

The Effects of Art Experience and the Presentation Context of Paintings on Levels of Interest, Pleasure, and Monotony

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[Abstract of a Master's Thesis]

This study analyzed the reactions of 100 novice and knowledgeable museum visitors to 16 painting facsimiles that were displayed in different ways. The 16 facsimiles comprised: (1) four styles (Baroque, Romantic, Impressionistic, Modern); and four contents (action, landscape, still life, portrait).

Method

Approximately one-third of the participants reacted to the facsimiles when viewed in one of the following ways:

- (a) *grouped by content*, i.e., action, landscape, still life and portrait grouped together and displayed in separate rows of four;
- (b) *grouped by style*, i.e., Baroque, Romantic, Impressionist, and Modern grouped together and displayed in separate rows of four;
- (c) *grouped randomly*, i.e., randomly intermixed and displayed in separate rows of four.

Reactions were measured on five 5-point rating scales: simple-complex, displeasing-pleasing, uninteresting-interesting, relaxed-tense and drowsy-alert.

Results

A repeated measures analysis of variance for each scale found that neither prior knowledge nor presentation context of paintings had significant main effects on levels of interest, pleasure, or monotony.

However, on all five scales there was a main effect for type of painting and a significant interaction of type of painting and presentation context of the paintings. There was also, a main effect for era of painting on all scales except for interest.

The results suggest that the presentation context, and the type and era of the painting make a difference in the way a particular painting is perceived. Reactions to action paintings tended to be more powerful, whereas reactions to landscape paintings tended to be more satisfying. Reactions tended to be more powerful when paintings were displayed with other paintings of the same content. Also, reactions to Impressionist (18th century) paintings tended to be most satisfying.

Three Experiments About the Effects of Various Formatting Techniques on Information Recall

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Introduction

Effective exhibit labeling is one of the factors that determines how educational an exhibit will be (Serrell, 1983; Bitgood 1989; Bitgood 1990; Wolf & Smith, 1993). Labels are necessary to interpret objects, to focus attention on important characteristics of the exhibit, to instruct, and to correct visitor misconceptions. The way a label is presented may affect readability, visibility, attraction, holding power, the ability to focus attention, and how visitors are likely to use or misuse labels (Screven, 1992).

A label's purpose should be well thought out before selecting among the available formats. Label format refers to the physical layout of the text, for example paragraphing or chunking of information, justification of text, bulleting items, information maps etc. One of the goals of this paper was to systematically investigate how label formatting can affect a person's ability to recall information. Text was presented in three formats: paragraph format, bulleted text format and information maps.

Screven (1992) describes paragraphing or chunking of information as the grouping of like information together in nested paragraphs. The same amount of information presented in smaller chunks or paragraphs can hold visitor attention longer (Bitgood, 1989). Chunking text also expands the amount of information a visitor can remember (Screven, 1992).

Information can also be presented by bulleting the main points. For example, the use of a filled-in circle next to indented text makes it easier for visitors to find information (Bitgood, 1990, 1993b). Bitgood (1993a) also recommends using an outline format rather than placing text in paragraphs. Visitors are more likely to read text in outline format.

Information mapping is another way, similar to the outline format, to motivate visitors to read text. An information map "is a collection of units of information called information blocks. Blocks are functionally labeled and contain only certain kinds of information" (Horn, 1974). The blocks of information are arranged in a standard sequence (Horn, 1974; Fields, 1981). All the labels in an exhibit can be presented in a similar sequence, for example: the heading first, followed by an introduction, and then details about specific pieces in the exhibit. This standard sequence of presentation allows the visitor to find information easily with minimal effort. Visual cues can be indentations, flow diagrams, boxed enclosures, type styles, colors, etc (Screven, 1986).

Empirical findings regarding the format of labeling is limited. Kool (1985) tested two different label formats on visitor attention. One format presented text in a "mapped" or outlined format and the second format presented information as paragraphed text. He found a significantly greater percentage of visitors who stopped when the "mapped" or outlined format was displayed (31% for "mapped" and 12% for paragraphed text).

In a study by Burrell (as cited in Fields, 1981), information mapping was used on students. Some of the students' scores were above the national SAT mean and some were below the national SAT mean. Students who used information-mapped material showed significantly greater overall achievement than students who did not use this type of material.

In addition to label format, we also examined the role of color contrast and point size which affects label legibility. Only one study could be found that examined factors that effect museum labels legibility (Wolf & Smith, 1993). Wolf and Smith looked at size of type, contrast between letters and background, and typeface. They found that contrast is one of the most important elements determining the legibility of labels. They reported that the best contrast is black letters on a white background. Wolf and Smith do provide empirical data on the legibility of labels, however data is confined to within subjects ratings of label types without looking at information recall. They did not investigate how memory interplays with these factors.

Data on effectiveness of color combinations is limited. Clearly, labels with strong contrast between print and background are more effective than labels with poor contrast. However, many museum curators focus on trying to find the most artistically pleasing combinations of colors, ignoring the fact that some of these combinations are barely legible. The most common recommendation has been to use black ink on white or buff-colored background. This combination offers the highest contrast (Williams, 1960; Weiner, 1963; Borun & Miller, 1980; Serrell, 1983).

Point size is assumed to be important because it influences the ease with which text can be read by visitors. Williams (1960) suggests a 24-point type be used as a minimum under good lighting conditions and proper background contrast. Weiner (1963) takes this one step farther, recommending that 24 to 30 point type be used for general text and 48 to 60 point type for main text. Serrell (1983) lists letter size ("too small - tiny words crammed on a 3 x 5 card") as one of her eight "deadly sins" that are characteristic of unsuccessful labels. She described the optimal size of type as 18 to 24 points to be viewed from a distance of two feet or less. Bitgood (1989) suggests that letters must be large enough to be clearly read from where visitors stop to view objects. During a poster session, Bitgood, Patterson, Benefield, and Thompson (1986) manipulated the size of letters on posters

from 18 to 36 point. Observations showed that the use of larger type increased the percentage of visitors who read the posters, 66.7% to 83.3%. Bitgood and Patterson (1993) increased the size of the label headings from 24-to 48-point size and the text from 18 to 36 point. They found that the percentage of readers increased from 28.4% to 39.6% with the use of larger type. Large letters can be easily detected and are more salient. However, in the Predators Building at the Birmingham Zoo, Thompson (1988) observed 3060 visitors' reading behavior to signs with 18-point, 36-point, and 48-point type size. He found little difference among the three values of point size.

In an attempt to address the limited findings in format, contrast, and text size, the following studies (carried out during the course of one year) systematically examined different formatting techniques likely to be important in the recall of semantic knowledge. Experiment 1 focused on text formats (paragraph format, bulleted text format and information maps) administered to museum visitors. Experiment 2 attempted to replicate the findings of Wolf and Smith (1993) and examine information presented in different text formats. Experiment 3 looked at format again using different text (Eagles of North America and Thirteen Star Flag). However, in this study the three formats were presented in the same label passage at one time to determine which format people found easiest to recall information. This change was made since Experiment 2 found no differences for format. The research question related to these variables is which technique is easiest for information recall? In an attempt to answer this question, individuals were exposed to text samples and asked to write down the information they could recall.

Experiment 1

Method

Thirty visitors (20 males and 10 females) to the Fort Collins Museum participated. Each participant read text samples developed for future exhibits at the Fort Collins Museum; the labels used for this study were "Unser Leit- The Germans from Russia" and "La Gente - The Hispanic People of Northern Colorado." The independent variable manipulated was the type of text format (information presented in a paragraph format, a bulleted text format, and information maps). Participants were randomly assigned to read either label first; all participants read both labels, and each participant read both labels in the same format.

The following instructions were read to participants: "What you will be reading are potential labels for a future exhibit at the Fort Collins Museum. Please read the label once through as if you were in an exhibit. Read the label once through and then please write everything you can remember about the label. This is not a test of how well you can memorize the text. Please read the passage as if you were in an exhibit."

Recall answers were scored based on a three-point scale for completeness of response for each of the information items in their various formats. Full credit for an item was scored with a two (2) indicating an accurate report of one of the items from the passage defined as a written response that included the main idea of information item. A score of one (1) indicated partial recall of an item in a sentence and a zero (0) score was given for any of the items in which there was no recall. The total score depended upon the length of passage; all scores were converted to proportions for comparison.

Results

Recall scores were combined and converted to proportions, due to information of varying lengths, for "Unser Leit-The Germans from Russia" and "La Gente - The Hispanic People of Northern Colorado" labels. The mean scores were as follows: paragraph .23, bulleted text .35, and information map .30. The format of the text did significantly affect information recall [$F(2, 27) = 3.71, p = .05$].

The results of this study suggest that bulleted text and information maps are a better way to present information in an exhibit. Results of the ranking of formats revealed the following median ranks; Information 1, Bulleted 2, and Paragraph 3. A rating of '1' meant greater preference. A Friedman Repeated Measures Analysis of Variance on Ranks showed a significance difference between groups (Chi square = 14.5, 2 df, $p = .001$). A posttest comparison (Dunnnett) showed that both information maps and bulleted formats were rated higher than paragraph. Consistent with the earlier finding, participants preferred bulleted and information formats to paragraph.

Experiment 2

Method

One hundred ninety six students enrolled in Introductory Psychology, with approximately equal number of males and females in each condition participated. Each participant was randomly assigned to one of twelve cells in a 3 x 2 x 2 fully crossed experimental design. The independent variables to be manipulated were the type of text format (information presented in a paragraph format, a bulleted text format, and information maps), color contrast (gray text on light blue background and black text on white background) and type sizes (18 point Helvetica font and 24 point Helvetica font).

Participants read through an information sheet detailing the experiment and were asked if they had any questions after being read the instructions in Experiment 1. Participants then read one text sample. The text sample was presented to participants via a mock-up exhibit. The topic was the Hispanic peoples' contributions to the development of Northern

Colorado. The text used for this study was the modified Hispanic text from the Fort Collins Museum. The text sample was composed of nine sentences. After reading the text sample, participants wrote down all the information that they could recall. Next, participants rated the label they read on a 10-point Likert scale based on the following criteria: legibility, ease or tiring to read, aesthetic appeal, and overall label rating. A rating of 1 or 2 meant the label was "completely illegible," 5 or 6 if it was "readable," and 9 or 10 if the label was "very clear." At the end of the form, participants checked the appropriate boxes for basic demographic information.

Results

When using small font size, contrast level (color) had an effect on recall [$F(1, 195) = 4.2, p = .04, R^2 = .02$]. Overall label ratings for color were significant [$F(1, 195) = 21.264, p = .0001, R^2 = .10$] and legibility by color interaction was significant [$F(1, 195) = 132.332, p = .0001, R^2 = .17$]. Legibility was not correlated with typesize ($r = .0155, p = .829$). Legibility was very strongly related to contrast ($r = .4191, p = .0001$) and memory score ($r = .2781, p = .0001$).

Experiment 3

Method

Sixty students (15 males and 45 females) enrolled in Introductory Psychology participated. Each participant was randomly assigned to view either the "Eagles of North America" or the "Thirteen Star Flag" text first. Once again, the independent variable to be manipulated was the type of text format (information presented in a paragraph format, a bulleted text format, information maps).

Participants read through an information sheet detailing the experiment and were asked if they had any questions after being read the instructions for Experiment 1. Participants then read one text sample. The text sample was presented to participants via a mock-up exhibit. The labels were on "Eagles of North America" and the "Thirteen Star Flag". The three text formats were presented in the same label passage at one time to determine which format people found easiest to recall information. Information based on "Eagles of North America" or the "Thirteen Star Flag" were presented in six different conditions to control for confounds in ordering effects.

Reliability was determined by calculating the percentage of inter-rater agreement using the following formula: agreements divided by agreements plus disagreements, and multiplying by 100. Using the exact agreement method, an agreement was counted when two independent raters scored the same response for the same item of information. An inter-rater reliability score of 81% was obtained for Experiment 3.

Results

Since information of varying lengths were used, recall scores were combined and converted to proportions for the "Eagles of North America" text and the "Thirteen Star Flag" text. The mean scores were as follows: paragraph = .33, bulleted text = .35, and information map = .39. The format of the text did not significantly affect information recall [$F(2,118) = 1.78, ns$].

Conclusions

The findings of these studies suggest that the recall of information depends upon the contrast color used. The greater the contrast between text and background color the better the recall of information. This finding is similar to previous research and recommendations (Williams, 1960; Weiner, 1963; Borun & Miller, 1980; Serrell, 1983; Wolf & Smith, 1993).

The format of the text (paragraph, bulleted, and information map) and the size of the text (18-point and 24-point Helvetica) did not affect information recall except for Experiment 1 where a difference was found between formats. With regard to format, the literature implies that particular formats ease information gathering (Horn, 1974; Fields, 1981; Kool, 1985; Bitgood, 1993a). However, these findings/recommendations are based upon attracting power of a label not how well a person can recall the information. Increased attraction would be consistent with the format ranking results from Experiment 1. Participants preferred either of the other two formats tested over paragraph text. Results of Experiments 2 and 3 suggest that the format of a label does not affect the amount of information recalled. If museum staff persons want to encourage initial reading, they should use a format such as information mapping that has better attracting power (Kool, 1985; Fields, 1981).

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