

# Losing a Dad Changes the Biology of Children

A fascinating piece of research related to father loss is highlighted by an [article at Family Studies](#). Most studies of the effects on a child losing his or her father through death, divorce or incarceration, rely on survey questions to measure health.

But the new [research](#), published in the US journal Pediatrics this month, took a biological approach, using DNA samples from children and examining telomere length. The results were significant, as co-author Daniel Notterman explained to IFS editor Alysse ElHage.

The children were from a group of nearly 5000 born between 1998 and 2000 (about three-quarters of them to unmarried parents) and being followed by the Fragile Families and Child Wellbeing Study. These families are called fragile because they are at greater risk of breaking up.

The DNA samples were taken when the children were 9 and again when they were 15.

Unless you know something about inner workings of DNA you may not have come across the term [telomere](#). This is a structure found at the ends of chromosomes and its function is to protect the end of the chromosome from deterioration or from fusion with neighbouring chromosomes. Shortening of telomeres is associated with ageing, but also with chronic stress in both adults and children.

The researchers hypothesised that father loss would be associated with telomere attrition, and so it turned out to be. Since chronic stress is also linked with heart disease and behavioural issues, it is not clear whether accelerated telomere attrition is just a biomarker for these other health

effects, or actually plays a causal role, says Notterman.

*“In either case, by examining telomere length, we get an early window ... into adverse health effects that may not be recognised for many years.”*

Even more interesting is that differing amounts of telomere attrition in the children were linked with the different reasons for father absence. At this point you might expect to read, as I did, that divorce/separation had the severest effect on children's health, since this is what other studies have found on comparing divorce with a father's death. It seems plausible, in that a father cannot be blamed for dying, whereas a child may feel rejected if his father leaves the home.

However, the biological evidence in this study shows otherwise.

A father's death had the strongest impact, with an average telomere length reduction of 16 percent. This was followed by incarceration of the father (10 percent) and divorce or separation (6 percent). The average reduction was 14 percent.

Notterman explains these results:

*“We conjecture that loss of a father due to death is a more potent stress because it completely ends the relationship between father and child. With separation and incarceration, it is still possible for there to be contact between father and child. Fathers who are separated from the family often maintain contact with a biological child, and incarceration may be limited in time.”*

Studies that rely exclusively on survey questions may underestimate the impact of a father's death.

Another important finding is that the effect of father loss

was 40 percent greater for boys than for girls – something the researchers were not looking for but which they put down to the absence of specific role-modelling in a boys' lives.

In addition, father loss due to the dissolution of the relationship between the parents has its strongest effect through reducing family income. However, income played only a small role as a stressor when it came to death or incarceration of the father: the loss itself was a "much more potent stress."

Notterman concludes:

*"We think that our findings reinforce the growing understanding of a father's importance in the life of his children. We do not think that our data support a conclusion that one type of relationship between a child's parents is more favorable than another; rather, we conclude that a central role for the father is optimal for his child's well-being. Furthermore, we think that this knowledge should inform public policy in providing support to families and children where the father, for one reason or another, is absent from his children."*

There is no encouragement here for making peace with new family forms that exclude a child's father, either by deliberate choice or by default. When it happens it is a loss to the child. Common sense tells us this, and now, so can his or her DNA.

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