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Investing in early human development: Timing and economic efficiency

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ABSTRACT

Policy discussions to ameliorate socioeconomic (SES) inequalities are increasingly focused on investments in early childhood. Yet such interventions are costly to implement, and clear evidence on the optimal time to intervene to yield a high economic and social return in the future is meagre. The majority of successful early childhood interventions start in the preschool years. However socioeconomic gradients in cognitive skills, socio-emotional functioning and health can be observed by age three, suggesting that preventative programmes starting earlier in childhood may be even more effective. We discuss the optimal timing of early childhood intervention with reference to recent research in developmental neuroscience. We motivate the need for early intervention by providing an overview of the impact of adverse risk factors during the antenatal and early childhood periods on outcomes later in life. We provide a brief review of the economic rationale for investing early in life and propose the “antenatal investment hypothesis”. We conclude by discussing a suite of new European interventions that will inform this optimal timing debate.

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1. Introduction

Inequalities in health, cognitive development, and socio-emotional functioning emerge early in life. Many subsequent social issues, such as crime, teenage pregnancy, low education and unemployment can be traced to an adverse early years' environment. Limited evidence suggests that targeted, early intervention programmes aimed at disadvantaged children and their families are an effective means of reducing these inequalities. Such early childhood interventions can partially compensate for risk factors that compromise children's most critical

stages of early development. Pioneering experimental studies, such as the Carolina Abecedarian programme (Ramey et al., 2000), High/Scope Perry Preschool programme (Schweinhart et al., 2005), Chicago Parent–Child Programme (Reynolds et al., 2002), and the Nurse–Family Partnership (Olds et al., 1997), have long been used to justify investing in early childhood in policy discussions worldwide.

These longitudinal studies find that the personal benefits (cognitive development, behaviour and social competence, educational attainment, and earnings), social benefits (reduced delinquency and crime) and government savings (higher tax revenues, reduced social welfare spending), associated with intervening early in a child's life clearly outweigh the costs (Karoly et al., 2005). Investment in the early years is subsequently increasing, yet the question of the optimal age to intervene remains. This article describes the risk factors that motivate early

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intervention and reviews both the economic rationale for investing in early childhood and the evidence on the optimal timing of intervention to reduce inequalities. Based on the economic and biological arguments for early intervention we propose the “antenatal investment hypothesis” which suggests that investments made during the pregnancy period may yield the highest return. The article concludes by discussing a suite of new European interventions that will inform this optimal timing debate.

2. Early childhood inequalities

The intergenerational transmission of socioeconomic inequalities in children’s health, and cognitive, behavioural and emotional development emerge early and, without intervention, may persist through life (Najman et al., 2004). Evidence based on UK data finds that for children born in 1970, there is a 13 percentile gap in an index of cognitive development at 22 months between children from high and low socioeconomic status (SES) families (Feinstein, 2003). More recent data from the UK Millennium Cohort Study, also show a significant socioeconomic gradient in children’s development by age 3 upon controlling for a range of parental and child characteristics. Fig. 1 demonstrates that children of low-educated mothers typically have poorer pregnancy outcomes, as measured by child birthweight; lower cognitive skills, as measured by the Bracken School Readiness Index; and poorer socioemotional and behavioural skills, as measured by the Strengths and Difficulties Questionnaire, compared to children from high-educated families. The goal of early childhood interventions is to reduce such inequalities in the early years so as to prevent the further acceleration of these problems later in life.

3. Why intervene early?

3.1. Risk factors

Intervening in the zero-to-three period, when children are at their most receptive stage of development, has the potential to permanently alter their development trajectories and protect them against risk factors present in their early environment. Both biological and environmental conditions play a role. Children from low socioeconomic backgrounds typically have poorer health in terms of the prevalence of illness, the severity of illness, the likelihood of mortality, and the incidence of disease (Chen et al., 2002). Possible explanations for this include genetic influences, environmental exposures to toxins, quality of medical care, and behavioural factors (Anderson and Armstead, 1995). Adverse childhood experiences have also been linked to adult conditions such as ischemic heart disease and depression (Dong et al., 2004; Chapman et al., 2004).

Children from poorer households also have lower verbal and cognitive ability (Brooks-Gunn et al., 1999) and more emotional and behavioural problems (McLoyd, 1998) on average. Parental education, particularly that of the mother (Haveman and Wolfe, 1995), plays a major role in the child’s development as educated parents are, in general, better equipped to provide stimulating home environments. Evidence shows that the availability of learning materials in the home can impact on the child’s cognitive development (Molfese et al., 1996). Maternal depression is also linked with increased developmental difficulties in the child’s behaviour and mental health (Cummings and Davies, 1994). Evidence also shows that children from low socioeconomic (SES) backgrounds may benefit more from formal childcare early in life than high SES children (Geoffroy et al., 2007).

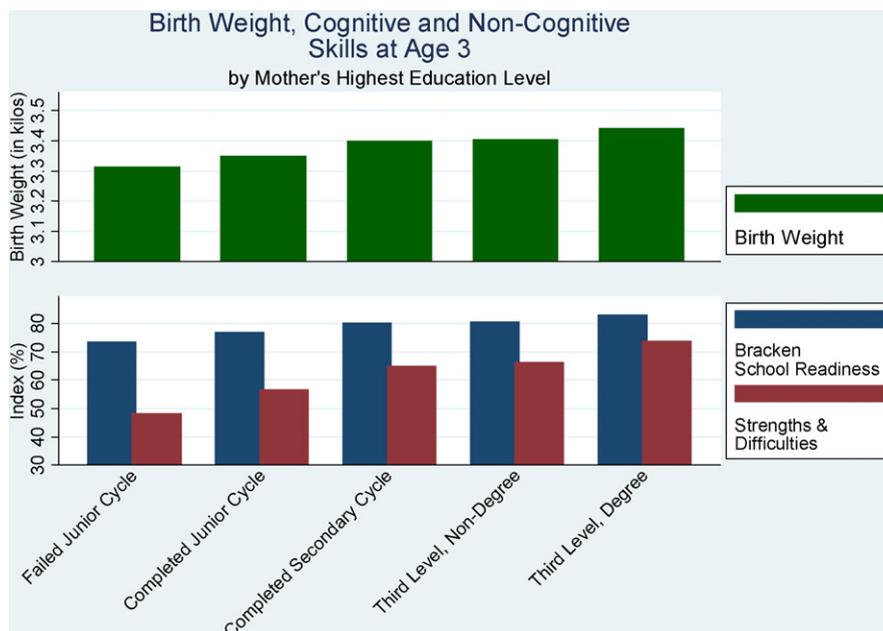


Fig. 1. Birthweight, cognitive and non-cognitive skills at age 3 by mother’s highest education level.

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