



Reading to young children: A head-start in life?



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ABSTRACT

This paper investigates the importance of parents reading to their young children. Using Australian data we find that parental reading to children at age 4–5 has positive and significant effects on reading skills and cognitive skills (including numeracy skills) of these children at least up to age 10 or 11. The effects on skills more closely related to reading and language are larger than those on skills such as numeracy skills. However, all findings in relation to reading and other cognitive skills are persistent and robust to a wide range of sensitivity analyses. Although reading to children is also correlated with children's non-cognitive skills, after accounting for the endogeneity of reading to children, no causal effect remains.

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1. Introduction

The cognitive and non-cognitive development of young children is important from an economic perspective because of their effects on economic productivity later-on in life (Heckman & Masterov, 2007). Cognitive skills are an important determinant in explaining socio-economic success in terms of schooling, wages and quality of jobs. Such skills are influenced by preschool training, education at school, but also by parental efforts. Cunha and Heckman (2008), for example, use data from the U.S. National Longitudinal Survey of Youth (1979) to establish the importance of parental investments in improving the skills of their children, and thus the children's success later in life.

As measures of parental investments they consider the number of books available to the child, whether the child has a musical instrument, whether the family receives a daily newspaper, whether the child receives special lessons and whether the child goes to museums and the theater. They find that the most effective period for parents to invest in cognitive skills is early in the life of their children. Cunha, Heckman, Lochner, and Masterov (2006) conclude from an overview of a large number of empirical studies that both cognitive ability and non-cognitive ability affect the likelihood of acquiring advanced training and higher education, and the economic returns to those activities.

Our paper investigates the relationship between reading to children and the effects this has on reading skills and other cognitive skills of the child.³ Several papers in the education literature have found a positive association of

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³ The focus of our paper is on the relationship between reading to children and cognitive skills of the child but as part of a sensitivity analysis we also investigate whether reading to children causally affects the non-cognitive skills of the child, finding that this is not the case. As we discuss later on in Section 5.4, only a few studies have investigated this relationship.

parents reading to their child and the child's subsequent reading skills, language skills and cognitive development (e.g. Kloosterman, Notten, Tolsma, & Kraaykamp, 2011; Mol & Bus, 2011; Raikes et al., 2006). Parents reading to their children may stimulate these children to read books themselves and further develop their cognitive skills.⁴

Previous studies on the relationship between reading to children and reading skills do not distinguish the causal effect of reading to a child on the reading skills of the child from simply an association between reading to a child and the child's reading skills. Even after taking correlations through observed characteristics into account, there are several explanations for associations between parents reading to children and the reading skills of the child. Conditional correlations can be driven by correlated unobserved characteristics of the children or unobserved circumstances that affect both the time available for reading to the child and the reading skills of the child, thus causing a spurious correlation. Parents who enjoy reading to their children may have children with better reading skills irrespective of whether they are being read to. It could also be that parents who spend more time with their children enhance the reading skills of their children through other channels than reading to their child. Furthermore, there could also be reverse causality if children who have better reading skills enjoy being read to, or if parents are more likely to read to their child if the child has poor reading skills. Finally, there could be a true causal effect and this is what we aim to establish.

It is not easy to establish a causal effect from being read to on reading skills, as experimental data are usually not available, and to the extent that they are available they are mostly for small samples from specific sub-populations. In our paper we determine whether there is evidence for a causal effect from reading to children following two distinct econometric methods. The first approach uses a range of different instrumental variable model specifications. We use two instrumental variables: whether the child is the oldest child in the family and the number of siblings in the family at the time of observing how much the child is read to. Both variables are associated with the time the parent has available for the child and thus affect the intensity with which children are being read to. The validity of instrumental variables depends on a number of assumptions. They should not directly affect child outcomes and they should influence outcomes only through the reading mechanisms. We offer a wide range of sensitivity analyses to argue that indeed these identifying assumptions hold. The second approach uses propensity score matching, which relies on applying weights to the

observations on children who are not read to, or not read to so frequently. The aim of these weights is to make this less-read-to group as comparable as possible on all aspects to the families who read to their children more frequently.

The assumption in the instrumental variable approach that birth order and family size do not have a direct effect on the child's inherent reading ability is not uncontroversial. Using Norwegian data, Black, Devereux, and Salvanes (2005) conclude that family size itself hardly has an effect on children's outcomes. However, birth order has. Higher birth order is found to have significant and large negative effects on children's education, adult earnings, employment and increases the probability of teenage childbearing. It is not clear what is causing these birth order effects.⁵ There are a number of potential explanations such as a stopping rule or financial constraints, but Black et al. (2005) conclude that these do not seem to be very important.⁶ Silles (2010) using data from the British National Child Development Study finds that in terms of test scores last-born initially have an advantage over older siblings but first-born ultimately outperform their younger siblings by the end of compulsory education.

A logical explanation for the birth order effect is time spent by parents with their children. Previous papers have found a correlation of birth order and the time mothers spent reading to their child (e.g. Silinskas et al., 2010). Price (2008) uses data from the American Time Use Survey to investigate the relationship between birth order and time spent with parents. Parents seem to provide equal time to each child at each point in time which is beneficial to the oldest child since for some time this child is the sole beneficiary of parents' attention, i.e. parental investments. A second-born always has to share parental time with the first-born. According to Price, in two-child families the first-born receives about 20 min of quality father-time and 25 min of quality mother-time more each day at each age than the second-born child does at the same age. The second-born child gets only slightly less total time with their parents but quality time, for example time spent reading to or with the child, is crowded out by other activities such as watching television. Price (2012) confirms this for children in two-child families where the oldest is read to more often than the younger child (*ceteris paribus*). He shows this affects their reading skills at different ages. We similarly argue that first-born children receive more attention from their parents and

⁴ Parents may also stimulate reading by their children through buying children's books, taking them to public libraries, talking about reading, giving the example of reading, instruction, et cetera. Reading by children can also be influenced by governments and school teachers. Governments can stimulate book-reading through subsidies for libraries, tax concessions on the sale of (children's) books, and measures to increase the production of book titles (Canoy et al., 2006). Schools and teachers can stimulate children to read by expanding the number of hours on literacy education or stimulate pupils' cultural interest. Plentiful availability of books in schools can also help.

⁵ Although there is no genetic component to birth order, there may be biological differences since children of higher birth order have older mothers. However, conditional on the age of the mother this suggests there should be no birth order effects. Black et al. (2005) find that controlling for the age of the mother at birth and for birth characteristics, such as birth weight, increases the estimated birth order effect, suggesting that potential biological differences are actually working in the opposite direction.

⁶ The stopping rule is related to perceptions of parents on the optimal number of children in response to the "quality" of previous children. If a high-quality child is born first, this may induce parents to have more children who may have a lower quality on average. If the first child is low quality, parents may stop at the first child. The financial constraints refer to the lower per capita budget in larger families available for investments in education.

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