## **Early Childhood Education**

**EVIDENCE BRIEF** 

Early childhood education is an effective way of boosting the cognitive and academic skills of children prior to formal education. There is clear international evidence that high-quality early childhood education reduces the likelihood of future criminal behaviour and other negative social outcomes for disadvantaged children.

## **OVERVIEW**

- Early childhood education (ECE) can include any form of home- or centre-based education provided from birth to school-entry age.
- There is clear international evidence that high-quality early childhood education reduces crime for disadvantaged children (i.e., children from low socioeconomic backgrounds).
- International evidence also suggests that early childhood education that includes social skills training may have the greatest potential for reducing future criminal behaviour.
- One longitudinal New Zealand study has demonstrated a link between the amount of early childhood education received and lower adolescent offending.
- There is clear international evidence and limited but consistent New Zealand evidence of cognitive, academic and social benefits from early childhood education.
- Although New Zealand already invests a relatively large amount in early childhood education, investment directed at teaching better social skills within ECE, or increasing overall ECE participation and quality in lower socio-economic areas, could further reduce offending.





### **EVIDENCE BRIEF SUMMARY**

Evidence rating:	Fair (for high-quality ECE with socioeconomically disadvantaged children)		
Unit cost:	Average of \$9,473 government expenditure for 1,000 hours of ECE per child per year in 2015		
Effect size (number needed to treat):	Intervention covering 4 individuals will prevent one instance of general offending		
Current spend:	\$1.81 Billion NZD		
Unmet demand:	Low		



## DOES EARLY CHILDHOOD EDUCATION REDUCE CRIME?

### International evidence

Although most countries including New Zealand provide or subsidise home-based early childhood education, most research looks only at centre-based early childhood education. Overall, meta-analyses and systematic reviews of the international evidence suggest that highquality early childhood education reduces future aggressive and criminal behaviour for socioeconomically disadvantaged children.<sup>i</sup>

Only a small number of longitudinal studies have looked directly at the relationship between early childhood education and crime. Furthermore, few of these studies have used experimental or quasi experimental designs.<sup>1</sup>

One meta-analysis looking only at experimental and quasi experimental studies found substantial, statistically significant reductions in future delinquent and criminal behaviour for socio-economically disadvantaged children who attended high-quality early childhood education compared to similar children who received no early education or poorer quality early education. Specifically, those who participated in high-quality early childhood education were less than half as likely to engage in delinquent and criminal behaviour over an average of 18 years' follow-up.<sup>ii</sup>

Larger meta-analyses looking at the effects of early child education on a combination of aggressive, criminal and other social behaviours (labelled social emotional outcomes) have also found significant, positive effects (e.g. less future aggressive and criminal behaviour) for mostly disadvantaged children who attended early childhood education compared to those who received no education or poorer quality early childhood education.<sup>iii</sup>

Systemic reviews and meta-analyses of the international literature both show that high-quality early childhood education has positive effects on future social and behavioural outcomes for socioeconomically disadvantaged children.<sup>iv</sup>

### **New Zealand evidence**

One longitudinal New Zealand study has looked at the relationship between early childhood education and future criminal behaviour. The Christchurch Health and Development Study (CHDS) followed a cohort of 1,265 people born in Christchurch in 1977 from birth to age 30. A recent analysis on this cohort examined relationships between early childhood education attendance from ages 2–5 years and outcomes from school entry to age 30.<sup>v</sup>

This recent analysis found a statistically significant association between the number of years spent in ECE and self-reported property/violent crime in adolescents (ages 15– 21). That is, more years of ECE were associated with a lower proportion of self-reported crime at ages 15 through 21. There were however, no significant associations between years of ECE and self-reported crime in adulthood (ages 21– 30). There were also no significant associations between years in ECE and self-reported arrests/convictions during adolescence or adulthood.<sup>vi</sup>

The analyses in this study controlled for an array of characteristics (e.g. gender and ethnicity) and sociodemographic variables (e.g. maternal and paternal education levels, socio economic status). The variables controlled for were selected based on their association with ECE attendance and potential association with the future outcomes assessed.<sup>vii</sup>

for pre-test differences with non-randomised comparison groups.

<sup>&</sup>lt;sup>1</sup> i.e. randomised controlled trials or methodological/statistical techniques used to control

## WHEN IS EARLY CHILDHOOD EDUCATION MOST EFFECTIVE FOR REDUCING CRIME?

### Quality of early childhood education

Most of the international research agrees that higher-quality programmes in terms of structure and process have larger effects on future social outcomes including crime, especially for socioeconomically disadvantaged children from ethnic minorities.<sup>viii</sup>

Within the research, quality in early childhood education typically refers to structural quality (i.e., level of funding, hours/years of service provided, group size, teacher to child ratios and teacher qualifications). An example of highstructural-quality ECE would include full-time programmes (6–8 hours a day, five days a week for 2–5 years) with groups of 3–6 children taught by someone with a Masters level qualification. In contrast, an example of lower-structural-quality ECE would include half-day programmes that run for 1–2 years with groups of 20–30 children taught by someone with a community college degree.

Quality in ECE can also refer to process quality (i.e., the quality of interactions between adults and children), which experts generally recognise as being more strongly linked to outcomes. However, this type of quality is more difficult to measure and so most research deals only with structural quality.<sup>ix</sup>

### Social skills training

One recent meta-analysis suggested that the level of social skills training included in an early childhood education programme can decrease future aggressive and disruptive behaviours. Aggressive and disruptive behaviours in childhood are often recognised as precursors to antisocial and criminal behaviour.<sup>x</sup>

This meta-analysis showed that the more social and emotional development included in an early

childhood educational programme the more it reduced future aggressive and disruptive behaviours. More specifically, programmes that included social skills training (e.g., teaching children appropriate social behaviours and cognitions) produced the largest reductions in future aggressive and disruptive behaviours.<sup>xi</sup>

## WHAT OTHER BENEFITS DOES EARLY CHILDHOOD EDUCATION HAVE?

Early childhood education produces a broad range of short- and long-term benefits, especially for disadvantaged children. International and New Zealand research has demonstrated positive effects of early childhood education on cognitive, academic and social outcomes, particularly for disadvantaged children who attend high-quality education centres.<sup>xii</sup>

### **Cognitive development**

There is clear International evidence and consistent New Zealand evidence that participation in early childhood education promotes cognitive development and is associated with higher intelligence. Greater increases in cognitive development are observed with higher-quality programmes.<sup>xiii</sup>

### Academic achievement

There is clear international evidence and consistent New Zealand evidence that early childhood education increases academic performance through elementary school, highschool and university. The academic benefits include higher grades, lower rates of failure, increased completion of university degrees and lower rates of drop-out. Greater increases in academic achievement are observed in higherquality programmes.<sup>xiv</sup>

### **Social outcomes**

International and New Zealand studies suggest that disadvantaged children who receive highquality early childhood education are less likely to be teenage parents, unemployed, welfare dependent or in poverty compared to the nonparticipating peers.<sup>xv</sup>

Early childhood education has also been found to have positive impacts on the mental and social wellbeing of attendants' families.<sup>xvi</sup>

### **Health outcomes**

International evidence suggests that access to high-quality early childhood education can prevent the early development of mental health problems and results in fewer instances of depression and other health problems throughout the life cycle.<sup>xvii</sup>

#### Intergenerational impacts

International research has shown that bettereducated parents generally have children who are themselves better educated, healthier and wealthier than the children of the less educated.<sup>xviii</sup>

# CURRENT INVESTMENT IN NEW ZEALAND

### **Ministry of Education**

The New Zealand Ministry of Education spent \$1.81 billion on early childhood education in the 2017/2018 financial year. Over 202,000 children were involved in ECE services<sup>xix</sup>. All children aged 0–5 in New Zealand are entitled to 30 hours of government subsidised ECE per week.<sup>xx</sup> A higher subsidy covering the full average cost of ECE is provided for children aged 3–5 for 20 of the 30 hours per week.

### **Ministry of Social Development**

The Ministry of Social Development also provides a subsidy (named the Childcare Subsidy) of up to 50 hours per week to offset ECE fees for low income parents. In 2015 the New Zealand government spent an average of \$9,473 per child in ECE; this amount pays for approximately 1,000 hours of education over one year for each child attending early childhood education.<sup>xxi</sup>

### **Comparison with other OECD countries**

New Zealand invests relatively more per child in early childhood education than other OECD countries. For example, New Zealand invests \$10,252 USD per child pre-primary (including public and private expenditure) compared with an average of \$8,070 USD per child for all OECD countries. New Zealand also has relatively higher rates of overall enrolment in early childhood education (80.7% vs. 63.5% OECD average) and lower child to teacher ratios than the OECD average.<sup>xxii</sup>

## Participation and Quality of ECE in New Zealand

Of the children who have just started primary school in New Zealand, overall prior participation in early childhood education has been steadily increasing over the last decade (from 93% in 2005 to 97% in 2018). Participation of children who then go on to attend a low decile school has also increased in recent times (from 87% in 2010 to 94% in 2018), though it is still lower than children who attend medium to high decile schools. The Ministry of Education has objectives to continue increasing overall participation with a focus on Māori and Pasifika children, and children from low socio-economic backgrounds.<sup>xxiii</sup>

The quality of New Zealand early childhood provision is guided by a curriculum called Te Whāriki. First published in 1996 this curriculum provides a broad bi-cultural framework for what is experienced in ECE centres and how those experiences can be delivered. This means there is large variability across New Zealand ECE centres. For example, a recent review by the New Zealand Education Review Office found that improvements are needed in many early childhood centres around how children's oral language is supported and monitored. This review found that 19% of NZ ECE centres were well-focused on supporting oral language learning and development, 50% had some focus and 31% had limited or no focus. Oral language abilities are fundamental to educational achievement and social abilities.xxiv Te Whāriki includes some broad principles related to developing social skills. There are no specific social skills training modules.xxv

Based on this information, initiatives aimed at providing more language support, specified social skills training modules or increasing participation and quality in low socioeconomic areas would have the greatest potential to reduce crime. Furthermore, increasing participation and quality in ECE would improve school readiness and achievement across several other domains (e.g., social and cognitive domains).

Given the broad and flexible nature of the New Zealand ECE curriculum, specific third-party interventions run within ECE centres (e.g., specific social skills training programmes) might have greater potential to reduce offending than changes to the curriculum. There is already a large robust evidence-base supporting the positive effects of these types of interventions within all types of education centres from ECE to high school.<sup>xxvi</sup> Meta-analyses of these programmes have also found positive effects on a range of outcomes including antisocial behaviour.<sup>xxvii</sup>

## **EVIDENCE RATING**

Each Evidence Brief provides an evidence rating between Harmful and Strong.

Harmful	Robust evidence that intervention		
	increases crime		
Poor	Robust evidence that intervention		
	tends to have no effect		
Inconclusive	Conflicting evidence that		
	intervention can reduce crime		
Fair	Some evidence that intervention		
	can reduce crime		
Promising	Robust international or local		
	evidence that intervention tends to		
	reduce crime		
Strong	Robust international and local		
	evidence that intervention tends to		
	reduce crime		

According to the standard criteria for all Evidence Briefs,<sup>2</sup> the appropriate evidence rating for ECE is **Fair**.

As per the standard definitions of evidence strength outlined in our methodology, the interpretation of this evidence rating is that:

- there is some evidence that interventions can reduce crime
- it is uncertain whether interventions will reduce crime even if implemented well
- interventions might be unproven in New Zealand or subject to conflicting research
- interventions may benefit from trial approaches with a research and development focus
- robust evaluation is needed to confirm interventions are reducing crime and to aid in detailed service design.

This rating reflects that although the international research is promising, the direct

<sup>&</sup>lt;sup>2</sup> Available at <u>www.justice.govt.nz/justice-</u> sector/what-works-to-reduce-crime/

evidence is limited and there is only one analysis from New Zealand.

More international or New Zealand research demonstrating the positive effects of early childhood education on crime reduction would be required to raise the evidence rating to Promising or Strong.

First edition completed: November 2017 Updated: December 2018

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### **FIND OUT MORE**

### Go to the website

www.justice.govt.nz/justice-sector/what-worksto-reduce-crime/

### Email

whatworks@justice.govt.nz

- <sup>iv</sup> Anderson et al 2003, Camilli et al 2011, Chambers et al 2010, Elango et al 2015, Gorey 2001, Nelson et
- al 2003, Schindler et al 2015, Mitchell et al 2007
- V Horwood & Geraldine 2016
- vi Horwood & Geraldine 2016
- vii Horwood & Geraldine 2016
- v<sup>iii</sup> Chambers et al 2010, Elango et al 2015, Gorey 2001, Mitchell et al 2007, Nelson et al 2003
- <sup>ix</sup> Gorey 2001, OECD 2017b
- \* Moffit 1993, Schindler et al 2015, Tremblay et al 2004
- xi Schindler et al 2015
- xii Horwood & Geraldine 2016, Mitchell et al 2007,
- Wylie & Hodgen 2011
- x<sup>iii</sup> Camilli et al 2011, Gorey et al 2001, Hodgen 2007, Mitchell et al 2007, Nelson et al 2003
- xiv Gorey 2001, Horwood & Geraldine 2016, Hodgen
- 2007, Mitchell et al 2007, Nelson et al 2003
- <sup>xv</sup> Gorey 2001, Horwood & Geraldine 2016

### **Recommended reading**

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### Citations

- <sup>xvi</sup> Nelson et al 2003
- xvii Centre on the Developing Child 2013, OECD
- 2017a
- xviii Kaushal & Rhodes 2014
- xix Ministry of Education 2018
- <sup>xx</sup> Ministry of Education 2016a, Ministry of Education 2017b
- xxi Ministry of Education 2016c
- xxii Crossan & Scott 2016
- xxiii Ministry of Education 2015, Ministry of Education
- 2016a, Ministry of Education 2018
- xxiv Education Review Office 2017

<sup>xxv</sup> Education evaluation report 2013, Ministry of Education 2017b

- xxvi Durlak et al 2011
- xxvii Durlak et al 2011, Lösel and Beelman 2003

<sup>&</sup>lt;sup>i</sup> Anderson et al 2003, Camilli et al 2011, Chambers et al 2010, Elango et al 2015, Gorey 2001, Nelson et al 2003, Schindler et al 2015, Mitchell et al 2007 <sup>ii</sup> Gorey 2001

<sup>&</sup>lt;sup>III</sup> Camilli et al 2011, Nelson et al 2003, Schindler et al 2015

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## SUMMARY OF EFFECT SIZES FROM META-ANALYSES

Meta- analysis	Treatment type/population	Outcome measure	Comparison groups	Reported average effect size	Number of estimates meta- analysis based on	Percentage point reduction in offending	Number needed to treat
Gorey (2001)	Mostly disadvantaged children of ethnic minorities	Delinquent behaviour	No ECE and alternative ECE controls	RR = .41*	3	0.30	3
Gorey (2001)	Mostly disadvantaged children of ethnic minorities	Arrested	No ECE and alternative ECE controls	RR = .47*	4	0.27	4
Gorey (2001)	Mostly disadvantaged children of ethnic minorities	Arrested 5 or more times	No ECE and alternative ECE controls	RR = .18*	1	0.41	2
Nelson et al (2003)	Mostly disadvantage children, predominantly African American	Social emotional outcomes kindergarten through grade 8	No ECE and alternative ECE controls	d = 0.27(NR)	19	0.12	8
Nelson et al (2003)	Mostly disadvantage children, predominantly African American	Social emotional outcomes high school and beyond	No ECE and alternative ECE controls	d = 0.33(NR)	10	0.15	7
Camilli et al (2011)	Mostly disadvantaged children aged 3-5	Social emotional outcomes	No ECE controls	d = 0.16*	113	0.07	14
Camilli et al (2011)	Mostly disadvantaged children aged 3-5	Social emotional outcomes	Alternative ECE controls	d = -0.03(NS)	103	0.01	74
Schindler et al (2015)	Mostly disadvantaged children of ethnic minorities	Externalising behaviour	No ECE controls	d = -0.03(NS)	96	0.01	74
Schindler et al(2015)	Mostly disadvantaged children of ethnic minorities	Level 1 programmes effect on externalising behaviour	No ECE controls	d = 0.13(NS)	96	0.06	17
Schindler et al (2015)	Mostly disadvantaged children of ethnic minorities	Level 2 programmes effect on externalising behaviour	No ECE controls	d = -0.10*	96	0.05	22
Schindler et al (2015)	Mostly disadvantaged children of ethnic minorities	Level 2 programmes effect on externalising behaviour	Level 1 ECE programmes	d =23*	96	0.10	10
Schindler et al (2015)	Mostly disadvantaged children of ethnic minorities	Level 3 programmes effect on externalising behaviour	Level 2 ECE programmes	d =26*	47	0.12	9
Schindler et al (2015)	Mostly disadvantaged children of ethnic minorities	Level 3 programmes with social skills training effect on externalising behaviour	Level 2 ECE programmes	d =50*	17	0.21	5

Meta- analysis	Treatment type/population	Outcome measure	Comparison groups	Reported average effect size	Number of estimates meta- analysis based on	Percentage point reduction in offending	Number needed to treat
Schindler et al. (2015)	Mostly disadvantaged children of ethnic minorities	Level 3 programmes with care giver behaviour management training effect on externalising behaviour	Level 2 ECE programmes	d =10(NS)	30	0.05	22
Schindler et al. (2015)	Mostly disadvantaged children of ethnic minorities	Level 3 programmes with social skills training effect on externalising behaviour	Level 3 ECE programmes with care giver behaviour management	d =46*	47	.20	5

Social emotional outcomes included aggressive antisocial and criminal behaviour, social skills, self-esteem, school adjustment, class
placement, educational aspiration, employment and education in adolescence (Camilli et al., 2011; Nelson et al 2003).

Alternative ECE refers to a less formal or lower quality early childhood education programmes.

Externalising behaviour refers to aggressive and disruptive behaviours including fighting, arguing, throwing tantrums, disturbing
activities, and harming others (Schindler et al 2015).

- Level 1 programmes are describes as having no clear focus on social and emotional development, Level 2 programmes have a clear but broad focus on social emotional development and Level 3 programmes have a clear and intensive focus on social and emotional development (Schindler et al 2015).

Social skills training involves teaching children appropriate behaviours and cognitive skills (e.g., making friends, social problem solving, expressing needs and emotions) whereas caregiver behaviour management training involves teaching behavioural management techniques to parents and teachers (e.g., limit setting, rewarding positive behaviour) Schindler et al 2015.

\* Statistically significant at a 95% threshold

d=Cohen's d or variant (standardised mean difference)

NS: Not significant

NR: Significance not reported

RR: Rate Ratio