

Dreaming as a mechanism for emotional handling;

Did dreams become more emotional after 9/11?

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Submitted by August Palmenfelt to the University of Skövde as a dissertation towards the degree of Bachelor of Science by examination and dissertation in the School of Humanities and Informatics.

I hereby certify that all material in this dissertation which is not my own work has been identified and that no work included for which a degree has already been conferred on me.

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Abstract

This study investigates the effects of traumatic experiences on emotional content of dreams. The theoretical framework of the present study is both the threat simulation theory and Hartmann's theory of dreams as a mechanism for handling emotions after traumatic events. Both theories predict an increase in negative emotions after trauma but assign a different function for this increase. The subjects in this study ($N = 16$) were regularly writing dream diaries which after the 9/11 attack gave the researchers an unique opportunity to study the exact impact of events on dream content. Each subject's ten last dreams before 9/11, and ten first dreams after 9/11, were analysed according to the emotional content. The results showed no significant differences in the number or tone of emotions in the before dreams compared to the after dreams. Possibly because none of the subjects experienced the event first hand.

Keywords: Dreams, trauma, emotional handling, threat simulation theory

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1. Introduction

In this article I will review contemporary scientific views about dreaming, and focus on the emotional aspect of dreams, how traumatic events effect the emotions in dreams. Then I will present an empirical study of the frequency and nature of emotions in dreams collected before and after exposure to a traumatic event.

First I will present the continuity between the waking and the dreaming mind, and then I will review Hartmann's theory of emotional handling, the theory of recurrent dreams and the threat simulation theory which is the theoretical basis for this study.

1.1. The waking and dreaming mind

Dreams are subjective experiences that occur during sleep, involve complex and organized images which show temporal progression or change (Farthing, 1992). These images are hallucinations created within the mind without external stimuli. Thus the dreaming mind can be regarded as pure phenomenal consciousness (Revonsuo, 2006).

The mind is active and self-aware during waking. It is able to steer the train of thought and focus its attention on a given object or state of mind. When asleep, the mind lose its ability to steer and control phenomenal consciousness, and simply roams free in its own thought. The images, movements, dialogs, feelings and intrigues are far too complex and narrative coherent to have been created by random spontaneous activation (Revonsuo, 2000). Thus, dreams have to be structured thoughts of a wandering mind.

Hence, contents of mind should be continuous between waking and sleeping.

This was called “A day residue” by Freud (1984); that events which have occurred to the dreamer during the day would be implemented into the dream. In a sense, one could follow the dreamer’s life by knowing the contents of his or her dreams.

A related view is that day residue appearing in the dream depicts the most salient of the dreamer’s concerns (Hartmann, 1998). Not necessarily only emotional concerns, such as anxiety aroused by waking events, but also physiological concerns such as hunger, thirst, or external stimuli such as noise (Strauch & Meier, 1996; Hartmann, 1998).

Our language is filled with metaphors, and according to Hartmann (1998), so are our dreams which are visual descriptions of feelings or events. Metaphors are deeply connected to our way of thinking and to our way of dreaming. For example, if a person feels overwhelmed in his waking life, he might at night dream of a flood or tidal wave overwhelming him (Hartmann, 1998). External stimuli can also be incorporated into dreams. A need to go to the toilet can be contextualized as images of seas or vast amounts of water. Having weights placed on the ankles during sleep may be experienced as being tied up or having snakes crawling on the legs (Hartmann, 1998).

This kind of metaphor interpretation can be applied to all aspects of the dream, but not always with accuracy. It is thus fairly simple to see the effect of trauma on dream content, i.e., how the traumatic event is reflected in a person’s dreams. To determine the concerns from the dream content of a person who has not experienced a trauma is far more difficult (Hartmann, 1998).

1.2. Hartmann’s theory of the function of dreaming

There is substantial evidence that stressful conditions and traumatic experiences lead to nightmares and recurrent dreams of the event. The dreams caused by these conditions

contain the feeling that corresponds to the trauma (Domhoff, 1993; Hartmann, 1996a, 1998; Nader, 1996; Valli, Revonsuo, Pälkäs, Ismail, Ali & Punamäki, 2005, Wilmer, 1996), in all stages of life (Nader, 1996).

To experience a traumatic event may cause emotional life to become unbalanced, like waves on a stormy sea. Hartmann (1998) proposes that dreams have the ability to calm these waves and restore the balance in the traumatized mind. While asleep the brain makes connections between the memory of the traumatic event and other memories and thoughts. This is an adaptive function that can help the person to relate the traumatic event to his ordinary life, and to accept what happened. This function also helps the person to understand that there are others who have gone through the same thing as well. The dreams do not have to be remembered in order to have a function. The recovery from trauma through dreams is a long process, and the process has many stages. At first the trauma is clearly depicted in dreams, it gradually starts to play a smaller and smaller role in the dreams (Hartmann, 1996a).

When looking closer on the dream content of people who have been exposed to the same traumatic event, there seem to be strong similarities in dream content. This implies that dreams seem to work in a similar manner in different persons. From the way that emotions and events are depicted a picture starts to emerge. The picture is a correlation between dreams and helps people with strong emotions. Vietnam veterans is a group studied closely because of the similar experiences and vast number of soldiers inflicted. The most prominent characteristics are survival guilt: a feeling that the dreamer was supposed to die instead of the buddy who did. In dreams this is contextualized most often as an uncertainty of who was killed when a grenade hit a fox hole, or if the dreamer is watching body bags and see himself in one (Hartmann, 1996a; 1998).

This shows that dreams are compatible with the emotional concerns of the waking life. Life can have many turns of events that affect us. Examples of these are pregnancy, undergoing an operation, a divorce, or problems within the family. All of these are more or less stressful conditions that for a period of time centre our emotions on certain issues. Clear examples of when unresolved concerns are manifested in dreams are dreams about deceased loved ones. Dreams like this often give the dreamer a chance to say goodbye, or apologize for not seeing the person before the departure. The dreams are often followed by a sense of relief and calm, which is a consequence of the resolution of a concern (Domhoff, 1996).

These types of concerns might have as big an impact on one's life as an emotional trauma. They can be also be detected in dream content. And much like the trauma cases, according to Hartmann (1998), dreams from people going through stressful periods conceptualize their emotional concern. This is apparent even among those who claim that they do not have any emotional concern in their situation (Hartmann, 1998). Regardless, the impact of stressful stimuli on dreams has been empirically demonstrated. Administering a stressful pre-sleep condition influences the dream, making it more salient (Farthing, 1992).

Koulack (1993) has done a number of studies in which viewing a stressful film before sleep increased the amount of stress in the dreams, as well as changed the narrative, sometimes directly by adapting the stressful event to the dream. These dreams also had physical influence; subject's heart rate increased in dreams containing more stress.

If a person has undergone a trauma it is likely, according to Hartmann (1998) that the person will have a dream of a flood, firestorm, an onrushing train, or any of the metaphors common to trauma-survivors. All dreams do not portrait the actual event, even if it is common in these cases (Siegel, 1996). Natural disasters are also a common metaphor for a tragedy or traumatic event; a great, unstoppable force that leaves the dreamer helpless. Thus it

is easy to see a causal correlation between a trauma and a dream or nightmare depicting the trauma. Since the definition of trauma is a severe emotional shock, and has a deep and often lasting effect on the personality (Websters, 1999), it would be seen in the dreams as one of the concerns of the dreamer for some time.

In 50 % of all dreams there are specific feelings. In 23 per cent of all dreams there are certain moods, thus this leaves little more than a quarter of dreams without emotions (Strauch & Meier, 1996). If the only function of dreams is to resolve emotions, why do a fourth of the dreams not include emotions? Or do not all dreams have the same function (Foulkes, 1993)? Antagonists might also ask why do we not remember dreams if they should teach us something or resolve a concern? If the function of dreams is to resolve emotional concerns then it is not the actual thinking about the concern that matters, rather the resulting feeling that one has found inner peace.

Furthermore, Kuiken and Sikora (1993) asked 168 persons to fill out a questionnaire about their dreams the last two years. The results show that dreams have a substantial impact on waking life. 54 % answered that they had at least two dreams that made them feel like changing their lives; 72 % answered that they had at least two dreams that made them sensitive to aspects of reality that they typically ignore; 50 % answered that they had at least two dreams which solved a personal problem. So even if we do not remember the majority of our dreams we are influenced by them.

1.3. Recurrent dreams

Dreams have a recurrent factor, often starting in childhood or adolescence, but can also be a result of traumatizing experiences later in life. 45 % of all recurrent dreams are of frightening nature (Domhoff, 1993). This fits the emotional processing theory: if a fear

arose in childhood it would be present until solved. And if the function of dreams is to restore calm in our emotional life, this will not happen over night. The process of creating connections as Hartmann (1998) put it, would have to be repeated during sleep.

Recurrent dreams affect women, men and children who have experienced trauma. These kinds of dreams depict the trauma in a vivid form, and contain all the feelings that affected the dreamer when the event originally happened. Some dreamers do not know the reasons for their stress, since they repress or forget the dream while awake. Others clearly know the causes for their stress (Domhoff, 1993).

Those subjects who stopped having recurrent dreams scored higher on a well-being scale than those who still had recurrent dreams. This shows that the reason for the dream is no longer valid and that the emotional trouble has seized. This gives the dreamer an opportunity for better psychological health (Domhoff, 1993). If children who have recurrent dreams about being chased by monsters or such, are asked to talk about the dreams and try to connect the dreams with waking life, the amount of anxiety in their dreams will be reduced (Hartmann, 1998). Never the less, the recurrent dreams may come back if the dreamer goes through a period of stress, or if he or she is reminded of the original event that triggered the dreams. This could be an anniversary or a memorial service of the event (Siegel, 1996).

1.3.1. Traumatic dreams or Post Traumatic Stress Disorder?

A post traumatic stress disorder (PTSD) nightmare is a specific type of nightmare. It pictures the particular event exactly as it happened, with all the feelings repeated over and over again. In these types of dreams the emotions do not change over time, and the dreams are very often so filled with anxiety that the person suffering from them is reluctant to

go to sleep. Clinically the condition can be treated with Dopamin blockers (Hartmann, 1996b).

Trauma dreams seem to be a “watered down” version of the PTSD, not portrayed as vivid nor as frightful. It seems as the original shock from a difficult event has been settled but still plays a role in the dreamer’s emotional world, and thus coming back in the form of a traumatic dream. The difference is that it does not depict the event in any exact manner; rather it depicts it as a metaphorical version (Domhoff, 1996).

1.4. Threat simulation theory

Our genes are inherited from our parents, and from their parents, tracing all the way back to our ancient ancestors. In these genes lie, obviously, our ability to dream. If the characteristics of dreaming are so outspread, it would seem that many species would have something to gain from it otherwise it would disappear from our gene-pool. Like eyes from lizards who immigrated to lightless caves.

The Threat simulation theory (TST) proposes that dreams are a neurobiological phenomenon that evolved to prepare us for threats in our environment (Revonsuo, 2000; Valli et al., 2005). The threat simulation theory proposes that our mind creates a threat in the dream, where it is safe to practise facing and dealing with the event. Our ancestors lived in an environment full of threatening situations on a daily basis and would have been more prone to rehearse these kinds of situations. Threat rehearsal in dreams would increase the probability of survival, and lead to increased numbers of offspring.

Studies support the theory (Valli, *et al*, 2005; Zadra, Desjardins & Marcotte, 2006) although Zadra and colleagues (2006) claim that the threats of today are more psychological than physical. Conflicts at work, in the family, economical difficulties etc

should lead the dreamer to have fewer dreams about being chased, and to have more themes of general anxiety towards certain issues in the modern environment. If the purpose of dreams is to prepare us for events that may occur in our waking lives, then for example dreams of being inappropriately dressed may be a contemporary version of this theory. They provide us with the ability not only to survive but to also survive socially. The majority of these types of dreams occur in the mid teens, giving a strong feeling of embarrassment, not fitting in, being nude or wearing the wrong clothes to a social event (Domhoff, 1996).

1.5. Hypotheses

Dream studies usually compare between groups of people who have suffered a traumatic event and groups of people who have not. This leads to a biased research, where one overlooks the differences between the two groups and between the subjects in each group. In contrast, the present study is based on people who have been writing dream diaries, have had a stressful experience, and continued writing the dream diary after this experience. Therefore it is possible to compare the dreams that have occurred before and after a certain event, which makes it possible to see the direct impact of the stressful event in the content of the dreams, for each of the participants

After the 9/11 attack more than 90 % of the American population showed one or more symptoms of stress such as trouble concentrating, having trouble falling asleep or staying asleep, having repeated disturbing memories, thought and dreams about the event (Schauser, *et al.*, 2001). According to previous studies, the content of the collected dreams should have more elements of uneasiness. This uneasiness could be manifested in a higher incidence of feelings of fear, vulnerability and anxiety in the dreams recorded after the attack.

As described above, there is a correlation between traumatic and stressful experiences and the content of dreams. Both theories that I have reviewed predict a change in the emotional content of dreams and that some of these dreams of negative nature are recurrent. My theory is that the number of negative emotions in dreams is higher in the dreams reported after 9/11 than before it. I will investigate if the frequency of emotions changes, i.e., that emotions occur more often after a trauma.

2. Method

2.1. Subjects

The 16 subjects in the study were recruited via a website maintained by the Sleep Research Society and the Association for the Study of Dreams. The subjects lived scattered around the USA, none in New York. Nine of the subjects females, six males, and one did not report sex. For the eight participants who provided their age, the mean age was 53. The participants regularly wrote dream diaries and were asked to supply 20 dreams to the study. These 20 dreams should be the last ten before 9/11 and the first ten after 9/11. In five cases submitted dreams was not one long dream but two shorter this gave a total of 325. These dreams were analysed by three independent judges.

2.2. Procedure

The scale that was used in the study is based on Hall/Van de Castle (Domhoff, 1996) and Hartmann and Basile's (2003) emotion coding scales. According to this score, an emotion should be coded when it is expressed directly in the dream, or when there is a very strong reason to believe that the dream character experiences an emotion, that is when the

subject reacts to a situation as one would do under the influence of this particular emotion. The scale features ten groups of emotions; happiness, love, sadness, fear, anxiety, anger, surprise, disgust, guilt and envy. All categories include subcategories (See Appendix).

2.3. Statistical methods

Normality distributions were tested with the Shapiro-Wilk Test. The number of reported emotions was not normally distributed in either in the before dreams sample or the after dreams sample, and thus, the Wilcoxon Signed Rank Test was used to investigate whether the number of overall emotions, or the number of negative vs. positive emotions, differed significantly between the before 9/11 and after 9/11 dreams.

3. Results

All dreams were scored by three independent judges. The level of correlation between the judges was low. A probable explanation for this could be either lack of experience among the judges, or that the definition used to identify an emotion was not precise enough. Either all dreams had to be recoded with more precise guidelines or as was the solution in this case a fourth judge chose one of the judges' results which, in her opinion, were the most accurate.

3.1. Emotional content

Overall, the negative emotions in the dreams were significantly more prevalent than the positive emotions. This pattern could be seen both in the dreams reported before

9/11, and in the dreams reported after 9/11 (see Table 1). The Before dreams sample: $Z = -2.56$, $p < 0.05$. The After dreams sample: $Z = -2.3$, $p < 0.05$. These results have been previously reported many times.

Table 1. The mean number of positive and negative emotions in the before dreams and the after dreams.				
	N total	Mean/subject	SD/subject	Range/subject
Before dreams, positive emotions	60	3,75	5,09	0-21
Before dreams, negative emotions	93	5,81	5,17	1-22
After dreams, positive emotions	59	3,69	3,11	0-11
After dreams, negative emotions	99	6,18	6,67	0-28

The dreams after 9/11 did not differ on the quality of emotions from the before dreams. There was no statistically significant difference, that is, the proportion of negative vs. positive emotions was almost identical in the before dreams and the after dreams (see means per subject in Table 1).

3.2. Individual differences

Seven subjects reported more positive emotions in the before dreams compared to the after dreams. In contrast, seven subjects reported more positive emotions in their after dreams than in their before dreams, while two had the same number of positive and negative emotions in both samples. Comparably, nine subjects reported more negative emotions in their after dreams than in their before dreams, five had an opposite pattern, and for two the number of positive vs. negative emotions was identical.

Overall, the frequency of emotions varied largely between subjects, i.e., some reported many emotions while others only few (see Range in Table 1.). However, the number of emotions reported by the same subject in the before and the after dreams did not differ significantly, that is, the subjects who reported only few emotions in their before dreams did so also in their after dreams, and those subjects who reported many emotions in their before dreams, did so also in their after dreams. Thus, the subjects followed a consistent pattern across conditions in how often they reported emotions.

As the individual subjects did not differ in the number of emotions in before and after dreams, the mean number of emotions was almost identical in before and after samples: the mean number of emotions in before dreams was 10.8 per dream report ($SD = 10.9$, range = 3-48), and in the after dreams 10.8 ($SD = 10.0$, range = 0-41). Thus, the before and after dreams did not differ in the number of emotions. However, eight of the subjects reported more emotions in before dreams, one an equal number of emotions in both samples, and seven more emotions in after dreams.

4. Discussion

The aim of this study was to examine the effects of trauma and the emotional contents of dreams. The hypotheses and the theoretical background predict that the frequency of negative emotions would increase. The results were ambiguous; some of the subjects' frequency of emotions increased while other decreased, even though most of the subjects did not have any changes. The majority of emotions were negative, both in the before and the after dreams, as have been reported earlier (e.g., Strauch & Meier, 1996). Half of the subjects reported more negative emotions in the after dreams. Although the difference was not a significant change, it was a change none the less. This trend supports the hypothesis. But there

were also an opposite trend; five subjects reported fewer negative emotions in the after dreams sample. This trend was not as big but could suggest either that the hypothesis is false or that there were flaws in collecting the data.

The frequency of emotions and the emotional tone did not change significantly, and there were individual variations between the subjects. The theories do not explicitly state that there will be an increase of emotions in the dreams, only that there will be an increase of negative emotions. Since the pattern of emotions is similar for both the dreams reported before 9/11 and the dreams reported after, the theories I have presented seem to not apply for this sample of dreams.

An explanation for this might be that even though 90 % of the American population (Schauser, *et al.*, 2001) showed symptoms of stress, none of the participants of this study lived in New York, and thus did not experience the event first hand. It would mean that these subjects were not traumatized. The trauma that was supposed to affect the subjects' dreams was too distant. This could also explain why the frequency of emotions in dreams did not change either.

The majority of the dreams were recorded between two to four weeks before, and two to four weeks after 9/11. The test may have showed another result if they were recorded closer to the attack, instead of weeks after. Regardless, the present sample is unique. With this test we can study the effect of stressful events in a within-subjects design, instead of the more common between-subjects design, with an experimental group and a control group. This is a new way of making more precise dream studies which should be used as often as possible for more accurate results.

In conclusion, even though this study did not support the hypothesis that dreams become more negative in emotional tone after a traumatic experience one can argue that based on previous knowledge dreams did become more emotionally negative after 9/11 in the

dreams of those who were present at the World Trade Center site, and experienced the traumatic event first hand.

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Appendix

Summary of the detailed coding system

1.0 Happiness and joy, peacefulness, mastery

- 1.1 Happiness and joy (happy, joyful, content, pleased, amused, cheerful, glad, elated, delighted, exhilarated, enthusiastic, satisfied)
- 1.2 Relief and peace (relief, safety, restfulness, peacefulness)
- 1.3 Mastery, power, supremacy, empowerment
- 1.4 Sexual pleasure

2.0 Love, attraction and empathy

- 2.1 Love, affection, attraction, desire (love, affection, sexual attraction, admiration, caring, liking, pride)
- 2.2 Empathy (empathy, sympathy, compassion, pity, worry for someone else's well-being)
- 2.3 Trust (trust, confidence)
- 2.4 Desire (desire, lust, craving, longing, coveting)

3.0 Sadness, grief and despair (sad, disappointed, hurt, depressed, heartbroken, downhearted, lonely, blue, lost, miserable, hopeless, in despair)

4.0 Fear and terror (terrified, horrified, afraid, frightened, scared, in panic)

5.0 Anxiety and vigilance, helplessness

- 5.1 Anxiety and vigilance (alarmed, distressed, uneasy, tense, worried, concerned, suspicious, nervous, shaky)
- 5.2 Helplessness, vulnerability

6.0 Anger, frustration and hostility

- 6.1 Anger (angry, mad, provoked, furious, enraged, annoyed, upset, irritated)
- 6.2 Frustration (frustrated, disappointed, offended)
- 6.3 Hostility (hostility, hate, contempt, loathing)

7.0 Surprise and confusion

- 7.1 surprise (surprised, astonished, amazed, awestruck, awe, wonder)
- 7.2 confusion and lack of confidence (confused, puzzled, perplexed, doubtful, uncertain, undecided, conflicted, disoriented)
- 7.3 Curiosity

8.0 Disgust and unpleasantness

- 8.1 Disgust (appalled, disgusted, repulsion)
- 8.2 Unpleasantness, unattractiveness (finding something highly unpleasant or unattractive)

9.0 Guilt and shame

- 9.1 guilt (guilty, blameworthy, remorseful, sorry, apologetic, regretful)
- 9.2 shame (embarrassed, ashamed, disgraced, dishonoured, dissatisfaction with self, feelings of inadequacy toward self)

10.0 Envy and jealousy (envious, jealous)

- 10.1 envy
- 10.2 jealousy