

Abstract

Previous research on reading Chinese indicates that removing strokes from characters makes them hard to read. Removing character-initial strokes is more disruptive than removing character-final or character-internal strokes (Yan et al., 2011). The present study decomposed Chinese characters into segments (vertical, horizontal, and diagonal lines) and the importance of each segment's contribution to character configuration was determined by singular value decomposition (SVD). We used SVD to delete segments that are most or least important for character identification. Subjects read sentences either with all segments intact or 30% of the segments deleted; the deleted segments were either the most important or the least important (determined by SVD), or were randomly selected. When the least important segments were deleted, subjects read as fast as when no segments were deleted, whereas when the most important segments were deleted, reading speed was greatly slowed. SVD, which has no information about the order of writing strokes, identified the most important segments as those located in the left side of the character and the least important as those that did not seriously alter the contour of a character, similar to the Yan et al. (2011) study. These results suggest that SVD is a psychologically valid way to capture Chinese character configuration, and configuration may be estimated by the contour of a character.