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Citation: Garrido, L., Susilo, T., Rezlescu, C. & Duchaine, B. (2019). Probing the Origins of the Face Inversion Effect With an Extraordinary Participant. *Perception*, 48(2), doi: 10.1177/0301006619863862

This is the accepted version of the paper.

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Link to published version: <https://doi.org/10.1177/0301006619863862>

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Probing the Origins of the Face Inversion Effect With an Extraordinary Participant

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We describe the case of Claudio, who is a man with a congenital condition (arthrogryposis multiplex congenita) that has affected multiple joints of his body. As a result of his condition, Claudio's head is rotated backward so that it nearly rests against his back. Therefore, like most people, Claudio has lifelong experience of viewing upright faces but, unlike most people, his own face orientation does not match upright faces (at least, most of the time). This extraordinary case has allowed us to probe the origins of the face inversion effect: Does it result from phylogenetic factors or from experience? We tested Claudio on a number of face detection and face identity perception tasks. All tasks showed reliable inversion effects in controls, in that almost all participants were better at detecting or matching upright faces compared with inverted faces. In contrast, for a large number of these tasks, Claudio's performance with upright and inverted faces was comparable. In addition, Claudio's performance on tasks with upright faces was much worse than controls'. These results suggest that the face inversion effect results from a combination of experience and phylogenetic factors.