

Early Childhood Measurement and Evaluation Tool Review

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Diagnostic Inventory for Screening Children (DISC) 4th Edition

Measurement Areas:

The DISC is designed as an early childhood diagnostic screening tool that bridges the gap between a first-stage developmental screen and a thorough diagnostic assessment. The DISC targets 8 developmental areas:

1. Fine Motor Skills
2. Gross Motor Skills
3. Receptive Language
4. Expressive Language
5. Auditory Attention and Memory
6. Visual Attention and Memory
7. Self Help Skills
8. Social Skills

The DISC is useful for early screening of developmental delays in children from birth to five years who have been previously identified as being possibly at-risk for developmental delays.

Purpose:

The DISC is a norm-referenced “diagnostic screening tool” that can be used to:

- discern specific developmental delays in preschool children
- design early childhood treatment programs for preschool children based on a developmental profile.

Length and Structure:

The DISC is designed to assess individual children; average administration should take between 15 to 40 minutes per child depending on the number of subscales used, child’s age, and developmental level.

The DISC consists of 27 items in each of the 8 subscales, for a total of 216 items if the entire scale is used. Items on the DISC are scored by indicating the presence or absence of an activity in the

child, using “yes”, “no”, or “no opportunity” [to observe]. Some items accept parental or guardian reports as valid methods of recording the child’s activities. Subscale scores are calculated by assessing a single point for the presence of an activity. Percentile scores and approximate age equivalents can be calculated from the raw scores.

Materials:

The DISC system is available to medical, nursing, and psychology institutions, as well as schools, childcare centres, and nurseries that can show proof of a staff member with a minimum two-year college diploma in early childhood education. The DISC kit is available for CDN \$900, which includes test materials, examiner’s manual, picture book, and 40 record forms. Replacement items for the DISC kit are also available through the publisher; a training video is available in VHS or DVD format for CDN \$250. Several authors have noted the absence of a ticking clock and a mirror in the kit, which are necessary for the administration of the tool (Schwartz, 1998).

Accessibility:

The DISC is available in the English and French languages.

Administration, Scoring, and Interpretation:

The DISC requires a trained person with a minimum two-year college diploma in early childhood education for both administration and interpretation. The test is easy to score, and fairly simple interpretation tables are provided in the manual.

Subscales:

Raw scores for each of the 8 subscales are calculated (see Measurement Areas section for list of subscales), and can be converted into percentile and approximate age equivalents. Each of the subscales are designed to encompass the entire age range of the DISC, yet it is worth noting that some subscales have a very limited number of items devoted to a specific age range (Schwartz, 1998).

Documentation:

The manual, which is included in the DISC kit, contains specific procedures for administration, interpretation and scoring. The manual also includes sections on the DISC standardization, norming sample, and reliability; information pertaining to validity is not discussed.

Norming Sample:

The sample upon which the DISC is normed includes 573 children (47% Female, 53% Male) between birth and five years. The sample data was collected in 1981, and is stratified among 11 different age groups, residing in Ontario, Canada. Approximately 95% of the children were identified as “English” in ethnicity. Extensive sample demographics are discussed in the DISC manual.

Due to the relatively low sample sizes in each age group, and extremely low representation of non-English/European ethnic groups, several authors question the validity of the normative sample and usage of the DISC (Watson, 1998). As such, the authors of the DISC suggest that the test is re-normed for the specific group being tested.

Reliability:

The DISC manual discusses three kinds of reliability that were studied:

Interrater reliability: An interrater reliability study conducted by the authors of the DISC yielded high reliability (.99) coefficients. However, it should be noted that the study included 30 children and may not be sufficient for demonstrating interrater reliability.

Test-retest reliability: 47 children were tested and re-tested in a one-week interval in a study conducted by the authors of the DISC. While the score comparisons between each administration session yielded highly correlation coefficients (.94 to .98), it should be noted that again the sample size is relatively small.

Internal Consistency: A split-half test for consistency was performed on the DISC items, yielding correlation coefficients of .98 to .99.

Validity:

Construct validity, according to the manual, was demonstrated through a factor analysis that yielded two scale factors: cognitive/motor skills and interpersonal skills.

While relatively little information on the validity of the DISC is available, Fleming et al. (2006) conducted a fairly comprehensive validation study. According to the authors of the study, the DISC demonstrated moderate concurrent validity with other tests of similar content such as the Peabody Picture Vocabulary Test III (PPVT-III) and the Preschool Language Scale 3 (PLS-3), while divergent and convergent validity were weakly demonstrated. Fleming et al. (2006) reported that their findings “do not support the use of subscale scores for drawing clinical interpretations about functioning in specific domains.”

According to Fleming et al.’s (2006) study, the DISC demonstrates “some sensitivity but poor specificity.” The authors demonstrate that while the DISC was relatively useful in detecting children already identified with developmental problems it yielded a large number of “false negative” cases in which a child is not identified when there is in fact a concern.

In terms of predictive validity, Fleming et al. (2006) show that the DISC was accurate in detecting 90% of children classified as not-yet-ready-for-school environments, yet over 72% of the children who were already classified as ready-for-school were misidentified as “delayed” by the DISC.

Publication Information:

The DISC was developed by Jeanette R. Amdur, Marian K. Mainland, and Kevin C.H. Parker. This review is based on the 4th edition, published in December 1996 by Mainland Consulting Inc.

Materials Used for Tool Review:

- Manual and Instruction Manual
- Journal/Review Articles

References

Fleming, D., Tan, X., Bisanz, J., Craig, M., & Gierl, M. (2006). *Validation of the Diagnostic Inventory for Screening Children: A Preliminary Report*. Unpublished paper.

Schwarting, G. (1998). Review of the Diagnostic Inventory for Screening Children. *Mental Measurements Yearbook, 13*, 365-366.

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