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ABSTRACT

Background

Word production difficulty is one of the most common and persisting symptoms in people suffering from aphasia (i.e., anomia). However, there is a considerable variability in patients' responses to treatment, leading to the need of new effective approaches. Also, the mechanisms underlying word (re)learning is little known in production even in neurotypical adult native language and especially in relationship with the lexical-semantic integration of (re)learnt words. The lexical-semantic network being highly contextual and multimodal, new technologies such as immersive virtual reality (iVR) may become pertinent approaches, but still need scientific proof, especially as past studies have found no advantage over a control method and have never used an immersive version of VR. Yet, the immersion has been identified as being a key factor of positive outcomes in learning. Therefore, the aim of the present study was to investigate whether iVR provides a benefit in word learning in neurotypical adults (Study 1) and in the treatment for anomia in people suffering from aphasia following stroke (Study 2).

Method

In study 1, 32 neurotypical adults learned two matched lists of 30 rare words each in their native language (French) during a one-week protocol alternating test and learning sessions with iVR and a digital static learning method. Study 2 followed the same design over a two week-period with 16 people with aphasia (re)learning two matched lists of 28 frequent words.

Results

Neurotypical adults demonstrated a higher accuracy rate in word production for words learned with iVR in comparison to those learned with the digital static learning method. For people suffering from anomia, the iVR did not differ from the control method on total accuracy but led to a greater reduction of lexical errors.

Conclusion

iVR has a potential of use for learning new words but also for the treatment of word production difficulties, especially in people with aphasia that produce mainly lexical errors. These two main results lead to the hypothesis that iVR promotes lexical-semantic processes.