

Early Childhood Measurement and Evaluation Tool Review

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Early Development Instrument (EDI)

Measurement Areas and Purpose:

The Early Development Instrument (EDI) is a teacher completed checklist developed to evaluate children's readiness to enter grade one. It is primarily used for kindergarten children between the ages of 4 and 6. The tool is not intended for use as a screening or diagnostic tool, nor is it intended to guide special programming or teaching practices at an individual level. Rather, its purpose is to report on children from various communities or geographic regions. It is intended to provide information about populations of children rather than about individuals. The instrument is used mainly for research and community information or development purposes. It is based on a concept of readiness to learn which refers to children's ability to successfully engage in the task demands of school. The EDI measures areas of physical health and well-being, social competence, approaches to learning, emotional maturity, language and cognition, and communication skills and general knowledge (Offord Center for Child Studies, 2004).

Length and Structure:

The administration of the EDI requires a kindergarten teacher to rate a child between the ages 4 and 6, in the second half of the kindergarten year (no earlier than January and no later than April). The completion of the EDI takes about 7 to 20 minutes. The EDI has 5 domains and 15 subdomains. The EDI also includes 3 sets of questions that may be used for contextual purposes but do not contribute to domain scores, these ask about special problems, special skills, and pre-school experience.

The EDI was developed by the Offord Center for Children Studies (OCCS) as part of a Canadian study entitled the School Readiness to Learn Project (SRL). Items on the instrument are rated either as on a yes/ no format, or on a 3-point scale.

Materials:

The authors indicate that the EDI is appropriate for use in research such as to understand a community's need for early childhood development. The OCCS lists some guidelines for use of the instrument. A full description of the tool and its guidelines are listed on the OCCS website (http://offordcentre.com/readiness/SRL_project.html). There are general guidelines for use of

this instrument as well as specific guidelines for use of the instrument for both community wide implementation and research purposes. Since the copyright of the EDI belongs to OCCS, all EDI data from across Canada and internationally needs to be shared with the OCCS. Generally if the EDI is to be used, it is necessary to contact the OCCS.

Accessibility:

The paper based EDI is available in the English and French languages and is accessible from authors upon request. Recently OCCS in partnership with the Health Research Computing have developed and tested a web-based version of the EDI, which is called e-EDI. The e-EDI is also available in English and French and is accessible from any computer that is connected to internet. Since utilizing e-EDI reduces the amount of paper and mailing and allows a quicker data analysis, OCCS encourages communities to use e-EDI.

Prior to utilizing either the paper based or e-EDI, user must consult the OCCS and sign a licensing agreement. The OCCS can administer the implementation of the e-EDI, or rights to the software can be purchased through McMaster University (Janus; Brinkman; Duku; Hertzman; Santos; Sayers; Schroeder; & Walsh, 2007).

Administration, Scoring, and Interpretation:

The EDI is a checklist format and the scores are not evaluated on an individual level but rather as a group (i.e. by school, neighborhood, geographic region, etc.). Each domain is scored from 0 to 10 and higher scores are indication of better developmental skills. From the group of data, all scores of data are added together, and then divided by the number of children that contributed data in order to obtain a mean score. Scores on each of the individual scales can also be arranged in a lowest to highest format and the divided into percentile groups. There is also a Multiple Challenge Index which is an indicator of a child experiencing challenges in three or more of the EDI domains. The results and interpretation of the results are presented in a report and described in terms of percentage of those ready for school and those not ready for school within the site's distribution. The upper 25% of children in each subscale domain are deemed very ready for school or developmentally advanced and the bottom 25% are classified as at risk and the lowest 10% are grouped as "vulnerable".

Subscales:

The EDI has 5 domains each with subscales. The OCCS lists the domains and subscales as follows:

Physical Health and Well-Being (contains 13 items)

- Physical readiness for school day
- Physical independence
- Gross and fine motor skills

Social Competence (26 items)

- Overall social competence
- Responsibility and respect
- Approaches to learning
- Readiness to explore new things

Emotional Maturity (28 items)

- Prosocial and helping behavior
- Anxious and fearful behavior
- Aggressive behavior
- Hyperactivity and inattention

Language and Cognitive Development (26 items)

- Basic literacy
- Interest in literacy/numeracy and memory
- Advanced literacy
- Basic numeracy

Communication Skills and General Knowledge (9 items)

- Communication Skills and general knowledge (no sub-domain)

Documentation:

The OCCS provides a manual for the teachers who are charged with the administration of the EDI in order to assist with rating the children. The OCCS website provides more extensive information on the EDI including administration, scoring, and results yielded by the EDI.

Reliability:

The Janus and Offord (2007) and Janus (2006) discuss five kinds of reliability measures:

Teacher reliability: Janus and Offord (2007) indicate that average teacher consistency within the domains ranges from .76 to .84 (estimated with HLM reliabilities).

Internal Consistency: Across the domains with a sample of 16,704, Cronbach's alphas were found to be: Physical Health and Well being 0.84; Social Competence 0.96; Emotional Maturity 0.90; Language and Cognitive Development 0.93; and Communications Skills and General Knowledge 0.94 (Janus, 2006).

Test-Retest reliability: The test retest reliabilities (n=112) for the EDI scales were found to be: Physical Health and Well being 0.82; Social Competence 0.92; Emotional Maturity 0.89; Language and Cognitive Development 0.82; and Communications Skills and General Knowledge 0.94 (Janus, 2006).

Interrater reliability: The interrater reliabilities (n=53) for the EDI scales were found to be: Physical Health and Well being 0.69; Social Competence 0.80; Emotional Maturity 0.77; Language and Cognitive Development 0.72; and Communications Skills and General Knowledge 0.53 (Janus, 2006).

Parent-Teacher correlations: The correlation between parent and teacher ratings (n=82) for the EDI scales were found to be: Physical Health and Well being 0.36; Social Competence 0.50; Emotional Maturity 0.36; Language and Cognitive Development 0.64; and Communications Skills and General Knowledge 0.41 (Janus, 2006).

Validity:

Confirmatory Factor Analysis: Confirmatory factor analysis was conducted and yielded 14 factors that fit were aggregated into five domains. Each factor demonstrate a good fit with the five factor model (Janus & Offord, 2007). The principal axis factoring analysis showed 14 factors, with eigen values greater than one. The 14 factors were grouped into five domains based on the conceptual framework. The 14-factor solution accounted for 63.1% of the variance. The factors contributed to the five domains as follows:

- Physical Health and Well Being, Factors 7, 10, and 14 (and one item from 5), 4.8% of variance;
- Social Competence. Factors, 1, 9, and 12, 32% of variance;
- Emotional Maturity, Factors 4, 5, 6, and 11, 10.5% of variance;
- Language and Cognitive Development, Factors 2, 8, and 13 (and one items each from 9 and 12), 10.7% of variance;
- Communications skills and General Knowledge, Factor 3, 4.25 of variance.

Concurrent Validity: Another method of demonstrating validity is to demonstrate that the EDI is correlated to other measures of preschool evaluation and child outcomes. The correlation between EDI scores and three other screening tests were as follow:

- *First Step Screening Test for Evaluation Preschoolers (n=68-94):* Physical Health and Well being 0.54 (Motor scale of First Step); Social Competence 0.65 (Socioemotional scale of First step); Emotional Maturity 0.73 (Socioemotional scale of First step); Language and Cognitive Development 0.58 (Cognitive scale of First step); and Communications Skills and General Knowledge 0.52 (Cognitive scale of First step) (Janus, 2006).
- *The Peabody Picture Vocabulary test (n=1700):* Physical Health and Well being 0.05; Social Competence 0.22; Emotional Maturity 0.11; Language and Cognitive Development 0.26; and Communications Skills and General Knowledge 0.57 (Janus, 2006).
- *Who Am I? Developmental Assessment (n=1700):* Physical Health and Well being 0.14; Social Competence 0.38; Emotional Maturity 0.36; Language and Cognitive Development 0.46; and Communications Skills and General Knowledge 0.22 (Janus, 2006).

External Validity: External validity of the EDI was determined by interviewing parents and asking them questions that related to the EDI domains. The correlations between parents' responses and children's EDI scores were statistically significant and list as follows:

- *Physical Health and Well being: 0.15 to .34*
- *Social Competence, Emotional Maturity: 0.21 to 0.48*
- *Language and cognitive development, Communication skills and general knowledge: 0.15 to 0.26.*

Publication Information:

The Early Development Instrument was developed at the Offord Centre for Child Studies at McMaster University, Hamilton, Ontario, Canada.

References:

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- Janus, M.; Brinkman, S.; Duku, E.; Hertzman, C.; Santos, R.; Sayers, M.; Schroeder, J.; & Walsh, C. (2007). The Early Development Instrument: A Population-based Measure for Communities: A Handbook on Development, Properties, and Use. Offord Centre for Child Studies.
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