The superiority of graphics over text in long-term memory retention

Lorenzo Ciccione
Collège de France - PSL University, Paris, France

Syalie Liu
Collège de France, Paris, France

Stanislas Dehaene
NeuroSpin Center, CEA DRF/I2BM, INSERM, Unicersité Paris-Sud, Université Paris-Saclay, 91191 Gif-Sur-Yvette, France

Abstract

Graphical representations of data are pervasive in modern communication and are often used to convey socio-economic, scientific and medical information. Despite their popularity, it is still unknown whether they can enhance the long-term retention of their content. We conducted an incidental delayed recall task with psychology undergraduates (N=92), in which participants read about the evolution of a socio-economic phenomenon, with few datapoints presented either as a graphics, a text, or a table. We found that graphics facilitated the remembering of the general trends of the data after a two-hour interval. No advantage was found on immediate recall of numerical values in another sample of participants (N=80). Thus, even for equal initial encoding of numerical information, and even for very concise materials, graphics facilitate long-term retention. Overall, the study reveals the potential of graphics as effective tools for enhancing memory retention and therefore highlights their valuable role in educational settings.

In D. Barner, N.R. Bramley, A. Ruggeri and C.M. Walker (Eds.), *Proceedings of the 47th Annual Conference of the Cognitive Science Society*