We aimed to compare the rates of early developmental delay, between epochs and geographical regions, among children participating in three population-based birth cohort studies (BCSs) in Brazil: MINA-Brazil (2015–2016), the 1993 Pelotas BCS and the 2004 Pelotas BCS.

MINA-Brazil is a population-based cohort study examining maternal and child health and nutrition in the city of Cruzeiro do Sul, Acre, in the northern region of Brazil. The cohort consists of 1246 children born between July 2015 and June 2016 of women resident in the urban area of Cruzeiro do Sul. The two Pelotas BCS are based in the city of Pelotas, in the Southern state of Rio Grande do Sul. All women delivering during the years of 1993 and 2004 in one of the five maternity hospitals of Pelotas, and who were resident in the urban area of the city were invited to participate in the studies (5249 and 4231 live newborns from the 1993 and 2004 cohort, respectively). The Denver II Screening Test was used to characterize neurodevelopmental delay, at 12 months in the three cohorts and at 24 months in the MINA-Brazil study. Suspected delay was defined as ≥2 items of concern and/or ≥1 delayed items. In the 2004 Pelotas BCS, children’s exposure to cognitive stimulation was assessed at 24 months, using measures of parent-child and interpersonal interactions, and attention-related executive functions were assessed at age 11 years using the adapted Test-of-Everyday-Attention-for-Children.

In our comparisons, the prevalence of suspected neuropsychomotor delay at 12 months was 37% in the 1993 Pelotas cohort, 21% in 2004 Pelotas cohort and 29% in MINA-Brazil. At age 24 months nearly half of the children of MINA-Brazil had suspected developmental delay, with highest rates of delay reported for the language domain. In the 2004 Pelotas cohort, levels of stimulation were inversely proportional to developmental scores. Just <3% of the more stimulated children presented low performance compared with 41 and 24% in the bottom groups of stimulation. Higher stimulation scores were also associated with fewer impairments in attentional-control and attentional-switching at 11 years.

Overall, we observed an improvement in child development between 1993 and 2004 in the Pelotas cohorts. However, children from the MINA-Brazil study had higher rates of developmental delay than those born more than a decade earlier in the Pelotas cohorts. It is possible that these observed differences may be accounted for by the high levels of social vulnerability present in the MINA-Brazil study population compared with the Pelotas population. Our finding of the highest rates of language delay in this population is consistent with previous evidence that language is the developmental domain that is most sensitive to the negative impacts of socioeconomic adversity. Our findings also show that early child stimulation may provide protective effects against cognitive impairments.

REFERENCES