

## FEELING EXPRESSION AND THE INCORPORATION OF PRESLEEP EVENTS INTO DREAMS\*

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### ABSTRACT

The expression of feelings about events occurring immediately before sleep was expected to increase the influence of remote memories on dream content and to decrease the influence of immediate presleep events on dream content. On each of two successive nights, twelve participants were asked to 1) view an emotionally involving film, 2) select the film segment that felt personally most important, and 3) rate the film segment using adjectives descriptive of affect. Participants in the feeling expression condition were then instructed to reflect on and characterize the feelings they experienced during the film, whereas participants in the no feeling expression condition were instructed to reflect on and analyze their impressions of the film's aesthetic quality. All participants were subsequently awakened from REM sleep and asked to 1) describe their sleep mentation and 2) rate the affect accompanying that mentation. As hypothesized, participants in the feeling expression condition were less likely than participants in the no feeling expression condition to have dreams with actions and scenes similar to those from the presleep films. They were also more likely than participants in the no feeling expression condition to have dreams with affect comparable to that experienced while viewing the presleep films.

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A pervasive theme in modern studies of dream content is that dreams provide, in Jones' phrase, "self-perception in depth" [1]. That is, dreams provide hints of a personal reality typically unknown—a personal reality that contrasts with everyday self-perception. However, since elements in REM dreams are typically mundane [2, 3] and not readily differentiated from waking mentation sampled under similar circumstances [4], perhaps dreams' capacity to effect "self-perception in depth" is limited to dreams that are emotionally involving and related to a rich array of personal memories. If so, it is important to determine how and when such dreams occur. The hypothesis examined here is that the expression of feelings about a presleep event is one determinant of the self-perceptual "depth" of subsequent dreams. Specifically, we hypothesize that the expression of feelings about events occurring immediately before sleep will increase the influence of remote memories on dream content and decrease the influence of immediate presleep events on dream content.

Understanding how feeling expression influences dream content requires consideration of presleep feeling expression and of dream formation. Feeling expression, as defined here, is neither emotional lability nor emotional display. Rather it is a process whereby a person characterizes the quality of feelings about an emotionally involving event and links that event with related personal memories. Specifically, feeling expression involves 1) activation of and attention to bodily feelings, 2) representation of the quality of these bodily feelings using words or images, and 3) mnemonic linkage of these words or images with affectively similar personal memories cf. [5].

Dream formation, as understood here, involves the fusion and juxtaposition of narrative elements from affectively similar memories. Specifically, 1) feelings about presleep events are reactivated during subsequent REM sleep [6-8], 2) these nocturnal feelings prompt the implicit activation of affectively similar memories [9, 10], and 3) the distinct narrative elements (e.g., actions, scenes, and characters) from these affectively similar memories are fused and juxtaposed to form the more or less coherent manifest dream cf. [11].

If the preceding analyses of feeling expression and dream formation are accurate, dreams that follow the presleep expression of feelings will include narrative elements from a relatively broad array of memories. That is, the additional mnemonic linkages established by expressing feelings about a presleep event will increase the number of distinct but affectively similar memories implicitly activated during REM sleep. Dreams formed by the fusion and juxtaposition of this broadened array of memories will be affectively similar to the presleep event but they will also include a mixture of the diverse actions, scenes, and characters from that array. In contrast, dreams following emotionally involving presleep events without feeling expression will be similar to the presleep event in their affective quality *and* in their actions, scenes, and characters.

While not entirely novel cf. [12], the model of feeling expression and dream formation just described has not been systematically researched. The evidence

available is correlational, such as in a study by Kuiken and Powell [13]. They found that self-reported high levels of feeling expression during wakefulness were associated with dreams containing unfamiliar and noncontemporaneous dream elements. Their results were consistent with the hypothesis that a broad array of memories influenced the dreams of individuals who were expressive of feelings during wakefulness. Therefore, we conducted an experiment in which we manipulated the opportunity for feeling expression following presleep presentation of emotionally involving films. We hoped to determine whether individuals who were provided with the opportunity for feeling expression would subsequently report dreams whose actions, scenes, and characters were less closely related to the content of the films than the dreams of individuals who were not provided with the opportunity for feeling expression.

## METHOD

Participants were twelve undergraduate volunteers who spent three consecutive nights (two experimental) in the sleep laboratory. On each experimental night, participants viewed a different emotionally involving film. One experimental film was "Where Is Dead?" which concerns how a little girl and her family cope with her brother's sudden death. The second film, "Dreamspeaker," is about a boy with psychological problems who escapes from a mental hospital and is befriended by two Amerindian men. The film ends unhappily with the deaths of all main characters. The order of film presentation on the two experimental nights was counterbalanced.

Following each film, participants were instructed to choose the two film segments that seemed most important to them. They rated the feelings they experienced during each of these film segments using Izard's 30-item Differential Emotions Scale [14].

Six participants (three men and three women) assigned to the feeling expression condition were instructed to reflect on the film segment that felt most important to them and then on the film segment that felt next most important to them. The instructions were administered in face to face sessions lasting 20-25 minutes. The instructions were interactive, allowing participants to indicate their progress through each step. Depending upon the participant's response, the experimenter branched to an appropriate repetition or variation of the instructions. Roughly, the instructions included the following steps:

1. Visualize and reflect on that part of the film that feels most important.
2. Attend to the personal feelings that accompany reflection on that part of the film.
3. Allow words or images to "come from" the feeling until a phrase or image is found that captures "what that feeling was all about."

4. While retaining the feeling, find words or images to characterize any aspect of the feeling that seems novel or significant.

These instructions were adapted from those developed by Gendlin [5].

In the no feeling expression conditions, six participants (three men and three women) were instructed to reflect on their first and second self-selected film segments in a manner that de-emphasized feeling awareness and instead encouraged consideration of the films' aesthetic qualities. These instructions involved the following steps:

1. Visualize and reflect on that part of the film that feels important.
2. Reflect on the aesthetic quality of that part of the film.
3. Consider the authenticity of the acting, dialogue, and setting in that part of the film.
4. Consider the message the artist intended to convey and how that part of the film contributed to its overall impact.

(The complete instructions are available from the first author.)

Within an hour of these manipulations, participants were in bed in the sleep laboratory. One experimenter awakened participants after five minutes into the first REM period, eight minutes into the second, and with increments of five minutes into each subsequent REM period. A second experimenter, blind to conditions, obtained mentation reports according to a standard interview. After each interview, participants again completed the Differential Emotions Scale, this time for the single dream segment that they selected as feeling most important to them.

## RESULTS

To assess nocturnal reactivation of feelings about that presleep film, each participant's Differential Emotions Scale ratings of feelings experienced during the film were correlated with the Differential Emotions Scale ratings of feelings experienced during each dream reported on the night following the film. When more than one dream was recalled during a night, the average correlation for all dreams of the night was calculated. Thus, high average correlations indicate similar profiles for film and dream affect. We had expected that participants' affective responses to the film would be similar to their affective responses during dreaming and that this waking/dreaming continuity would be equally manifest in both conditions. This prediction depended upon the assumption that, independent of feeling expression, presleep feelings are reactivated during REM sleep.

However, a 2 x 2 analysis of variance, with condition (feeling expression/no feeling expression) as a between subjects factor and experimental night as a within subjects factor, revealed that, for participants' first self-selected film segment, average correlations between film affect and dream affect in the dreams of the

corresponding night were higher in the feeling expression condition ( $M = .29$ ) than in the no feeling expression condition ( $M = .11$ ),  $F(1,10) = 6.79$ ,  $p < .03$ . For participants' second self-selected film segment, average correlations were again higher in the feeling expression condition ( $M = .31$ ) than in the no feeling expression condition ( $M = .10$ ),  $F(1,10) = 22.88$ ,  $p < .01$ . These differences suggest that feeling expression facilitates the reactivation of presleep feelings during REM sleep.

To determine whether the feeling expression instructions may have merely sensitized participants to affective aspects of their dreams, we also assessed whether explicit descriptions of affective states (e.g., "I felt sad") or affective actions (e.g., "I was crying") were more frequent in dream reports from the feeling expression condition than in those from the no feeling expression condition. A judge's count of the frequency of these explicit affective descriptions, divided by the number of actions in the dream narrative to correct for dream length, disconfirmed this possibility. In fact, the frequency of explicit affective descriptions tended to be higher in the no feeling expression condition ( $M = .14$ ) than in the feeling expression condition ( $M = .06$ ), although this difference was not statistically significant. This pattern is inconsistent with what might be expected if the enhanced incorporation of film affect into the dreams of participants in the feeling expression condition had been due to implicit experimenter demands to attend to affective qualities of dream content.

To assess the incorporation of narrative elements (actions, scenes, and characters) from the presleep film, we used a scheme for analyzing narrative structure that is an elaboration of the story grammars familiar in contemporary cognitive psychology cf. [15]. Our analytic scheme isolates attributes of 1) actions (e.g., grasping action type, affiliation goal type, etc.), 2) scenes (e.g., man-made environments, presence of apertures, etc.), and 3) characters (e.g., identifiable by professional role; identifiable by personal association, etc.). In its present use, a judge first scored the presence or absence of each of these three types of narrative elements in each participant's self-selected film segment. Then the judge examined each participant's self-selected dream segments using the same criteria. An incorporation was defined as the presence of the same narrative element (e.g., a grasping action, a man-made environment, a character identifiable by professional role) in a participant's film segment *and* in his/her dream segment. The number of incorporations divided by the number of opportunities for incorporation (e.g., number of scene attributes divided by the total number of scenes) defined each dependent variable.

The results of this analysis were consistent with our hypothesis for two of the three types of narrative elements. That is, for actions and scenes but not for characters, participants in the feeling expression condition were *less* likely to incorporate film narrative elements into dreams of the corresponding night than were participants in the no feeling expression condition. Specifically, for the first self-selected film segment, feeling expression participants incorporated fewer

film action attributes per action unit ( $M = 1.76$ ) than did the no feeling expression participants ( $M = 2.85$ ),  $F(1,10) = 13.18, p < .01$ . For the second self-selected film segment, again feeling expression participants incorporated film action attributes less frequently ( $M = 1.82$ ) than did the no feeling expression participants ( $M = 2.88$ ),  $F(1,10) = 9.37, p < .02$ .

Similar trends were obtained for the incorporation of scene attributes. For the first self-selected film segment, there was a tendency for participants in the feeling expression condition to incorporate fewer film scene attributes per scene unit ( $M = 4.41$ ) than did participants in the no feeling expression condition ( $M = 5.42$ ),  $F(1,10) = 3.47, p < .10$ . Similarly, for the second self-selected film segment, feeling expression participants tended to incorporate scene attributes less frequently ( $M = 4.73$ ) than did the no feeling expression participants ( $M = 5.37$ ),  $F(1,10) = 2.08, p < .18$ .

There were no differences between conditions when the number of character attributes per character were considered.

In summary, the results for action attributes, and perhaps scene attributes, were consistent with the prediction that feeling expression would prompt dreams in which the narrative elements are relatively unlike those of presleep events.

## Secondary Analyses

The analysis of affective similarity indicated that presleep feeling expression prompted reactivation of presleep feelings during subsequent dreaming. This unexpected result suggested that dreams following feeling expression were more affectively self-referential, i.e., reflective of personal feelings. Perhaps they were self-referential in other ways as well. To explore this possibility, the analysis of dream narratives was extended to assess the frequency of narrative units in which the dreamer was the actor. In our scheme for analyzing narrative structure, a narrative unit is defined as either a simple action (e.g., "I walked over to my desk") or an integrated sequence of simple actions designed to attain a common goal (e.g., "I walked over to my desk, picked up my pen, and began to write a letter"). For each dream, we counted the number of narrative units in which the dreamer was the actor and the number of narrative units in which another character was the actor.

A  $2 \times 2$  factorial analysis of variance with feeling expression condition as a between subjects factor and character type (dreamer/all other characters) as a within subjects factor revealed a significant interaction between condition and character type,  $F(1,10) = 6.64, p < .03$ . Specifically, in the feeling expression condition, the dreamer was actor in more narrative units ( $M = 4.52$ ) than in the no feeling expression condition ( $M = 1.83$ ), while the corresponding difference was smaller for the combined actions of all other dream characters ( $M = 3.77$  vs.  $M = 2.80$ ).

Since the overall number of narrative units per dream was greater in the feeling expression conditions ( $M = 4.15$ ) than in the no feeling expression condition ( $M = 2.32$ ),  $F(1,10) = 8.95$ ,  $p < .01$ , we also examined the level of dreamer self-reference by assessing the *proportion* of all narrative units having only the dreamer as actor. This proportion was greater in the feeling expression condition ( $M = .59$ ) than in the no feeling expression condition ( $M = .47$ ),  $F(1,10) = 5.38$ ,  $p < .05$ . In sum, these analyses indicated more self-reference in dreams from the feeling expression condition than in dreams from the no feeling expression condition.

The preceding effect was not simply attributable to greater elaboration of dreamer actions within dreams that followed feeling expression. The number of simple actions per narrative unit was no different in the feeling expression condition than in the no feeling expression condition. This was so for the figure of the dreamer ( $M = 1.57$  vs.  $M = 1.32$ ) and for other characters ( $M = 1.40$  vs.  $1.63$ ). These results are inconsistent with what might be expected if implicit experimenter demands in the feeling expression condition merely prompted more elaborate and detailed descriptions of dreamer actions.

## DISCUSSION

In this study, presleep expression of feelings about the films frequently induced *similar* feelings in subsequent dreams. Also, as predicted, presleep expression of feelings about the films induced relatively *dissimilar* dream actions or scenes. In the feeling expression condition, the fact that dreams included similar feelings and dissimilar action and scene attributes supports the notion that 1) feeling expression precipitated reactivation of presleep feelings during REM sleep, 2) such reactivation of presleep feelings implicitly activated numerous narratively distinct but affectively similar memories, and 3) the fusion and juxtaposition of narrative elements from that array of memories produced dreams that were discontinuous with the actions and scenes from the presleep film. In contrast, in the no feeling expression condition, fewer narratively distinct but affectively similar memories were activated during sleep, resulting in dreams that more directly reflected actions and scenes from the presleep films. These findings conceptually replicate results of a study by Kuiken and Powell [13] in which trait measures of feeling impression were associated with dreams that were discontinuous with the person's immediate presleep experience.

To clarify the processes by which feeling expression influences dream formation, it is useful to consider available evidence that, during wakefulness, specific affective states facilitate retrieval of affectively similar memories only when the to-be-remembered material is self-referenced, i.e., only when people have been asked to consider how descriptive the material is of themselves [16]. In other words, *affective self-reference* (rather than affective state *per se*) may be critical in facilitating retrieval of affectively similar memories [17]. Our extension of this

reasoning is that presleep feeling expression resulted in the reactivation of affective self-referential processes (rather than affective states *per se*) during REM sleep, prompting the implicit activation of numerous affectively similar memories. Activation of these distinct but affectively similar memories, in turn, induced dreams whose actions and scenes were unlike those in the films.

Secondary analyses support the hypothesized role of affective self-reference. For participants in the feeling expression condition, feelings about the presleep film were reactivated during dreaming, *and* these dreamers were more involved as actors in their dreams than were dreamers in the no feeling expression condition. Thus, reactivated affect *and* increased self-referential activity, i.e., affective self-reference, were manifest in dreams following feeling expression, prompting implicit retrieval of numerous affectively similar memories and producing dreams that less directly reflected narrative elements of the presleep films.

The preceding account is consistent with the present data but not unequivocally demanded by them. It is also possible that the enhanced incorporation of affect in the feeling expression condition and the enhanced incorporation of action and scene attributes in the no feeling expression condition simply indicate those aspects of the presleep films upon which participants were asked to reflect in greater depth. The feeling expression instructions explicitly directed participants to attend to and conceptualize the affective qualities of the films. The no feeling expression instructions unwittingly may have directed them to attend to and conceptualize narrative elements of the films, e.g., film action and plot.

The simplest form of this alternative explanation is that the instructions were implicit experimenter demands that participants *report* similar affect in the feeling expression condition and similar scenes and actions in the no feeling expression condition—independently of actual differences in their dream experiences. A similar alternative is that the actual incorporation of presleep events into dreams depended only upon which aspects of the presleep films were made salient by the instructions in the two conditions. Although these alternatives cannot be completely discounted, neither can account for the overall pattern of our results.

Specifically, although the feeling expression instructions explicitly encouraged attention toward feelings about the films, there was no evidence that dreams from the feeling expression condition more frequently included explicit descriptions of affect than dreams from the no feeling expression condition. Also, although the no feeling expression instructions implicitly encouraged attention to actions and plot in the films, there was no evidence that dreams from the no feeling expression condition provided more elaborate action descriptions than dreams from the feeling expression condition. In fact, dream actions, especially those of the dreamer, were more frequent in dreams from the feeling expression condition than in dreams from the no feeling expression condition. This finding, while not predictable from either the experimenter demand or the simple attentional explanation, is consistent with the hypothesis that presleep feeling expression facilitated affective self-reference during dream formation.



In sum, the hypothesis that the reactivation of affective self-referential processes during REM sleep prompts recall of affectively similar memories provides an explanation for the entire pattern of results obtained in the present study. In particular, our data indicate that the reactivation of affective self-referential processes during dreaming is especially evident in those dreams that follow presleep feeling expression. Also, the affective self-referential processes in dreams following feeling expression may have a "depth" that involves an array of distinct but affectively similar personal memories. Perhaps the perception of that "depth"—in dreams that follow feeling expression—is what enriches our self-perceptions when we reflect on our dreams.

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