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[Barbara S. Chaparro](#), Editor

Which Fonts Do Children Prefer to Read Online?¹

By [Michael Bernard](#), Melissa Mills, Talissa Frank, & Jan McKown

Children today are reading large amounts of text on computer screens, either in the classroom or for leisure. In fact, currently there is a drive to supplement or even replace some traditional pen and paper lectures and tests with computer-based ones. However, to date there has been no research specific to a younger population investigating preferences for different types and sizes of fonts for reading online. This study sought to address this need by examining four types of fonts at 12- and 14-point sizes in order to help determine the font combination that is perceived as most readable on computer screens and most preferred by children.

Participants

Twenty-seven participants (10 males, 17 females) volunteered for this study. They ranged in age from 9 to 11 years old and attended 4th, 5th, or 6th grade. All participants had 20/20 or 20/20 corrected vision. Most participants (96%) had at least some experience reading text on computer screens. The children received \$10.00 for participating in this experiment.

Equipment

A Pentium II based PC computer, using a 60 Hz, 96dpi 17" monitor with a resolution of 1024 x 768 was used.

Font Type/Size Combinations

This study examined fonts that are commonly seen in children's text. To do this, we used the serif fonts, Times New Roman (Times) and Courier New (Courier), as well as the sans serif fonts, Arial and Comic Sans MS (Comic) at 12- and 14-points. Times and Arial are very common fonts for their respective font type. Courier is a common non-proportional font, whereas Comic has become a popular font for child-related reading material. The different font types and sizes are shown below in Table 1.

Table 1. 12- and 14-point serif and sans serif fonts studied.

12-point size	14-point size
Times New Roman	Times New Roman
Courier New	Courier New
Arial	Arial
Comic Sans MS	Comic Sans MS

Font conditions were compared by having participants read eight passages. Both the fonts and the passages were counter-balanced by means of a Latin square design. The passages were short children's stories drawn from Whootie Owl's Fairytales, which were written at the 4th and 5th grade reading level. The passages were adjusted to have approximately the same length (an average of 581 words per passage, S.D. of 16 words) and had horizontal margins set at 640 pixels. The amount of words per line varied as a result of the width of the fonts within the different type/size combinations. The color of the font in all passages was black on a white background.

Procedure

This study used a 4 x 2 font (type x size) within-subjects design. Preference was measured by using a Friedman c2. The participants were asked to read eight passages, each with a different font combination. In order to assure that the participants read the passages, ten substitution words were randomly placed throughout each passage. The participants were instructed to identify these words by stating the substituted words out loud. The substitution words were designed to be seen as inappropriate for the context of the passages when read carefully, and varied grammatically from the original words—for example the noun "sun" being replaced with the adjective "fun."

After reading each passage, participants answered a perception of readability questionnaire. The questionnaire consisted of a 6-point Likert scale, with 1 = "Not at all" and 7 = "Very Much" as anchors. The questionnaire items were as follows: "The story's print was easy to read," "I feel that I can read fast with this type of print," "The story's print was nice looking," and "I would like my schoolbooks to have this type of print."

After participants read all eight passages and answered the respective questionnaires they ranked the eight type/size font combinations for general preference.

RESULTS

Perceptions of Font Ease of Reading

An analysis of the eight font type/size combinations for perceptions of ease of reading revealed a significant main effect of font size [$F(1, 26) = 16.07, p < .001$], favoring the 14-point fonts (see Table 2), and font type [$F(3, 78) = 6.56, p < .001$]. Using the Bonferroni method, post hoc analysis of the font types indicate that the Times font was perceived as being significantly less easier to read than the Arial and Comic fonts. (see Table 3). No interactions were found to be significant.

Perceptions of Reading Faster

An analysis of participants' perceptions of reading faster with a particular size and type of font revealed a significant main effect for font size [$F(1, 25) = 12.07, p < .002$], favoring the 14-point font size (see Table 2). No significant interactions we found.

Perceptions of Font Attractiveness

An analysis of the perceptions of font attractiveness revealed a significant main effect of font size [$F(1, 26) = 16.9, p < .001$], favoring the 14-point font (see Table 2), and for font type [$F(3, 78) = 5.4, p < .004$]. Post hoc analysis using the Bonferroni method indicated that the Times font was perceived as being significantly less attractive than the Comic font (see Table 3). No significant interactions were found.

Desire to Use Font Type/Size in Schoolbooks

Examining the font combinations for the desire of a particular font to be used as text in schoolbooks found a significant main effect for font size [$F(1, 26) = 42.7, p < .001$], again favoring the 14-point size (see Table 2), and for font type [$F(3, 78) = 2.4, p < .001$]. Post hoc analysis using the Bonferroni method revealed that the Times and Courier fonts were significantly less desired to be used in schoolbooks than the Comic font (see Table 3). No interactions were significant.

Table 2. Means (SDs) for font size.

	12-point size	14-point size
Easy to read	4.7 (0.9)	5.3 (0.6)
Reading faster	4.5 (0.7)	5.0 (0.7)
Attractiveness	4.5 (1.1)	5.0 (0.8)
Use in schoolbooks	3.8 (1.3)	4.7 (1.0)

Table 3. Means (SDs) for font type

	Times	Courier	Arial	Comic
Easy to read	4.6 (1.0)	4.8 (1.1)	5.1 (1.0)	5.5 (0.7)
Attractiveness	4.5 (1.2)	4.5 (1.4)	4.9 (0.9)	5.1 (0.9)
Use in schoolbooks	3.8 (1.5)	3.8 (1.7)	4.4 (1.2)	4.9 (1.3)

Font Preference

Analyzing participants' mean preference for each font type/size combination revealed a significant difference in ranking. Post hoc analysis found that the 14-point Arial and the 12-point Comic font was significantly preferred over the 12-point Times and Courier fonts. In addition, the 14-point Comic font was significantly preferred over the 12-point Courier font. Examining participants' 1st and 2nd preference choice further shows the popularity of the Comic font (see Figure 1).

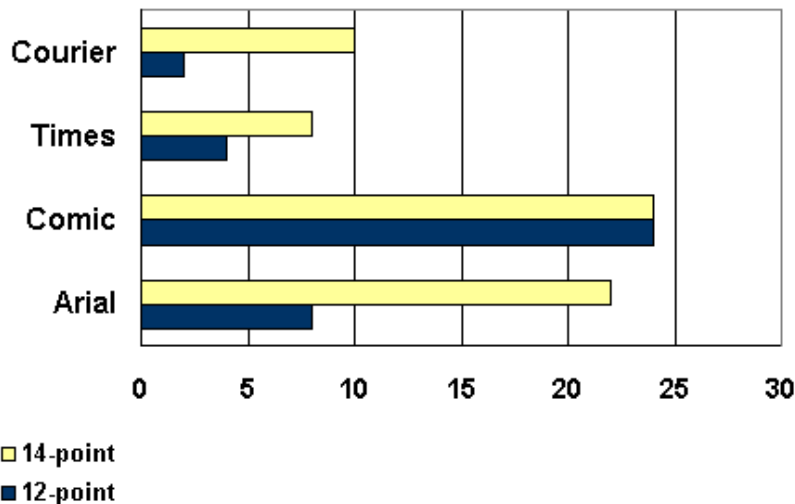


Figure 1. The percentage of times each font was chosen as the 1st or 2nd preference choice.

CONCLUSIONS

Generally the larger, 14-point font size was considered to be easier and quicker to read, as well as being more attractive and more desired to be used in schoolbooks. In addition, the Comic font type was perceived as being easier to read and more attractive, as well as being more desired to be used in schoolbooks than the other font types. Along with Arial, it was also preferred over the serif fonts for use

in schoolbooks. Overall the 14-point Arial and the 12-point Comic was the most preferred font types.

¹Note: This article has been updated from a previous version.

²Note:

A presentation based on this work was presented at the Usability Professional Association's 10th (2001) Annual Meeting in Las Vegas.

REFERENCES

Mills, C. B. & Weldon, L. J. (1987). Reading text from computer screens. *ACM Computing Surveys*, 19 (4), 329-358.

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