

# A Comparison Between Verbal Working Memory and Vocabulary in Bilingual and Monolingual South African School Beginners: Implications for Bilingual Language Assessment

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This study compared measures of simple and complex verbal working memory and receptive and expressive vocabulary for bilingual and monolingual school beginners. Monolingual learners outperformed bilingual learners in vocabulary, but there were no significant differences on working memory tests. Thus, working memory tests may offer a fairer measure of language ability for bilingual children.

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This study compared bilingual and monolingual school beginners

on measures of simple and complex verbal working memory and receptive and expressive vocabulary. Participants comprised 120 school beginners (English first- and second-language speakers) who were being educated in English. Monolingual learners outperformed bilingual learners in vocabulary, but there were no significant differences on working memory tests. Thus, working memory tests may offer a fairer measure of language ability for bilingual children.

- Vocabulary tests are typically used to assess language learning in children, although bilingual children underperform on such tests.
- Bilingual children develop vocabulary slower than monolingual learners; thus, vocabulary tests alone are unlikely to provide an accurate representation of the bilingual child's language learning.
- Working memory tests may provide a fairer means of evaluating bilingual language learning than tests of vocabulary.
- In South Africa, 79% of the population speak South African languages as their mother tongue rather than English. However, language tests are usually conducted in English.

### **Benefits of using working memory tests**

- Procedures and stimuli are typically designed to be equally unfamiliar to all testees and are based on material that is either not explicitly taught (such as non-words) or very well learned (such as digits and letters).
- Tests of working memory evaluate the passive, short-term storage of the verbal-based phonological loop and/or the visuospatial sketchpad (known as 'simple' verbal/visuospatial working memory), as well as the active central executive (or 'complex' verbal or visuospatial working memory).
- Phonological loop tasks are implicated in vocabulary

ability and new word learning.



## The study

The purpose of this study was to compare performance on tests of simple and complex verbal working memory and receptive and expressive vocabulary in monolingual learners' mother tongue and bilingual learners' second language. The aim was to determine whether verbal working memory tests provide a fairer means of assessing bilingual language-learning than measures of vocabulary.

**Participants** were 120 first-grade students. Of these, 67 spoke only English at home, while 53 spoke African language at home with English being their second language. Their non-verbal intelligence, vocabulary, and working memory were measured.



## Findings

- Significant language group differences emerged on the vocabulary tests and with non-verbal IQ.
- There were no significant differences between the language groups on any of the four working memory tests.
- All the working memory tests were moderately-to-strongly correlated with the vocabulary measures in the monolingual group.
- In the bilingual group, the vocabulary measures were

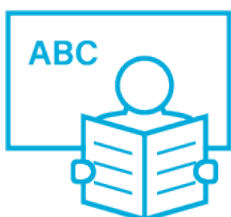
only significantly correlated with the digit span tests. Non-word recall and counting recall appear unrelated to expressive and receptive vocabulary in this group.

## Summary

- Worldwide, there has been an increase in the number of immigrant children who do not speak the majority language.
- Psycho-educational assessments of these children may be complicated as they are often conducted in a language that is not the child's mother tongue.
- It would be useful to be able to include tests that can provide an objective indication of typical language processing in such assessments, even when the child is assessed in their second language.
- Working memory tests may be suitable for this kind of assessment.

## Key findings

- Monolingual children performed significantly better than bilingual children on the measures of expressive and receptive vocabulary.
- There were no significant differences between language groups on the simple or complex verbal working memory measures, even when differences in vocabulary were statistically accounted for.
- Working memory tests showed different patterns of relationship with the vocabulary tests for monolingual and bilingual groups.



## **Implications**

- The findings of this study suggest that tests of verbal working memory are able to give an indication of whether the articulatory rehearsal and storage processes of the phonological loop are developing appropriately in the bilingual child, even when the child is tested in a second language.
- Phonological loop processes predict performance on a range of linguistic and academic tasks.