	0.87
4	0.22	1.16
5	0.85	0.81
6	0.31	0.84
7	0.58	0.92
8	3.00	1.26
9	1.12	1.78
10	1.21	1.18
11	0.90	1.24 $r_s = +0.45$ (not sig.)
12	0.72	0.72

In the area of shame anxiety a significant correlation was obtained between scores from the verbal samples and scores from the dream reports. These are presented in Table ~~10~~.

TABLE 7. Shame anxiety scores for verbal samples and dream reports.

<u>SUBJECT</u>	<u>VERBAL SCORE</u>	<u>DREAM SCORE</u>
1	2.93	1.45
2	1.43	1.17
3	1.31	0.26
4	0.22	0.33 *
5	0.30	0.28 *
6	2.18	2.07
7	2.03	1.74
8	0.19	0.39 *
9	0.17	0.35 *
10	0.09	0.25 *
11	0.17	0.18 * $r_s = +0.78$ (sig.
12	1.48	3.02 $p \leq 0.01$, 1 tail test.)

It was thought that this high positive correlation may have been spurious because of the high proportion, 50%, of pairs of scores based on uncorrected raw scores of zero (these are asterisked). When these were removed, leaving 6 pairs of scores derived from non-zero uncorrected raw scores, a correlation coefficient of $r_s = +0.937$ was obtained. This is significant ($p \leq 0.05$, 1 tail test). Therefore it is thought reasonable to regard the scores from the verbal samples and dream reports, in the area of shame anxiety, as significantly correlated.

D. DISCUSSION

The hypothesis that anxiety, in general, expressed in the waking state is positively correlated with that expressed in dreams is supported but the more specific hypothesis that material about which a person feels anxious in the waking state has an increased likelihood of appearing in that person's dreams is supported only in some content areas. It is evident then, that there is a large amount of variance in dream content, especially in these more specific content areas, that is not attributable to the measures of manifest anxiety. It would be advantageous here to speculate, on the basis of the little evidence available, on possible factors affecting manifest dream content generally and the expression of affect in dreams specifically.

When reports of dreams from awakenings during dream periods early in the night are compared with those from awakenings in later dream periods, the later dreams tend to be more vivid, express more affect and to involve more elements from the dreamer's distant past life (Verdone (1965)). It seems that body temperature is involved and that dreams associated with low body temperature may be more vivid and emotional. In addition, the time of awakening within a dream period is related to the dream report obtained (Foulkes (1964), Dement and Fisher (1963)). Awakenings made very early within a dream period contain mainly ordinary, memory-like material involving scenes from the day or hours just before sleep.

Awakening later during a dream period i.e. after a dream period has been in progress for 10 or 20 minutes, elicits reports with more affective content.

Both these factors could account for some variance in affective dream content. Neither were controlled in this study - control is only practicable when the subjects can be kept in a dream laboratory and awakenings can be made at specific periods in the night and in periods of dreaming as indicated by rapid eye movements and EEG patterns characteristic of the dream state.

Another factor concerned with time is the rapidity of awakening. This seems to influence dream reports more generally - sudden awakenings tend to give more dream recall and also more vivid recall, whereas slow, gradual awakenings tend to give less recall and less vivid recall (Goodenough, Lewis, Shapiro, Jaret, and Sleser (1965)).

Pre-sleep stimuli have been shown to influence the content of dreams generally and affect in particular. A study has been made by Foulkes and Rechtschaffen (1964) involving the showing of films to subjects before they went to bed in order to determine the influence of these films upon subsequent dream content. Affects elicited by the films or certain themes associated with the films appear in dreams far more frequently than do specific visual elements. The authors found that dream reports following a violent western film were more vivid and more intense than dream reports following a romantic comedy. That is, general areas of concern or specific conflicts aroused by the film clearly make their

appearance in a dream. This may well have been an important factor in determining the content of dreams in the area of anxiety in the present study in view of the popularity of evening television viewing, where the more violent programmes appear latest in the evening - that is, immediately prior to going to bed. Again, where subjects are not under restriction prior to sleep it is difficult to effectively control for this factor.

The importance of day residues, material experienced in the day or two prior to the dream, in determining dream content has long been recognized. However, very little investigation has gone into the problem of what areas of day residue influence what areas of dream content, consequently it is premature to speculate on the possible influences of day residues on the expression of affects, like anxiety, in dreams.

The incorporation of external stimuli into dreams introduces another area in the determination of dream content. There are numerous anecdotal reports supporting the notion that external stimuli can be incorporated into dreams. In fact most people at some time or other have experienced the incorporation of the sound of an alarm clock or telephone into an ongoing dream; a dream may involve a friend arriving and ringing the doorbell or the ringing of the telephone, followed by awakening when the dreamer notices that the alarm clock has gone off and is still ringing or the telephone is ringing. An eighteenth century French nobleman is said to have made use of this knowledge in an ingenious fashion ; one of the servants was ordered to arise early and tiptoe around his master's bed with an open bottle of perfume, in order

to induce pleasant dreams.

Dement and Wolpert (1958) investigated this factor using a jet of water on the skin, a flash of light and an auditory stimulus with dreaming subjects but only in 10% to 25% of the attempts was the stimulus directly incorporated. However, it is possible that if distant associations or symbolic representations had been considered, the percentage of incorporation might have been higher. Among the external stimuli employed, a jet of water on the skin was the most frequently incorporated, an auditory stimulus next, and a visual stimulus least frequently. Berger (1963) has shown that meaningful stimuli - names of persons - can similarly be incorporated into dreams.

It is difficult to see how external stimuli would have any important effect on the expression of anxiety in dreams but its effects on other content areas could be important in certain cases e.g. for persons sleeping in noisy environments.

Attempts have also been made to study bodily states such as hunger or thirst which could presumably exert an effect on the content of dreams e.g. producing dreams of eating and drinking. In Dement and Wolperts' (1958) study thirst did not result in any obvious effect on dream content though in a study by Bokert (1965) subjects who were thirsty and also given a spicy meal before sleep, reported dreams involving thirst. Again it is difficult to see how this factor would have any systematic effect on the content areas investigated in this study.

The effects of psychoactive drugs on the content of dreams have been investigated by Whitman, Pierce, and Maas (1960) who found that the administration of the tranquillizer meprobamate gave rise to significant increases in the expression of motility and dependency in dreams. In a further study Whitman, Pierce, Maas, and Baldrige (1961) investigated the effects of the anti-depressant imipramine and the tranquillizer prochlorperazine on the content of dreams. They found that imipramine increases the amount of hostility and anxiety expressed in dreams and that it seems to exert this effect selectively since all other content categories examined were not consistently affected. It is very unlikely that this factor had any effect on the anxiety expressed in the dream reports used in this study as the subject was required to indicate if he had taken any psychoactive drug prior to sleeping. If this was the case, that particular dream was discarded for the purposes of the study.

In any study where dream reports are obtained after morning awakening the problem of the accuracy of the report becomes more obvious than if reports are obtained by awakening the subject on the basis of physiological indications of dreaming. Material may be omitted from reports because it is thought socially undesirable by the subject. Hall and Van de Castle (1966, p 178) state regarding norms established from the content analysis of 1000 dreams collected from undergraduate university students:

"We feel that our norms for sexual interactions do not accurately reflect the actual incidence of this type of social interaction. In our opinion, neither sex is completely candid in reporting sex dreams, and females are probably less frank than males." This may occur in reporting the expression of strong affect in dreams - the subject may not want to reveal to the investigator, say, strong sexual attraction toward close female relatives in dreams. A similar situation may occur with the expression of anxiety where the anxiety is so inappropriate or misplaced as to embarrass the subject who may think he is over-exposing his deficiencies or revealing private details of his life. That is, there could be a repressor effect where highly anxious subjects may omit or reduce the intensity of expressions of anxiety in their reports.

Another possible factor influencing the reporting of anxiety in dreams is repression where unpleasant or disturbing material is forgotten without the subject being directly aware of doing so. There has been one study in this area by Meier, Ruef, and Ziegler (1968) in which they found no evidence for repression when comparing the dreams of one subject who reported his dreams after being awakened at the end of every period of rapid eye movement and on awakening in the morning. It was concluded that the forgetting of dreams conformed to a classical memory theory rather than the psychoanalytic theory of repression. Variables associated with classical memory theory are very influential in determining which dreams

will be recalled in the morning. For example, it has already been stated that dreams from later periods in the night tend to be more vivid and express more affect and this seems related to body temperature. Meier et al (1968) have shown that a higher proportion of dreams from toward the end of the sleep period than dreams from other times during the night, are recalled in the morning. This is an example of recency in classical memory theory. Consequently there is a selective process working, whereby the more vivid and emotional dreams tend to be recalled in the morning. This in turn must influence the level of affect, in this study anxiety, expressed in the dream report.

In conclusion, then, it is clear that dream research is a potentially rich field. In order to give greater generality to conclusions it will be necessary to use larger samples especially from normal populations, to increase the frequency and depth of sampling of behaviours under investigation for both dreaming and behaviours outside the dream state and to establish rigorous controls over the multitude of intervening variables. With the more widespread use of physiological monitors of sleep these goals can be attained.

E. SUMMARY

The author hypothesized that (a) the greater the total anxiety (as a summation over all classes of anxiety) manifested by a person in the waking state, the greater the total anxiety manifested in that person's dreams, and (b) material about which a person feels anxious in the waking state has an increased likelihood of appearing in that person's dreams. Twelve subjects were used and an anxiety scale designed for verbal samples was used to rate anxiety in the waking state and in dreams. The first hypothesis was confirmed and some support was obtained for the second hypothesis. A representative survey of the literature relating personality characteristics to dream content was also included.

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