

A loving family can boost children's intelligence

- Five-year study measures impact of environment
- Deprived upbringing is linked to stunted growth
- [Ian Sample](#) in St Louis
- [The Guardian](#), Saturday 18 February 2006

Depriving children of a loving family environment causes lasting damage to their intelligence, emotional wellbeing and even their physical stature, according to the most extensive study of social deprivation yet.

A lack of care and attention left children with stunted growth, substantially lower IQs and more behavioural and psychological problems than children who had been better cared for, according to the report at the American Association for the Advancement of Science meeting in St Louis yesterday.

The extent to which children are sensitive to the environment they grow up in emerged from an unprecedented study, the Bucharest Early Intervention Project. It is the first randomised clinical trial set up to investigate the effects of social deprivation on the emotional, psychological and physical health of children.

The study has been running for five years and records the wellbeing of children in a Romanian orphanage from an early age, and the changes they experience when transferred to foster care. The orphanage represents an extreme of social deprivation because the children are typically looked after by a rota of carers who will be responsible for 12 to 15 children at any one time.

Researchers found children living in deprived conditions suffered stunted growth, falling within the shortest 10% for their age. But on moving to a foster home, they went through astounding growth spurts.

"They can grow five times faster than normal and by the time they've been in foster care for a year and a half they will nearly have caught up," said Dana Johnson, professor of pediatrics at the University of Minnesota, who estimates children in orphanages lose one month of growth for every three they spend there. Even though the children go through extraordinary growth spurts, they tend to go through puberty younger and faster, and so miss out on the usual long spell of growth most children experience.

The researchers say the children's recovery is unlikely to be explained by better nutrition as they had adequate meals before. Instead, they believe the effect is down to the more attentive environment.

The study found that a child's environment had a marked effect on intelligence and emotional development. It measured IQ and ability to express positive emotions in 136 children aged six to 30 months. All had spent time in the orphanage, but 69 had been moved into foster homes.

The studies showed that children in the most deprived conditions had exceptionally low IQs, but once they were removed to foster homes, improved when tested again at 42 and 54 months. Similarly, the children's ability to express positive emotions also improved markedly when they were moved into a family environment.

The report shows that emotional and cognitive impairments caused by a poor social environment can be substantially improved if living conditions are improved early enough, according to Professor Nathan Fox of the University of Maryland.

Not all of the psychological problems caused by a difficult upbringing were fixed by later improving conditions. Psychiatric problems were three and a half times more common among institutionalised children, but moving them to stable family environments did not always improve their mental condition. While the study showed children in foster homes had fewer psychiatric problems, with less anxiety and depression than those in orphanages, their behavioural problems, including being aggressive and confrontational, did not subside. The children's response was different depending on gender, with girls more likely to have emotional problems and boys more prone to behavioural disorders.

Charles Nelson, a paediatrics specialist at Harvard University, used measurements of brain activity to assess whether a lack of social interaction and attention might harm children's neural development. Using EEG (electroencephalograms), Dr Nelson looked at the strength of brain activity relative to children who had never been institutionalised. The measurements showed children in the orphanage had less powerful activity in all parts of their brains. In this case, placing the children into foster homes failed to bring about significant improvement.

In a further brain study, Dr Nelson's team used a test called ERP, event-related potential, which measures the brain's response to certain stimuli, such as being shown happy, sad, angry or fearful faces.

"What we are seeing is that with the institutionalised children their brain's response to the faces was weaker and they took longer to respond," he said.