

Neuroscientists: Two heads are better than one -- with the right partner

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In the new age of coalition governments, the question of whether two heads are better than one is more relevant than ever. A study published today in the journal *Science*, neuroscientists from UCL (University College London) and Aarhus University, Denmark, shows that two heads can be better than one - but only if you have the right partner.

The study, led by Professor Chris Frith of the Wellcome Trust Centre for [Neuroimaging](#) at UCL and Niels Bohr Professor in the University of Aarhus, found that two heads were better than one, but only when both partners were equally competent and could freely discuss their disagreements.

As individuals we are very good at combining information from different sensory sources to arrive at a judgement that is more accurate than from either source on its own. For example, we can better judge the speed of an approaching car by combining vision and sound. But, what happens when two people work together. Can two people combine their sensory information?

"When we are trying to solve problems, we usually put our heads together in teams, calling on each other's opinions," says Dr Bahador Bahrami, lead author of the study from UCL. "For our study, we wanted to see if two people could combine information from each other in a difficult judgement task and how much this would improve their performance."

Volunteers came into the lab in pairs and were asked to detect a very weak signal that was shown on a computer screen. If they disagreed about when the signal occurred, then they talked together until they agreed on a joint decision.

The results of the first experiment showed that joint decisions were even better than the decision made by the better-performing individual - in this case,

two heads were definitely better than one. Two additional experiments showed that this improvement depended critically on the partners being able to talk together. Just being told which of them was right was not enough.

However, the researchers found that in some situations, two heads can be worse than one. In a fourth experiment, pairs of volunteers were given the same task; however, one of the participants was sometimes surreptitiously made incompetent by being shown a noisy image in which the signal was much more difficult to see. In this case, the joint decisions were worse than decision of the better performing partner - in other words, the pair would have been better off if the opinion of the incompetent partner had been ignored.

"When two people working together can discuss their disagreements, two heads can be better than one," explains Professor Frith. "But, when one person is working with flawed information - or perhaps is less able at their job - then this can have a very negative effect on the outcome. Being able to work together successfully requires that we know how competent we are. Joint decisions don't work when a member of the team is incompetent, but doesn't know it.

"We know all too well about the catastrophic consequences of consulting 'evidence' of unknown reliability on problems as diverse as the existence of weapons of mass destruction and the possibility of risk free investments."

More information: Bahrami, B et al. Optimally interacting minds. *Science*; e-pub 26 Aug 2010

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