



The role of preschool in promoting children's healthy development: Evidence from an Australian population cohort



Sharon Goldfeld^{a,b,c,*}, Elodie O'Connor^a, Meredith O'Connor^{a,b,c}, Mary Sayers^b, Tim Moore^b, Amanda Kvalsvig^{a,b}, Sally Brinkman^{d,e,f}

^a Centre for Community Child Health, Royal Children's Hospital, Melbourne, Victoria, Australia

^b Murdoch Children's Research Institute, Royal Children's Hospital, Melbourne, Victoria, Australia

^c Department of Paediatrics, The University of Melbourne, Melbourne, Victoria, Australia

^d Telethon Institute for Child Health Research, University of Western Australia, West Perth, Western Australia, Australia

^e Health Sciences, Curtin University, Perth, Western Australia, Australia

^f School of Population Health, University of Adelaide, Adelaide, South Australia, Australia

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ABSTRACT

A growing body of evidence suggests that engagement with quality early childhood education and care (ECEC) programs such as preschool can enhance children's early development. The Australian Early Development Census (AEDC) provides a unique opportunity to explore the relationship between ECEC and children's developmental outcomes in a full population cohort of Australian school entrants. The AEDC is a teacher-rated checklist that provides data on ECEC experiences in the year before starting school, as well as five important domains of child development at school entry: physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, and communication skills and general knowledge. In 2009, the AEDC was completed for 97.5% of Australian children in their first year of formal schooling ($N = 261,147$; $M = 5$ years, 7 months of age). Logistic regression analyses revealed that attendance at preschool was associated with reduced odds ($OR = 0.69$, $p < 0.001$ to $OR = 0.40$, $p < 0.001$) of being in the vulnerable range (<10th percentile) on four of the five AEDC domains (with the exception of emotional maturity; $OR = 0.89$, $p = 0.002$), compared to other ECEC experiences, or care exclusively by parents. Subsequent analyses revealed that this effect was evident for children living in both advantaged and disadvantaged communities. Together, the results suggest that engagement with preschool programs in Australia may present a plausible, equitable, and modifiable approach to improving children's developmental outcomes.

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1. Introduction

In Australia and other developed nations, developmental outcomes for some children have worsened and health inequalities have increased, with those living in poverty experiencing the poorest outcomes (Li, McMurray, & Stanley, 2008; Stanley, Richardson, & Prior, 2005). These disparities are already evident as children start school, with marked differences in the cognitive, physical and social skills that help children to thrive in this new environment (Dockett & Perry, 2007; Feinstein & Duckworth, 2006). There has thus been increasing interest in identifying modifiable factors capable of reducing inequalities in early developmental outcomes before children begin compulsory schooling. By providing cogni-

tively stimulating and rich learning environments, early childhood education and care (ECEC) is one potential opportunity to promote children's healthy development (Magnuson, Meyers, Ruhm, & Waldfogel, 2004; Melhuish, 2003; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004). However, this premise has yet to be tested with large-scale data that can provide precise estimates at the population level. The Australian Early Development Census (AEDC; previously the Australian Early Development Index), a population census of children's development completed by teachers in children's first year of compulsory schooling, provides a unique opportunity to address this evidence gap and explore the relationship between ECEC experiences and children's developmental outcomes in an Australian population cohort.

1.1. ECEC in the Australian context

Across Australia, preschool (known as "kindergarten" in some States and Territories) refers to structured, play-based edu-

* Corresponding author at: The Royal Children's Hospital, 50 Flemington Road, Parkville, Victoria, 3052, Australia. Tel: +61 3 9345 6408; fax: +61 3 9345 5900.
E-mail address: Sharon.Goldfeld@rch.org.au (S. Goldfeld).

cation, provided by a qualified early childhood teacher in the year prior to compulsory schooling (Council of Australian Governments, Productivity Agenda Working Group, & Early Childhood Development Sub-group, 2008). Most Australian children attend preschool (over 80%; O'Connor, O'Connor, Kvalsvig, & Goldfeld, 2014), but rates differ across jurisdictions (Walker, 2004). At the time of the AEDC data collection, all States and Territories had committed to supporting children's access to preschool in the year prior to starting school, but differed in the extent to which they had enacted this policy (Brinkman et al., 2012; Harrison et al., 2009). In Australia, preschool programs occur in two different contexts; dedicated preschool services (that can include both stand-alone preschools and preschools co-located with elementary schools; Cheeseman & Torr, 2009; Dowling & O'Malley, 2009; Press, 2014), and preschool programs integrated within day care services.

There are differences in regulatory standards between preschool and day care services in Australia. For example, at the time of the 2009 AEDC data collection, a number of States and Territories did not require qualified teachers to be employed in day care services (Harrison et al., 2009). Australian data suggests that structural aspects of quality (e.g., adult-to-child ratios, staff experience and qualifications) tend to be higher in preschool settings than day care services, while other aspects of quality, such as children's access to learning materials, are fairly consistent (Harrison et al., 2009). Australian (Dowling & O'Malley, 2009; Harrison et al., 2009; Tayler, Ishimine, Cloney, Cleveland, & Thorpe, 2013) and international (as suggested by Sylva et al., 2004 in the UK context) research suggests that children's outcomes may differ across these contexts, with dedicated preschools and day care centers with a preschool program providing greater benefits to children's development than day care centers without a preschool program.

1.2. ECEC and the transition to school

The entrance to compulsory schooling (at about five years of age in Australia) is an important time in the lives of children and their families, and how children fare during this transition period carries lasting implications for their development (Tayler, 2012). Successful transitions to school are influenced by both the child's characteristics and the broader context in which the transition process occurs (Centre for Community Child Health, 2008; Dockett, Perry, & Kearney, 2011). At the individual level, children's physical development, social competence, emotional maturity, language and cognitive development, and general knowledge and communication skills all contribute to their capacity to adjust to the new demands of the school context (Farrar, Goldfeld, & Moore, 2007).

International evidence, particularly that focusing on preschool, suggests that high-quality early learning environments may have the capacity to promote these school readiness skills, and thus aid successful transitions to the school environment. This includes findings from the UK (Sylva, 2010; Sylva et al., 2004; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2008), and the US (Magnuson et al., 2004; Magnuson, Ruhm, & Waldfogel, 2007a,b). Positive associations have been observed between preschool attendance and cognitive and language skills (Hall et al., 2013; Li, Farkas, Duncan, Burchinal, & Vandell, 2013; Sammons et al., 2007; Sylva et al., 2008; Votruba-Drzal, Coley, Koury, & Miller, 2013), and social and emotional outcomes (Corter, Patel, Pelletier, & Bertrand, 2008; D'Onise, Lynch, Sawyer, & McDermott, 2010; Gormley, Phillips, Newmark, Welti, & Adelstein, 2011).

A growing body of Australian work similarly tends to suggest protective effects associated with preschool. Using data from the Longitudinal Survey of Australian Children, a number of studies have investigated the impact of ECEC on children's learning and development (Gialamas, Mittinty, Sawyer, Zubrick, & Lynch, 2015; Harrison et al., 2009; Wake et al., 2008; Warren & Haisken-DeNew,

2013). For example, Warren and Haisken-DeNew (2013) reported that Australian children who attended preschool in the year prior to school had higher literacy and numeracy scores 3–4 years later than those who did not attend preschool. However, to date, this evidence has been limited by the lack of large-scale data that can provide precise estimates at the population level.

1.3. ECEC attendance for at-risk subpopulations

The ECEC experiences of Australian children tends to differ across jurisdictions and at-risk subpopulations. Children from non-English speaking backgrounds, Indigenous children, and children from socioeconomically disadvantaged families are among the least likely to attend preschool or day care prior to entering school (Baxter & Hand, 2013; Walker, 2004; Wong, Harrison, Rivalland, & Whiteford, 2014). There are many potential barriers that may contribute to this; for example, families from non-English speaking backgrounds may face cultural barriers or different cultural understandings and expectations of ECEC settings (Australian Institute of Health and Welfare, 2011; Harrison et al., 2009).

Socioeconomic disadvantage in particular appears to impact heavily on attendance at ECEC services, and is a well-established risk factor for poorer developmental outcomes, both in Australia (Nicholson, Lucas, Berthelsen, & Wake, 2012) and internationally (Lloyd, Li, & Hertzman, 2010). Evidence suggests that ECEC experiences improve the confidence and social skills of children from disadvantaged backgrounds, leading to a better foundation for school success (Melhuish, 2003), and increased educational and occupational opportunities later in life (Nores, Belfield, Barnett, & Schweinhart, 2005). Some researchers have therefore suggested that the benefits of ECEC attendance may be more concentrated within at-risk subpopulations, but may carry fewer benefits for children from socioeconomically advantaged settings (Burger, 2010; Gormley & Gayer, 2005).

1.4. The current study

Attending quality ECEC settings such as preschool may be a feasible and modifiable intervention target that seems likely to promote the skills and competencies that can aid children's successful transitions to the school environment (Sylva et al., 2004). In this study, we draw on unique population data, representing over 97% of Australian children in their first year of formal schooling in 2009, to investigate the relationship between ECEC experiences and children's development. We hypothesized that (1) attending preschool in the year before school would be positively correlated with better outcomes for Australian children across all developmental domains, independent of potential demographic confounders (including gender, language background, Indigenous status, community socioeconomic status, and State or Territory), and (2) children living in more disadvantaged communities in Australia would particularly benefit from this experience.

2. Method

2.1. Study design

The AEDC is a cross-sectional population census of early childhood development across Australia, adapted from the Canadian Early Development Instrument (EDI; Brinkman, Gregory, Goldfeld, Lynch, & Hardy, 2014; Janus & Offord, 2007). The Australian Government has committed to undertake this developmental census every three years, with the data used by researchers, policy makers, communities and schools to inform service development, policy, and planning (Brinkman et al., 2014). Importantly, the AEDC is not a screening tool and is thus not intended for individual diagnostic

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