

In the visual tongue twister effect, readers take longer to silently read sentences with repeated word-initial phonemes (Twenty toys were in the trunk) than sentence with a normal mixture of word-initial phonemes (Several games were in the chest) (McCutchen & Perfetti, 1982). The explanation of this effect is that when words are identified during reading, they are held in a working memory buffer. The first phoneme of each word is used as a marker to differentiate them. When all of the phonemes are the same, it becomes difficult to differentiate each word, thus tongue twisters take longer to read silently than neutral sentences. Although this explanation sounds plausible, there has been no research yet to test the hypothesis that the visual tongue twister effect is caused by confusion in working memory. The current study tested this hypothesis to determine if working memory is really related to the visual tongue twister effect. Participants read 40 sentences with repeated phonemes (tongue twister) and 40 sentences with no repeated phonemes (neutral) and completed a working memory task. Tongue twister sentences were paired with neutral sentences and controlled for syntactic structure, reading difficulty, and semantic similarity. Participants with low working memory capacity were more affected by the tongue twister sentences than readers with high working memory capacity. This result indicates that working memory plays an important role during reading. The results support the theory that word-initial phonemes serve to differentiate words that are held in a working memory buffer.