

The Emotion Pictured by a Dream: An Examination of Emotions Contextualized in Dreams

Ernest Hartmann, M.D., Michael Zborowski, M.D., and Robert Kunzendorf, M.D.

This is the first report describing which emotions are judged to be contextualized or pictured by the imagery of a dream, based on a total of 1401 dreams from a number of our recent studies. These studies stemmed from the observations of dreams after trauma, especially the paradigmatic "tidal wave dream" in which someone who has experienced a trauma of any kind frequently dreams, "I am overwhelmed by a tidal wave," or something similar. Here the tidal wave obviously pictures the emotion (fear, terror) experienced by the dreamer. We have developed and standardized the "CI score," which measures the frequency and intensity of such contextualizing images as the tidal wave. We have shown that the CI score is especially high in people who have experienced trauma, that it is higher in students reporting any abuse than in students reporting no abuse, and that CI scores are much higher in dreams than in daydreams, all scored on a blind basis. In scoring dreams the rater is asked first to assign a CI score, and then to guess which emotion (from a list of eighteen) might be pictured by that dream image. The present report examines which emotions are judged on a blind basis to be pictured by the dreams. We find that the first two emotions, fear/terror and helplessness/vulnerability, are by far the most frequent and that this is true not only of dreams after trauma but of dreams from all our groups. However, this trend is especially prominent in the most traumatized subjects. We also report that the CIs characterized by highest intensity scores tend to be those in which the emotion is judged to be fear/terror and helplessness/vulnerability. Positive emotions are fewer and appear to produce less intense images. We report that emotions judged to be pictured were relatively weaker and tended towards more positive emotions in a laboratory-style study, compared to home-reported dreams. And we find that the emotions pictured were more positive in a group of artists and professionals compared to groups of students. Overall, however, it appears that groups of interest to us, such as abuse vs. no abuse, or trauma vs. no trauma, are differentiated more clearly by the CI score than by the type of emotion judged to be pictured. (*Sleep and Hypnosis* 2001;3(1):33-43)

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INTRODUCTION

There are many different ways of examining dreams from both clinical and research perspectives. Research studies have generally focused on data that can be easily quantified, thus there are any

From Tufts University School of Medicine, Newton-Wellesley Hospital; State University of New York College at Buffalo; University of Massachusetts, Lowell

Address reprint requests to: Ernest Hartmann, M.D. 27 Clark St. Newton, MA 02459 USA
Phone: 617 965 5872 Fax: 617 965 6548

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number of studies using approaches such as Hall and van de Castle's which involves counting total words or important words in dream reports, classifying settings, characters, actions, etc. (1). There are also many global rating scales that judge the entire dream report by degrees of dreamlikeness, bizarreness, vividness, amount of detail, etc. (2)

Numerous interesting results have been produced by quantitative dream research using such scales, but often something has appeared to be missing. From the clinician's point of view what is missing is the importance of the dream for the dreamer. The dreamer himself (in a number of interviews),

tends to feel the rating scales are interesting but miss something very important — the (usually emotional) core or center of the dream.

Our group has been trying to study the powerful imagery at the center of the dream. As elaborated in detail elsewhere, we believe that in dreams connections are made more broadly and more loosely in the networks of the mind (in other words dreams are hyperconnective). However, we believe these connections are not by any means random; they are guided by the dominant emotion, or central emotional concern of the dreamer (3).

From our point of view the paradigmatic dream is the "tidal wave dream," in which someone who has recently experienced a trauma dreams of being overwhelmed by a tidal wave, whirlwind, or something similar. Clearly, this person is not dreaming about his or her actual experience (which in our cases involve escape from a fire, an attack, a rape, etc.) but rather is picturing the dominant emotion ("I feel terrified, I feel overwhelmed"). Thus, we see the dream as "contextualizing" (finding a picture-context for) the dominant emotion or emotional concern of the dreamer. The tidal wave is a "contextualizing image." We suggest that this can be seen most easily in situations such as the tidal wave dream after trauma, but that theoretically it occurs, though less obviously, in all dreams (3). The mechanisms by which an emotion can produce or alter imagery are under investigation. For instance Kunzendorf and others have recently shown that a powerful emotion can produce clear-cut effects on ongoing imagery (4) and on perception (5) in the waking state.

A quantitative rating scale has been developed for Contextualizing Images (CIs) in dreams (see methods). We have shown, using this scale scored on a blind basis, that dreams have significantly higher CI scores than daydreams (3), that material obtained from REM sleep has significantly higher CI scores than material from non-REM sleep, which has higher scores than material from waking (6), that series of dreams collected after trauma have higher CI scores than students' dreams, and that among students, those who report on a questionnaire any history of abuse (either childhood or recent, sexual or physical) produce "most recent dreams" with higher CI scores than those who do not report any abuse (7).

Thus, the CI score, indicating the presence and intensity of a central image, is well established in several studies. However, no results on the specific emotions judged to be contextualized have been

reported to date. In this paper we report the results on what emotion is judged to be contextualized in dreams, from a series of recent studies, totaling 1888 reports (of which 1401 are labeled dreams or REM-reports) from 738 subjects. The details describing the subjects and methods of collection are described under methods below.

The present paper can be considered a first attempt to examine emotions judged to be contextualized by dreams. To a great extent, the data are presented simply as a survey of what emotions were rated as contextualized in the different groups, with some attempts to categorize and group the emotions and the groups of dreamers studied. Statistical comparisons between groups are presented when such comparisons are possible, but often conditions for proper statistical analysis are not fulfilled and the data may be used simply to get an impression which can be examined further in future research.

We hope it is clear that what is being studied is the underlying emotion — the dreamer's emotion judged to be pictured by the dream images — not an emotion that is specifically mentioned in the dream report (In fact only about one third of the dream reports in our series mention an emotion.) In cases where an emotion is mentioned, however we have found a close correlation between this emotion and the emotion judged to be contextualized by independent raters (3).

METHODS

Data for the present study was obtained from a number of data sets (groups of dreams) in recent published and unpublished studies, as detailed below.

Subjects

1. Student group 1 consists of 286 undergraduate students from the State University of New York College at Buffalo. Each student wrote down one "most recent dream." The group was composed of 66 males, 214 females and six subjects whose gender is unknown. The mean age was 20.5 ± 4.4 years.

2. Student group 2 was a new sample of 64 Buffalo undergraduate students, each of whom wrote down a recent dream, as well as taking part in a long interview and filling out other questionnaires. There were 14 males and 50 females with a mean age of 21.2 ± 3.8 years.

3. Student group 3 was another sample consist-

ing of 205 Buffalo undergraduate students, each of whom wrote down one "most recent dream." This group had 47 males and 158 females, with a mean age of 21.6 ± 5.0 years.

4. Student group 4 consisted of 40 undergraduate students from the University of Massachusetts at Lowell. The exact ages and genders were not recorded. However, almost all students were between 18-24 years old. Each student reported a "most recent dream," a "dream that stands out," a "most recent daydream," and a "daydream that stands out." Thus, a total of 160 reports were obtained, four from each of the 40 students.

5. Student group 5 consisted of 44 undergraduate students from the University of Massachusetts at Lowell. Again, almost all were 18 to 24 years old. Each of them, among other data, reported one "most recent dream," one "outstanding dream," and one "recurrent dream." A number of students however did not report all the dreams requested. A total of 112 dreams was obtained from this group.

6. "Nightcap study" group: For fourteen days, 14 students in Cambridge, Massachusetts wore a "nightcap device" (8) every night and carried a pager device throughout the day and night. The "nightcap" device involves small electrodes applied to the eyelids, and is able to differentiate the physiological states of waking, NREM sleep, and REM sleep. Students were "buzzed" through the pager quasi-randomly in different states, and asked immediately to dictate whatever was going through their minds. There were a total of 534 content reports obtained from four different states: waking, sleep onset, NREM sleep and REM sleep. These cannot all be considered dream reports, of course. The study was designed to so that approximately 25% of the buzzes or "awakenings" would occur in REM sleep and approximately, about 25% in NREM sleep, about 25% at or close to sleep onset, and about 25% during waking. These four sub-samples will be discussed separately.

7. Trauma group: This group consisted of ten persons who had undergone severe trauma. There were five males and five females, ranging in age from 25 to 54 years. These people were either keeping a dream log, or were reporting dreams to a therapist who recorded them. Each trauma was different from the others. The two most severe traumas were a violent rape, and several months of torture in a Latin American country. The ten dream series varied in length from five dreams to 237 dreams. A total of 451 dreams from this group have been collected and scored.

8. Artists and professionals group: This group consisted of 67 persons, 15 males and 52 females, with a mean age of 32.0 ± 11.5 years. Within the group were visual artists, dancers, writers, and graduate students in psychology. Since the four individual groups are small, they are combined together to form group 8. Each person provided at least one dream as part of a research study. Only the first dream from each was studied, so there are 67 dreams from this group.

Procedures

Each of the dreams in the eight series above was scored for contextualizing images (CIs) by one or in some cases two experienced scorers. The scorer is given the score sheet in Table 1, and asked to examine each dream report and pick out a striking or powerful image if possible — specifically, "a striking, arresting or compelling image — not simply a story — but an image which stands out by virtue of being especially powerful, vivid, bizarre, or detailed." An intensity score from 0 to 3 is then applied, where 0 is "no CI in this dream" and 3 is "about as striking and powerful an image as you have seen." Scorers are allowed to use half-points. Thus the CI score is a seven point scale: 0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0. The CI is identified and scored for intensity without any concern as to what emotion might be involved. Furthermore, a CI is sought and scored regardless of whether any emotion is mentioned in the dream report. After identifying and scoring the CI for intensity, the scorer is then asked to choose one emotion out of the list of 18 emotions in Table 1 which might be contextualized (pictured) by this image. If the scorer feels there is more than one emotion, s/he may score a second emotion as well. If the scorer feels that no emotion on the list is appropriate, s/he may leave this portion blank. Inter-rater reliabilities for CI scores (including studies of groups used in this study) varied between $r = .65$ and $r = .90$.

The data on emotions will be presented chiefly in descriptive form. We will start by presenting all data on emotions contextualized for each group in the large Table (Table 2), which can be considered a survey of what emotions are judged as contextualized in dreams.

The data lend themselves to statistical analysis only in a few situations. We compare emotions contextualized in several groups of students' dreams with each other; we compare the dreams of students reporting any form of abuse with those reporting no

Table 1. SCORING DREAMS FOR CONTEXTUALIZING IMAGES

Definition: A contextualizing image is a striking, arresting, or compelling image — not simply a story — but an image which stands out by virtue of being especially powerful, vivid, bizarre, or detailed.

EMOTION LIST

- | | |
|--|--------------------------------|
| 1. fear, terror | 10. disgust, repulsion |
| 2. helplessness, vulnerability, being trapped, being immobilized | 11. power, mastery supremacy |
| 3. anxiety, vigilance | 12. awe, wonder, mystery |
| 4. guilt | 13. happiness, joy, excitement |
| 5. grief, loss, sadness, abandonment, disappointment | 14. hope |
| 6. despair, hopelessness (giving up) | 15. peace, restfulness |
| 7. anger, frustration | 16. longing |
| 8. disturbing — cognitive dissonance, disorientation, weirdness | 17. relief, safety |
| 9. shame, inadequacy | 18. love (relationship) |

If there is a second contextualizing image in a dream, score on a separate line.

Dream ID#	1. CI? (Y/N)	2. What is it?	3. Intensity (rate 1-3)	4. What emotion?	5. Second emotion?
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abuse; we compare emotions contextualized in students' dreams with those in dreams after trauma; and we compare emotions contextualized in dreams versus daydreams and in REM versus NREM sleep, using X² tests. Since there are 18 different emotion categories, some of the "boxes" have very small numbers (0 to 4) so that the requirements for X² tests are not completely met. Therefore in Table 3, the 18 emotions are combined into three broad groups: A) emotions 1 and 2, consisting of the most powerful negative emotions — fear/terror and helplessness/vulnerability, these are the emotions commonly associated with nightmares; B) other negatively toned emotions (emotions 3 – 10); C) all positively toned emotions (emotions 11– 18). This grouping produces Ns large enough for analysis.

RESULTS

Tables 2 and 3 present an overview of the results of the emotions contextualized in all groups studied: a total of 1888 dreams or other reports in 738 subjects. Table 2 is most useful for glancing horizontally at which emotions are mentioned. From this overview it is clear first of all that all 18 emotions were rated (judged as contextualized by dreams) a number of times. Overall the numbers are definitely higher for the first two emotions fear/terror and helplessness/vulnerability. These two emo-

tions account for more than one third of the totals. Roughly speaking, this is true for the various student groups, as well as for the group who had experienced trauma (see below). Among the group of "other negative emotions" (numbers 3-10), it appears that anger/frustration and grief/loss were especially prominent. Among the more positive emotions (numbers 11-18), the ones scored most frequently were awe/wonder, happiness/joy, and power/mastery.

Table 3 is more useful for comparisons between groups. Table 3 presents the same data with the emotions grouped into three categories: emotions 1 and 2 (fear/terror and helplessness/vulnerability), emotions 3-10 (other "negative" emotions) and emotions 11-18 (positive emotions). For each group of emotions, Table 3 shows the actual number of dreams scored as picturing these emotions, as well as the percentage of total emotions mentioned that this number represents. For the sample as a whole it appears that about one third of the instances of emotion fall under each of the three groups of emotion.

Overall, the five student groups did not differ significantly from each other. And there was no significant difference between males and females in the student groups when the gender was available. Within the large student group #1, we have previously compared CI scores in 226 students who did

Table 2. Emotions judged as contextualized in dreams

Group	N (Ss)	N (Ds)	CI Score	Emo 1	Emo 2	3	4	5	6	7
Student group 1	286	286	.75 ±1.03	21	20	2	2	8	3	5
— without abuse	228	228	.65 ± .97	12	17	2	1	6	2	4
— with abuse	52	52	1.12 ±1.20	8	3	0	0	2	1	1
Student group 2	64	64	1.00 ±1.16	13	4	4	0	6	0	1
Student group 3	205	205	.68 ±1.08	36	7	2	1	1	0	5
Student group 4 recent dream	40	40	1.19 ± .98	3.5	3.5	1.5	0	1	0	2
Student group 4 dream that stands out	40	40	1.34 ±1.17	8	6.5	0	0	1	1	0
Student group 4 recent daydream	40	40	.51 ± .76	0.5	0.5	0.5	0	1	0.5	1
Student group 4 daydream that stands out	40	40	.51 ± .71	0.5	1	0	0	1	0	0
Student group 5	44	112	.32 ± .70	6	8	0	1	2	0	3
Nightcap study — REM reports	13	127	.73 ± .60	1	9	8	4	9	0	26
Nightcap study — NREM	13	112	.38 ± .62	1	0	4	1	3	1	8
Nightcap study — sleep onset	13	141	.10 ± .32	0	1	0	0	0	0	1
Nightcap study — awake	13	154	.09 ± .30	0	1	0	1	0	1	2
Trauma group all dreams of all subjects	10	451	1.52 ± .64	31	30	19	16	27	5	31
first five dreams with CIs for each S	10	50	*	4	16	2	0	6	0	5
two Ss with most severe trauma	2	13	2.23 ± .42	2	8	0	0	2	0	1
Artists and Professionals	76	76	.72 ±	4	6	3	2	2	1	0
Totals										
All labeled dreams or REM	738	1401	*	123.5	94	39.5	26	57	10	73
All students most recent dream	639	639	.72 ±1.05	75.5	35.5	9.5	3	17	3	14

Table 2. Continued - Emotions contextualized in dreams

Group	8	9	10	11	12	13	14	15	16	17	18
Student group 1	9	4	6	6	7	5	2	3	2	5	2
— without abuse	7	3	2	6	3	5	2	2	1	5	2
— with abuse	2	1	4	0	4	0	0	0	1	0	0
Student group 2	2	0	1	1	0	0	0	0	0	0	0
Student group 3	4	1	0	1	0	3	0	1	1	0	0
Student group 4 recent dream	1.5	2	0	2	1		0	0	0	1	3
Student group 4 dream that stands out	2	0	0	2	1	1	0	0	0	0	0
Student group 4 recent daydream	2	0	0	2	2	1	0	0	0	1	0
Student group 4 daydream that stands out	0	1.5	0	1	1	1	0	0	0	0	0
Student group 5	0	0	0	2	3	0	1	1	0	0	0
Nightcap study — REM reports	4	9	7	10	3	11	2	0	3	1	4
Nightcap study — NREM	4	10	4	9	3	8	2	0	1	0	1
Nightcap study — sleep onset	1	2	0	1	4	5	0	4	1	0	0
Nightcap study — awake	0	2	1	3	1	6	2	0	1	0	2
Trauma group all dreams of all subjects	21	13	7	51	18	23	6	8	18	6	5
first five dreams with CIs for each S	3	1	0	6	2	3	0	0	1	1	0
two Ss with most severe trauma	0	0	0	0	0	0	0	0	0	0	0
Artists and Professionals	1	0	1	2	10	4	0	5	2	2	0
Totals											
All labeled dreams or REM	44.5	29	22	77	43	47	11	17	26	16	14
All students most recent dream	16.5	7	7	10	10	8	2	4	3	7	5

Emo 1 = fear, terror. Emo 2 = helplessness, vulnerability, being trapped, being immobilized. Emo 3 = anxiety, vigilance. Emo 4 = guilt. Emo 5 = grief, loss, sadness, abandonment, disappointment. Emo 6 = despair, hopelessness (giving up). Emo 7 = anger, frustration. Emo 8 = disturbing — cognitive dissonance, disorientation, weirdness. Emo 9 = shame, inadequacy. Emo 10 = disgust, repulsion. Emo 11 = power, mastery, supremacy, pride. Emo 12 = awe, wonder, mystery. Emo 13 = happiness, joy, excitement. Emo 14 = hope. Emo 15 = peace, restfulness. Emo 16 = longing. Emo 17 = relief, safety. Emo 18 = love (relationship).

*Data not available in this form or not appropriate for comparisons.

Table 3. Groups of emotions contextualized

Group	N (Ss)	N (Ds)	CI Score	Emotions 1-2	Emotions 3-10	Emotions 11-18
Student group 1	286	286	.75 ± 1.03	41 (37%)	39 (35%)	32 (29%)
— without abuse	228	228	.65 ± .97	29 (35%)	27 (33%)	26 (33%)
— with abuse	52	52	1.12 ± 1.20	11 (41%)	11 (41%)	5 (19%)
Student group 2	64	64	1.00 ± 1.16	17 (53%)	14 (44%)	1 (3%)
Student group 3	205	205	.68 ± 1.08	43 (68%)	14 (22%)	6 (10%)
Student group 4 recent dream	40	40	1.19 ± .98	7 (32%)	8 (36%)	7 (32%)
Student group 4 dream that stands out	40	40	1.34 ± 1.17	14.5 (64%)	4 (18%)	4 (18%)
Student group 4 recent daydream	40	40	.51 ± .76	1 (12%)	5 (42%)	6 (50%)
Student group 4 daydream that stands out	40	40	.51 ± .71	1.5 (21%)	2.5 (36%)	3 (43%)
Student group 5	44	112	.32 ± .70	14 (52%)	6 (22%)	7 (26%)
Nightcap study — REM reports	13	127	.73 ± .60	10 (9%)	67 (60%)	34 (31%)
Nightcap study — NREM	13	112	.38 ± .62	1 (2%)	35 (58%)	24 (40%)
Nightcap study — sleep onset	13	141	.10 ± .32	1 (5%)	4 (20%)	15 (75%)
Nightcap study — awake	13	154	.09 ± .30	1 (4%)	7 (30%)	15 (65%)
Trauma group all dreams of all subjects	10	451	1.52 ± .64	61 (18%)	139 (41%)	135 (40%)
first five dreams with CIs for each S	10	50	*	20 (40%)	17 (34%)	13 (26%)
two Ss with most severe trauma	2	13	2.23 ± .42	10 (77%)	3 (23%)	0 (0%)
Artists and Professionals	76	76	.72 ±	10 (22%)	10 (22%)	25 (55%)
Totals						
All labeled dreams or REM	738	1401	*	217.5 (28%)	301 (39%)	251 (33%)
All students most recent dream	639	639	.72 ± 1.05	111 (47%)	77 (32%)	49 (21%)

not report any physical or sexual abuse versus 52 students who had reported abuse, either in childhood or more recently. The students who reported abuse showed significantly higher contextualizing image scores (CI scores). Examining the emotions contextualized, it appears that the students with abuse have somewhat less of the positive emotions (19% versus 33%) but the chi-square comparing the distribution of emotions is not significant ($X^2 = 1.8$, N.S.) (Table 4).

is of interest that overall in the "nightcap study" the distribution of emotions is shifted towards more positive emotions compared to student groups samples discussed previously. Even in the material from REM sleep, there appears to be much less of emotions 1 and 2 (fear/terror and helplessness/vulnerability) in the "nightcap" awakenings than in the students' spontaneously reported recent dreams. (Differences in collection methods make direct statistical comparison impossible.)

Table 4. Students who report abuse versus students who report no abuse

	Emotions 1-2	Emotions 3-10	Emotions 11-18
No Report of Abuse	29	27	26
Report of Abuse	11	11	5

$x^2 = 1.8$, d.f. = 2, N.S.

Emotions contextualized by dreams and daydreams provide another possible comparison; the numbers become large enough if recent and outstanding dreams are combined, and recent and outstanding daydreams are combined. This produces the data shown in Table 5, which does show significant differences ($X^2 = 6.8$, $p < .04$). It appears that dreams contain CIs with more negative emotions contextualized than daydreams, and the difference is especially prominent for the first two emotions; dreams show much more fear/terror and helplessness/vulnerability. We have previously reported that the CI scores are significantly higher in dreams than in daydreams in this group (3).

The group of subjects studied after trauma is difficult to summarize and compare with other groups, since there were only ten subjects but a large numbers of dreams (between five and 237 dreams) per subject. We have reported previously that the CI scores were higher after trauma than before trauma, in the four cases where dreams for such comparisons were available, and that overall the trauma group had higher CI scores than student groups, using several different comparisons (Hartmann, et al, submitted for publication). In terms of the emotions contextualized, the line in Table 3 including all dreams of the ten subjects shows surprisingly much positive emotion. However, this total is distorted by the

Table 5. Student Group 4: Dreams versus daydreams

	Emotions 1-2	Emotions 3-10	Emotions 11-18
Dreams (recent dream + dream that stands out)	21.5	12	11
Daydreams (recent daydream + daydream that stands out)	2.5	7.5	9

$x^2 = 6.8$, d.f. = 2, $p < .04$

In the "nightcap" study involving material obtained from four different physiologically defined states, we have reported that CI scores were significantly higher for REM than for NREM, sleep onset, or waking reports (6). The data on emotions contextualized do not show significant differences between REM sleep and NREM sleep, though there is a trend towards more scoring of the first two emotions in REM sleep. Material from sleep onset and from waking appear to contain more positive emotions, but the numbers are too small for statistical analysis. It

results in a single subject — the one who reported 237 dreams; this man had very powerful images, but they often involved positive emotions. Thus, the next line summarizing the trauma group using five dreams containing CIs for each subject is probably most valid for comparison with other groups. This demonstrates that the trauma group as a whole had a distribution of emotions not very different from those of the student groups. However, the two most severe trauma patients did stand out as having dreams contextualizing almost entirely emotions 1

and 2: fear/terror and helplessness/vulnerability.

The dreams of the 76 artists, writers and graduate students were compared with the most recent dreams of the undergraduate student groups (all five student groups combined) providing the data of Table 6. There were clearly significant differences in the direction of far more positive emotions contextualized by the dreams of the artists/ writers/ graduate students group.

accounted for about one third of all the emotions mentioned. The other negative emotions — emotions 3-10 accounted for another third of all emotions mentioned, leaving only one third of the emotions as positive (interestingly, the proportion was even somewhat lower among the large undergraduate student groups).

These results are also consistent with well-known results indicating that emotions actually mentioned

Table 6. Artists and professionals versus students

	Emotions 1-2	Emotions 3-10	Emotions 11-18
Artists and Professionals	10	10	25
Five Student Groups	111	77	49

$\chi^2 = 24.2$, d.f. = 2, $p < .001$

We also investigated whether images with high CI scores — the especially intense images — are associated with certain emotions rather than others. Table 7 — based on combined results of student groups 1,2, and 3, from which data were available — shows that indeed there are systematic differences. The most intense CIs — those scored 2.5 or 3.0 — were overwhelmingly associated with emotions 1 and 2 (fear/terror and helplessness/vulnerability). The positive emotions (emotions 11-18) which constitute about 20% of all the emotions rated in this particular group, are associated especially with the low end of the intensity scale. When intensity was scored as 0.5 or 1.0, more than half of the emotions contextualized were in the positive group.

in dreams are negatively toned about 2/3 of the time (see for instance 9). In most of the dreams studied here, there was no actual emotion mentioned in the dream. As described, the CI score and the emotion contextualized were based simply on finding a powerful image in the dream and judging what emotion it might picture. However, we have reported that when an emotion does occur in the dream report, it is closely correlated with the independently scored emotion contextualized (3), and thus it is not surprising that the two sets of data fit together quite well.

Likewise, the finding of more negative emotions contextualized by dreams and relatively more positive emotions by daydreams is consistent with the

Table 7. CI Score versus emotion contextualized

CI Score	Emotions 1-2	Emotions 3-10	Emotions 11-18
0.5 or 1	8	9	22
1.5	12	13	9
2	20	24	5
2.5	29	12	1
3	31	8	2

$\chi^2 = 67.9$, d.f. = 8, $p < .001$

DISCUSSION

In general, our results demonstrate that emotions judged to be contextualized ranged across the entire group of 18 emotions provided as possibilities to the scorer, but the more negative emotions 1 and 2 (fear/terror and helplessness/vulnerability) are mentioned most frequently. These two emotions alone

above and with the generally accepted view that daydreams often depict desired or happy events.

In the "nightcap study," though the numbers are small, it is of interest that more of the powerful negative emotions seem to occur in reports from REM sleep. Material from NREM sleep, sleep onset, and waking is judged as picturing relatively more positive emotions. Data from the nightcap study as a

whole suggests that this material — generated from different physiological states as an immediate response to a computer signal — contains definitely less of emotions 1 and 2 than found in the other groups of dreams which involved written dream reports. This could be explained on the basis that the written dream reports (usually "most recent dream") already involved some selection relative to the immediate unselected material of the "nightcap study." Indeed in group 4, where students were asked also to select a "dream that stands out," the trend continued in the same direction — dreams that stand out were characterized even more by emotions 1 and 2. All of this, as well as the CI scores, is consistent with the view that we tend to remember dreams with powerful vivid images and also that we tend to remember best dreams associated with powerful, negative emotions. These results could be said to confirm the conclusions of William Domhoff's study of many years ago comparing home dreams with laboratory dreams (10). He concluded that "home dreams are better" by which he meant more exciting and more emotional.

Another interesting finding was that the professional artists and graduate students differed from undergraduate students in that more positive emotions were scored. The more positive emotions scored in the dreams of the artist and writers group cannot simply be accounted for by the fact that they were somewhat older (aged 25-40) than the student groups. We have overall found no clear-cut correlation with age. Possibly these people who were advanced graduate students or active artists were in some sense more settled, and more satisfied with their lives than the undergraduate students who were in transition and just beginning to worry about what direction they should choose for their futures.

Overall, comparing these results with previous reports on the CI score (measuring the presence and intensity of CIs) it is striking that in most cases the CI scores differentiate various groups better than does the type of emotion. Thus, REM awakenings show significantly higher CI scores than NREM emotions, but the pattern of emotion is not very different. Students who report any past or recent abuse show significantly higher CI scores, but interestingly the type of emotions do not show very striking differences. Dreams in series of people who have

experienced severe trauma show significantly higher CI scores than students, or when the comparison is possible, than the same people before trauma, but again, the differences in emotions contextualized is not as striking. The only exception to the above occurs in the two most severely traumatized persons. In these two cases indeed the type of emotion (almost entirely emotions 1 and 2) did differentiate them from other persons, and of course the CI score also showed a clear difference.

Taken together, all these results suggest that situations (persons or periods) characterized by powerful emotion are reflected in high CI scores. Thus the CI score — definitely higher after trauma, and in persons who have had abuse — can perhaps be considered a rough measure of emotional activation, or strength of the underlying emotion. Consistent with this formulation is our finding that CI scores are higher in students characterized by "thin boundaries." High levels of emotional activation or arousal apparently produce a variety of powerful images in dreams — not tied to any specific emotion.

The data on dreams versus daydreams and REM versus NREM awakenings also fits into this view, if it is accepted — as suggested by recent brain imaging studies (11-13) — that limbic and especially amygdalar activation is very prominent in REM sleep. Thus it is reasonable to think of REM sleep as probably more emotionally activated than NREM sleep. Likewise, in a general sense, it makes sense to consider dreams as more emotionally activated than daydreams.

The type of the emotion judged to be contextualized in the CI is of interest in that it almost always quantitatively favors negative emotions. Somewhat surprisingly this is the case almost as much in ordinary student dreams as in traumatized persons (except for the most severely traumatized.) Perhaps underlying emotional arousal or activation in some way intensifies all imagery, regardless of the emotional tone of a specific image, but with a slight bias towards the powerful emotions associated phylogenetically with danger.

In following up these results it would be important to examine long-term dream diaries — long series of dreams— in persons whose state or emotional arousal or stress level was also being measured on a longitudinal basis.

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