1997

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Yolas, Ibolya; Pelkey, Melissa; and Porter, Tiffany (1997) "Effects of levels of pleasantness and vividness on mood and recall," Modern Psychological Studies: Vol. 5 : No. 2 , Article 4.
Available at: https://scholar.utc.edu/mps/vol5/iss2/4
Effect of Levels of Pleasantness and Vividness on Mood and Recall

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Undergraduate university students (N=118) participated in the experiment examining the effects of pleasantness level and vividness level on mood and recall. A pleasant and an unpleasant story were manipulated to construct the subdued and vivid version of the story. Subjects were randomly assigned to one of the four experimental conditions: (a) pleasant-subdued, (b) pleasant-vivid, (c) unpleasant-subdued or (d) unpleasant-vivid. A mood scale was administered before and after the presentation of the text. An additional test was used to measure recall. The results indicated significant main effect for level of vividness on mood $F(1,111) = 5.58, p < .05$. Mood was found to be a significant predictor variable of recall $R = .25, R^2 = .066, F(1,111) = 7.66$. These findings might be applicable to any area concerned with mood alteration.

Past research studies have been conducted concerning story content manipulation and its effects on recall, and the relationships between subjects' mood and recall. Several experiments have concluded that minute changes in the text may greatly improve recognition and recall. This literature review served as a basis for our research. The following experiments displayed significant results concerning how story content affects recall and, in some cases, how mood plays a role in recall.

Text Surface Structure

In many cases, manipulating the text slightly can produce significant results. Young and Wogalter (1990) suggested that by simply increasing the noticeability of the hazardous warning labels in dangerous products that memory and comprehension would greatly increase. Two separate experiments were conducted using an instruction manual for a gas-powered electric generator and a natural gas oven. The instruction manual was manipulated in four ways: (a) using large or (b) highlighted text or (c) verbal warning messages that were combined with a pictorial. The remaining manual (d) was kept unchanged from the original text. The results showed that those participants who received the larger text with pictorials better comprehended and recalled the verbal warning messages.

Text Content and Subjects' Internal State

Langer, Keenan and Cumbo (1992) were interested in determining whether or not story content affects recall. They distributed two versions of a story to sixty-nine psychology students which described a small town in different contexts. The first version was described as the route version, representing the town as perceived by a motorist driving through it.

The second version, referred to as the survey version, displayed the town in spatial terms. Both versions were similar in content, but the route version gave a more specific structure. In this version, the participants developed a mental image of the depicted town which contained a precise sequence. The subjects were placed in one of three conditions: (a) some were allowed access to a map, (b) some were allowed to read only a few sentences of the description (c) while others were permitted to read the entire passage. The sentence feedback had been proven exceptional for the “route version” as opposed to the survey version.

Understanding the influence of mood on memory is essential. It is a central topic in theories of the relation between affect and cognition. Recent studies have questioned
mood-dependent memory through the use of various experimental methods and designs. Many experimenters followed Bower’s theory of recall congruency effect. This effect stated that “persons show preferential recall for material that is of the same effective tone as their current mood” (Goodwin & Sher, 1993). Salovey and Singer (1989) also concluded that in many studies positive affect induction has promoted the recall of positive toned cognition, and vice versa. This phenomenon was found true in an experiment conducted by Eich, Macaulay and Ryan (1994) concerning mood dependent memory for events of the personal past. Their subjects were asked to recall specific episodes from their past that a specific object called to mind. The findings suggest, that since it is necessary to engage in internal mental processes, the recalled material will be congruent.

In opposition to Bower’s theory of recall congruence, Parrott and Sabini (1990) conducted two field quasi-experimental studies on mood congruent recall. They found that memory recall tended to be incongruent with the subject’s mood. Parrott and Sabini explained their findings by a theory called mood regulation. They proposed that people try to repair their moods, especially when negative, by imagining contrasting events. In this study, subjects with more negative affect recalled memories that were more positive.

Many experiments also used word lists as a source of recall. In most cases, these words were either positively or negatively connotated. Lewis and Williams (1989) investigated mood congruent vs. mood state dependent learning. They relied primarily on two lists of effectively assessed words: (a) one positive and (b) one negative. For example, the word “smiled” could be viewed as positive, whereas “tragedy” could have a negative connotation. Each participant was then asked to recall words from both lists, either in a positive or negative induced mood. Their findings suggested that subjects would learn positively assessed words in a positive mood, and vice-versa.

Correlating with past research trends, Zupan, Hammen and Jaenicke (1987) had suggested that participants remember adjectives judged to be self-descriptive. It is most important to note that positive and negative adjectives are differently recalled by depressed and non-depressed individuals. The participants were asked to recall words of a negative and/or positive connotation. As they expected, depressed individuals recalled significantly more negative words than non-depressed individuals.

The current study aimed to determine whether minute changes in text content would have any effect on participants’ mood and recall abilities. Our manipulation of the text incorporated level of pleasantness (pleasant vs. unpleasant) and level of vividness (vivid vs. subdued). The experiment compared measures of the participants’ mood before and after reading the story in order to determine whether the content of the story had any effect on mood. The results of this study would be applicable to any field in which the ability to recall text is an important factor. An example would be in the area of testing, where the consideration of the effect of text content on mood and recall could help reduce bias.

**Statement of purpose**

This experimental study is intended to combine and expand on the past research of Zupan, Hammen and Jaenicke (1987) and Lewis and Williams (1989) as previously cited, in order to determine the effects of pleasantness level (pleasant vs. unpleasant) and vividness level (subdued vs. vivid) on mood and recall of a story content. Zupan et al. as well as, Lewis and Williams, determined that mood is associated with recall. Thus, the main theoretical question in this study focuses on
whether the content of the story presented, influences subjects' mood and recall abilities.

Hypotheses

The main purpose of this research was to examine how well college students can recall different types of stories. The stories varied in their level of pleasantness and vividness. Furthermore it was our goal to determine whether these factors (level of pleasantness, level of vividness) could effect the subjects' mood.

The major empirical questions examined in this study were the following: (a) Subjects of the pleasant conditions will score significantly higher on the recall test than those in the unpleasant conditions, and (b) subjects of the vivid conditions will score significantly higher on the recall test than those in the subdued conditions. Further, we hypothesized that (c) there is a significant two-way interaction between level of pleasantness and level of vividness on recall; (d) the level of pleasantness in the story content will have a significant effect on mood, (e) the level of vividness in the story content will have a significant effect on mood, and (f) there is a significant two-way interaction between level of pleasantness and level of vividness on mood.

Participants

The participant were 118 undergraduate students (32 males, 86 females) enrolled in a variety of Psychology courses. They were encouraged to participate in the experiment by assurances of feedback about psychological measures relevant to their course. They were told that their participation was voluntary and that withdrawal and/or nonparticipation carried no penalty. The racial background of the participants differed: 9 (8%) were Asian, 25 (21%) were Hispanic, 16 (14%) were African American, 50 (42%) were White Non-Hispanic, 6 (5%) regarded themselves as Other, and 12 (10%) did not answer the question. Their age ranged from 18 to 52 years old. Participants were randomly assigned to each of the four experimental conditions (i.e. pleasant-subdued, pleasant-vivid, unpleasant-subdued, unpleasant-vivid).

Experimental Design and Overview

The experiment was designed with four conditions. The four conditions were: (a) pleasant-subdued, (b) pleasant-vivid, (c) unpleasant-subdued, (d) unpleasant-vivid. Each person was randomly given one of the four versions of the story.

The independent variables in this experiment were level of pleasantness and level of vividness in story content. These variables were operationally defined as follows: The level of pleasantness was defined as story content considered enjoyable. This was described as a story in which the majority of the verbs and adjectives were of a pleasant nature, and where the story ended with a positive outcome. The text was selected from a book titled: "Black Elk Speaks" written by John G. Neihardt. A chapter titled: "The First Cure" was elected to satisfy the requirement of the pleasant story. Not only the context, but the writing style itself enriched the legend, and helped to depict more accurately the young boy who finds satisfaction by curing a child from a serious illness.

It was the Moon of Shedding Ponies (May), when we had the [greatly honored] heyoka ceremony. One day in the Moon of Fatness (June), when everything was
blooming [in millions of color], I invited One Side to come over and feast with me. I had been [faithfully] thinking constantly about the four-rayed herb that I had now seen twice - the first time in the great vision when I was nine years old, and the second time when I was lamenting on the hill. I knew that I must have this [vital] herb for curing, and I thought I could recognize that [same] place where I had seen it growing that night when I lamented.¹ (p. 196)

The level of unpleasantness was defined as a story with a negative outcome. This legend was selected from the same source as the pleasant version, which permitted easier contrast. The chapter was titled "Early Boyhood - Fire Thunder Speaks". It contained a detailed description of a brutal attack, between soldiers and Indians.

Dead men and horses and wounded Indians were scattered all the way up the [big] hill, and their blood was frozen, for a [vicious] storm had come up and it was [extremely] cold and getting colder all the time. We left all the dead lying there, for the ground was [completely frozen], and we picked up our wounded and headed back; but we lost most of them before we reached our camp at the [great] mouth of Peno.² (p. 13)

The level of vividness was defined as adding, and/or changing words in order to create a more visual version of the story. For example, the word "ferocious" was added in the appropriate sentence in order to intensify the content. All four versions of the text were selected as a result of extended pilot studies.

A pilot study was conducted using 48 participants’ ratings of the stories. The subjects read one version of the story and were asked to rate vividness level and pleasantness level on a 10 point scale. The means for level of pleasantness ratings on the pleasant story was $M = 8.39$ and for the unpleasant version of the story $M = 2.99$. Mean scores for level of vividness also indicated differences, for the subdued version $M = 6.83$, and for the vivid version $M = 8.20$.

The dependent variables were: (a) the participants’ mood change and (b) test scores on the recall test. Mood, as a dependent variable was defined as the subjects’ mood state before and after reading the story. The participants’ mood was determined by their responses to the adapted mood scale (See Appendix A and B). Mood Scale I (Appendix A) was used to determine the subjects’ mood.

¹ Adapted from Black Elk Speaks by John G. Neihardt by permission of the University of Nebraska Press. Copyright 1932, 1959, 1972, by John G. Neihardt. Copyright © 1961 by John G. Neihardt trust.

before reading the text, and Mood Scale II (Appendix B) measured mood after reading
the story. This scale was adapted from the Structural Interview Guide for the Hamilton
Depression Rating Scale - Seasonal Affective Disorder by Norman Rosenthal, MD. (1993).
Reliability measures for this scale were not available. A sample question from the mood
scale was: “I have been feeling guilty or like a failure”. Responses from both scales were
recorded, and compared to find out whether there were any changes.

The second dependent variable was recall. Recall was operationally defined as the score on the questionnaire. It measured the ability to remember specific aspects of the story content when tested. A different questionnaire was developed for the two types of stories, one for the pleasant story (Appendix C), and one for the unpleasant story (Appendix D). Both questionnaires had the same number of items, and the task was the same in both versions: trying to recall the specifics of the story. Careful attention was paid in the process of developing the questionnaires to make the two versions equivalent.

Description of Stories

Two short chapters from the book “Black Elk Speaks” by John G. Neihardt were used. One titled “Early Boyhood” which served as the basis for the unpleasant story, and the other “The First Cure” was used for the pleasant story. The text was selected predominantly on the final outcome, whether the story had a pleasant or unpleasant ending. In addition, the pleasant story contained predominantly positive adjectives and verbs, while the unpleasant story contained mostly verbs and adjectives of a negative nature.

Both selection of pleasant and unpleasant text were further manipulated to create a vivid and subdued version. In order to create the subdued version of the text, some words were changed to be more neutral, while others were eliminated. The vivid version of both stories was created by changing some words in order to increase the visual intensity of the text. Here is an illustration of how we created the subdued version:

3  I looked .towards the west,
and yonder at a certain
spot beside the creek were
crows and magpies,
chicken hawks and . . .
eagles circling around and
around.3 (p. 197)

The following is an example of the vivid version of the same passage above:

I [suddenly] looked
down towards the
west, and yonder at an
[inescapable dark
grassy] spot beside the
[gushing] creek were
[noisy] crows and
magpies, chicken
hawks and spotted
eagles circling [high],
around and around.4
(p. 197)

As the result of our manipulation, we accomplished creating four different stories: (a) pleasant-subdued (Appendix E), (b) pleasant-vivid (Appendix F), (c) unpleasant-subdued (Appendix G), and (d) unpleasant-vivid (Appendix H).

Procedures for Data-Gathering

The procedures for the experimental sessions were the following: (a) Researchers

3, 4 Adapted from Black Elk Speaks by John G.
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Neihardt. Copyright © 1961 by John G. Neihardt
trust.
distributed protocols randomly to ensure that each participant had an equal chance of being in either condition. Next, (b) participants received step-by-step instructions from the researchers. First, participants were told to read and sign the Informed Consent Form (Appendix I). This form provided information initially relevant for the participant to know in regards to the nature of the experiment. Following that (c) participants were instructed to fill out the Demographic Information Sheet (Appendix J), and upon completion, answer Mood Scale I. (Appendix A). At this point, participants were reminded that their responses would be kept confidential and would only be used for research purposes. Each participant had to read one versions of the stories (d), namely: pleasant story content, subdued version (Appendix E), pleasant story content, vivid version (Appendix F), unpleasant story content, subdued version (Appendix G), unpleasant story content, vivid version (Appendix H). The participants had 5 minutes to read the story. According to our calculations, this was an adequate amount of time to read and understand the story used in this experiment. Next, (e) participants were asked to complete Mood Scale II (Appendix B). The purpose of this second scale was to determine whether the story’s level of pleasantness and vividness had any effect on the participant’s mood. Upon completion, (f) participants were instructed to answer questions on the recall test. Finally, (g) researchers reiterated to the participants that their responses would be kept confidential and thanked them for their participation. A Feedback Sheet (Appendix K) was distributed to the subjects in order to debrief them about the study. In addition, the participants were given an opportunity to voice any questions they might have regarding the experiment.

Results

The major results of the experiment are summarized in Table 1 which lists separately for each of the four experimental conditions, the average scores for Mood Scale I and II, as well as the average scores for the Recall Test.

The first analysis of variance (ANOVA) was computed to investigate main and interaction effects between level of pleasantness and level of vividness for recall.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Condition</th>
<th>n</th>
<th>Mood I</th>
<th>Mood II</th>
<th>Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pleasant-Subdued</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>1.09</td>
<td></td>
<td>1.11</td>
<td>9.59</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>.85</td>
<td></td>
<td>.92</td>
<td>3.72</td>
<td></td>
</tr>
<tr>
<td>Pleasant-Vivid</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>.78</td>
<td></td>
<td>.72</td>
<td>8.41</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>.55</td>
<td></td>
<td>.54</td>
<td>4.17</td>
<td></td>
</tr>
<tr>
<td>Unpleasant-Subdued</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>1.02</td>
<td></td>
<td>.92</td>
<td>7.97</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>.61</td>
<td></td>
<td>.56</td>
<td>3.91</td>
<td></td>
</tr>
<tr>
<td>Unpleasant-Vivid</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>.78</td>
<td></td>
<td>.73</td>
<td>7.96</td>
<td></td>
</tr>
</tbody>
</table>

Table 1
Descriptive Statistics for Recall and Mood Measures for each Conditions
Note. The lower the mood scale value, the more positive the subjects’ mood state.

The analysis failed to reach significance. Results are shown in Table 2.

### Analysis of Variance for Recall

<table>
<thead>
<tr>
<th>Variable</th>
<th>df</th>
<th>Recall</th>
<th>Mood II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Pleasantness (P)</td>
<td>1</td>
<td>1.93</td>
<td>.50</td>
</tr>
<tr>
<td>Level of Vividness (V)</td>
<td>1</td>
<td>.63</td>
<td>5.58*</td>
</tr>
<tr>
<td>P X V</td>
<td>1</td>
<td>.61</td>
<td>.66</td>
</tr>
<tr>
<td>Error</td>
<td>118</td>
<td>(16.25)</td>
<td>(.42)</td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent mean square errors.

* *p < .05.

A second ANOVA was performed to investigate effects for Mood Scale II. This analysis yielded significant main effect for level of vividness (F (1,111) = 5.58, p < .05) but revealed no significant interaction. The results of this test are indicated also in Table 2. Further, post hoc comparison tests were performed to compare individual mean values between the four experimental conditions. There were significant differences between pleasant-subdued and pleasant-vivid conditions as well as pleasant-subdued and unpleasant-vivid conditions.

A regressional analysis was also performed and indicated that mood was a significant predictor variable of recall R=.25, R Squared=.066, F (1,111)=7.86. The results are displayed in Figure 1.

This experiment was unique because it addressed the issues of pleasantness, vividness, mood and recall all within a single study. It has yielded an interesting significant result between level of vividness in a story and subject’s mood. This result could find application in areas where manipulation of mood is an issue. Some potential fields of relevance
might include treatment of emotional trauma, geriatric mental health, entertainment and advertising strategies.

Note: The lower the mood scale value, the more positive the subjects’ mood state.

Discussion

The goal of this experimental research was to determine how level of pleasantness (pleasant vs. unpleasant) and level of vividness (vivid vs. subdued) influenced recall and mood. One out of the six hypotheses was confirmed based on the collected data. In the following brief discussion we will attempt to interpret the findings, and the limitations of the experiment.

As was hypothesized, the level of vividness in the story content had a significant effect on mood. A vivid version of a story may have helped readers to envision the content more easily. When a story is vivid, it becomes more descriptive not only by expanding on the quantity of words, but by employing them in such a way as to capture the readers’ attention. Our hypotheses stating that the level of pleasantness in the story content will affect mood, and that the two-way interaction between level of pleasantness and level of vividness will affect mood significantly, was not confirmed. It was somewhat surprising to find that only the level of vividness affected mood. None of our hypotheses concerning recall were confirmed, although we did find that mood is a good predictor variable of recall. This is consistent with previous research findings.

The failure of five out of the six hypotheses might be attributed to several factors. Due to the experiment’s strict time constraints the length of the story was necessarily abbreviated. In our opinion, increasing the length of the story and allowing participants a more prolonged exposure to the pleasant/unpleasant quality of the text could evoke additional significant results. Future studies might take this factor into consideration.

References


