

A Normative Study of the *Change Counting Assessment*

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Introduction

Acalculia is an acquired disorder characterized by the inability to complete simple mathematical calculations. It results from acquired brain damage such as stroke or the neurodegenerative effects of Alzheimer's disease (Bermejo-Velasco, Castillo-Moreno, 2006). For people with acalculia, functional money handling skills such as counting change may be affected. Because of this, a speech-language pathologist (SLP) at Sacred Heart Hospital in Eau Claire, WI developed the *Change Counting Assessment* (CCA). The CCA is a brief test of money handling ability for patients with acquired brain damage. The assessment has been used for several years, but normative data have not been collected. For SLPs at Sacred Heart the CCA has been used to gather information about a patient's calculation ability, but it is limited because normative data are not available and it has not been validated.

Purpose

The objective of this study is to establish local norms for the *Change Counting Assessment* for older adults and to establish its validity as of measure of simple money handling ability. Data collection is ongoing.

Methods

- Participants have been and are being solicited from senior volunteers at Sacred Heart Hospital, attendees of the LE Phillips Senior Center, residents of Oakwood Hills, and through personal contacts.
- Currently data are available from nine participants (seven female and two male Caucasians) with a mean age of 71.3 years (SD = 4.1 years) and a mean education level of 13.4 years (SD = 2.2 years). All participants performed within normal limits on the *Mini Mental State Examination* (Folstein, Folstein, & McHugh, 1975), a screening measure of cognitive function.
- Participants were tested in a quiet area in their respective settings. After informed consent was obtained the participants completed a questionnaire about their education and health history, including the status of their vision and manual dexterity.
- Participants then were administered the *Mini Mental State Examination*, which was used to ensure that participants demonstrated no signs of cognitive decline. Next the *Change Counting Assessment* was administered followed by the Counting Money subtest of the *Assessment of Language-Related Functional Activities* (ALFA; Bains, Heeringa, & Martin 1999). The ALFA is a test that has been standardized on adults aged 55 years or older and is being given to determine concurrent validity for the *Change Counting Assessment*.
- Currently 20% of the participants have been re-administered the *Change Counting Assessment* two weeks after initial testing to determine the test/re-test reliability of the CCA. Data are too few to analyze at this time.

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Preliminary Results

Table 1. Descriptive Statistics for the *Change Counting Assessment*.

	N	Total Time	Number of Restarts
Mean	9	88.6 s	1.9
Standard Deviation	9	23.5 s	2.1
Range	9	62-140 s	0-7

Table 2. Spearman Rank Correlation Coefficients for the *Change Counting Assessment* (CCA) and the Money Counting Subtest of the *Assessment of Language-Related Functional Activities* (ALFA).

	N	CCA Total Time	CCA Number of Restarts
ALFA Money Counting Total Time	9	.867**	.453
ALFA Money Counting Score	9	-.232	-.827**

**Significant at the .01 level.

Preliminary Conclusions

- Normal older adults appear to have little difficulty counting money based on their performance on the *Change Counting Assessment*.
- The *Change Counting Assessment* appears to be a valid measure of simple money handling skills based on the relatively high Spearman Rank Correlation Coefficients between the *Change Counting Assessment* and Counting Money subtest of the *Assessment of Language-Related Functional Activities* for the nine participants tested thus far. However, this will not be known until data collection and analysis have been completed.

Works Cited

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