

Dream Incorporation of a Sentinel Life Event and Its Relation to Waking Adaptation

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This is a preliminary report on a study testing the adaptive theory of dreaming. Dreams of the first 12 subjects to complete a longitudinal study of volunteers untreated for an episode of major depression related to a marital break-up were recorded on four occasions during an eight month period. Nine went into remission and three failed to improve by the end of the study. These differed in ability to create and recall well-constructed dreams. Dream ability on the first night of REM awakenings was significantly correlated to the waking level of adjustment at follow-up. Eighty-nine percent of dreams in which the failed marriage or former spouse was incorporated into the dream scenario were scored as well-developed on the Dream-like Fantasy Scale. The affect of these Incorporation dreams was rated as Neutral or Negative with dampened affect intensity at the beginning of the study when the subjects were most depressed and as Pleasant when they occurred on the last month. These positive Incorporation dreams expressed pleasure in independence and disengagement in feeling about the former spouse. These findings are supportive of there being individual differences in an ability to form dreams that connect present affect related to a disturbing event to other images. A high level of this ability is predictive of improvement in waking functioning. (*Sleep and Hypnosis* 2001;3(1):25-32)

Key words: *dream incorporation, depression, dream function, stress, adaptation, divorce*

INTRODUCTION

Over the years, particularly since the publication of Freud's *The Interpretation of Dreams* (1), the question of dream function has been a matter of lively debate. Do dreams have inherent emotional meaning or is the perception of meaning added through a process of association following what are

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initially, random sensory stimuli arising from brain stem activation? Further, if there is meaning do dreams serve a unique function in the integration or assimilation of affectively aroused information into the solutions embodied in existing memory systems (2)? Or, on the contrary, is the suppression of dreams following horrendous emotional experiences the better part of valor, especially when there are no pre-existing solutions available (3)? These opposing viewpoints have often proved to be long on assertion and short on supporting data.

Recently, there has been a resurgence of interest in the questions of dream meaning and function following a number of brain imaging studies of normal human subjects while they are in Rapid Eye Movement (REM) sleep. The areas of the brain that are reported to be most active, and those that are most deactivated during REM, in contrast to those turned on and turned off while the subject is awake or in Non-REM sleep, suggest that dreams are an

involuntary emotion-driven mental activity. Maquet et al (4) found that during REM there is specific activation of the amygdaloid complexes, which have a role in emotional information processing and verified that this brain state coincides with dream experiences by waking the subjects for a report. Nofzinger et al (5) reported activation during REM sleep of a wide region of midline limbic and paralimbic structures, while there is deactivation of the prefrontal cortex. These authors concluded that the dreams of REM sleep are a product of affective memory schemas, and that one function of REM sleep is the integration of neocortical activity with basal forebrain-hypothalamic motivational and reward mechanisms (5; p.200). They further suggest that this may help relate the dysregulation of the limbic system in major depression, to the concurrent presence of some abnormalities in the REM sleep system, and to differences in the affective quality and quantity of dreams recalled. Thus, REM sleep provides a convenient state from which to retrieve dreams following a specific emotionally-disturbing life event, to discover whether, and how, this effects dream content, and if there is a functional connection between dream representation and the degree of subsequent waking solution or emotional adaptation. Due to the high probability that dreams are being experienced when the distinctive set of observable REM markers are present (the abrupt loss of tone in the chin muscles, a desynchronized brain wave state and rapid synchronous movements of the eyes), awakenings from REM to elicit mentation reports makes it possible to test hypotheses concerning the meaning of dreams and their function, in those experiencing a current or recovering from past mood disturbances.

Breger, Hunter and Lane (2), used this model to study the dreams of five subjects recorded in the laboratory for four nights before, and three nights after, a surgical procedure in order to test the contribution of the dreams to the mastery of the stress induced by this impending event. They looked for instances of direct or symbolic incorporation into the dreams, of references to the surgery immediately before and after it took place. They found that none of their subjects dreamed of the surgery directly but there was a good deal of symbolic incorporation beforehand with dreams having a narrower focus on related images such as of damaged elements, and the act of cutting, than were present once the surgery was over. These investigators conclude that in dreams there is a recoding of the thoughts and feelings aroused in waking, that this

process transforms the stress into familiar terms, assimilates the new stress into memory networks and opens them to the subject's typical ways of coping. What is unique about dreaming, these authors state, is that this process is more apparent in those who do not handle their concerns during the previous day. This suggests dreams have a specific adaptive function, and more so in some than others, perhaps depending on their ability to cope with the disturbing issue in waking life.

Cartwright (6) collected laboratory dreams of forty-nine subjects who were in process of a divorce. Thirty-one of these subjects were suffering a mood disorder secondary to the marital break-up. The other eighteen were not depressed. As in the Breger study this work investigated whether there was more frequent direct incorporation of the former spouse into the dream content in those more emotionally disturbed by this event, and, whether this dream focus was helpful to a later resolution of the depression. The depressed subjects dreamed of the former spouse more frequently and with more intense affect than those who were not depressed. The test of effectiveness came much later in this study than in that by Breger. When the depressed were divided into two groups, those who incorporated the ex-spouse into their dream content and those who did not, and these two were compared on remission from depression one year later, there was a significant association between dream incorporation and later remission. Something had helped the working-through process, - was it the dreams?

Lavie and Kaminer (3) studied the dreams of twenty-two Holocaust survivors some forty years after this emotionally devastating period in their lives, to test whether their present degree of waking emotional adjustment is related to the amount and kind of dreams they are able to recall in the laboratory. This study reports that the Holocaust experience had long lasting effects on those who experienced it notwithstanding their degree of adjustment to their present life in Israel. In comparison to a control group the survivors had much higher percentages of dreams dealing with threats to their existence. There were, however, marked differences in the rates of dream recall and in the affective response to the threat dreams among those who survived. It was those making a good adjustment in their current lives who recalled fewer dreams following REM awakenings. Even those who did report some dreams of danger had a muted affective response to these. These authors conclude that a

successful adjustment to traumatic life events includes a protective dampening of the recall of all dreams in comparison to control subjects even many years later.

There were many differences in these three studies, in the characteristics of the samples, the nature of the stresses, the time frames for testing the effects on waking adjustment, and in the methods of measuring function. All three raise further questions. How does dream incorporation of an emotionally arousing event relate to the personality structure of the subjects and do these dreams reveal the typical coping mechanisms established for handling similar threats, as suggested by Breger et al?

There has been only limited testing of the relation of personality variables and dream behavior. Repressors, who tend to avoid anxiety-arousing stimuli through forgetting, denial and rationalization, have been reported to remember fewer dreams than do sensitizers who use intellectualization and an obsessive worrying coping style (7). Is the processing and recall of specific dream content necessary to waking emotional adaptation? If this hypothetical emotional adaptive function of dreaming is a process that occurs over time it might be more appropriately tested in a longitudinal study.

The study to be reported here was designed to address these issues. However as this is still a work in progress, and the number of completed cases is small, the more complicated question of differential personality / dream styles and their relation to adaptation following severe emotional upsets will have to wait the completion of a larger number of subjects. The hypotheses to be tested here are those basic to the general proposition that dreams, particularly those that focus on an emotionally disturbing event, are necessary to emotional adaptation.

1. Subjects who are depressed secondary to a divorce will adjust emotionally and handle the real-

ity challenges their new status presents more rapidly if they are able to construct, and recall, well-developed dream scenarios, especially if these integrate images of the present problem with other memory material.

2. The kind and amount of affect associated with problem-focused dreams will change over time, in those making a good waking adjustment. The prediction is that these direct dreams will become, less frequent, less negative and less intense but that these parameters will not change in those who are not adapting well.

METHODS

Sample

Paid volunteers were solicited through ads and posters for a study of the sleep and dreams of persons who are feeling blue over the breakup of a first marriage. Subjects were screened first by phone to eliminate any who were currently being treated for depression, either by medication or psychotherapy, or who could not commit to sleeping in the laboratory for two consecutive nights on four occasions over an eight month period. Those who met these criteria were then seen in the office for an interview concerning the history of the marriage and their understanding of the reasons for its failure. They were also tested to select those meeting criteria for major depression on the SCID-NP (8), a Hamilton Rating Scale (9) at or above 18, and a Beck Depression Inventory (BDI) (10) of 14 or greater. Twenty who were depressed and untreated signed informed consent as approved by the Institutional Review Board for their participation. Twelve have completed all aspects of the study and eight dropped out after completing at least one month of testing and sleep laboratory studies. Table 1 describes the sample.

Table 1. Sample characteristics

Group	N	Sex		Age		Children		Months Separated		Previous Depressions
		M	F	Mean	S.D.	Mean	Range	Mean	S.D.	
All Subjects	20	7	13	35.9	5.8	1.2	0.3	12.5	12.6	7
Dropouts	8	3	5	36.1	6.7	.5	0-2	12.1	11.5	2
Completed	12	4	8	35.9	5.5	1.7	0-3	12.8	13.8	5
Final Adjustment										
Rating Poor 5-6.5	3	0	3	35.0	6.2	2.3	2-3	4.0*	3.6	0
Final Adjustment										
Rating Good 7-10	9	4	5	36.2	5.5	1.5	0.3	15.7	14.8	5

* Months separated Adjustment Poor, Adjustment Good; $t = 2.193$ df 10, $p < .05$

Procedure

Subjects were recorded in the sleep laboratory for an extra night on the first occasion only. This additional night was used to adapt the subjects to sleeping in the laboratory and to identify any who met diagnostic criteria for either sleep apnea or periodic leg movements. Two subjects who demonstrated significant apnea were withdrawn from the study and treated clinically. Other drop outs were voluntary, due to a marital reconciliation, a move out of state, or difficulty getting child care for the nights in the laboratory. On the second night subjects were allowed to sleep for a standard bedtime of 420 minutes to obtain various sleep parameters: the proportions of sleep in the various stages, sleep latency, sleep efficiency, as well as to identify the presence of REM abnormalities often associated with major depression, an early onset of REM sleep, and increased density of the rapid eye movements in the first REM period. The sleep data will be reported in a separate paper. On the third night each REM period was interrupted on a standard schedule to elicit reports of mentation. This is the same protocol as has been detailed in previous studies (6). Following the tape recording of the spontaneous report, subjects were asked to rate the dream affect by asking: Would you say that dream was Positive (Pleasant), Neutral, or Negative (Unpleasant) and then whether the dream was: Highly emotional, Mildly emotional or Not emotional before being told to return to sleep. In this manner, 3-6 REM reports were obtained on each night of awakenings.

The protocol called for six additional nights of laboratory recording: two nights, on Months 2, 4, and 8. On each occasion a sleep-through night was followed by a night of REM interruptions to solicit mentation reports. Subjects also completed a BDI before each sleep-through night. On the intervening months, Month 3, 5, 6, 7 and following the last night in the sleep laboratory, subjects came for day time appointments to complete testing for depression and to meet with the senior author who conducted a semi-structured interview to assess how they were coping with this change in their lives. This interview covered the areas of how the legal proceedings were going, any problems of work, with the children, their relations with the former spouse, their social life, health and finances. Following each of these visits the interviewer made an Adjustment rating on a ten point scale, where 10 represented the highest degree of adjustment, to summarize the subject's present level of social and psychological

adjustment to the realities of their new single status. This rating was made while the rater was blind to the dreams that had been collected by the second author, and to the depression scores on the BDI and Hamilton, which were administered by the third author.

All dream reports were transcribed and coded to remove names and dates before ratings were made. Each REM awakening was scored on four variables:

1. DREAM-LIKE FANTASY (DF): Each report was given a categorical score denoting the degree to which it was dream-like using a modification of the Foulkes scale (11)

1= No recall

2= Thought: report of mentation which is not sensory but cognitive

3= Minimal Dream: a report of a single image

4= Dream: a report of two or more images with some story-like connection or elaboration

5= Well-developed Dream: a report of two or more images connected by a more elaborate story which may have some unrealistic or bizarre elements

2. INCORPORATION: Each dream report was coded for whether or not it included the former spouse, or reference to the failed marriage: I or NI

3. AFFECT TYPE: Type of affect had been rated by the subject at the time of each REM report:

1= Negative or unpleasant

2= Neutral

3= Positive or pleasant

4. AFFECT INTENSITY: Affect Intensity was also assigned by the subject at the time:

1= Not at all emotional

2= Mildly emotional

3= Highly emotional

There were two dependent measures of adaptation: 1) the Adjustment Rating at the last interview and 2) the status of the depression as in remission or not in remission based on a repeat SCID-NP, Hamilton Rating Scale and BDI administered by the third author.

RESULTS

There were two significant initial differences between the subjects who failed to improve and those who were in remission. The failures had been separated for a significantly shorter period, that is,

Table 2. Mean depression scores of groups at screening, month 5 and follow-up

Group	N	Hamilton Rating Scale			Beck Depression Inventory			
		Screening	Month 5	F/U	Screening	Month 5	F/U	
Completed Cases	12	Mean	23.50	11.33	9.25	26.00	12.58	12.16
		S.D.	3.57	6.99	9.68	8.78	12.40	13.57
Low Adjustment (5-6.5)	3	Mean	23.67	20.33	24.20	37.66**	31.68	34.33
		S.D.	3.06	1.15	4.04	1.52	6.65	0.57
High Adjustment (7-10)	9	Mean	23.11	8.44	4.22	22.11	6.22	4.88
		S.D.	3.89	5.38	2.33	6.11	4.29	2.60
Drop Outs (7 -10)	8	Mean	21.13	--	--	23.75	--	--
		S.D.	3.83			6.84		

Difference in BDI at Screening between Adjust Low Adjust High; $t = 4.235$ $df 10$, $p < .002$

they had less time to adapt (see Table 1). They were also significantly more depressed on the self-report measure of depression (BDI) although equally depressed on the clinical measures (SCID and Hamilton) (see Table 2). All those who were Good Adapters at follow-up showed recovery to normal scores on both the BDI and the Hamilton Rating Scale at or before Month 5 and maintained their improvement while the Poor Adapters were unchanged on depression scores throughout the study.

The first question to be answered was whether adaptation to divorce as measured by a remission from depression occurs in untreated cases during this time frame. Of the twelve who completed the study, nine no longer met any of depression criteria at follow-up. They were within normal limits on the SCID-NP interview, the Hamilton Rating Scale and the BDI. The other three cases failed to remit by all these criteria. The independent rating of Adjustment to the new life circumstances clearly distinguished those who were in remission from those who were not (see Table 2). These measures of emotional/behavioral adaptation were significantly correlated at follow-up. (BDI and Hamilton $r = .950$, BDI and Adjustment rating $r = -.726$, Hamilton Rating and Adjustment Rating $r = -.678$. All correlations were significant $p < .01$. Given the agreement of these measures two groups were designated Good Adapters (Adjustment Rating 7-10, BDI < 14 and Hamilton < 18) or Poor Adapters (Adjustment < 7, B.D.I. = or > 14, Hamilton = or > 18.) As 75% of the group fell into the Good Adapter group without formal treatment, it is reasonable to proceed to test the

first hypothesis that adaptation is related to the quality and quantity of the dreams recalled.

1. The two outcome groups were compared on the Dream-like Fantasy (DF) scores assigned to each of the 196 reports collected on the four REM interruption nights. For the group as a whole 43% of REM reports were rated as well-developed dreams (a DF rating of 4 or 5). For the Good Adapters this percentage (51.8%) was more than twice the percentage of that of Non Adapters (24.1%). The Good Adaptor group also had a lower percentage of No Recall reports (9.4%) than those who did not (17.2%) (see Table 3). That this ability to form and recall well-developed dreams, while one is depressed, relates to later adaptation is supported by the rho correlation between the percent of REM reports rated at 4 or 5 on the first dream collection night and the final Adjustment rating eight months later ($\rho = .685$, $p = .014$).

Table 3. Percent distribution of DF scores for REM reports of good adapters and poor adapters

	Poor Adapters	Good Adapters
1. No Recall	17.2	9.3
2. Thought (Not a Dream)	13.8	10.1
3. Minimal Dream (Single Image)	44.8	28.8
4. Well Developed and		
5. Highly Developed dreams	24.1	58.8

2. Next the relation of dream Incorporation, dream reports including a direct mention of the ex-

spouse, the divorce, or specific reference to the failed marriage at Months 1, 2, 4, and 8 to the outcome measures of waking adaptation was tested by comparing the outcome groups on the frequency of these dreams, when they occurred, and with what type and intensity of associated affect. Nine of the 12 subjects dreamed of the ex-spouse directly. There was a total of 18 such dreams, six from the three Poor Adapting cases (11.8%), and twelve from those who adapted successfully (10.1%). This was not a significant difference in frequency. All but two of these Incorporation dreams were rated as well-developed dreams (DF ratings of 4 or 5) (89%) a much higher percentage than was found for all dreams reported. This suggests that dreams that include the ex-spouse or failed marriage connect this life event to more associated memory material. The Affect Type associated with these dreams showed no difference: 5 were rated Negative or Unpleasant, 6 were Neutral and 7 were reported to be Positive or Pleasant dreams. However, the timing of these did differ (see Table 4). Most of those rated as Negative or Neutral occurred in the first two months of the study when the subjects were most depressed. Six of those rated as Pleasant occurred at the end of the study on Month 8. The pleasure they express is one of feeling independent, or relieved of feeling strongly about the ex-spouse and of a need to hide their marriage troubles from others. Below are examples of dreams rated as Pleasant occurring at the end of the study.

Table 4. Time distribution of dreams with direct incorporation by affect type

Affect Type	N	Months				
		1	2	4	8	
Unpleasant	5	1	2	1	1	
Neutral	6	2	4	0	0	
Pleasant	7	1	0	0	6	

MONTH 8 REM 3

I was hoping that I would be able to make time to go back to school. I was going to call the college to find out what the schedule would be but I couldn't find the number. I think we were on vacation in Disney World. It was just the three of us, my boys and me. It was kind of nice, it was kind of emotional. We haven't had a vacation in a long time. It was weird because usually I have to get permission from their dad to take the children but for some reason, it didn't matter. It was my choice to take them on vaca-

tion. I didn't have to ask anybody.

MONTH 8 REM 4

I was having a beer and writing a letter to my lawyer to let him know that I was going to pay him. That was going to solve all my problems. I don't remember if I was home or not, sitting at a desk with a lot of light. I saw the stationary. I felt like I was home but I really don't live there anymore. I felt glad and relieved of a burden of worry. I thought I was at home but really I don't have a key to get into the house anymore because my husband lives there.

MONTH 8 REM 2

I was on an airplane flying. There were lots of other planes with me.. I was told that I had a message from my wife. My wife found a ticket for me to go to a city with a kind of fake sounding name. It turned out to be a ticket with another woman to this city. All the planes had landed and she was telling me that she found out I was going with another woman. We were in a race and this was all a trick to force me out of the race. We were in separate planes like World War II bombers. But even if I had got knocked out of the game I wouldn't be upset. It was kind of a light-hearted and frivolous dream. In the dream my wife was speaking French. I was struck by my lack of involvement, my non-attachment. I really wasn't involved enough to care what happened.

In these dreams the separation in feeling from the spouse is accepted as positive. In contrast to these are the dreams rated as Neutral which occurred at the beginning of the study while the subjects were most depressed. For example:

MONTH 1 REM 2

I was dreaming about my husband dating this girl that he works with and him taking her out. That's all I can remember. He was just taking her out meeting her at our house. I was just sitting in my house in my livingroom and he was going out the door with this girl. I was reading a newspaper. I was just looking at them. I felt calm.

MONTH 2 REM 5

My kid's father got some shoes that we bought. He was looking at shoes we bought for my sister. He brought them out while we were eating. I was sitting

at the table eating.

The lack of interaction and dulled affect in the Neutral dreams are unlike the early dreams of the marriage the dreamer rated as Unpleasant. Some examples of these are:

MONTH 2 REM 4

I was dreaming about my daughter and my son. I was kind of sad. My wife was in the dream. She had bought my daughter some clips and I was trying to put them in her hair. I was feeling emotions of pain and hurt. Resentful toward my wife because I haven't seen my children. I wasn't able to see my son. I know he was somewhere but I couldn't find him in the room they were in. My daughter was standing by the table and I was opening the bag of red hair clips. I commented on how many there were and how nice they were. And my wife talked but I didn't talk back. I felt very hurt because I knew this is not real. When I touched my daughter's hair I was able to feel it. But I just knew that this is not happening. So I put the bag down and went to look for my son.

MONTH 3 REM 3

I was fleeing from something with my daughter and my son on a dark street in a suburban area but in an Indian or Asian community with barbed wire around the fence. My son needed to use the bathroom and my daughter needed water for her dog. We knocked on the door of this house and an old woman answered. I asked her for help but a man came to the door and said No. I asked him Why not? and he said You would have to be my wife I didn't know what to do. Then we were backtracking through a field and there were shots being fired all around. Then we were in a room where a dance was being planned. I was telling my ex-husband that I would only be staying for five minutes and he said Fine like he didn't care. I knew that his new girl friend would be there and they would be dancing. I felt resentful. I didn't want to see that.

The total number of dreams with direct mention of the marriage or former spouse are few. There were many more that had to do with the fallout from that event such as, longing for more contact with the children, trouble with having to relocate, feelings of being uprooted, being subject to disapproval by the parents, all of which might be classed as relating to

the break-up of marriage indirectly. However the hypothesis as stated, that Good Adapters will have more direct Incorporation dreams than Poor Adapters, is not supported. What is clear is that these dreams change in affect type over time with Good Adapters feeling less intense affect and more positive feelings of enjoying their freedom.

3. The subjects' reports of their affect intensity showed those not adapting have a dampening of affect: 45% of their dreams were rated as no emotion, and 50% were rated as engendering only mild emotion. Those who were successful in their adaptation produced more dreams they rated as being strongly felt (18%). Only one of the three Non Adapters produced a strongly felt dream. In contrast seven of the nine successful subjects produced a total of 23 such dreams.

DISCUSSION

Successful adaptation to a divorce-related depression takes time and the ability to construct complex dreams. Those who have had less time to make their peace with the feelings and realistic changes this life event brings about were also less able to dream with connected images that formed good narratives in sleep. These subjects showed no change their waking depression symptoms. They had both less dream recall, and a reduced level of dream affect. This shutting down of dreaming has been reported by others to be characteristic of more severely depressed patients (12,13). This study suggests that the subjects who do not dream well are not more severe on clinical measures of depression but are more distressed by their symptoms.

Although this report is based on a small sample it supports that remission from depression without treatment, and adjustment to the life changes involved, is more likely to occur in those able to make connections in dreams between the present disturbing events and memory-based images. In other words to elaborate complex dreams. When further subjects have completed this protocol the questions of whether dream changes in affect type and intensity precede or follow waking changes in depressive symptoms will be addressed. Perhaps both patterns occur depending on waking personality variables such as differences in defense styles. The present analysis while preliminary is promising in support of an adaptive dream process which varies in efficiency in different individuals.

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