Effects of Line Length, Line Spacing, and Line Number on Proofreading Performance and Scrolling of Chinese Text

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Objective: The main purpose of this study was to investigate the effects and interactions of line length, line number, and line spacing on Chinese screen-based proofreading performance and amount of scrolling.

Background: Proofreading is an important process, and much of it is now done on screen. The Chinese language is increasingly important, but very little work has been done on the factors that affect proofreading performance for Chinese passages.

Method: Three display factors related to screen size, namely line length, line number, and line spacing, were selected to be investigated in an experiment to determine their effects on proofreading performance and amount of scrolling. Correlations between proofreading performance in time and accuracy and scrolling amount were also analyzed.

Results: The results showed that line number and line spacing had significant main and interaction effects on both proofreading time and detection rate. Line length and line number influenced scrolling amount significantly, but there was no interaction effect for scrolling. Scrolling amount was negatively correlated with proofreading time and typo detection rate such that more scrolling movement was associated with faster proofreading, but lower detection rate. There was a trade-off between time and accuracy.

Conclusion: For balancing time and detection rate and improving performance for on-screen Chinese proofreading, the display setting of medium line length (36 characters per line) with four lines and 1.5 line spacing should be used.

Application: The findings provide information and recommendations for display factors and the screen design that should prove useful for improving proofreading time and accuracy.

Keywords: proofreading, Chinese, screen design, scrolling

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INTRODUCTION

The population of China is around 1.3 billion, and the Chinese language is used extensively in different kinds of publications (Rosenberg, 2010). It is very likely that the number of people using the Chinese writing system will increase rapidly due to the large Chinese population and the spread of Chinese influence. An unabridged Chinese dictionary contains about 48,000 Chinese characters (*Zhonghua da zidian*, 1978) and 2,500 of them are most frequently used (Ministry of Education of the People's Republic of China, 2005). Unlike English, a very large number of individual characters can act as words and can also be combined to form words and sentences. Each Chinese word is formed by one to five characters in general, and the frequency of usage of one- and two-character Chinese words in texts is about 98.6% (Lua, 1990).

Information technology has developed rapidly, and the accessibility of the Internet has changed people's reading habits. Due to the flexibility and convenience of electronic documentation, the employment of computer screens for reading has increased significantly, and Internet users show a preference for reading many types of written material on computer screens (Shaikh & Chaparro, 2004). For example, e-books are gaining in popularity, thereby increasing the need for proofreading. Project Gutenberg was initiated to digitize, archive, and distribute mainly full texts of public domain books along with a web-based scheme to proofread drafts of e-texts for errors. Compared with the 30,768 English releases, the 405 finished Chinese items is much fewer (Project Gutenberg News, 2012). If the display format of the drafts and the screen design for Chinese can be made more user-friendly, proofreading would be improved and a larger number and variety of items could become available to a larger audi-