

Publication

Effect of image analysis software on neurofunctional activation during processing of emotional human faces

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 1196104**Author(s)** Fusar-Poli, Paolo; Bhattacharyya, Sagnik; Allen, Paul; Crippa, José A.; Borgwardt, Stefan; Martin-Santos, Rocio; Seal, Marc L.; O'Carroll, Colin; Atakan, Zerrin; Zuardi, Antonio W.; McGuire, Philip**Author(s) at UniBasel** [Borgwardt, Stefan](#) ;**Year** 2010**Title** Effect of image analysis software on neurofunctional activation during processing of emotional human faces**Journal** Journal of clinical neuroscience : official journal of the Neurosurgical Society of Australasia**Volume** 17**Number** 3**Pages / Article-Number** 311-4**Mesh terms** Adolescent; Adult; Brain, physiology; Brain Mapping; Emotions, physiology; Face; Facial Expression; Humans; Image Processing, Computer-Assisted, methods; Magnetic Resonance Imaging, methods; Male; Photostimulation, methods; Software; Young Adult

Functional brain imaging techniques such as functional MRI (fMRI) that allow the in vivo investigation of the human brain have been exponentially employed to address the neurophysiological substrates of emotional processing. Despite the growing number of fMRI studies in the field, when taken separately these individual imaging studies demonstrate contrasting findings and variable pictures, and are unable to definitively characterize the neural networks underlying each specific emotional condition. Different imaging packages, as well as the statistical approaches for image processing and analysis, probably have a detrimental role by increasing the heterogeneity of findings. In particular, it is unclear to what extent the observed neurofunctional response of the brain cortex during emotional processing depends on the fMRI package used in the analysis. In this pilot study, we performed a double analysis of an fMRI dataset using emotional faces. The Statistical Parametric Mapping (SPM) version 2.6 (Wellcome Department of Cognitive Neurology, London, UK) and the XBAM 3.4 (Brain Imaging Analysis Unit, Institute of Psychiatry, Kings College London, UK) programs, which use parametric and non-parametric analysis, respectively, were used to assess our results. Both packages revealed that processing of emotional faces was associated with an increased activation in the brain's visual areas (occipital, fusiform and lingual gyri), in the cerebellum, in the parietal cortex, in the cingulate cortex (anterior and posterior cingulate), and in the dorsolateral and ventrolateral prefrontal cortex. However, blood oxygenation level-dependent (BOLD) response in the temporal regions, insula and putamen was evident in the XBAM analysis but not in the SPM analysis. Overall, SPM and XBAM analyses revealed comparable whole-group brain responses. Further studies are needed to explore the between-group compatibility of the different imaging packages in other cognitive and emotional processing domains.

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