It has already been shown that spatial patterns of brain activity have a considerably higher sensitivity and selectivity for detecting mental processes than activity in individual regions [6]. Importantly, such a data-driven approach for detecting deception based on pattern classification does not necessarily require a neurocognitive theory of deception. Instead, it would be sufficient to obtain training data by conducting neuroimaging in real criminal investigations [7]. This would constitute a maximally realistic scenario, ideally for which it was not known whether the suspect had committed the crime or not. Cases in which independent evidence becomes available after scanning on whether the person was lying or telling the truth will provide the best way to train the program. Thus, the accuracy of a neuroimaging lie-detector would be most clearly validated, which is more than can be said for other widely used methods for assessing truth [8]. The question of whether different types of lies and different contexts are a problem for neuroimaging-based lie-detection can be answered by assessing the degree to which data from such real-world scenarios can be correctly classified. It should be an ethical imperative to use the best available methods for assessing deception and, hence, the question of whether a neuroimaging-based lie-detection should be used is a matter of its success as determined from empirical data in realistic settings.

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Letters Response

Response to Haynes: There's more to deception than brain activity

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Haynes outlines a programme for using the new voxel-wise categorization technique in functional magnetic resonance imaging (fMRI) for detecting deception [1]. The imaging methodologies he proposes are undoubtedly the best currently available. However, they depend on the existence of independent categorization of deceptive and non-deceptive intentions in each of the subjects being scanned, which is the weak point of his proposal. Valid experimental paradigms for eliciting deception are still required, and such paradigms will be particularly difficult to apply in real-life settings. Furthermore, it is known that brain activity is markedly affected by the subjects' beliefs about the situation rather than objectivity [2,3]. In two such studies [2,3], brain activity depended on whether subjects thought they were interacting with a person or a computer, even though, objectively, the sequence of stimuli they experienced were the same in both conditions. In such cases, the state of the subject can only be confirmed by subjective report. Deception is a subjective intention rather than objective state. Consider, for example, the situation in which someone tells the truth with the subjective intent to deceive. In this example, there is no objective marker of intent. Can we rely on the reliability of subjective reports in a forensic setting to supply our independent marker of deception? Moreover, in such settings, it is well known that witnesses often disagree as to what actually happened. So, it seems highly problematical to presume that independent evidence will always be available to indicate whether a person is lying or telling the truth. In a forensic situation, we believe that the question 'is this person being deceptive' is not the correct one to ask, especially if we are to rely solely on measures of neural activity. Rather, we should ask questions about objective states, as in the guilty knowledge test [4], such as 'has this person seen this object before'. We agree with Haynes, however, that there are important ethical issues at stake for researchers in this field. In our opinion, one of the most important of these is careful consideration of how results derived from highly controlled laboratory settings compare with those obtained from real-life scenarios, and if and when imaging technology should be transferred from the laboratory to the judicial system.

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Erratum

Corrigendum: Imaging recollection and familiarity in the medial temporal lobe: a three-component model

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The authors to the above article wish it to be known that Table 1 contains two minor errors. Johnson and Rugg [26] should be reported as a retrieval analysis rather than an encoding analysis. Cansino *et al*. [14] used pictures instead of words as materials. Also, to clarify, Woodruff *et al*. [24] included words and pictures as study materials, although the test included words only. The authors apologize to the readers for these errors.

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