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Barbara S. Chaparro, Editor

A Comparison of Popular Online Fonts: Which is Best and When?

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A general survey of the Web finds that a majority of sites use 12-point fonts (size= 3) for much, if not all of their written content. With this in mind, we examined the most popular font types at this size for differences in effective reading speed (reading time/accuracy), as well the perception of font legibility.

In addition, we were interested in the subjective reactions associated with specific font types. That is, certain font types may appeal to a particular mood and consequently, could affect the tone of a website. Thus, we also examined certain aesthetic qualities that could impact the mood, as well as assessed general font preference. Examined were five sans serif and serif fonts, as well as two ornate fonts (shown in Table 1).

Table 1. The twelve fonts studied (View a sample of each font type)

Sans Serif Fonts	Serif Fonts	Ornate Fonts
Agency FB (Agency) Arial Comic Sans MS (Comic) Tahoma Verdana	Courier New (Courier) Georgia Goudy Old Style (Goudy) Century Schoolbook (Schoolbook) Times New Roman (Times)	Bradley Hand ITC (Bradley) Monotype Corsiva (Corsiva)

The sans serif and serif fonts are meant to represent the most popular font types used on the web today. The two ornate fonts are, of course, only a sampling of the numerous possible types that do not fit in any particular category. However, an examination of these fonts should help determine ornate fonts' place in both performance and popularity in comparison to standard font types.

METHODS

A Pentium II based PC computer, with a 60 Hz, 96dpi 17" monitor with a resolution setting of

1024 x 768 pixels was used. The fonts were kept at 12 points except the Agency font, which was increased from 12- to 14-points in order to have a height (approximately 3 mm) that was comparable to the other font types.

Participants

Twenty-two participants (7 males and 15 females) volunteered for this study. They ranged in age from 20 to 44, with a mean age of 25 (S.D. = 6 years). All participants tested had 20/40 or better unaided or corrected vision. Ninety-five percent of the participants reported to have regularly read documents on computer screens at least a few times per week, and 68 percent of them had at least four years of college.

Task Design

Font conditions were compared by having participants read twelve passages, each of which comprised of a font from one of the twelve font types. Both the font types and the passages were counterbalanced by means of a Latin square design.

The passages came from Microsoft's electronic library, Encarta^{TM}, and were written at approximately the same reading level and discussed similar material (all dealt with psychology-related topics). They were adjusted to have approximately the same length (an average of 1032 words per passage, S.D. of 40 words) with horizontal margins set at 640 pixels. The amount of words per line varied as a result of the width of the font types. The color of the fonts in all passages was black on a white background.

Procedure

Participants were positioned at a fixed distance of approximately 57 cm from the computer screen. They were then asked to read "as quickly and as accurately as possible" the passages which contained 15 randomly placed substitution words (they were not told the number of substitution words). The substitution words were designed to be clearly seen as inappropriate for the context of the passages when read carefully. These words varied grammatically from the original words—for example the noun "cake" being replaced with the adjective "fake." The participants were instructed to identify these words by stating the substituted words aloud.

To accurately determine font legibility and its associated effect on reading time, an effective reading score was used. The score was derived from obtaining the percentage of accurately detected substituted words in the passages divided by the time taken to read the passages —which was registered by a stopwatch.

After reading each passage, participants answered a perception of readability/ aesthetic appeal questionnaire. The questionnaire consisted of a 6-point Likert scale with 1 = "Not at all" and 6 = "Completely" as anchors. When all twelve questionnaires were completed, they ranked the twelve font types for general preference.

RESULTS AND DISCUSSION

A within-subjects ANOVA design was used to analyze objective and subjective differences between the font types. Post hoc comparisons were done by using the Bonferroni test. Ranked font preference was measured by means of a Friedman X^2.

Font Legibility

Examining font legibility by means of reading efficiency, resulted in no significant font type effects. This is not too surprising in light of other studies, including our own (i.e., Bernard & Mills, Summer/2000; Bernard, Mills, Frank, & McKown, Winter/2001), which suggest that fonts at this size are fairly robust in their ability to accurately convey meaning to the reader.

Reading Time

Examining the mean reading time for each font type irrespective of their accuracy, found significant differences [$F(11, 231) = 3.90$, $p < .001$]. Further analysis revealed that the Tahoma font was read significantly faster than the Corsiva font (see Figure 1). The reading time difference between these two fonts was 40 seconds for approximately two pages of text. This finding of a relatively small difference in reading speed between these fonts has been consistent with our previous studies (i.e., Bernard & Mills, Summer/2000). Accordingly, the different reading speeds associated with various font types may not be of any real consequence for short online passages —as long as the fonts are within the conventional font size and type range.

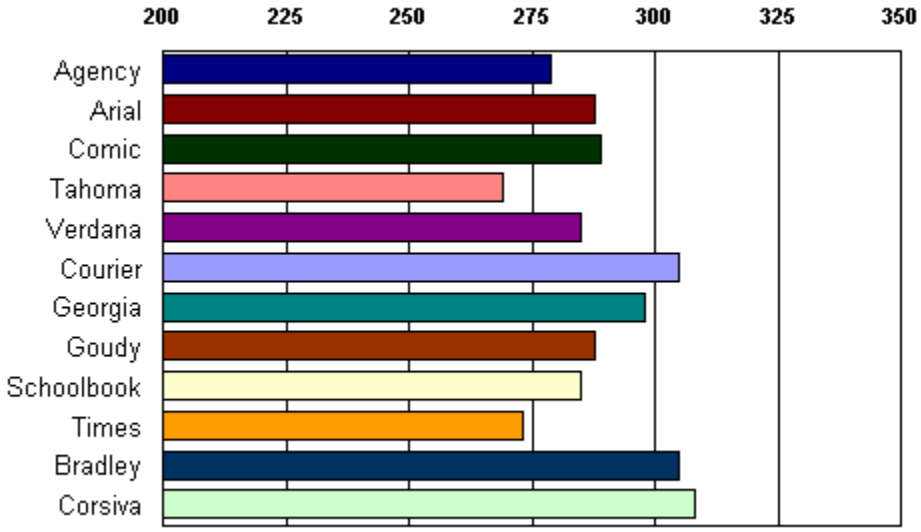
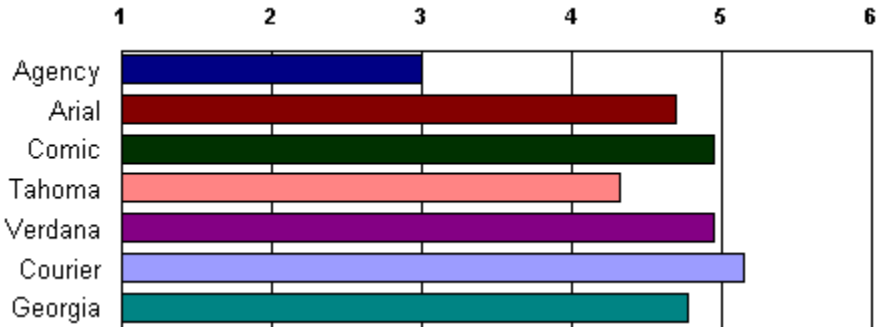


Figure 1. Reading time in seconds (longer bars indicated longer reading times)

Perceived Font Legibility

Assessing the perception of font legibility revealed significant differences between font types [$F(11, 231) = 13.75$, $p < .001$] in that Courier, Comic, Verdana, Georgia, and Times were significantly perceived as being more legible than Agency, Goudy, Bradley, and Corsiva font types (see Figure 2).



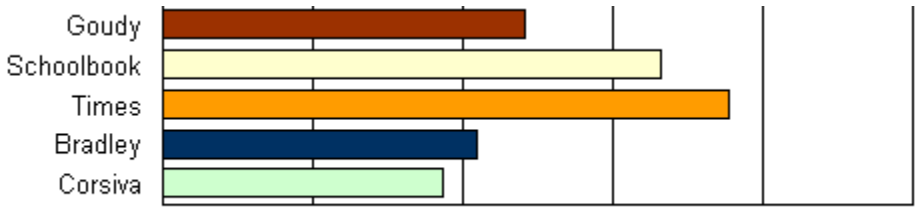


Figure 2. Perceived font legibility (1 = "Not at all" and 6 = "Completely")

Font Type Conveyed 'Personality'

Examining the participants' impressions that a particular font type had 'personality' revealed significant differences between font types [F(11, 231) = 5.47, p <.001] in that the Times font had significantly lower perceptions of 'personality' than Comic, Bradley, or Corsiva fonts. Bradley, on the other hand, had significantly higher rates of 'personality' than Courier, Schoolbook, Goudy, Tahoma, or Times (see Figure 3).

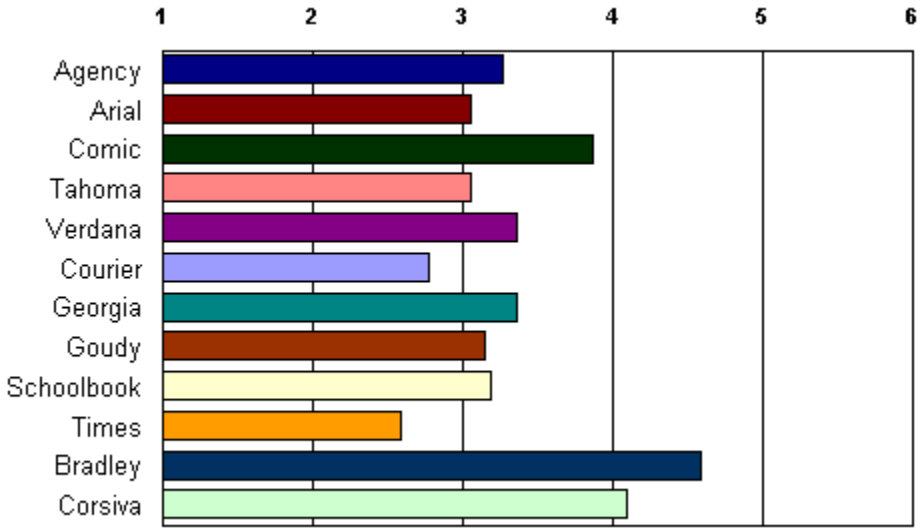
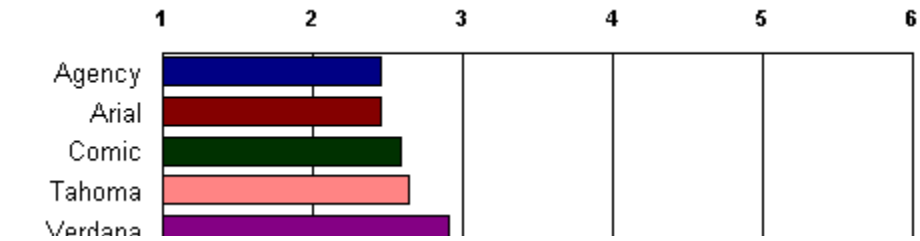


Figure 3. Perceived as having personality (1 = "Not at all" and 6 = "Completely").

Font Type was Elegant

Examining the participants' impressions pertaining to the perceived 'elegance' of the fonts revealed significant differences between the font types [F(11, 231) = 10.84, p <.001]. Further analysis found that the Corsiva font was significantly considered more elegant that all other font types except Bradley. Bradley was considered significantly more elegant than the Agency and Courier fonts (see Figure 4).



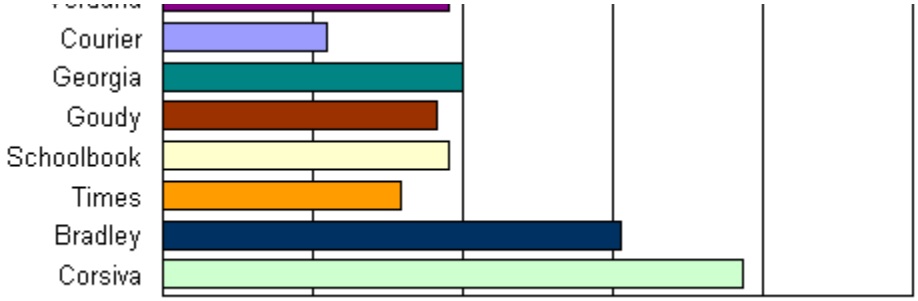


Figure 4. Perceived as being elegant (1 = "Not at all" and 6 = "Completely").

Font Type Appeared Youthful & Fun

Examining the participants' impressions regarding a particular font as being 'Youthful & Fun' revealed significant differences between font types [F(11, 231) = 7.84, p <.001]. Further analysis found that the Comic font was significantly perceived as more 'Youthful & Fun' than Arial, Agency, Courier, Schoolbook, Goudy, and Times fonts. Times was significantly perceived as being less 'Youthful & Fun' than Georgia, Verdana, and Comic font types (see Figure 5).

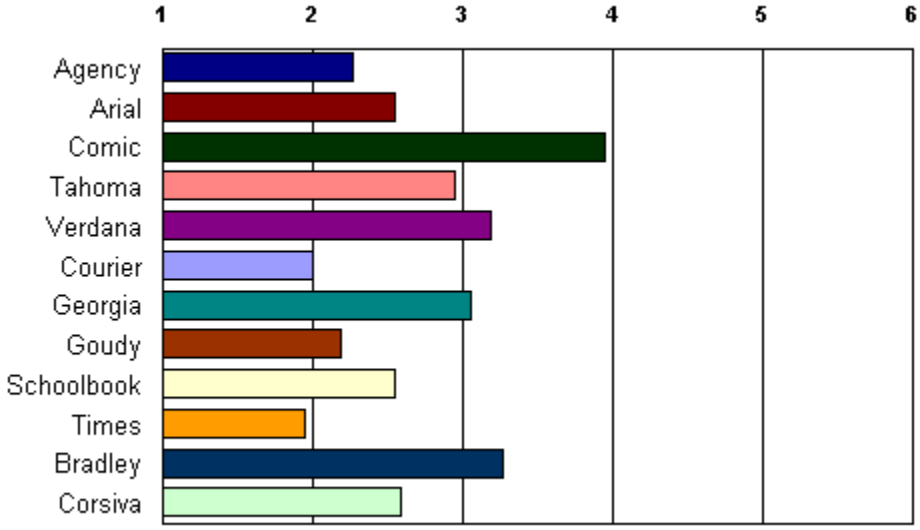
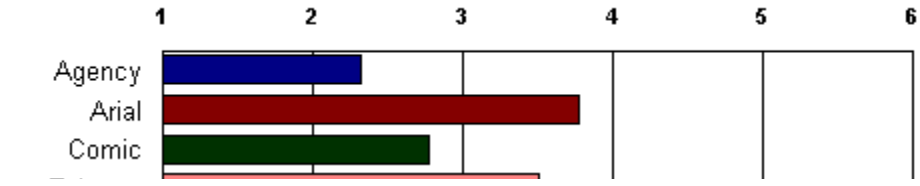


Figure 5. Perceived as being youthful & fun (1 = "Not at all" and 6 = "Completely").

Font Type Appeared Business-like

Assessing the participants' impressions that a particular font type appeared 'Business-like' revealed significant differences between font types [F(11, 231) = 15.76, p <.001] in that Times and Courier fonts were significantly perceived as being more business-like than all fonts except Tahoma, Verdana, Georgia, and Schoolbook (see Figure 6).



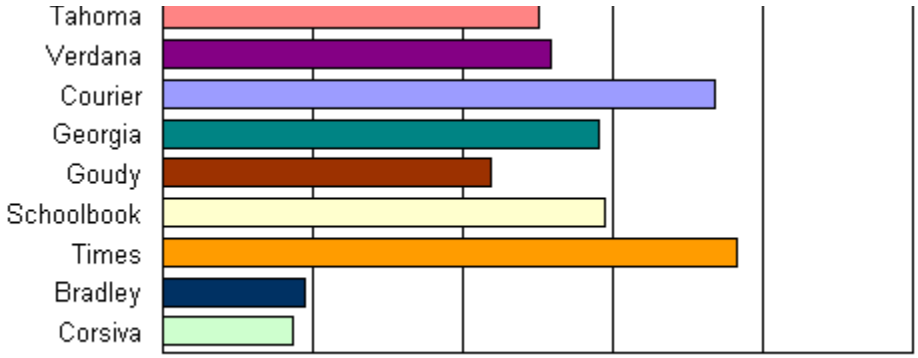


Figure 6. Perceived as being business-like (1 = "Not at all" and 6 = "Completely").

General Font Preference

Analysis of the participants' preference for each font type revealed a significant difference in ranking [c2 (11, N = 22) = 121.2, p < .001] in that Arial, Comic, Tahoma, Verdana, Courier, Georgia, and Schoolbook were significantly preferred over the other font types (see Figure 7). It was not too surprising that Arial was ranked high in preference, since it has been most preferred in our previous font studies that examined children (Bernard, Mills, Frank, & McKown, Winter/2001), older adults (Bernard, Liao, & Mills, Winter/2001), and college students (Bernard & Mills, Summer/2000). It is interesting, however, that Times, the most popular default font for word processing packages, has consistently ranked low in preference across all of our studies.

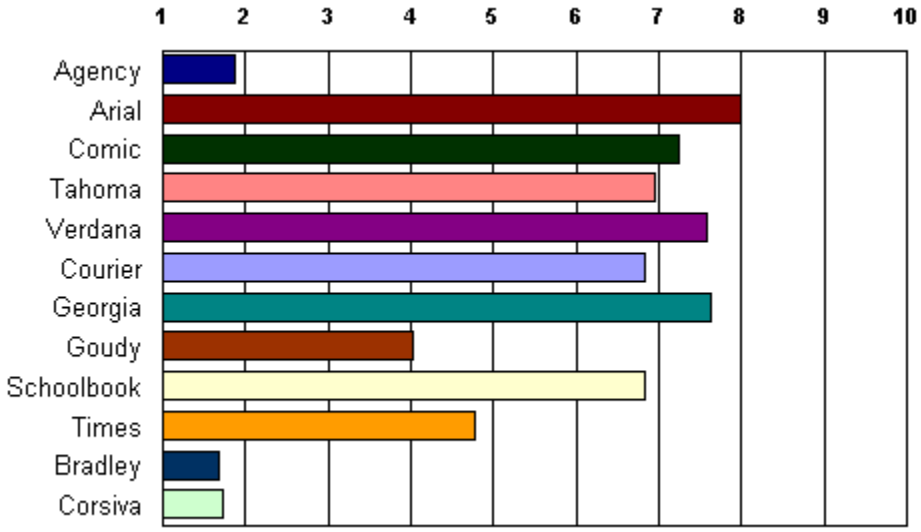


Figure 7. Font preference (longer bars indicates more preferred).

Percentage Chosen as First or Second Preference Choice

Further examining participants' preference choices revealed that Verdana, Arial, and Comic font types were the first and second preference choices of the studied font types. None of the participants chose Agency as their first or second choice (see Figure 8).

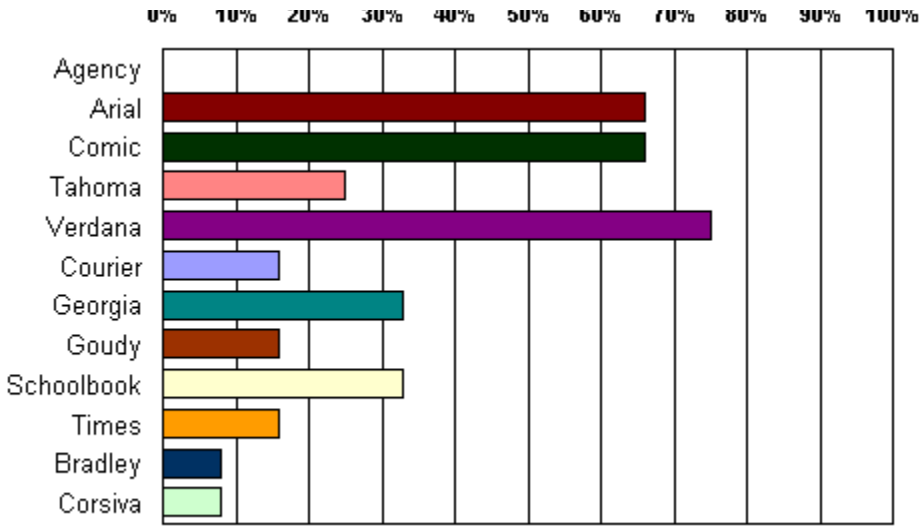


Figure 8. Percentage chosen as first or second preference choice.

CONCLUSIONS

Several observations can be made regarding the examined font types. First, no significant difference in actual legibility between the font types were detected. There were, however, significant differences in reading time, but these differences may not be that meaningful for most online text because these differences were not substantial. It may, on the other hand, be helpful to consider using font types that are perceived as being legible. In this study, the font types that were perceived as being most legible were Courier, Comic, Verdana, Georgia, and Times.

The results of this study also provide information regarding the aesthetic appeal related to specific font types. For example, the ornate fonts Bradley and Corsiva were perceived as having a great deal of personality and elegance (However, one should be cautious in using these ornate fonts to any great extent because of both their low performance and low popularity among the font types studied). Furthermore, Courier and Times were perceived as being the most business-like, whereas Comic was perceived as being the most fun and youthful.

Applying this information can help establish the proper mood of a particular site. For example, fonts that are perceived as being business-like and elegant may be more effective for a site such as an online bank. Conversely, fonts perceived as being youthful and fun, along with having personality, may be more effective for sites directed at children, such as an online toy store. Of course, general preference is an important consideration as well, especially for longer online passages. In this study, as well as our other font studies, Arial, Verdana, and Comic fonts scored high in preference.

It should be noted, however, that the subjective results of this experiment may or may not be generalized to an international audience, since all participants tested came from the United States. Web designers are encouraged to conduct their own user tests to help determine if these results apply to their intended audience.

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