

The effects of parental death and health shocks on children's outcomes

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Policy motivation:

Nearly everyone experiences the death of a parent, but this loss can occur at different stages of people's lives. Parental death affects children differently depending on the age of the children: in preliminary work, we find that parental death has long-term impacts on the labour market outcomes of both young and adult children, but that the effects vary substantially over the life cycle. Although one cannot prevent people from dying, the negative effects of parental death and illness can be mediated by appropriately targeted (perhaps age-specific) policy interventions. Creating policies capable of ameliorating the effects of parental death, however, depends crucially on understanding the mechanisms through which parental death and illness affect children's labour market outcomes. For example, losing a parent during childhood may alter children's labour market trajectories by affecting their mental health, academic success and choice of study. The mechanisms through which parental death and health shocks affect children's labour market outcomes are only poorly understood in the current literature. By shedding more light on these mechanisms and understanding the degree to which these "middle year" effects predict later life outcomes, our project seeks to guide policymakers.

Proposal:

Parents invest in their children emotionally and financially throughout childhood and into adulthood. Many parents will require help and assistance when they themselves grow old. The critical role of parents in determining children's socioeconomic outcomes and well-being is well documented (see e.g., Almond, Currie & Duque, 2018, for a review). We examine the effect of parental death or severe health shocks at various ages during childhood on children's immediate, intermediate and later life outcomes. By determining the age-specific effects of parental care on child academic and mental health (immediate and intermediate) outcomes in addition to the (late) labour market outcomes, policymakers can more efficiently trace out appropriate interventions for children in the most vulnerable age groups, and thereby can more efficiently mediate the negative impact on their mental health.

Existing literature has documented how parental health shocks affect children's outcomes in childhood. However, due to data limitations, they do not focus on the age-specific effects of parental health shocks on children's later life outcomes or their underlying mechanisms (Adda et al., 2011; Chen et al., 2009; Gould et al. 2020).¹ Thus, the policy conclusions they draw make no mention of whether policies should target more vulnerable age groups for maximal efficiency. This project overcomes these data limitations by using rich population-level data from Denmark. Our project complements existing studies and adds to the understanding of how the effects of parental health shocks differ by child age and their underlying mechanisms.

We seek to quantify the total effect on early adult outcomes such as labour market participation, earnings and occupational choice, including management and entrepreneurial activity, as a function of the age at which parents' health was negatively shocked. The latter of these outcomes is inspired by

¹ A notable exception to this is Garcia-Miralles and Gensowski (2022). They focus on more immediate effects of parental health shocks on socio-emotional skill formation for children between the ages of 11-16, but also consider age-specific effects of parental health and death shocks before the age of 15 on the child at age 15. They conclude that socio-emotional skills of 11-16 year olds are robust to these shocks, but also that there are negative effects on the conscientiousness of 15 year olds, and that these effects are decreasing in the age.

work in the field of psychology that has found a correlation between creativity, entrepreneurship, leadership and orphanhood.²

To understand the mechanism by which such shocks translate into later life outcomes, we will uncover effects on cognitive skill formation by estimating the effects on children's test scores (elementary and national aptitude) across a number of subjects all the way through the choice of which secondary education to pursue. To uncover (negative) effects on non-cognitive skill formation we will consider children's admission to psychiatric wards as well as their medical prescriptions, including prescriptions for mental health, e.g., antidepressants.

The availability of Danish register data for information on each parent's health and death back to the 1980s, which will allow us to identify shocks to parental health and death, and thus, to estimate the effects (or absence) of parental care and investment at various ages during childhood. We will follow a similar identification strategy as Garcia-Miralles and Gensowski (2022), but given the larger sample and different outcomes that we will consider, will have more power. Because we have complete information on the composition of each family, we can control for sibling-fixed effects. This allows us to provide causal evidence regarding the age at which parental care/investment and the absence thereof matters the most for child outcomes, and to investigate at which point these effects most sharply reveal themselves relative to the shock: immediately, slowly, or only later in life? In addition, the availability of the full population of individuals gives us the ability to investigate whether these age-specific effects differ for shocks to mothers as opposed to fathers.

In the Danish register data, we are able to observe a large number of outcomes and demographics for the entire population from 1980 to 2019. Importantly, we can observe the exact date for each occurrence of parental death and health shocks. We will leverage the exogenous timing of sudden parental death and unexpected health shocks to rule out anticipatory effects and reverse causality. By exploiting the completeness of information on birthdays and links between parents and children, we can estimate the age-specific impact of parental death on children. Child-sibling fixed effects will allow us to handle the endogeneity of parental death and provide causal estimates of age-specific effects of parental death. Because we can observe parental outcomes from 1980 to 2019, we can also control for factors that may vary within the family over time, e.g., income and unemployment. In an early descriptive analysis, we see that income at age 30 is heavily affected by parental death in childhood and that the impact varies significantly by age: we find a significantly larger effect if the parent dies when the child is very young.

As has been pointed out by Almond, Currie and Duque (2018), there is a widely held belief that it is more cost effective to focus policy on the very young, even though there is a surprising lack of research that directly compared policies targeting different age groups. We believe that our analysis would be a valuable step in this direction – our ability to detect nontrivial differences in the effects of parental shocks according to age, would suggest that policy ought to consider to differentially target children of different ages. In addition, as Almond, Currie and Duque (2018) point out, research often quantifies the effect of parental health/death shocks during childhood (and policies to mitigate these shocks) on later life outcomes (say earnings at age 30), but that there is a lack of knowledge about the “missing middle” – the years between the shock and later life. Specifically, we ask if long term outcomes can be predicted by observable outcomes during these middle years? The answer to this question – whether or not early childhood affects adult outcomes only through outcomes in the middle years (e.g., middle year

² See for instance Eisenstadt, J. M. (1978). As the psychologist Dean Simmons states, “Gifted children and child prodigies seem most likely to emerge in highly supportive family conditions. In contrast, geniuses have a perverse tendency of growing up in more adverse conditions.” For an excellent discussion on the topic, see Malcom Gladwell's *David and Goliath- Underdogs, Misfits, and the Art of Battling Giants*.

outcomes satisfy the exclusion restriction) – would greatly simplify estimation of a structural model of human capital production. We hope to provide evidence exactly along these lines.

To further examine the mechanisms through which parental death generates age-specific effects on children's later life outcomes, we initially control for a potential income effect: parental death is likely to result in lower family income. This allows us to assess the impact of parental death on children's cognitive and non-cognitive skills. First, we explore the impact of parental death on children's academic scores, and second, the effect on children's mental health. To achieve this, we are requesting two new sources of data from Statistics Denmark: 1) student academic scores, and 2) children's admission to psychiatric wards as well as their medical prescriptions, including prescriptions for mental health, e.g., antidepressants. The data set of student academic scores from Statistics Denmark is provided free of charge, but the data on children's mental health is subject to a cost of around 60.000 DKK. We are applying for funding to finance the purchase of the data on mental health outcomes, as well as Statistics Denmark's time cost of receiving all of our data and creating the project. This data is crucial for us to understand whether parental death or severe health shocks affect children's later life outcomes differentially by age due to a differential impact on children's mental health.

Project participants:

Moira Daly (Associate Professor, CBS) has worked extensively on Danish administrative data. In particular, she is familiar with the Danish data on health outcomes and skills; she has published a number of papers using these data. Ning Zhang (Postdoc, University of Oxford) and Mathias Jensen (Postdoc, University of Oxford) have both worked extensively on administrative data, including on multiple projects focusing on inequalities in labour market outcomes. Thus, the proposed project is a natural extension of the research agenda of all three project participants.

Timeline:

Before April 2023, we will use the administrative data to which we already have access to start the empirical analysis outlined in the proposal. We aim to have the main results of the impacts of parental death on children's outcomes ready by the Summer 2023. We will purchase the administrative data on individual admission to psychiatric wards and medical prescriptions from Statistics Denmark as soon as funding is obtained. It will take a couple of months for us to get access to the data. After getting access to the data, we will run the empirical analysis on the impact of parental death on children's mental health outcomes. We aim to finish these tasks around July-August 2023. After that, we will further explore the mechanisms that drive the main results. The latter task should be completed in October 2023. By June of 2024, we expect to have the first draft of the paper that can be submitted to major academic conferences, and next, to leading academic journals, e.g. *American Economic Review*, *American Economic Journal: Applied Economics*, *American Economic Journal: Economic Policy*, *Economic Journal*, *Journal of Political Economics*, *Journal of Labor Economics*, *Journal of the European Economic Association*, *Review of Economic Studies*, *Review of Economics and Statistics*.

References:

Adda, Jerome, Anders Bjorklund, and Helena Holmlund. 2011. "The Role of Mothers and Fathers in Providing Skills: Evidence from Parental Deaths." *IZA Discussion Paper Series* (5425).

Almond, Douglas, Janet Currie, and Valentina Duque. 2018. "Childhood Circumstances and Adult Outcomes: Act II." *Journal of Economic Literature* 56:1360–1446.

Chen, Stacey H., Yen Chien Chen, and Jin Tan Liu. 2009. "The Impact of Unexpected Maternal Death on Education: First Evidence from Three National Administrative Data Links." *American Economic Review*, vol. 99: 149–53.

Eisenstadt, J. M. (1978). "Parental loss and genius." *American Psychologist*, 33(3), 211–223.

García-Mirallas, Esteban, and Miriam Gensowski. 2022. "Are Children's Socio-Emotional Skills Shaped by Parental Health Shocks?", conditionally accepted: *Journal of Human Resources*.

Gould, Eric D., Avi Simhon, and Bruce A. Weinberg. 2020. "Does Parental Quality Matter? Evidence on the Transmission of Human Capital Using Variation in Parental Influence from Death, Divorce, and Family Size." *Journal of Labor Economics* 38(2):569–610.