

## Session 4: What do we know about how ECEC can support child development?

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### FOCUS OF SUBMISSION

In this submission I focus on how an intensive early childhood education and care model for children living with significant adversity, enrolled before the age of three, can mitigate the effects of toxic stress and trauma and support learning skills and development. I am a Chief Investigator in the multi-disciplinary University of Melbourne team, led by Professor Jeff Borland, that evaluated the outcomes of an intensive early childhood education and care program for children living with significant family stress and social disadvantage. The program was evaluated using a randomised controlled trial (RCT) methodology by a team from The University of Melbourne's Departments of Economics, Paediatrics and Education and the Melbourne Institute.

Publications with detailed information about the research trial including the demographics of the children and families who participated (Report 1), the theoretical underpinnings and key features of the intensive early childhood education and care program (Report 3) and the outcomes after 1,2 and 3 years participation (Reports 2,4, and 5) are available at: <https://fbe.unimelb.edu.au/research/streams/health-and-wellbeing/Changing-lives#output>

### INTRODUCTION

Adverse early childhood experiences cause significant disruption to brain development, emotional and behavioural regulation, and the ability to cope with stress which can jeopardise the development of the knowledge skills and attributes required for successful learning and a healthy life.

The aim of the centre-based early years education and care program for children, aged from birth to 3 years living with significant family stress and social disadvantage, was to provide education and care experiences that would enable them to begin formal schooling as confident and successful learners who are developmentally and educationally equal to their peers. The long-term objective was the attainment of knowledge, skills and attributes needed for ongoing successful learning with the same life trajectories as children not living with adversity.

### BACKGROUND

*“From before birth children are connected to family, community, culture and place. Their earliest development and learning takes place through these relationships, particularly within families, who are children’s first and most influential educators” (Belonging, Being and Becoming: The Early Years Learning Framework for Australia, p.9, Department of Education, Employment and Workplace Relations 2009).*

Stable responsive relationships early in life are a critical factor in building healthy brain architecture (Shonkoff 2010). Children who encounter extreme adversity in the early years – including prolonged

exposure to physical or sexual abuse, and/or living in a highly stressful family environments with multiple and compounding psychosocial and economic needs, are at risk of compromised developmental and learning outcomes. In addition to missed learning opportunities because of impoverished family and community environments, behavioural and emotional dysregulation in response to trauma can impair children's ability to learn leading to poor literacy and numeracy skills (Koenen et al. 2003; Raver et al. 2011). Gaps in learning and development at an early age can impede later learning (Cunha & Heckman 2007; Heckman 2008; Heckman & Mosso 2014). Heckman summarises this as "Skill begets skill" (2008, p290). Exposure to significant adversity and deficits in cognitive and social skills before the age of five underpin problems such as low education attainment, unemployment, teenage pregnancy, homelessness, involvement in crime and an increased risk of physical and mental health problems. (Capsi et al. 2016; Knudsen et al. 2006).

## RESEARCH PARTICIPANTS

To be eligible to participate in the early childhood education and care centre evaluated with the RCT, children had to be 1) engaged with family services or child protection services 2) aged between birth and three at the time of enrolment, assessed as having two or more risk factors as defined in the Victorian Department of Human Services 2007 Best Interest Case Practice Model and have participation in early education as an element in their care plan.

145 children (72 randomized to the intervention and 73 randomized to the control group) from 97 families participated in the trial. There were 64 girls and 81 boys. Children in the control group participated in universal early childhood services as decided by their parents without any direction from the researchers.

Thirty percent of children in the trial were living with 2-3 or three risk factors (identified by referrers) at the time of referral, for 36 percent it was 4-5 risk factors, and 34 % were living with 6-9 risk factors. These included family violence, parent alcohol and drug use, parent mental illness, attachment/relationship issues, harsh, inconsistent discipline and neglect or abuse (Tseng 2017).

We compared the research sample with children studied in the Longitudinal Survey of Australian Children (LSAC), which followed the development of 10,000 Australian children and families. Baseline characteristics of children in the trial were compared with children from all households in LSAC and with children from the bottom 25 percent of households ranked by LSAC according to a socio-economic status (SES) index (Tseng 2017).

Parents of children in the trial were more likely to experience psychological distress (25.8% vs 4.45 low SES) and financial crises (32% vs 18.8% low SES). Eighty-nine percent of parents were unemployed/not in the labour force compared to 70.7% low SES households surveyed by LSAC. Problems with police or a court appearance in last 12 months were experienced by 15.3 % of parents compared with 4% in the low SES LSAC group. Twice as many households had an income below \$250 per week (in 2016 equivalent) -27.4 percent of children in the trial vs 12.9% low SES LSAC group.

Children in the trial started life more vulnerable – they were more likely to have a low birth weight - 25.6% vs 7.3% LSAC low SES. When enrolled in the trial, before they turned three years of age, cognitive development, language, motor skills and adaptive behaviour were delayed compared to the general population. Child participants were three times more likely to have significant language delay and six times more likely to have delays in adaptive behaviour than the general population. (Tseng et.al. 2017).

## THE INTERVENTION -DOSE, DURATION AND QUALITY

Children were enrolled before the age of three and participated in the intensive early childhood education and care program for 5 hours a day, 5 days a week, 50 weeks of the year for 3 years at no cost to families/carers.

The curriculum and pedagogy were based on the national *Early Years Learning framework* and guided by its principles and practices (EYLF, DEEWR, 2009). The model had a dual focus – firstly to reverse the harms from exposure to family risk factors and trauma on children’s emotional regulation and learning and secondly to provide an enriched learning environment with a rigorously developed curriculum. The program’s core integrated elements work in synergy to redress the negative impacts of toxic stress so that the children build their cognitive and emotional capacity for learning. The curriculum is relationship-based informed by trauma and attachment theories in addition to early learning theories (Jordan and Kennedy 2019).

Structural and process quality elements ensured a high-quality program that is based on high expectations for children’s learning. Children’s rooms in the small centre are led by an early childhood teacher with the support of diploma qualified educators. There was a full-time pedagogical leader in addition to the full-time centre director and small group sizes. The ratios of adults to children (1 teacher/educator to 3 children for children aged under three and 1 teacher/educator to 6 children for children over three) enable individualised care, teaching and learning. A senior infant mental health consultant and family support worker are embedded in the staff team (0.4 FTE for each position). Seventy-five percent of a child’s daily nutritional needs are provided through lunch and snacks.

The infant mental health consultant assesses each child as the first step in their participation in the intensive early childhood education and care program. This assessment is shared with educators and provides critical information for planning the child’s orientation to participation. It highlights how the child’s emotional regulation strategies might facilitate or impair learning and informs each child’s individual case plan in terms of caregiving and relational pedagogical strategies. Education and care practices are attachment and trauma informed.

The relational pedagogy and attachment focus of the model means that educators are thoughtful and mindful about their interactions with parents and that their approach is relational rather than instrumental. Nurturing a strong sense of belonging for every child and family in an inclusive, welcoming, non-judgemental environment is a key principle. Educators meet with families or carers every twelve weeks to develop shared goals for children’s learning and development.

All staff receive individual fortnightly reflective supervision, and the infant mental health consultant provides regular, scheduled consultations for each children’s room as well as ad hoc advice regarding individual children. As the children only attend for five hours each day, teachers and educators have ten hours per week for planning, multidisciplinary team meetings and case meetings. These experiences support enhanced professional confidence, knowledge and skills and contribute to teachers and educators having the resources and resiliency to work with children exposed to severe adversity in a centre where all the participating children have these challenges. These supports contribute to continuity of staff.

## LEARNING AND DEVELOPMENT OUTCOMES FOR CHILDREN WHO PARTICIPATED IN THE TRIAL

The 145 children (72 randomized to the intervention and 73 randomized to the control group) from 97 families who participated in the RCT were assessed at baseline and then after 12-, 24- and 36-months

participation in the trial. Children's cognitive and language development was assessed using standardized tests by a qualified clinical researcher. Cognitive and language development were measured using the Bayley Scales of Infant and Toddler Development III (BSID) or Wechsler Preschool and Primary Scale of Intelligence (WPPSI) according to the age of the child. Social and emotional outcomes were assessed using the Brief Infant Toddler Social Emotional Assessment (BITSEA) or Child Behaviour Checklist (CBCL) according to the age of the child.

The intensive early childhood education and care program had large and significant positive impacts on children's outcomes. Children who participated in the intervention had an average increase in IQ score of 7.7 points after 36 months and their average score was 99.6. This increase of about half a standard deviation was mostly achieved in the first 12 months of participation. Language scores improved by an average of 6.8 points with an average score of 99.5 at the end of 36 months and it took the whole duration of the program for this large and significant improvement to be detected. Large increases in IQ and language scores were evident for children whose development was most compromised at baseline – for children with an initial score less than 90, their IQ improved by an average of 13.6 points and their language score improved by an average of 12.7 points with their average scores very close to the population average (98.6 and 98.2 respectively).

A large, positive and significant impact of the program on social emotional problems was evident after 24 months participation with 29% fewer social emotional problems compared to the control group (12.7% vs. 42%). After 36 months of participation the average reduction in score on the CBCL was 6.2 points which is equivalent to 0.6 of a standard deviation (Tseng et.al. 2022).

## WHY DID CHILDREN'S LEARNING AND DEVELOPMENT OUTCOMES IMPROVE?

The children who participated in this research trial already had compromised development before the age of three and yet were able to make the most of learning opportunities offered in a high quality infant mental health informed intensive early childhood program so that they were equal to their peers at the end of three years participation.

The targeted early childhood education and care model responded to the very high needs of young children living with significant adversity in the same way that paediatric intensive care in hospitals is designed for children with acute medical problems. "Intensive care" with the intensity of dose and duration, highly qualified and skilled staff, theory driven, and evidence informed education and care practices are required to enable children living with significant family stress and social disadvantage to achieve the same learning outcomes as their age peers.

The unique features and the level of intensity and duration of the intensive early childhood education and care program, including the employment of full-time, qualified educators, with an embedded infant mental health consultant and family services practitioner as part of the staff team; a rigorous relationship-based curriculum informed by trauma and attachment theories; individualised case planning in consultation with parents and other agencies; and the ongoing training, professional development, and reflective supervision for staff, contrasts clearly with universal education and care services in Australia.

The Abecedarian and Perry preschool research-based programs were implemented in the USA in the 1960s and 1970s. Five decades later there is new, robust research and practice wisdom from infant mental health, neuroscience, developmental psychology and early childhood education which was able to be used in determining the key structural and process quality elements of the intensive early childhood education and care program. The approach was dual pronged - addressing the impact of toxic stress on the developing brain and providing high quality pedagogy in an enriched early learning and

care environment.

Participation in the program provided the child with an enriched learning environment, high quality pedagogy and curriculum, corrective early relationship experiences, and reduced exposure to highly stressful family environments. Families paid no fee for their child to attend which was important in ensuring access and consistency of participation.

The evidence from the neuroscience of child development suggests that it is important to provide help to very young infants and toddlers to redress the negative impacts of trauma and toxic stress which is why this program enrolled children under the age of three years. This same vulnerability and sensitivity to environmental influences means that infancy is an optimal time for early intervention

## IMPLICATIONS FOR PRACTICE AND POLICY

Universal ECEC services struggle to provide the intensity and quality of care and education required to achieve similar outcomes. Educators in universal services find it difficult to implement individually adapted teaching strategies to ensure both learning success and skills in emotional and behavioural regulation.

Investment needs to start early – before the age of three and be sustained. Although significant improvements in IQ were achieved by the end of one years' participation, the dramatic improvements in resilience and social-emotional health required two years participation and language required three years .

Services need to be cohort focused, with eligibility criteria and able to deal with a range of child and family complexity. Children and families that were the focus of this research often experience stigmatisation and other barriers when trying to access universal early childhood education and care services, which results in disengagement or intermittent participation. Children living with toxic stress and exposure to trauma are often excluded from services due to extreme and complex emotional and behavioural dysregulation.

Services need to have a collaborative, relationship-focused and trauma informed partnership approach to working with families. Ensuring sustained participation in ECEC settings for children from families living with the challenges of adversity and persistent distress involves sophisticated, trauma- informed engagement skills and can take many weeks of work. Sustained participation is essential to achieve the intensity and duration of dosage that is needed to redress harms (therapeutic elements) and to educate (pedagogical elements) so that post-intervention, children can make full use of what is on offer in a quality universal early childhood service, preschool or school.

A new targeted, equity funding model and capital investment is required with secure funding from all levels of government and philanthropic funders. There should be no cost to families for children living with significant family and social disadvantage to participate in intensive early childhood education and care services.

There needs to be a focus on Structural and Process quality elements in early childhood education and care services. For children living with adversity this needs to be at a level beyond National Quality Standards and National Regulations. Many factors in addition to the knowledge and skills of individual teachers and educators will impact on the quality of the experience of infants and toddler and their emotional and social development. The size of a centre, the size of the rooms, the ratio of adults to children, the amount of staff turnover and unplanned leave, how transitions are managed, whether leave cover is staffed by a known pool of educators or random casuals will all impact on whether the

infant and toddler experiences the education and care service as a source of stress or security. There is a body of evidence documenting the impact of group size on children's learning outcomes as well as on educators' and children's stress levels (McQuail et.al 2003, Munton et.al. 2002, Wertfein et.al. 2009).

Early childhood services need multidisciplinary teams with infant mental health and family support staff embedded in the team. Regular reflective supervision and clinical coaching can teach educators frameworks and concepts to understand emotional development, child responses to stress, and the skills to apply these concepts to the individual child. The most salient environmental influence for infants and young children is their caregiving relationships. Interpersonal interactions are the primary source of experiences (positive and negative) that shape the developing brain and therefore influence development and learning. Optimal emotional and behavioural regulation is achieved by infants with the scaffolding provided by their primary caregiver (Hofacker N & Papousek 1998, Tronick E & Gianni A 1986) in moment-to-moment interactions in the context of everyday care and is the foundation for mental health throughout life (Shonkoff , 2011). All early childhood education and care services need structures and processes that facilitate high quality interaction.

Early childhood education and care services and mental health outcomes. In the same way as parent mental ill-health can disrupt parent-child interactions, poor mental health in early childhood teachers and educators, or high levels of occupational stress imposed on them can present a risk the mental health of children in their care. There are occupational risks to the mental health of early childhood teachers and educators if they are poorly paid, have insecure work, are accorded low status, and are not adequately trained and supported to work with children with parents living with significant adversity (Witherell, S 2013).

## REFERENCES

Caspi, A, Houts R, Belsky D, Harrington H, Hogan S, Ramrakha S, Poulton R and Moffitt T(2016), 'Childhood forecasting of a small segment of the population with large economic burden', *Nature Human Behaviour* 1, Article number: 0005 doi:10.1038/s41562-016-0005.

Commonwealth Department of Education, Employment and Workplace Relations 2009, *Belonging, Being and Becoming: The Early Years Learning Framework for Australia*, Canberra.

Cunha, F. and J. Heckman (2007), 'The technology of skill formation', *American Economic Review*, 97(2), 31-47.

Heckman, J.J. (2008), 'Schools, skills and synapses', *Economic Inquiry*, 46(3), 289-324.

Heckman, J.J. and S. Mosso (2014), 'The economics of human development and social mobility', *Annual Review of Economics*, 6(1), 689-733

Hofacker N & Papousek M .(1998 ), Disorders of excessive crying, feeding and sleeping: The Munich Interdisciplinary Research and Innovation Program, *Infant Mental Health Journal*, 19 (2) 180-2101.

Jordan B & Kennedy A. (2019). *Changing the Trajectories of Australia's Most Vulnerable Children. Report No. 3. The Early Years Education Program (EYEP) Model*. Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

Knudsen, E.I, J.J. Heckman, J.L. Cameron and J.P. Shonkoff (2006), 'Economic, neurobiological and behavioral perspectives on building America's workforce', *Proceedings of the National Academy of Sciences*, 103(27), 10155-62.



Koenen, K.C., T.E. Moffitt, A. Caspi, A. Taylor and S. Purcell (2003), 'Domestic violence is associated with environmental suppression of IQ in young children', *Development and Psychopathology*, 15(2), 297-311.

McQuail S, Mooney A, Cameron C, Candappa M, Moss P & Petrie P. (2003). *Early Years and Childcare International Evidence Project/Child Outcomes*, Thomas Coram Research Unit, Institute of Education, London.

Munton T, Mooney A, Moss P, Petrie P, Clark A & Woolner J. (2002). *Research on ratios, Group size and Staff Qualifications and Training in Early Years and Childcare Settings. Research Report vol 320*. Thomas Coram Research Unit, Institute of Education, University of London, Queen's Printer, Norwich

Raver et al. (2011). Raver, C.C., S.M. Jones, C. Li-Grining, F. Zhai, K. Bub and E. Pressler (2011), 'CSRP's impact on low-income pre-schoolers pre-academic skills: Self-regulation as a mediating mechanism', *Child Development*, 82(1), 362-78.

Shonkoff J (2020) Building a New Biodevelopmental Framework to Guide the Future of Early Childhood Policy. *Child Development*, January/February 2010, Volume 81, Number 1, Pages 357–367

Shonkoff, J.P. (2011), 'Protecting brains, not simply stimulating minds', *Science*, 333(6045), 982-83.

Tronick E & Gianino A. (1986) Interactive mismatch and repair: Challenges to the coping infant, *Zero to Three*, 6(3) 1-6.

Tseng Y, Jordan B, Borland J, Clancy T, Coombs N, Cotter K, Hill A and Kennedy A. (2017). *Changing the Trajectories of Australia's Most Vulnerable Children. Report No. 1. Participants in the Trial of the Early Years Education Program*. Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

Tseng, Y., Jordan B., Borland J., Clancy T., Coombs N., Cotter K., Hill A and Kennedy A (2018), *Changing the Life Trajectories of Australia's Most Vulnerable Children – Report no.2: The first twelve months in the Early Years Education Program: An initial assessment of the impact on children and their primary caregivers*. Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

Tseng, Y., Jordan B., Borland J., Coombs N., Cotter K., Guillo M., Hill A, Kennedy A and J Sheehan (2019), *Changing the Life Trajectories of Australia's Most Vulnerable Children – Report no.4: 24 months in the Early Years Education Program: Assessment of the impact on children and their primary caregivers*. Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

Tseng, Y., Jordan B., Borland J., Clark M., Coombs N., Cotter K., Guillo M., Hill A, Kennedy A and J Sheehan (2022), *Changing the Life Trajectories of Australia's Most Vulnerable Children Report No. 5. 36 months in the Early Years Education Program: Assessment of the impact on children and their primary caregiver* Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

Victorian Department of Human Services 2007 Best Interest Case Practice Model

Wertfein M, Spies-Kofler A & Becker-Stoll F. (2009) Quality curriculum for under-threes: the impact of structural standards. *Early Years: An International Journal of Research and Development*, 29 (1) 19-31.

Witherell SL. (2013). Work-related stress and mental health of child care center workers. Dissertation. Wayne State University, Detroit, Michigan.

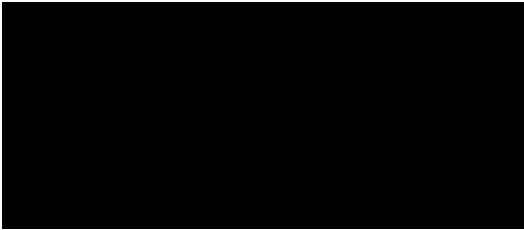
## REFERENCES FOR MEASURES OF CHILDREN'S OUTCOMES

Bayley, N. (2006), *Bayley Scales of Infant and Toddler Development* (Third edition, San Antonio, TX: Harcourt Assessment, Inc.).

Wechsler, D. (2002), *Wechsler Preschool and Primary Scale of Intelligence-Third Edition (WPPSI III)* (San Antonio Texas: NCS Pearson).

Achenbach, T. and L. Rescorla (2000), *Manual for the ASEBA Preschool Forms and Profiles* (Burlington: VT, University of Vermont, Research Center for Children, Youth and Families

Briggs-Gowan, M. and A. Carter (2006), *BITSEA Brief Infant- Toddler Social and Emotional Assessment* (Bloomington, MN: Pearson).



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