

THE EARLY DEVELOPMENT INSTRUMENT: AN EXAMINATION OF VALIDITY

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ABSTRACT

We examined the construct or criterion validity of the Early Development Instrument (EDI), a teacher rating scale designed to tap school readiness in Kindergarten populations. Although intended for interpretation at the group level, widespread use of the EDI has led to questions of validity at the individual level. To this end, we compared EDI teacher ratings of 267 kindergarteners (53% female) with individually-administered, child-based, measures of school readiness: the Early Screening Inventory - K, the Bracken School Readiness Composite, a measure of phonological awareness, and a measure of social competence. Results provided support for the criterion validity of EDI total scores but not for the convergent/discriminant validity of EDI domain scores or subscale (factor) scores. Together, the four criterion measures accounted for 36% of variance in total EDI scores, with each criterion contributing significantly. Correlations between EDI scores and standardized criterion measures varied widely across teachers, indicating that teachers differed in their ability to evaluate school readiness (relative to standardized assessments). Results support use of the EDI only for inferences at the aggregated school or district level, but not at an individual or classroom level.

BACKGROUND

The EDI is a new assessment tool designed by Janus and Offord (2000) to measure school readiness in populations of children. Although the EDI is completed on individuals, data are intended for interpretation at the group level only; it was not meant to be used as an individual diagnostic tool. Although there is some evidence to support the reliability and validity of the EDI at the group level (Janus, Wilms & Offord, forthcoming), widespread use of the EDI has led to questions of validity of interpretations at the individual level. This study examined the validity of the EDI in a sample of kindergarten children assessed in 2003. Our focus was on construct or criterion validity, determined by examining whether teacher ratings on the EDI correlated with other, established indices of school readiness across several domains. To minimize shared method variance between criterion and validity measures, we compared teacher ratings on the EDI with individually-administered, child-based measures that assessed directly what children could do in various domains, as tapped by the EDI.

METHOD

Kindergarten children (142 boys, 125 girls, mean age = 5½ years) were evaluated by 27 teachers (primarily white, female) in 16 schools/3 districts in BC, representing a multicultural sample that was primarily non-Aboriginal (97%), English speaking (71%), and non-ESL (70%), with few children designated as special needs (1%). Within 3 months of the EDI, each student was normally assessed in 2 testing sessions at school (approx. 30 min. each) by 1 of 9 testers (trained male & female university students) who administered 4 different criterion measures:

Early Screening Instrument-Kindergarten (ESI-K; Meisels, Marsden, Wiske, & Henderson, 1997), standardized measure of school readiness tapping a variety of cognitive and physical arenas; includes subscales for more specific areas of readiness.

School Readiness Composite-Bracken Basic Concepts Scale (Bracken SRC, 1998), a standardized receptive language measure tapping children's understanding of basic concepts that teachers typically expect children to know when they enter school.
Comprehensive Test of Phonological Processing (CTOPP, Wagner, Torgesen & Rashotte, 1999), a standardized measure of phonological awareness, or the ability to manipulate the smallest units of sound, currently considered one of the best predictors of reading success.

Relationship Questionnaire from the Group for the Study of Interpersonal Development (GSID Rel-Q, Schulz & Selman, 2000) on which children were asked how they should respond in a series of social situations, yielding an overall score, & subscales for Conflict Resolution, Perspective-Taking, Interpersonal Understanding.

RESULTS & DISCUSSION

Significant but modest correlations (see Table 1) were obtained between total readiness scores on each of the criterion measures and total EDI scores (average of five domains).

TABLE 1: EDI SCORES AND OVERALL VALIDITY MEASURE SCORES (N=249-257)

	ESI-K Total	BrackenSRC	CTOPP	GSID Rel-Q
EDI Total (All Students)	.49***	.46***	.37***	.25***
Boys	.44***	.38***	.34***	.21**
Girls	.53***	.60***	.41***	.23**

Stronger correlations were expected between EDI domain scores and conceptually similar criterion measures (i.e., evidence of convergent validity, highlighted in bold in all tables); lower correlations were expected between domains and less conceptually similar areas (i.e., evidence for discriminant validity). These expectations were generally not met (see Table 2).

TABLE 2: EDI DOMAIN SCORES AND OVERALL VALIDITY MEASURES (N=249-257)

	ESI-K Total	BrackenSRC	CTOPP	GSID Rel-Q
EDI Total (All Students)	.49***	.46***	.37***	.25***
Physical Well Being	.41***	.41***	.34***	.21***
Social Competence	.45***	.31***	.27***	.18**
Emotional Maturity	.27***	.28***	.11*	.16**
Language and Cognition	.44***	.34***	.41***	.16**
Communic/Gen. Knowl.	.41***	.49***	.42***	.26***

Further exploring EDI's discriminant validity, we correlated criterion measures and the 16 EDI subscale (factor) scores, tapping more specific characteristics than the 5 domain scores. Contrary to expectations, validity correlations were not found to be stronger between these more conceptually restricted scores and the criterion measures (see Tables 3 - 6).

TABLE 3: EDI PHYSICAL SCALE AND SUBSCALES (N=254-267)

	ESI-K Scores: Total	Gross Motor	Visual Motor
Total Readiness	.49***	.23***	.31***
EDI Physical Well-Being Domain	.41***	.27***	.26***
Subscale 1: Readiness for the School Day	.45***	.13*	.19**
Subscale 2: Physical Independence	.27***	.04	.10
Subscale 3: Gross and Fine Motor Skills	.44***	.31***	.27***

TABLE 4: EDI COMMUNICATION/GEN. KNOWLEDGE SCALE AND SUBSCALES (N=252-257)

	ESI-K Total	ESI-K Verbal Exp	ESI-K Lang/Cogn	Bracken SRC	CTOPP
EDI Total Readiness	.49***	.43***	.35***	.46***	.37***
Communication/Gen Knowl.	.41***	.39***	.38***	.49***	.42***
Subscale 1: Communication	.43***	.39***	.47***	.49***	.43***

***p<.001, **p<.01, *p<.05

TABLE 5: EDI SOCIAL COMPETENCE AND EMOTIONAL MATURITY SCALES AND SUB-SCALES (N=245-249)

	GSID Rel-Q Scores	Total	Persp Taking	Interpers. Underst.	Conflict Resol'n
EDI Total Readiness		.25***	.20***	.10	.22***
Social Competence Domain		.18**	.14	.06	.18**
Subscale 1: Overall social competence		.12*	.09	.02	.14*
Subscale 2: Responsibility and respect		.13*	.09	.06	.13*
Subscale 3: Approaches to Learning		.20***	.16**	.09	.19***
Subscale 4: Readiness to explore		.11*	.14*	-.03	.16**
Emotional Maturity Domain		.16**	.12*	.10	.12*
Subscale 1: Prosocial behaviour and helping		.24***	.18**	.18**	.15*
Subscale 2: Anxious/fearful		.05	.03	.04	.04
Subscale 3: Aggression		.07	.06	.03	.06
Subscale 4: Hyperactivity and Inattention		.13*	.13*	.04	.11*

TABLE 6: EDI LANGUAGE AND COGNITION SCALE AND SUBSCALES (N=249-267)

	Bracken Letters	CTOPP	Bracken #s	ESI-K #s	ESI-K Visual Mem	ESI-K Auditory Mem
EDI Total Readiness	.25***	.37***	.39***	.29***	.10	.18**
Language and Cognition	.42***	.41***	.57***	.33***	.10	.11*
Subscale 1: Basic Literacy	.36***	.34***	.48***	.31***	.09	.06
Subscale 2: Interest and memory	.27***	.27***	.44***	.25***	.06	.13*
Subscale 3: Advanced literacy	.33***	.37***	.38***	.19***	.05	.10
Subscale 4: Basic Numeracy	.38***	.29***	.57***	.36***	.11*	.08

Results of regression analysis indicated that 36% of the variance in overall EDI scores could be predicted by a combination of the four overall criterion validity measures ($R=.60$, $R^2=.36$, $F(4,232) = 32.76$, $p<.001$), each contributing significantly.

At the classroom level, among those teachers (n=12 out of 27) for whom we had data on at least 10 of their students (range 10-21), correlations between the overall EDI composite and standardized assessments of readiness varied considerably across teachers: range = .17 to .95 for ESI-K total scores; range = -.04 to .66 for Bracken SRC scores. Given such variability in the degree to which teacher ratings of school readiness corresponded with that reflected in standardized instruments, inferences at the individual and classroom level may not be appropriate.

Overall, these results support the concurrent validity of the EDI at the level of the overall composite scores. Given the breadth of coverage of the EDI, and the fact that we correlated teacher ratings with child-based measures, the magnitude of these correlations, although moderate, is quite respectable. Evidence for the convergent and discriminant validity of EDI domain and subscale (factor) scores was less compelling. Moreover, given the observed variability across teachers in the degree of correspondence between EDI evaluations and criterion measures, aggregation at the classroom level is also questionable. In light of these findings, we argue that the most appropriate use of the EDI with regard to individual students or classrooms would be as a marker variable, flagging, but not definitively identifying, potential problems and indicating the need for further, in-depth individualized assessment to determine whether a problem exists and the nature of that problem. Further, we would argue that the EDI becomes a more valid marker or flag as the unit of analysis becomes more molar. The EDI was developed as a population-based measure and remains a viable index of readiness to learn when interpreted at this level.