

Communicability of the Emotional Connotation of Type

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The communicability of the emotional connotation of type was investigated in this study. Typographers, student instructional technologists, and naive readers rated 30 typefaces using a semantic differential scale. The results indicated that different typefaces arouse similar results in different subject groups, and that different subject groups agree on the emotional connotations of typefaces. The agreement of these results with previous studies suggests the use of typeface connotation as a variable in typeface selection.

Instructional technologists spend varying amounts of time ranging from a few hours to several months to a year or more designing an instructional product. At the last minute, a hasty decision is often made in the selection of a typeface and other typographical features for the print materials. Previous research, though, indicates that most typefaces are legible when set in acceptable line widths (Tinker, 1963). Macdonald-Ross and Waller (1975) have reviewed other legibility studies and concluded that many of the studies investigated problems that have a negligible effect on the act of reading. Based on Tinker's work, one can conclude that most common typefaces set in 10- or 11-point type with a 2- to 4-leading and a 19-pica line length are legible for mature readers. Hartley and Burnhill (1977) also concluded that a 10-point type with 2-point leading is a good all-purpose size.

Recent text design research has investigated the effects of headings on search and recall (Hartley & Trueman, 1983), typographical cues that facilitate comprehension (Frase & Schwartz, 1979; Shebilske & Rotondo, 1981), and reader preferences for text design (Hartley & Trueman, 1981). One additional and important area of text design research for the instructional technologist which can contribute to the selection of a typeface is the emotional connotation of typefaces.

Type selection decisions are typically made for reasons of legibility based on the results of numerous research studies. One part of the art of typography, however, is

the selection of a typeface to communicate an affective message. Harrison and Morris (1967) described four different affective functions of type. First, the typeface can reinforce the connotations of the message through the connotation of the typeface. Second, the typeface can introduce new and independent connotations to the message. Third, the typeface can be neutral or minimal in its connotation. Fourth, the type can have a connotation that conflicts with that of the message. Zachrisson (1965, p. 76) defined the emotional connotation of type or typeface congeniality as "a correspondence between content and visual form." Ovink (1938) defined congeniality as those properties of a typeface that arouse feelings within the individual. Dair (1967) stated that it is possible to communicate the emotional meaning of a word via typography so as to arouse an emotional response in the reader. Warde (1956) presented an opposing view in an essay that compared type to a crystal wine goblet suggesting the reader should not be aware of the typeface.

Several authors have ascribed "personality" characteristics to different typefaces. Secrest (1947) described Garamond type as graceful, elegant, and feminine. Zachrisson (1965, p. 36) described the sans serif letter as foreign and antagonistic while Albers (1963, p. 4) claimed the sans serif letters produced "poor word pictures." Each of these authors suggested that typographers ascribe an emotional connotation to various typefaces. The current study investigated the communication of typeface connotations.

A review of the literature revealed only six studies that have investigated the emotional connotations of type. The most recent study was published in 1979. Poffenberger and Franken (1923) completed one of the earliest studies investigating the emotional connotation of type by requiring subjects to rank 29 typefaces according to their appropriateness for advertising. Poffenberger and Franken concluded that judges were capable of reacting to the presence or absence of the appropriateness of a typeface. Davis and Smith (1933) attempted to improve on Poffenberger and Franken's study by controlling for legibility of the typefaces and the emotional content of the message.

Subjects were required to (a) select a typeface appropriate for each of 23 products, (b) select a typeface to express each of 24 feelings, (c) select a product from the list of 23 which each typeface could best represent, and (d) select a feeling tone from a list of 24 which each typeface could best represent. Davis and Smith reported no differences between males' and females' responses, and that extreme size, condensation, boldness, family style, and italics were the most forceful in expressing feeling tones. Kastl and Child (1968) attempted to determine the effect of variations in a typeface on the judgment of the emotional connotation of type. They varied (a) angular versus curved, (b) bold versus light, (c) simple versus ornate, and (d) serif versus sans serif. The results indicated that serif typefaces were perceived as forceful and vigorous, and sans serif faces as gentle and quaint. Kastl and Child's results were consistent with the previous studies indicating a trend toward identifiable emotional connotations of typefaces.

Brinton (1961) appears to have been the first to use the semantic differential to measure the emotional qualities of typefaces. Brinton concluded that there was a general agreement between professional typographers and laymen on the perceived emotional connotation of the typefaces. Tannenbaum, Jacobson, and Norris (1964) used four typefaces set in 24-point type, roman and italic inclination, and in upper and lower case letters to determine the degree of similarity between three groups of raters. Using a semantic differential scale, Tannenbaum et al. (1964) found a high degree of similarity between professional, semi-professional (students), and amateur typographers (naive subjects). They found that the professional typographers attributed more meaning to each typeface, and the semi-professionals attributed less meaning than the amateurs. The semi-professional group had the highest homogeneity (least variance). Tannenbaum et al. (1964) also found a lack of significant difference between serif and sans serif faces on the evaluative scale. Tinker (1963) also found a preference for serif typefaces which suggested the serif faces might be perceived as better. The results of Tannenbaum et al.

(1964) also indicated that italics were perceived as more active than the roman inclination and that one sans serif face was perceived as more potent than one of the two serif faces. They concluded that there was a substantial basis for the use of typography to transmit connotative messages. Benton (1979) investigated the connotative meaning of 10 display typefaces and concluded that lay subjects also subscribed different emotional connotations to typefaces.

These experiments have all used stimulus materials of a questionable nature. Poffenberger and Franken (1923) used the introduction to the Declaration of Independence with no control for type size. Davis and Smith (1933) used the familiar phrase, "Now is the time for all good men. . . ." The type sizes ranged from 12-point to 24-point resulting in various amounts of the message being presented. The first line was always in all upper case letters while the second line included both upper and lower case letters. Kastl and Child (1968), Tannenbaum et al. (1964), and Benton (1979) used letters of the alphabet in their experiments (e.g., ABC . . . abc . . . ?+!@ . . .). The use of words in the stimulus material added a confounding factor to the experiments. The use of the alphabet in sequential order does not represent the visual pattern created by the letters in running text (e.g., how often do the letters "bcde" occur together?). Thus, any effect created by the visual pattern of the letters is lacking. A second criticism of the prior experiments is the lack of an orderly criterion for selecting the typefaces that would allow for generalizations.

Type can vary according to the variables listed in Table 1. The first four dimensions in the table are characteristics of individual let-

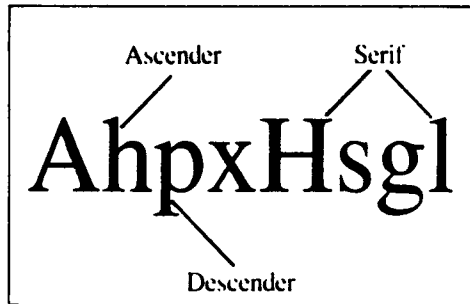
ters that influence the design of the total alphabet. These characteristics are used to distinguish between different typefaces. (Ascenders, descenders, and serifs are identified in Figure 1.) Stroke contrast is the difference between the thickness of the various lines of a letter (see Figure 2). Stress is defined by the orientation of the letter "o" (see Figure 3). The second four dimensions are common to the total alphabet of a specific typeface. The two inclinations (roman and italic), and the three weights (light, regular, and bold) are illustrated in Figure 4. (The roman inclination is noted with a lower case "r" while a roman typeface is indicated with an upper case "R.")

Craig (1971) has classified typefaces into five type families that include all of the typefaces that are variations of one serif design. An inherent quality of Craig's scheme is the grouping of type styles that vary in a similar manner. Figure 2 illustrates Craig's classification scheme. Craig's classification scheme, although historical in nature, groups type styles together that are similar in the first four variables of Table 1 (Craig, p. 31). For example, the Old Style family typefaces show little variation in stroke thickness, have an oblique stress, and are heavily bracketed (see Figure 2). The second family, Transitional, includes typefaces that have a great contrast between thick and thin strokes. With Craig's scheme it is possible to select one typeface that is representative of other typefaces in the same family. Thus, the stimulus material is reduced to five typefaces to represent the total population of normal text type allowing for generalization of results within a family. It should be noted that display faces such as Old English

TABLE 1
Dimensions of Type Variation

<i>Dimension</i>	<i>Dimension values</i>
Ascenders/descenders	Long, medium, short
Stroke contrast	No contrast, slight contrast, great contrast
Stress	Oblique, slightly oblique, vertical, none
Serif	Bracketed (2 forms), hairline, square, sans serif
Form	Upper case, lower case, small caps
Inclination	Italic, roman
Weight	Bold, demi-bold, regular, light, extra light
Width	Extended, regular, condensed

FIGURE 1
Parts of a Type Character



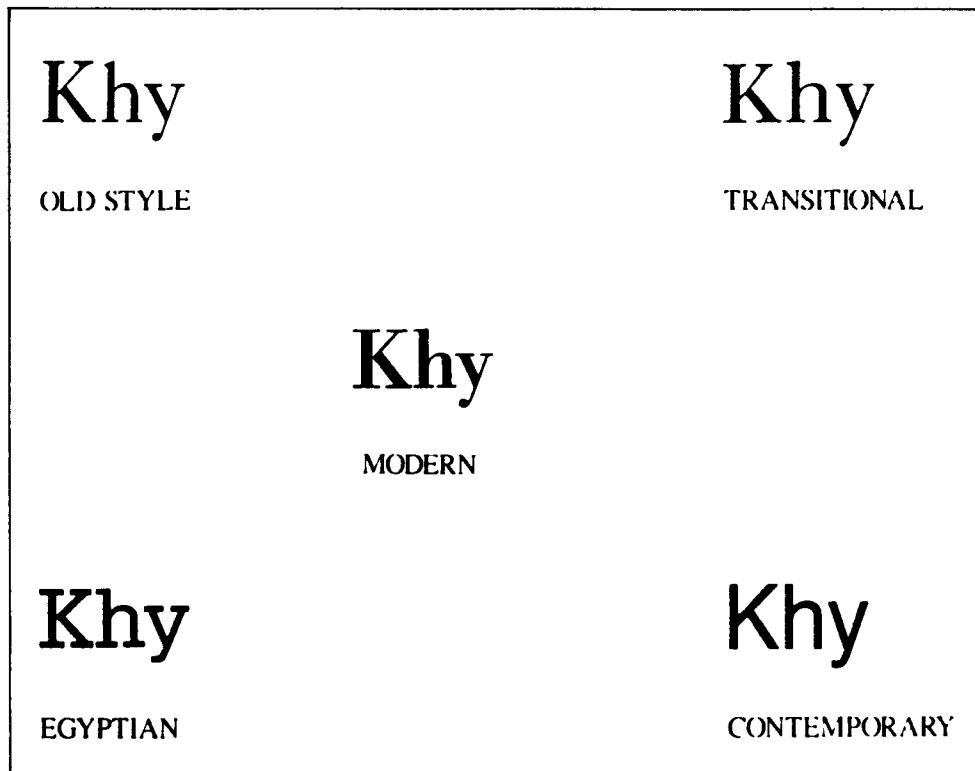
are not included in the category of normal text type.

One of the major problems with the previous studies has been the presentation format of the stimulus material. Two of the reviewed studies used sentences or parts of a sentence for the stimulus material. Two other studies used the alphabet that pre-

sented letter combinations (e.g., bcde) which do not occur in English. Wendt (1968) recommended a presentation format that was an approximation to English and free from emotional content. Six artificial languages that are different levels of approximation to the English language were developed by Weaver (1949) to resemble the language, but are free from meaning. A third order approximation consists of nonsensical "words" that are unlikely to communicate an uncontrolled message. At the same time, the words have the same visual structure as the English language and could be easily typed by a typist. A typical phrase might be "ere sasesuth wid oteren bo."

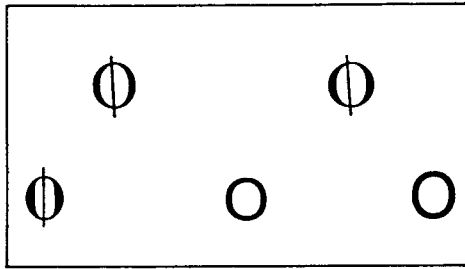
The purpose of the present study was to investigate the different emotional connotations aroused by typefaces in different groups of subjects, and to find whether these groups agree on the interpretation of

FIGURE 2
Craig's (1971) Classification Scheme



Note. From *Designing with Type: A Basic Course in Typography* (p. 30) by J. Craig, 1971, New York: Watson-Guptill Publications. Copyright 1971 by Watson-Guptill Publications. Adapted by permission.

FIGURE 3
Typeface Stress



Note. From *Designing with Type: A Basic Course in Typography* (p. 30) by J. Craig, 1971, New York: Watson-Guptill Publications. Copyright 1971 by Watson-Guptill Publications. Adapted by permission.

FIGURE 4
Typeface Variations

	roman	italic
Light	Khy	<i>Khy</i>
Regular	Khy	<i>Khy</i>
Bold	Khy	<i>Khy</i>

the emotional connotation of a typeface. This experiment was an exploratory study of the use of Craig's classification scheme and Weaver's artificial language to control the message content, and to provide a means for making generalizations when applying the research. Previous studies have used messages that have confounded the measurement of the typefaces' meanings. They have also failed to use a systematic typeface selection process and a categorization scheme that allow for generalization and application of the results. This lack of an orderly selection scheme reduces the possibility of applying the research during typeface selection by an instructional technologist.

Hypotheses

This study tested seven hypotheses. The first three hypotheses were based on the

articles written by various typographers ascribing different emotional connotations to typefaces (e.g., Secrest, 1947; Zachrisson, 1965); and the results of Tannenbaum et al. (1964). These three hypotheses were concerned with the differences between experts and nonexperts. The remaining hypotheses were based on the results of the various studies conducted on the emotional connotation of type. First, student instructional technologists and student typographers will be significantly more homogeneous in semantic differential judgments concerning affective meaning of typefaces than naive readers. Homogeneity will be measured by the range of scores. Second, student instructional technologists will show significantly more extreme judgments of the typefaces on the semantic differential than will naive subjects. Extreme judgments (in either direction from the midpoint of a scale) are interpreted as a measure of meaningfulness and stronger attribution of connotation. Third, student typographers will show significantly more extreme judgments of the typefaces on the semantic differential than will naive subjects. Fourth, all subjects will judge the italic form of a typeface to be significantly more active than the roman form as measured by the activity factor of the semantic differential. Fifth, all groups of subjects will judge the weight of a typeface designated as bold to be significantly more potent than the regular weight as measured by the potency factor of the semantic differential. Sixth, all groups of subjects will judge the sans serif typefaces to be significantly more positive than the sans serif typefaces as measured by the evaluative factor of the semantic differential.

METHOD

Subjects

Three subject groups were used in this study. The first group, 14 naive subjects, was composed of college and high school students who had no knowledge of lettering and typography. The second group, 14 student instructional technologists, included graduate students who had training in instructional message design. The third group, 14 student typographers, was com-

posed of college students who had training in typography.

Stimulus Materials

The type (the stimulus in this study) was varied across three dimensions selected from Table 1. First, the serif/sans serif dimension was varied according to the five families described by Craig (1971) (see Figure 2). Craig's classification scheme includes four different serif families and one sans serif family. Second, the typefaces were varied in weight—light, regular, bold. Third, the type was varied in inclination to include both roman and italic. The result was a 5-typeface x 3-weight x 2-inclinations matrix (see Table 2). Each typeface was set in 24-point type except for Baskerville Bold. This typeface was only available in 11-point metal type which was photographically enlarged to 24-point type. The typefaces selected to represent each family are identified in Table 2.

Sixty third order approximations to English were generated consisting of 25 characters and spaces (Weaver, 1949, pp. 42-44). Two of the stimulus messages were set in each typeface variation. The test booklets were printed by offset press on 8½- x 11-inch (22 x 28 cm) white paper. The first page of each booklet included the instructions and was followed by five stimulus pages that were used for warm-up and were not scored. The next 30 pages consisted of 30 typefaces and the semantic differential scale (25 bipolar pairs). Each booklet had one of the two, third-order approximation messages for each typeface. The stimulus, set in 24-point type (approximately ¼-inch), was printed in black ink at the top and centered

on the page. The bipolar adjectives were printed with a seven-point scale below the stimulus material. The booklets were assembled in a random order with the five warm-up pages always appearing first.

The semantic differential scale selected for the current study was used by Tannenbaum et al. (1964). It consisted of 25 bipolar pairs spread over seven factors with factor loadings over .55 (see Table 3) (H. K. Jacobson, personal communication, November 15, 1974). Tannenbaum et al. (1964) reported a similar scale was used by Brinton (1958).

Procedure

The stimulus material was presented in a group format to the naive and student instructional technologist groups. The test booklets were distributed to the subjects at the beginning of the untimed test period. The stimulus material was presented individually to the student typographers, as they were not available as a group.

Design

The resulting experimental design consisted of three groups, based on experience, rating five families of type that varied by three levels of weight and two levels of inclination. The design was a mixed analysis of variance with three between-subject dimensions and $5 \times 3 \times 2$ within-subject dimensions. The subjects rated 30 typefaces on seven semantic differential factors. The scores were calculated by determining the mean score for each factor as defined in Table 3 (see Table 3).

TABLE 2
Typefaces Selected for Stimulus Material

Type Families	Weight		
	<i>Bold</i>	<i>Regular</i>	<i>Light</i>
Old Style	Caslon	Caslon	Caslon
Transitional	Baskerville	Baskerville	Baskerville
Modern	Bodoni	Bodoni	Bodoni
Egyptian	Stymie	Stymie	Stymie
Contemporary	Univers	Univers	Univers

TABLE 3
Semantic Differential Scale

Factor	Bipolar Pairs
Evaluative	Pleasant-unpleasant
	Beautiful-ugly
	Meaningful-meaningless
	Good-bad
	Graceful-awkward
	Cheap-expensive
	Fresh-stale
	Clear-hazy
	Clean-dirty
	Warm-cool
Potency	Rugged-delicate
	Masculine-feminine
	Strong-weak
	Heavy-light
	Hard-soft
Activity	Graceful-awkward
	Active-passive
	Fast-slow
	Exciting-calming
	Young-old
	Modern-old fashioned
	Fresh-stale
	Pleasant-unpleasant
Size-shape	Good-bad
	Graceful-awkward
	Large-small
Complexity	Angular-round
	Plain-fancy
	Simple-complex
	Clean-dirty
	Clear-hazy
	Young-old
Novelty	Modern-old fashioned
	Usual-unusual
Excitement	Exciting-calming

RESULTS

Hypothesis 1

Hypothesis 1, student instructional technologists and student typographers will be significantly more homogeneous in semantic differential judgments concerning affective meaning of typefaces than naive subjects, was rejected. There were no significant differences ($p > .05$) between groups on any of the factors.

Hypothesis 2

Hypothesis 2, student instructional technologists will show significantly more ex-

treme judgments of the typefaces on the semantic differential than will naive subjects, was rejected. The analysis of variance failed to find a significant difference ($p > .05$) on the between-groups variable. Hypothesis 2, therefore, was rejected due to a lack of significant differences between groups.

Hypothesis 3

Hypothesis 3, student typographers will show significantly more extreme judgments of the typefaces on the semantic differential than will naive subjects, was rejected on the same evidence as was used for Hypothesis 2. There was a lack of significant differences between groups ($p > .05$).

Hypothesis 4

Hypothesis 4, all groups of subjects will judge the italic form of a typeface to be significantly more active than the roman form of typefaces as measured by the activity factor of the semantic differential, was not rejected. A significant main effect was found for the inclination variable $F(1, 39) = 8.58$, $p < .05$. The italic faces ($M = 3.7$) were rated as significantly more active on the activity factor than were the roman faces ($M = 3.88$) (see Table 4).

Hypothesis 5

Hypothesis 5, all groups of subjects will judge the variation of a typeface designated as bold to be significantly more potent than the regular typeface as measured by the potency factor on the semantic differential, was not rejected (see Table 5). A significant main effect was found for the weight variable, $F(2, 78) = 113.59$, $p < .01$. The Scheffé S test was used to assess the magnitude of the differences (Kirk, 1968, p. 91). A significant difference was found between the bold ($M = 3.23$) and regular typefaces

TABLE 4
Means and Standard Deviations for
Typeface Inclination on the Activity Factor

Inclination	Mean	Standard Deviation
Roman	3.88	.92
Italic	3.7	.9

TABLE 5
Means and Standard Deviations for
Typeface Weight on the Potency Factor

<i>Weight</i>	<i>Mean</i>	<i>Standard Deviation</i>
Bold	3.23	.76
Regular	3.88	.80
Light	4.38	.72

($M = 3.88$), $S = 73.3$, $p < .05$; bold and light typefaces ($M = 4.38$), $S = 225.73$, $p < .05$; and regular and light faces, $S = 41.76$, $p < .05$. The bold typefaces were rated as more potent than regular typefaces.

Hypothesis 6

Hypothesis 6, all groups of subjects will judge the sans serif typeface to be significantly more potent as measured by the potency factor of the semantic differential, was not rejected (see Table 6). The analysis of variance yielded a significant main effect for typefaces, $F(4, 156) = 19.61$, $p < .01$. The post hoc analysis indicated the Contemporary family ($M = 3.5$) (sans serif) differed significantly from the combined means of the four serif families ($M = 3.91$), $S = 310.4$, $p < .05$.

Hypothesis 7

Hypothesis 7, naive subjects will judge the serif typefaces to be significantly more positive than the sans serif typeface as measured by the evaluative factor of the semantic differential, was rejected. The Group-by-Typeface interaction was not significant ($p > .05$).

DISCUSSION

The results of this study indicated that different typefaces did arouse emotions in different groups, and the subject groups did agree on the emotional connotation of the typefaces. The first three hypotheses predicted student instructional technologists and typographers would be homogeneous and more extreme in their judgments than naive readers. All three of these hypotheses were rejected which suggests all three groups did agree on the emotional connotation of the type, and no one group attrib-

uted more meaning to any of the typefaces. These results are consistent with Tannenbaum et al. (1964).

The results of the present study indicated that the italic inclination was rated as more active than the roman inclination which is in agreement with the results of Davis and Smith (1933) and Tannenbaum et al. (1964). One potential explanation for this result might be the conditioning created by graphic representation of motion in static cartoons. When an artist desires an object to be in motion, the object is illustrated by leaning the object toward the direction of motion. The results might also be explained by the same factors found by Lundhom (1921) and Koontz (1967) who researched the meaning of various line shapes. If a line were traced over an italicized word, it would represent a low wavy line with angles. A similar line was perceived as suggesting movement or activity by Lundhom and Koontz.

Results from the current study are also in agreement with Kastl and Child (1968) who found bold typefaces perceived as forceful and vigorous. Davis and Smith (1933) also reported boldness as an important factor contributing to emotional connotation.

The current study found the sans serif typefaces rated significantly more potent than the serif typefaces. Benton (1979), however, did not find a significant difference between serif and sans serif faces on the potency factor. The difference in results might be due to Benton's use of the letters of the alphabet in contrast to the current study's use of approximations to English that may have cued associations with actual words. For example the sans serif face is used for traffic and information signs (e.g.,

TABLE 6
Means and Standard Deviations for Type
Families on the Potency Factor

<i>Type Family</i>	<i>Mean</i>	<i>Standard Deviation</i>
Old Style	3.9	.92
Transitional	4.07	.96
Modern	3.95	.66
Egyptian	3.74	.94
Contemporary	3.5	.85

interstates and airports) that may have produced an association with authority. The current study did not find a significant difference on the evaluative scale between serif and sans serif faces which is in agreement with Tannenbaum et al. (1964). The difference was expected due to Tinker's (1963) results that found subjects expressing a preference for serif faces. The lack of preference may be due to increased use of sans serif faces in recent years.

CONCLUSIONS

The results of the current study are consistent with the findings of previous studies which have indicated that typefaces can communicate connotative meanings. The existence of significant different emotional connotations suggests that this variable may have application in the design of instructional materials. The development of third order approximations to English as described by Weaver (1949) reduces the ambiguity created by the stimulus material in previous studies. The use of Craig's (1971) scheme provides a basis for applying these results to typeface selection. Using the model proposed by Harrison and Morris (1967), the instructional technologist might be able to control the processing of textual materials through typeface variations. A typeface with emotional connotation in agreement with a main point, or a typeface perceived as potent might cue the learner in a way to promote deeper semantic processing as described by Craik and Lockhart (1972). A typeface with an emotional connotation in conflict with the message may elicit a different response. The current evidence though, suggests that further studies are needed to test Harrison and Morris' (1967) hypothesis concerning the effect of type on the perception of the message. The next step is to determine the effect of the emotional connotation of the typeface on the emotional connotation of the message, and the response elicited from the learner.

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