

# Education and culture affect children's understanding of the human body

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Experiences of life and death can help children's understanding of the human body and its function, according to research by psychologists at the University of East Anglia.

The study found that children as young as four and five can understand that the [human body](#) works to keep us alive. The researchers call this a 'life theory' and say it is important because it enables children to understand other related biological facts, such as what the vital organs do to keep us alive and what happens when people die. The results also have implications for teaching about the human body in schools.

The research, published in the *British Journal of Developmental Psychology*, aimed to identify the age by which children begin to demonstrate a biological understanding of the human body and the idea that its function is to maintain life. It also explored the extent to which education, culturally specific experiences and religion influence this understanding. The findings suggest that many of the changes in children's reasoning about life and the human body take place between the ages of four and seven - earlier than previous research that suggested these do not happen before the age of seven and that it is after the age of 10 that children reason in biological terms about the human body, life and death.

Dr Georgia Panagiotaki, of UEA's Norwich Medical School, and Dr Gavin Nobes, of the School of Psychology, interviewed children aged between four and seven from three different cultural backgrounds -

white British, British Muslim and Pakistani Muslim. They found similarities in children's ideas across the cultures and that they were equally smart in understanding the concept of life, whether they were growing up in England and enjoyed relatively high standards of education, or living in a deprived rural village in Pakistan, where education and resources were limited.

However, different educational and cultural experiences were seen to influence aspects of biological understanding among the groups. One "intriguing" finding was that exposure to cultural experiences, such as the raising and killing of domestic animals for religious and other purposes, provided the Pakistani children with learning opportunities that accelerated their understanding of the fact that without vital organs such as the heart, brain and stomach humans cannot survive. As a result they were better at understanding the importance of vital organs to life than the British children.

Despite not having these experiences, British children were better at explaining the biological function of vital organs because they learn about them at school earlier and with better resources than their Pakistani counterparts. British children's understanding of organ function also increased with age, indicating that teaching of scientific facts about the human body – introduced in British schools in Years 1 and 2 – improves children's knowledge in this area. In contrast, Pakistani children are not taught this until after the age of seven, and their knowledge of the function of internal organs did not improve with age. This suggests that without the right education and teaching of biological facts and concepts, having a life theory and exposure to certain experiences is not enough.

Dr Panagiotaki, a lecturer in psychology, said it was the first time British children had been studied and different cultures compared in this way.

"These findings have educational implications as current teaching is not based on the key concepts of life and the body as a life machine," said Dr Panagiotaki. "They suggest that we can teach children more systematically about the human body, the function of [vital organs](#) and the concepts of life and death as a biological process as early as five years old. We can also base our teaching on the concept of life, which can work as a framework for children's understanding of other related biological concepts such as death, health and illness.

"Direct experience is a powerful tool that can accelerate children's understanding of biological facts and phenomena. Pakistani children in rural areas tend to have more experience of life and death through their daily contact with animals, and this is likely to expose them to key facts about what happens to the body when organs such as the heart stop working, even when they cannot explain their functions. These culturally specific events provide informal learning opportunities that can influence the development of children's reasoning about life and the human body.

"These experiences are very different from those of their urban counterparts, whose contact with animals might be limited to looking after pets and visits to the zoo. British children are quite protected, maybe too much so, from discussions about life and death, subjects that can be seen by adults as difficult to talk about."

Dr Panagiotaki added: "Young children can understand much more than we think but there are some things, such as what the heart does or what blood is for, that they cannot work out by themselves without the right kind of teaching and explanation. Children are very interested and curious and it is important that teaching takes into account what they already know and gives them the right facts and answers to their questions."

Looking at the influence of religion, the researchers predicted Muslim children would differ from their White British counterparts. However, they found that British Muslim children were more similar to their White British than to their Pakistani Muslim counterparts, suggesting it does not affect children's understanding of the human body and its function

A total of 188 children – 82 four to five-year-olds and 106 six to seven-year-olds – took part in the study. The younger group consisted of 33 white British, 24 British Muslim, and 25 Pakistani Muslim children. The older group consisted of 44 white British, 26 British Muslim, and 36 Pakistani Muslim children. White British children were compared with British Muslim children living in the same areas, and attending similar secular state primary schools in London, and Muslim [children](#) growing up in Pakistan who attend state primary schools in two villages near the town of Gadap, Karachi.

**More information:** 'Cultural influences on children's understanding of the human body and the concept of life', Georgia Panagiotaki and Gavin Nobes, is published in the *British Journal of Developmental Psychology*.

Provided by University of East Anglia

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