

## **Study links low national average IQs with infectious diseases**

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Log disability-adjusted life years owing to infectious disease and average national IQ correlate. Image credit: [i]Proceedings of the Royal Society B[/i], doi:10.1098/rspb.2010.0973

(PhysOrg.com) -- Researchers in the US have noted areas of the world with the lowest average intelligence quotient (IQ) also tend to have the highest rates of infectious diseases, and suggest the energy required to fight off the diseases may hinder brain development in children because both are metabolically costly processes.

The research is partly based on data published in 2001 and then 2002 in the book by Richard Lynn and Tatu Vanhanen, "IQ and the Wealth of Nations." The book collected data from published literature and tabulated the average IQ of 81 nations. They also estimated the average



IQ for a further 104 countries by looking at the IQ of surrounding countries. The 2006 edition of the book expanded the data to include measurements for 113 countries and estimates for another 79.

The results published in the book showed that Hong Kong had the highest average IQ of 107. The lowest IQs were found in the poorer countries, such as those in Africa, and the authors suggested the differences were at least partly due to variations in the wealth of the nations.

The new study, by Christopher Eppig, Corey Fincher, and Randy Thornhill, of the University of New Mexico in Albuqurque, suggests that lower IQs are linked to infectious diseases. They call their hypothesis the "parasite-stress hypothesis," and propose children who contract "parasites," which they define as including viruses and bacteria as well as parasites such as intestinal worms, spend more energy fighting off infection and therefore have less in reserve for <u>brain development</u>.

The scientists took the data on IQ collected in Lynn and Vanhanen's 2006 edition of their book, and compared it to 2004 data on the number of years of healthy life lost due to <u>poor health</u> and infectious diseases from the World Health Organization (WHO). The WHO data included information on 28 infectious diseases, including <u>malaria</u>, <u>tetanus</u>, and hepatitis. They also looked at factors suggested by other researchers to explain the national differences in IQ, such as nutrition, education, gross domestic product, temperature, and climate.

The results of the analysis showed the infectious disease burden more closely correlated with the average IQ than the other variables both across all nations, and within each continent except South America. To test the hypothesis further they developed a statistical model that enabled them to test the effects of infectious diseases against the other suggested variables, and again <u>infectious diseases</u> came out in the lead, with



temperature and distance from sub-Saharan Africa also explaining some of the variation.

Eppig points out the study does not suggest "that <u>parasites</u> are the only thing affecting the global diversity of intelligence," but that it may be even more important than factors such as wealth and access to education. He said disease saps the body's energy and in the early years of childhood a lot of energy is going into building the brain. "If you don't have enough, you can't do it properly." If the results are right, the IQ of a nation will not be raised unless the burden of disease can be lifted, Eppig said.

The research findings are reported online in the *Proceedings of the Royal Society B*.

**More information:** Parasite prevalence and the worldwide distribution of cognitive ability, Christopher Eppig et al., *Proceedings of the Royal Society B*. Published online before print June 30, 2010, <u>doi:10.1098/rspb.2010.0973</u>

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