

# Early life deprivation: is the damage already done?



"Sir—The evacuation of small children between the ages of 2 and 5 introduces major psychological problems." This sentence by John Bowlby and colleagues published in *The BMJ* in 1939 warns against the detrimental effects of separation of young children from their mothers.<sup>1</sup> During World War 2, children in the UK were evacuated to unfamiliar families for reasons of safety. The professional attention to the effects of family disruption preceded the attention to serious physical and emotional deprivation of children raised in residential institutions such as orphanages as a result of war. Since Bowlby's report for WHO about the negative effects of institutional deprivation,<sup>2</sup> it is now well established that early deprivation faced by many institutionalised children has serious consequences for children's neurobiological, social, behavioural, and cognitive development.<sup>3,4</sup> However, less is known about the effects of timing and duration of adverse exposures and its pervasiveness on later development. This type of knowledge is important because it can inform child mental health professionals about how to treat or prevent the effects of early deprivation.

The young adult follow-up of the longitudinal English and Romanian Adoptees study by Edmund Sonuga-Barke and colleagues<sup>5</sup> in *The Lancet* fills an important knowledge gap on the long-term mental health consequences of early severe childhood deprivation. The authors followed up two groups of children who were assessed in childhood at ages 6, 11, and 15 years and in young adulthood at ages 22–25 years. The first group consisted of children raised in Romanian institutions from soon after birth to up to 43 months who were removed out of deplorable living conditions—characterised by severe physical, emotional, and social deprivation—and placed into stable and caring families in the UK. This group was separated into those who had spent less than 6 months in an institution (n=67 at age 6 years; n=50 at young adulthood) and those who spent more than 6 months in an institution (n=98 at age 6 years; n=72 at young adulthood). The second group consisted of UK adoptees who did not experience deprivation as a comparison group (n=52 at age 6 years; n=39 at young adulthood). The authors carefully assessed both groups using developmentally appropriate standardised procedures (questionnaires and interviews for adoptees and their parents, and direct measures of IQ)

across the four assessment waves. Using these procedures, Sonuga-Barke and colleagues determined symptoms of autism spectrum disorder, inattention and overactivity, disinhibited social engagement, conduct or emotional problems, and cognitive impairment (IQ score <80).

This study is unique because it directly compares the developmental course of a wide range of behavioural, social, and cognitive measures in children who experienced extremely poor physical and social circumstances before adoption with that of adopted children who did not experience deprivation, it followed both groups across extended developmental periods from childhood into adulthood with multiple assessments, and it contrasted the development of severely deprived children adopted before 6 months of age with those who spent more than 6 months in an institution.

The most salient finding was that children severely deprived up to 6 months and non-deprived UK adoptees had similarly low levels of problems, whereas severe deprivation lasting 6 months or more had persistent detrimental effects on individuals' behavioural and social development in terms of symptoms of autism spectrum disorder, disinhibited social engagement, and inattention and overactivity through to young adulthood (pooled  $p < 0.0001$  for all), despite the fact that they were raised in supportive and caring adoptive families. Compared with the UK controls, the high deprivation group also had a higher proportion of

Published Online  
February 22, 2017  
[http://dx.doi.org/10.1016/S0140-6736\(17\)30541-X](http://dx.doi.org/10.1016/S0140-6736(17)30541-X)  
See Online/Articles  
[http://dx.doi.org/10.1016/S0140-6736\(17\)30045-4](http://dx.doi.org/10.1016/S0140-6736(17)30045-4)



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people with low educational achievement ( $p=0.0195$ ), unemployment ( $p=0.0124$ ), and mental health service use (<11 years  $p=0.0120$ , 11–14 years  $p=0.0032$ , and 15–23 years  $p=0.0003$ ). The longitudinal comparison across the four assessment waves revealed two interesting findings that would have stayed unnoticed if only young adult data had been used. The higher rates of cognitive impairment in the high deprivation group at ages 6 years ( $p=0.0001$ ) and 11 years ( $p=0.0016$ ) compared with the UK controls remitted to normal rates at young adulthood ( $p=0.76$ ). By contrast, emotional problems in the high deprivation group (depression and anxiety) showed a late onset pattern with a significant increase in levels from ages 11 and 15 years to young adulthood ( $p=0.0005$ ).

This study raises three questions. First, are the findings in line with the concept of sensitive periods in which particular experiences are essential for normal development? During brain development, there seem to be time windows in which the organisation of the brain is sensitive to particular external stimuli. After this time the capacity of the brain for change diminishes. A classic example is amblyopia in children caused by a disturbance of normal visual input during sensitive periods of visual development usually within the first year of life.<sup>6,7</sup> If there is no single sensitive period for visual development, but rather several sensitive periods that vary with the neural system involved, what about functions that are at least equally complex, including attention, emotions, behaviour, and social functioning?

In an earlier study in which the Romanian adoptees were followed up from ages 6 to 11 years, Kreppner and colleagues<sup>8</sup> reported a large increase at age 11 years in the proportion of children with two or more impairments (impaired cognition, quasi-autistic behaviour, inattention and overactivity, disinhibited attachment, conduct problems, emotional problems, and peer relationship problems) in children adopted after 6 months versus those who were adopted before 6 months. For those adopted after 6 months, an increase in duration of institutional deprivation was not associated with an increase in the proportion of children with multiple impairments. This marked 6-month cutoff in the negative effects of duration of deprivation supports the sensitive period hypothesis, but an alternative explanation of an accumulative effect with increasing duration of deprivation cannot be ruled out. A more linear relation between duration of exposure (<6 months, 6–24 months, and 24–42 months) and the

proportion of children with none, one, two, three, or more impairments was reported for the Romanian adoption sample when the children were 6 years old.<sup>9</sup> Additionally, the finding that cognitive impairment in the adoptees who had long-term deprivation remitted to normal rates in adulthood is not in line with the expectation that after a window of opportunity has closed the loss of flexibility of the brain hampers improvement.

Second, should the social and behavioural problems of adoptees with long-term institutional deprivation be regarded as clinical disorders or as evolutionary adaptations to extreme circumstances?<sup>10</sup> For example, disinhibited social engagement might be adaptive in an environment without caregiver continuity, and hyperactive behaviour might increase the probability of a deprived child to interact with others. However, the finding in Sonuga-Barke and colleagues' study<sup>5</sup> that emotional problems had emerged *de novo* in adult Romanian adoptees suggests that not all behaviours associated with deprivation should be regarded as adaptive.

Lastly, is the finding that a fifth ( $n=15$ ) of the Romanian adoptees who had spent more than 6 months in institutions and were problem-free from age 6 years onwards remarkable? To improve interventions, a better understanding of biological and psychological factors that make these children resilient to severe adversities is crucial.

Whatever the underlying mechanisms, the findings of Sonuga-Barke and colleagues' study elegantly support the rule of the earlier the better for improving the caregiving environment for young children whose basic needs are profoundly violated. This finding is true for millions of children around the world who are exposed to war, terrorism, violence, or mass migration. As a consequence, many young children face trauma, displacement, homelessness, or family disruption. The straightforward implications of the study by Sonuga-Barke and colleagues are in line with Bowlby's views and should be advanced in an equally determined and passionate way.

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I publish the Dutch translations of the Achenbach System of Empirically Based Assessment for which I receive remuneration. I declare no other competing interests.

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- 1 Bowlby J, Miller E, Winnicott D. Evacuation of small children. *BMJ* 1939; **2**: 1202–03.
- 2 Bowlby J. Maternal care and mental health. Geneva: World Health Organization, 1951.
- 3 Johnson R, Browne K, Hamilton-Giachritsis C. Young children in institutional care at risk of harm. *Trauma Violence Abuse* 2006; **7**: 34–60.
- 4 Teicher MH, Samson JA. Annual research review: enduring neurobiological effects of childhood abuse and neglect. *J Child Psychol Psychiatry* 2016; **57**: 241–66.
- 5 Sonuga-Barke EJS, Kennedy M, Kumsta R, et al. Child-to-adult neurodevelopmental and mental health trajectories after early life deprivation: the young adult follow-up of the longitudinal English and Romanian Adoptees study. *Lancet* 2017; published online Feb 22. [http://dx.doi.org/10.1016/S0140-6736\(17\)30045-4](http://dx.doi.org/10.1016/S0140-6736(17)30045-4).
- 6 Astle AT, Webb BS, McGraw PV. Can perceptual learning be used to treat amblyopia beyond the critical period of visual development? *Ophthalmic Physiol Opt* 2011; **31**: 564–73.
- 7 Daw NW. Critical periods and amblyopia. *Arch Ophthalmol* 1998; **116**: 502–05.
- 8 Kreppner JM, Rutter M, Beckett C, et al. Normality and impairment following profound early institutional deprivation: a longitudinal follow-up into early adolescence. *Dev Psychol* 2007; **43**: 931–46.
- 9 Rutter M, Kreppner JM, O'Connor TG. Specificity and heterogeneity in children's responses to profound institutional privation. *Br J Psychiatry* 2001; **179**: 97–103.
- 10 Jensen PS, Mrazek D, Knapp PK, et al. Evolution and revolution in child psychiatry: ADHD as a disorder of adaptation. *J Am Acad Child Adolesc Psychiatry* 1997; **36**: 1672–79.