

Outcome Measure	Controlled Oral Word Association Test
Sensitivity to Change	Yes
Population	Adult
Domain	Neuropsychological Impairment
Type of Measure	Objective test
ICF-Code/s	b1
Description	<p>Verbal fluency tasks evaluate the spontaneous production of words under restricted search conditions. For phonemic fluency, individuals are given 1 min to name as many words as possible beginning with one of the letters F, A, S or C, F, L. For semantic fluency, individuals are given 1 min to name as many items of a category as possible. The most common category is “animals”.</p> <p>The administration of phonemic and semantic fluency takes approximately 5 minutes. Admissible responses are summed and compared to a normative sample.</p>
Properties	<p><u>Internal consistency</u>: .83 for F,A,S (Tombough et al., 1999) and .83 for C,F,L (Ruff et al., 1996).</p> <p><u>Test-retest reliability and practice effects</u>: Test-retest reliabilities are typically over .70 for both phonemic and semantic fluency, measured after an interval of one week to five years (Basso et al., 1999; Dikmen et al., 1999; Harrison et al., 2000; Tombough et al., 1999).</p> <p><u>Inter-rater reliability</u>: .99 for scoring 125 CFL protocols of healthy subjects.</p> <p><u>Construct validity</u>: Correlations between .44 and .87 have been reported between phonemic fluency and VIQ (Henry & Crawford, 2004). Semantic fluency has a moderate to strong correlation (.57-.68) with performance on the Boston Naming Test (Henry & Crawford, 2004).</p> <p><u>Concurrent validity</u>: In a meta-analysis of 30 studies with 1269 participants, TBI patients were impaired compared to healthy controls on tests of phonemic and semantic fluency, to a greater extent than would be predicted based on their premorbid IQ, current VIQ or psychomotor speed (Henry & Crawford, 2004). CFL performance in a sample of 669 individuals with TBI showed the task was sensitive in all groups and performance showed a clear relationship with severity across mild, moderate and severe classifications.</p>
Advantages	<ul style="list-style-type: none"> • Users may design their own materials and use norms available in Strauss, Sherman and Spreen. • Quick to administer. • Appears sensitive to TBI and predicts severity. • Strong psychometric properties.
Disadvantages	<ul style="list-style-type: none"> • Low specificity. • The abilities underlying performance on the test are varied (attention, working memory, processing speed, episodic memory), thus it is

	<p>difficult to attribute impairment to a particular cognitive function.</p> <ul style="list-style-type: none"> • Highly influenced by premorbid verbal IQ.
Reviewers	Skye McDonald

References

- Basso, M. R., Bornstein, R. A., & Lang, J. M. (1999). Practice effects on commonly used measures of executive function across twelve months. *The Clinical Neuropsychologist*, 13(3), 283-292.
- Dikmen, S. S., Heaton, R. K., Grant, I., & Temkin, N. R. (1999). Test-retest reliability and practice effects of expanded Halstead-Reitan Neuropsychological Test Battery. *Journal of the International Neuropsychological Society*, 5(04), 346-356.
- Harrison, J. E., Buxton, P., Husain, M., & Wise, R. (2000). Short test of semantic and phonological fluency: Normal performance, validity and test-retest reliability. *British Journal of Clinical Psychology*, 39(2), 181-191.
- Henry, J. D., & Crawford, J. R. (2004). A meta-analytic review of verbal fluency performance in patients with traumatic brain injury. *Neuropsychology*, 18(4), 621.
- Ruff, R., Light, R., Parker, S., & Levin, H. (1996). Benton controlled oral word association test: Reliability and updated norms. *Archives of Clinical Neuropsychology*, 11(4), 329-338.
- Tombaugh, T. N., Kozak, J., & Rees, L. (1999). Normative data stratified by age and education for two measures of verbal fluency: FAS and animal naming. *Archives of Clinical Neuropsychology*, 14(2), 167-177.