EDITORIAL

Child Development with the D-Score - Preface [version 1; peer review: not peer reviewed]

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Abstract

The foundations of adult health and wellbeing have their origins early in life, often measured by children's early growth and development. A valid and easily interpretable metric is needed to interpret the underlying latent construct of early childhood development that can represent change and is comparable across cultures and contexts.

Keywords

Child development, D-Score

This article is included in the [Child Development with the D-score](#) gateway.

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Preface

The foundations of adult health and wellbeing have their origins early in life, often measured by children's early growth and development (Clark *et al.*, 2020). Growth standards established by the World Health Organization (WHO) have been adopted globally and are used as indices and targets for improvement. For example, in 2018, 219 million children under 5 years of age (21.9%) were stunted (height for age < -2 standard deviations of the WHO growth standards) (UNICEF, 2019). Stunting early in life has been associated with negative childhood development, academic achievement, and adult productivity. In the absence of direct population-based metrics for childhood development, stunting and poverty have been used as proxy indicators to estimate the number of children not reaching their developmental potential (Lu *et al.*, 2016).

Although stunting and poverty have been effective indicators and have contributed to advances in global childhood development policies and programs (Black *et al.*, 2017), they lack the sensitivity to measure changes associated with programmatic interventions. Early childhood development is a latent construct comprised of an ordinal sequence of developmental domains (motor, language, cognitive, personal-social). A valid and easily

interpretable metric is needed to interpret the underlying latent construct of early childhood development that can represent change and is comparable across cultures and contexts. Chapter I - Turning milestones into measurement - shows that the D-score (Developmental score) meets those criteria.

Chapter II - Tuning instruments to unity - deals with the problem of how to define and calculate the D-score from data obtained from multiple studies and multiple instruments. After harmonizing longitudinal measures of childhood development among over 36,000 children from 11 countries (Weber *et al.*, 2019), the statistical analysis produced a D-score scale with interval qualities that can reflect change over time and enable within and across country comparisons. In addition, the D-score is responsive to environmental conditions that may impact children's development, ranging from community programs and policies to macro-level conditions from migration, inequities, or climate. Applied to populations, direct metrics of children's early growth and development assess the current status of the population's health and well-being, establish predictions of future health and well-being, and provide opportunities to measure changes. Thus, applying the D-score to the early development of children extends to populations and society as a whole.

References

- Black MM, Walker SP, Fernald LCH, *et al.*: **Early Childhood Development Coming of Age: Science Through the Life Course**. *Lancet*. 2017; **389**(10064): 77–90.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Clark H, Coll-Seck AM, Banerjee A, *et al.*: **A Future for the World's Children? A WHO-UNICEF-Lancet Commission..** *Lancet*. 2020; **395**(10224): 605–58.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Lu C, Black MM, Richter LM: **Risk of Poor Development in Young Children in Low-Income and Middle-Income Countries: An Estimation and Analysis at the**

- Global, Regional, and Country Level.** *Lancet Glob Health*. 2016; **4**(12): e916–22.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- UNICEF: **The State of the World's Children 2019: Children, Food and Nutrition: Growing Well in a Changing World.** UNICEF. 2019.
[Reference Source](#)
- Weber AM, Rubio-Codina M, Walker SP, *et al.*: **The D-score: A Metric for Interpreting the Early Development of Infants and Toddlers Across Global Settings.** *BMJ Glob Health*. 2019; **4**(6): e001724.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)