

Treatment / Child Wellbeing: Cognitive Functioning

A foster care programme for young children (less than three years old) which permanently removed them from terrible institutional care in Bucharest, Romania, was effective in improving cognitive development in early childhood. However, by adolescence, foster care children's cognitive functional outcomes were still lagging children who had never been in institutional care.

Evidence status	Moderate risk of bias	Moderate evidence of impact on cognitive outcomes
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The summary in brief

After the Ceausescu political regime ended in 1989, Romania was left with many children living in terrible orphanages. To address these issues, *The Bucharest Early Intervention Project (BEIP)*, a novel foster care programme, was introduced in 2000. At the time of launch, foster care was very uncommon in Romania.

The cell has five papers (all on *BEIP*) that report cognitive functioning outcomes – Johnson 2010, Smyke 2010, Wade 2018, Wade 2020, and Colich 2021. A full summary of two *BEIP* papers (Johnson 2010 and Bick 2015) is available in the guidebook. There are eleven papers in total of this RCT in the EGM all in the 'treatment' row across multiple outcomes.

Before their third birthday, children in orphanages (institutional care) were randomised to either move to foster homes (i.e., receive *BEIP*) or to remain in the orphanages (institutions). The aim was to study the effects of reasonably early intervention for children who experience adverse situations after birth. The domains studied included growth, brain development, cognition, and behaviours. Various outcomes are measured at various times in each of three groups of children: a group moved from institutional care to foster care (FC: *BEIP*); a group which remained in institutional care (care as usual, CAU); and a comparison group who were never in care (NIC).

Foster caregivers received regular support from trained social workers. Social workers aimed to facilitate the establishment of a strong bond between children and their foster carers. At 42-54 months, cognitive development in foster care children was associated with developmental quotient (DQ) scores at the start of the study (lower the initial DQ, higher the improvement in DQ and IQ), by standardised change-in-height scores (every unit height increase led to a 12 point increase in verbal IQ) and birth weight (low birth weight and entering foster care after age two combined for poor cognitive development). Foster care children demonstrated higher positive attachment to their caregiver (such as being secure) than those that remained in institutional care but lower than for children who had always lived at home. Every month spent in foster care and every unit of improvement in DQ added up to better attachment outcomes for foster care children.

Cognitive functions such as memory, learning and problem-solving were tested between ages eight and 16. Children who had never been in institutional care (always lived at home) performed better on almost all outcomes at age eight than both the groups in foster care or institutional care, and they consolidated their lead by age 16 (i.e., the others never caught up). Surprisingly, the foster care group and their peers

in institutional care performed similarly on almost any cognitive function measure (one would expect foster care children to perform better).

The cell also includes one systematic review of cognitive behavioural therapy for adolescent sexual offenders. There were no differences in cognitive outcomes between CBT and usual treatment groups in residential facilities.

Contents of the cell

The papers are all from the same RCT, and all have moderate risk of bias.

Johnson 2010	Romania. Children in institutional care (orphanages) in Bucharest.
Smyke 2010	Evaluation of the <i>Bucharest Early Intervention Project (BEIP)</i> , a foster care programme for children in institutional care.
Wade 2018	Three studies from <i>BEIP</i> report on predictors of cognitive development and association between cognitive development and attachment in the short-term (42-54 months) and cognitive functional outcomes in the long-term (8 years-16 years).
Wade 2020	
Colich 2021	

A. Primary Studies

The intervention

Under the Ceausescu dictatorship in Romania (until 1989), abandoned children lived in dreadful orphanages¹. Bucharest had six institutional care centres (“orphanages”), which were characterised by terrible environments for children to grow physically, mentally, socially, or emotionally. Foster care was practically non-existent in Romania during this time.

In the year 2000, *The Bucharest Early Intervention Project (BEIP)* was created to provide foster care. *BEIP* established 56 foster families that could take in children from institutions. Randomisation of children to *BEIP* or continuing institutional care was rationalised since, without *BEIP*, all children would continue to live in awful conditions. This was a chance to identify an effective intervention that could be used to address this issue.

Foster care recruitment and training were standardised and relevant to the local context. Three social workers supported foster caregivers on a regular basis. Social worker roles focused on monitoring the relationship between children and their foster caregivers, promoting parent-child attachment relationships, providing support for behavioural management as needed, and serving as a resource for foster caregivers on the special needs of their children. Social workers were trained and received ongoing support from US-based mental health practitioners every week. Overall, social workers promoted a committed relationship between foster caregivers and the children.

¹ Weir, K: American Psychological Association. (June,2014). The lasting impact of neglect. Retrieved from <https://www.apa.org/monitor/2014/06/neglect>

Children entered foster care between five and 31 months of age. An assessment conducted when a child was four and a half years old showed that most *BEIP* children were still with their foster family. *BEIP* was not directly supported by the local government initially, but after a few years, the local government in Bucharest provided financial and administrative support for foster families and children.

Does the intervention work in improving children's cognitive functioning?

Effects on cognitive functioning were measured in the short term (42-54 months) and in the longer term (age 8-16).

Short-term (42-54 months):

Three factors were statistically significant predictors of DQ and IQ for children who entered foster care:

1. *Baseline DQ* (when the study began) for all DQ and most IQ measures (except for performance IQ) at 54 months. The lower the baseline DQ (i.e., the child was worse off developmentally) the greater the increase in DQ and IQ measures at 42 and 54 months.
2. *Change in height z score* (a standardised measure for height change in children) for DQ at 42 months and verbal IQ at 54 months. Each unit increase in the z score meant an average increase of about 12 verbal IQ points at 54 months.
3. *Birthweight* for full IQ and performance IQ at 54 months. The impact of low birth weight and delayed placement in foster care is clear. Low birth weight children (<2.5kg) placed in foster care after age two had statistically significantly lower IQ scores than children with normal birth weight who were placed in foster care before their second birthday (average IQ score of 67.7 vs. 91.1 points at 54 months). Low birth weight infants in institutional care are especially vulnerable to cognitive deficits. The earlier the intervention (foster care), the better the chances of preventing this.

Cognitive development was also studied as a predictor for attachment in children at 42 months of age. DQ scores were highest for children who had always lived at home with their birth families, followed by foster care children and children who remained in orphanages. Across groups, children with organised attachment (a set of positive indicators of attachment) and secure attachment (a specific positive indicator of attachment) had higher DQ scores at 42 months.

Each month spent in foster care increased the odds of the child demonstrating organised attachment by approximately 27%. For children in 'Care As Usual' (CAU), DQ was a predictor of organised attachment. Each unit increase in DQ scores improved the odds of organised attachment by close to 7%. DQ scores were not predictive of organised attachment for foster care children. Secure attachment, one specific indicator within organised attachment, was associated with DQ scores for foster care children (nearly 6% increased odds of secure attachment with every unit increase in DQ). This was also seen in children who had always lived at home with their birth families (14% increase in odds) but not in CAU children.

Long-term (8-16 years):

Memory and 'executive functioning' (EF) were tested at ages eight through 16 for foster care children (FC), children who remained in institutional care (care as usual: CAU) and children who had always lived with their families at home (never in care: NIC). EF "is an umbrella term for a group of skills involved in goal-directed action and problem solving, including working memory, cognitive flexibility, response inhibition, and attentional control." These cognitive abilities can predict future educational attainment, mental health, income, and psychosocial wellness in adulthood. The Cambridge Neuropsychological Test Assessment Battery (CANTAB)² was used to measure these cognitive domains.

1. *Attention and short-term visual memory*: HC performed statistically significantly better than both FC and IC at age eight and at age 16 (all groups seemed to have improved their performance at the same rate from age eight to 16).
2. *Spatial planning (e.g., being able to accurately describe their environment and orient themselves in new surroundings) and problem solving*: At age eight, all three groups did equally well, i.e., there were no statistically significant differences among groups. However, at age 16, HC did statistically significantly better than the other two groups.
3. *Spatial working memory*: HC were able to strategize statistically significantly better and make fewer mistakes at age eight compared to the other two groups. All three groups improved their performance on this domain as they got older, but the HC group improved statistically significantly more than the other two. This meant that by age 16, the HC group had considerably widened their lead.
4. *Visual-spatial memory and new learning*: At age eight, FC had statistically significantly more errors and needed more attempts than the other two groups. However, they were able to catch up with the other groups by age 16.

Being placed in foster care before age two did not seem to make much difference, like it did for short-term outcomes (discussed above).

The findings from long-term assessments are surprising. Though it is plausible that children who have always lived at home (NIC) will have an advantage compared to children who have ever been in institutional care (FC or CAU), one would expect better outcomes for FC compared to CAU (which was not the case here).

Have the interventions been implemented at scale?

Not really. This was a unique study in Bucharest in a situation that was quite out of the ordinary.

Which type of organisation delivered the intervention?

² <https://www.cambridgecognition.com/cantab/why-choose-cantab/#:~:text=CANTAB%20accurately%20measures%20cognitive%20function,academic%20institutions%20around%20the%20world.>

The intervention and the associated RCT were designed by researchers from various US universities. The researchers partnered with a local NGO (SERA Romania) to implement *BEIP*. The team also collaborated with local authorities at the Ministry of Health and the Directorates of Child Protection.³

What do the interventions cost?

The study does not report cost data.

How is the programme meant to work? The theory of change

The study does not mention a specific theory on which the programme is based.

Are the results generalisable?

BEIP covered the entire Bucharest area since children in all six institutional care facilities were included in the programme. It was implemented in Bucharest at a time when foster care was uncommon in Romania. Findings from this trial are probably generalisable to jurisdictions looking to ramp up support for fostering children - because *BEIP* was a newly created foster programme.

How reliable is the evidence?

Moderately reliable.

Risk of Bias for Randomised Controlled Trials (RCTs)

Study (Author and year)	Overall risk of bias	Randomisation process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result
Johnson 2010	Some concerns	Low risk	Some concerns	Low risk	Low risk	Some concerns
Smyke 2010	Some concerns	Some concerns	Some concerns	Some concern	Low risk	Some concerns
Wade 2018	Some concerns	Low risk	Some concerns	Some concerns	Low risk	Some concerns
Wade 2020	Some concerns	Low risk	Some concerns	Some concerns	Low risk	Some concerns

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Colich 2021	Some concerns	Low risk	Some concerns	Some concerns	Low risk	Some concerns
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What else do we know about the *Bucharest Early Intervention Project (BEIP)*?

The *Bucharest Early Intervention Project (BEIP)* – which is the subject of eleven papers on the EGM - placed children from terrible orphanages in Romania into foster care. Foster care children, predictably, did much better than institutional care children on most developmental, physical, mental, emotional, and cognitive health outcomes. They were also able to catch up with their peers, who had always lived at home with their birth families, on many of these outcomes, especially in the short term. The earlier the intervention, the more beneficial the intervention. *BEIP* is classified as a treatment intervention on the EGM since foster care was considered a treatment after living in extremely poor conditions (in orphanages).

B. Systematic Review (Sneddon 2020)

What is the systematic review about?

Sneddon 2020 is a systematic review assessing the effectiveness of cognitive behavioural therapy (CBT) for adolescents (10-18 years) who show ‘problematic or harmful sexual behaviour.’ Usually, these adolescents have received a formal reprimand or conviction for their behaviour and are receiving treatment in residential facilities.

What are the findings on children’s cognitive functional outcomes?

Three were US studies and one from South Africa. There was no difference between CBT and regular treatment on cognitive outcomes such as overall distortions on harmful sexual behaviour or specifically on distortions about rape, i.e., that rape or sexual assault is wrong.

What information is available on cost and cost-effectiveness?

No information is provided on cost or cost-effectiveness.

Are results generalisable?

Not applicable. Findings were not significantly different for CBT vs. usual treatment.

How reliable is the evidence?

The systematic review was judged to be **low risk of bias**. This means that it was conducted well, which increases our confidence in the findings.