



# Life-Course Approaches to Socioeconomic Inequities in Educational Outcomes Across Childhood and Adolescence: An Update

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## WHAT'S NEW

Life-course approaches provide unique insights into socioeconomic inequities in education. This update highlights recent literature on educational inequities from a life-course perspective, impacts of the COVID-19 pandemic, and discusses approaches to interventions guided by life-course, ecological, and social determinants perspectives.

Children in families experiencing disadvantaged socioeconomic status (SES) are at increased risk of poor educational outcomes, which is likely to have lifelong impacts on their health and socioeconomic flourishing. SES is a dynamic exposure which changes over time, but there had previously been limited systematic comparison of how impacts of SES on academic achievement may vary according to the timing and duration of exposure. In our paper “*Socioeconomic status during childhood and academic achievement in secondary school*”,<sup>1</sup> we used a life-course methodology (the structured modeling approach)<sup>2</sup> to examine which of seven life-course models encompassing duration and timing best explained associations of SES in childhood (four periods from 4–5 to 10–11 years of age) with reading and numeracy achievement in adolescence. We found strong cumulative associations between low SES in childhood and academic achievement in adolescence. For reading, a sensitive period (timing and duration) model was the best fit, with all periods except 8–9 years contributing equally to achievement. For numeracy, a longer duration of low SES was associated with poorer achievement, regardless of timing, with stronger impacts for

boys than girls. Our findings highlighted the need to target educational interventions towards children experiencing persistent socioeconomic disadvantage. In this Progress Report, we consider our findings submitted March 6, 2020, in light of others have published since then.

There is ongoing interest in the application of life-course approaches to understand socioeconomic inequities in educational outcomes. A 2023 systematic review<sup>3</sup> of 75 studies from 2000–2021 evaluated how the temporality of exposure (defined as timing, duration or mobility) to social and economic circumstances across childhood impacts educational and cognitive outcomes across the life-course. The authors considered a range of exposures including economic resources, social adversity and home/neighborhood environments. Temporality of exposure (particularly timing and duration) played a critical role in the vast majority of included studies,<sup>3</sup> highlighting the ongoing importance of examining not just *which* social/economic factors drive educational outcomes, but also the dynamic ways in which their impacts may *vary over time*. This lens remains critical for future work, in order to identify which children are most in need of targeted interventions. In accordance with our findings for SES, the review found strong support for accumulating impacts of persistent exposure to disadvantage, with duration effects identified as relevant in 36/41 studies that examined this type of temporality.<sup>3</sup> This reinforces the importance of targeting interventions towards children experiencing persistent disadvantage. The role of timing effects across specific stages from early childhood to adolescence was also highlighted by a number of included studies,<sup>3</sup> including pronounced impacts of limited economic resources in early childhood, a period we

were not able to examine fully as our earliest exposures were at 4–5 years of age. This underscores the importance of early intervention. The review<sup>3</sup> also highlighted the ongoing challenges of disentangling life-course hypotheses and the importance of direct within-study comparisons for different types of temporality, using methods such as the structured modeling approach that we applied.

The years since our paper also encompass the reverberating impacts of the COVID-19 pandemic, which resulted in immense disruptions to learning and child development globally through school closures, illness-related absences, and social isolation due to lockdowns.<sup>4</sup> It was expected that these adverse impacts would be particularly pronounced for children in lower SES families who may have less access to school/home-based resources to support home-based learning. A 2023 review including 42 studies across 15 countries<sup>4</sup> identified substantial overall learning deficits since the pandemic, estimated to be ~35% of a school years' worth of learning, with the vast majority of studies indicating that inequities in learning outcomes across family SES have increased since the pandemic. The compounding effects of COVID-19 and socioeconomic disadvantage are likely to have profound implications for children's chances of good health, well-being and development across the life-course, which should be examined in future longitudinal studies.

Identifying and implementing interventions to promote educational flourishing for children experiencing socioeconomic disadvantage therefore remains an important area that has only grown in urgency since the pandemic. In accordance with social determinants of health and ecological systems perspectives, such interventions should consider the influence of social, economic, political, environmental, psychological and biological factors across multiple levels (ie, child, family, school, community, and broader social, cultural and policy systems) that constitute and determine the conditions in which children are born, grow, live, play and learn.<sup>5–7</sup> They should also take a life-course approach that seeks to intervene proactively during early childhood, support children appropriately during developmental transitions, and prevent cycles of accumulating health and socioeconomic disadvantage for children experiencing persistently low SES.<sup>5</sup> At the school-level, a 2021 review<sup>8</sup> of school-based interventions to improve reading and mathematics for grade K-6 students with or at-risk of academic difficulties identified peer-assisted instruction and small-group instruction by adults as promising intervention components. Although the review included a range of at-risk populations, 70% of participants were from low-income families, suggesting these findings are likely to be relevant for families experiencing socioeconomic disadvantage.<sup>8</sup> At the child and family level, there is growing recognition of the importance of not only tackling the intervening factors between low SES and achievement (eg, fostering the home environment through reading interventions),<sup>6</sup> but also intervening on more upstream social determinants (eg, reducing financial hardship through income support, improving housing stability/conditions).<sup>6,7</sup> A recent paper used a target trial approach to examine potential impacts of a one-off household income supplement for lower-income families in early childhood on

developmental outcomes, reporting modest reductions in income-based inequalities in learning competencies at age 4–5 years.<sup>9</sup> Such application of novel methods for causal inference from observational data is an important avenue to generate evidence on potential impacts of policy interventions addressing upstream social determinants of health.<sup>6</sup> Critically, as highlighted elsewhere,<sup>5,6,10</sup> given the complex, multifactorial and multilevel drivers of these inequities, it is unlikely that any single intervention will be able to tackle them alone. Rather, an approach of “stacking” multiple targeted interventions (concurrently and across development) is needed,<sup>5,6,10</sup> to support optimal academic achievement and lifelong flourishing for all children.

## DECLARATION OF COMPETING INTEREST

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Natasha Nassar reports financial support was provided by Financial Markets Foundation for Children. Natasha Nassar reports financial support was provided by National Health and Medical Research Council. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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