

# Cumulative risk over the early life course and its relation to academic achievement in childhood and early adolescence

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## KEYWORDS

academic achievement, adolescents, risk factors, Iceland,

## RESEARCH SUMMARY

### DESCRIPTION

Exposure to risk factors such as poverty, maltreatment, and illness, early in life, has been shown to have a negative impact on the academic achievement of children and adolescents. This study uses data on over 1,000 children in Reykjavik, Iceland to examine the link between early exposure to risk factors and subsequent academic achievement.

The goal of this study is to address the following questions:

1. Does an increased number of risk factors across the early life course lead to lower academic achievement in 4th and 7th grade?
2. Does the risk-factor profile produce distinct underlying classes of participants that reveal different academic outcomes?

The authors found that academic achievement declines in relation to the number of risk factors experienced early in life. The findings and methodology from this study are useful to education and youth development researchers. The results demonstrate the importance of early detection of risk for children who are likely to experience cumulative risk factors and providing them with appropriate supports.

### METHODOLOGY

This study utilizes a registry-based, retrospective cohort design with data from 1151 adolescents (49% female) born and residing in Reykjavik in the year 2000. The data comes from a 5-year cohort study drawing upon multiple data registries, conducted by the Icelandic Center for Social Research and Analysis at Reykjavik University. The researchers examined data collected over a 13-year

period, starting with the mother's pregnancy and ending with the participants' 7th grade data.

Risk factors considered included: smoking during pregnancy, mother's age, number of children in the household, visits to school nurses, emotional well-being in school, child maltreatment, family income, marital status, disability status, and academic achievement (for which a composite score was created from national standardized testing data).

Cumulative risk scales were calculated along with separate risk variables for 4th grade and 7th grade students. The risk index was then analyzed with Analysis of Covariance (ANCOVA) and linear regression. Latent class analysis was used to assess the underlying risk factor profile of 7th grade students.

The researchers identified the following limitations: a) it was not possible to collect additional background and control variables, b) the list of risk factors is not comprehensive, c) the coding approach used assumes that all children exposed to any one risk factor had an equal level of risk for poor academic achievement, d) number of children in the household only includes older siblings, and e) the sample is limited to youth born in Reykjavik. Also, taking a binary approach to the coding of risk simplifies a complex construct.

### KEY FINDINGS

Exposure to more risk factors early in life predicted lower academic achievement in 4th and 7th grades. Each additional risk factor accumulated early in life was associated with lower grades. Also, youth with zero risk factors vs. youth with any other number of risk factors were found to be significantly different from each other. Two classes of youth emerged in terms of risk level: high-risk and low-risk, with the high-risk class less likely to achieve academically.

These results are consistent with prior research, which demonstrates that children exposed to several risk factors are more likely to have various negative outcomes such as emotional disorders, educational underachievement, and engaging in risky behaviour. Previous research has been inconclusive about whether or not the impact of risk factors shows a threshold effect or an additive effect. This study provides further evidence that the negative impact of risk factors has an additive effect on academic achievement.

### WHY THIS MATTERS

The findings and methodology are primarily relevant to education and youth development researchers. This study extends previous research by using comprehensive data, examining risk in

## ABOUT THIS SUMMARY

This study examines the relationship between cumulative risk factors in the early phase of life and subsequent academic achievement. The authors show that academic achievement declines in proportion to the number of risk factors experienced in early life.

relation to outcomes longitudinally, and employing a person-centered analytic approach. The authors also highlight the importance of identifying potential risks for children early in their lives and providing adequate early supports. Additionally, they call for educational policy to emphasize the impact of cumulative risk factors.

*"... any and all exposure to risk factors appears to have impact on academic outcomes [...] with that impact increasing additively with a greater number of risk factors ..."*

Ragnarsdottir et al., 2017, p. 40

### RECAP

Each additional risk factor experienced in early life was associated with lower academic achievement in later grades.

### APA CITATION

Ragnarsdottir, L. D., Kristjansson, A. L., Thorisdottir, I. E., Allegrante, J. P., Valdimarsdottir, H., Gestsdottir, S., & Sigfusdottir, I. D. (2017). Cumulative risk over the early life course and its relation to academic achievement in childhood and early adolescence. *Preventive Medicine*, 96, 36-41.