

Early Childhood Measurement and Evaluation Tool Review

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Date of review: May 2012

Test of Nonverbal Intelligence, Third Edition (TONI-3)

Measurement Areas:

The Test of Nonverbal Intelligence, Third Edition (TONI-3) is designed to test **nonverbal abstract/figural problem solving** in individuals ages **6 years 0 months to 89 years 11 months** in several content areas:

1. Shape
2. Position
3. Direction
4. Rotation
5. Contiguity
6. Shading
7. Size
8. Movement

Purpose:

The TONI-3 is a norm-referenced nonlinguistic problem solving ability assessment tool used:

- with individuals who have severe spoken language disorders (i.e. aphasia);
- with individuals who are deaf or hearing impaired;
- with non-English speakers, or English-language learners;
- to assess cognitive, language, or motor impairments due to neurological conditions (i.e. cerebral palsy);
- to identify individuals suspected of intellectual impairment; and
- to conduct research.

Length and Structure:

The TONI-3 administration takes approximately 15-20 minutes to complete. The TONI-3 consists of two forms (“A” and “B”) that can be used to establish multiple measures of an individual’s ability. Each form has a single test of 45 items with 6 possible response options; if the individual correctly or incorrectly answers the item he/she is given a ‘1’ or a ‘0’

respectively. The examiner's manual discusses several different ceiling/finish rules that can be used to determine when the testing is complete. Based on the raw scores, deviation quotients, percentile ranks, and age equivalents can be derived.

Materials:

The publisher classifies the TONI-3 as a "B-level" qualification. The publisher requires the purchaser to fit into one of the following categories: (a) trained and certified by a recognized institution in a relevant area of assessment (with or without a Master's degree), (b) a member of the American Speech-Language-Hearing Association or the American Occupational Therapy Association, or (c) possess a Master's (or Doctorate) degree in psychology, education, or relevant field with training in assessment.

The TONI-3 Complete Kit is sold by the publisher for CDN \$500, and includes the examiner's manual, picture book, 50 Form 'A' answer booklets and record forms, 50 Form 'B' answer booklets and record forms. Additional record forms and answer booklets are available from the publisher.

Accessibility:

The TONI-3 kit is available in the English language using norms developed with a sample from the U.S. According to the manual, the TONI-3 is designed to minimize the necessity of verbal language proficiency in examinees and subsequently can be used with a variety of populations (see Purpose section for details).

Administration, Scoring, and Interpretation:

The TONI-3 examiner's manual suggests that the test can be administered and scored by professionals and paraprofessionals with formal training in psychological assessment. Individuals with formal graduate-level or professional training in psychological assessment should interpret test results using the step-by-step method described in the manual. The test is easy to administer, easy to score, and moderately difficult to interpret based on the interpretation guide in the manual.

Subscales:

The TONI-3 is a single-scale test that measures performance on a single factor associated with nonverbal problem solving ability.

Documentation:

The TONI-3 examiner's manual provides specific procedures for administration, scoring, interpretation, and has extensive sections on standardization, norming, validity, and reliability.

Norming Sample:

The TONI-3 was normed and standardized using an **American** sample of 3,451 primarily English-speaking individuals' ages 6 years to 89 years. The sample was stratified according to demographic variables such as age group, sex, race/ethnicity, disability classification, rural/urban residence, and geographic region. The authors maintain that a close correspondence was kept between the sample's demographics and demographic information based on the 1997 U.S. Census. The manual contains a detailed report of the sample's demographic information compared to U.S. population statistics.

Reliability:

The TONI-3 examiner's manual discusses three kinds of reliability measures:

Internal Consistency: According to the manual, average coefficient alpha reliabilities fell between .89 and .97 for both forms of the test. Furthermore, an alternate forms reliability test showed that the average correlation between each form ('A' and 'B') was .84.

Test-retest Reliability: An American sample of 170 examinees (ages 13, 15, 19-40) was tested with the TONI-3 twice in a one-week interval using Form A and Form B, respectively. The test-retest reliabilities were calculated, and yielded correlations in the .90s for both forms at all ages tested.

Interscorer Reliability: According to the manual, 25 pairs of completed protocols for both forms (from the normative sample) were scored by two independent scorers, yielding score correlations of .99 for both forms of the test.

Validity:

According to the TONI-3 examiner's manual, content was selected with the purpose of building a test focused on language-free abstract/figural problem solving. The authors also claim that the test is both "culture-free" and "motor activity-reduced" based on academic research by Jensen (1980).

Convergent Validity: The authors discuss several score comparisons that were made between the TONI-3 and other measures of cognitive ability. The first study compared correlations between the TONI-3 scores and the Comprehensive Test of Nonverbal Intelligence (CTONI) scores using an American sample of 550 individual's ages 19-50 matching U.S. census demographics. An analysis showed that the CTONI and TONI-3 full nonverbal IQ scores correlated at .76 and .74 for forms A and B, respectively. A second study examined the TONI-3's relation to the WISC-III using an American sample of 34 examinees ages 7-17. According to the authors, the WISC-III Full Scale IQ correlated at .63 with the TONI-3 scores on both forms.

A comparison was also made between the TONI-3 and the WAIS-R using an American sample of 19 examinees, ages 16-19. The correlation between WAIS-R Full Scale IQ and the TONI-3 scores were at .73 and .71 for forms A and B, respectively.

Construct and Discriminative Validity: Scores on the TONI-3 were also hypothesized to correlate with measures of academic achievement, differentiate between different age groups, differentiate between groups of people already known to be above (or below) average intellectual ability, and measure a single-factor related to Spearman's *g*. According to the manual, the TONI-3 normative scores matched the hypothesized age-score profile found in the TONI and TONI-2. In terms of school achievement, the TONI-3 was compared to a variety of achievement tests using a sample of 20 students with learning disabilities ages 8 to 16. According to the authors, the TONI-3 scores correlated between .55 and .76, suggesting "a high degree of relationship" between the measures.

Using the normative sample data, the authors analyzed the mean scores for subgroups based on clinical, educational, or racial classifications such as individuals with ADD/ADHD, deafness, reading disabilities, emotional disturbances, intellectual disabilities, or who were Hispanic, African American, or spoke English as a second language. According to the authors, each group scored predictably on the TONI-3 (i.e. individuals with intellectual disabilities scored 2 standard deviations below the average). Minority groups performed within the average score range, suggesting that the TONI-3 is equally valid for those groups as a culture or language-free measure. Finally, according to the manual, a factor analysis yielded a single-factor solution that accounted for 67% of the variance, which the authors claim supports their hypothesis that the test measures a single-factor related to *g*.

Publication Information:

This review is based on the 3rd edition of the Test of Nonverbal Intelligence published in 1997 by Pro-Ed.

Publisher's website: <http://www.proedinc.com>

References:

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How to cite this document: This document was created for CUP. However to cite this document use the following:

Community-University Partnership for the Study of Children, Youth, and Families (2011). *Review of the Test of Nonverbal Intelligence, Third Edition (TONI-3)*. Edmonton, Alberta, Canada.