Can the Early Development Instrument (EDI) be used to explore social determinants of health for children with special needs?

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Background

Early Childhood Development

• Children with special needs often face poor developmental outcomes, which translate to poor academic and social outcomes later in life.

• There is evidence that certain factors can mitigate or exacerbate these outcomes.

• Population-level monitoring of developmental health for children with special needs is important as it can shed light on correlates of developmental outcomes.

The Early Development Instrument (EDI)

• The Early Development Instrument (EDI) is a teacher-completed instrument to evaluate children’s developmental health at school entry across five domains (each scored on a 0 to 10 scale):
  - Physical health & wellbeing
  - Social competence
  - Emotional maturity
  - Language & cognitive development
  - Communication skills & general knowledge

• The EDI has undergone extensive validation in typically developing populations.

• Objective: To investigate psychometric properties of the EDI in a Canadian population of children with special needs.

Methods

• The Pan-Canadian database on children’s developmental health, which includes EDI records from all provincial implementations of the EDI, was used for this investigation.

• Item and domain performance were evaluated by item-total domain score correlation, item-deleted alpha, and domain alpha coefficients.

• The fit of the five factor model of the EDI was evaluated by confirmatory factor analysis (CFA).

• Multivariate analysis of covariance (MANCOVA) was conducted to assess the sensitivity of the EDI to gender and age.

Results

• Population characteristics are presented in Table 1.

<table>
<thead>
<tr>
<th>Table 1: Population characteristics</th>
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<tbody>
<tr>
<td>Total N</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Male n (%)</td>
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<tr>
<td>Female n (%)</td>
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<td>Mean age (SD)</td>
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Item and Domain Characteristics

• Mean EDI domain scores for children in the study were lower than those for typically developing children in the EDI normative dataset, with large differences (Table 2).

• Domain alpha coefficients were higher than ideal but similar to those obtained for typically developing children (Table 2).

• Only three items were found to be potentially problematic due to lack of homogeneity with other items in their respective domains.

Construct Validation

• Similar to typically developing populations, girls with special needs scored significantly higher on all domains of the EDI (Table 4).

Discussion

• Overall, the performance of the EDI children with special needs was similar to its performance in typically developing children.

• Only minor issues were observed, such as lack of homogeneity between few items and their respective domains.

• The statistically insignificant relationship between EDI scores and age was not unexpected, as many developmental assessment scores do not show significant improvement with age for children with disabilities (e.g., Patterson et al., 2013; Rapport et al., 1994).

• The evidence presented here supports the validity of EDI data in this population, thus enabling pediatric and education population-level research on all children’s development at school entry.