

论著

反社会人格障碍患者说谎的功能磁共振分析

1. 中南大学生物医学工程研究所, 长沙 410083;
2. 中南大学湘雅三医院放射科, 长沙 410013;
3. 湖南第一师范学院信息科学与工程系, 长沙 410205

摘要: 目的:研究反社会人格的罪犯说谎时的功能磁共振情况。方法:对32个满足反社会人格标准的男性罪犯进行功能磁共振,分析他们在说真话和说假话时的脑区激活差异以及习惯性说谎程度与激活脑区强弱之间的关系。结果:反社会人格障碍患者左扣带回前部,双侧的背外侧前额叶,左顶下小叶与其欺骗行为的执行相关。并且随着善于说谎程度的加强,这些区域的激活强度呈下降趋势。结论:利用大脑的血氧水平依赖激活可对反社会人格障碍患者说谎和说真话行为进行识别,但是血氧水平依赖激活差异会随着善于说谎程度的增加而降低,这对测谎精确度提出了挑战。

关键词: 反社会人格障碍 功能磁共振 欺骗 测谎 强迫选择任务

Functional MRI analysis of deception among people with antisocial personality disorders

JIANG Weixiong, LIAO Jian, LIU Huasheng, TANG Yan, WANG Wei

1. Institute of Biomedical Engineering, Central South University, Changsha 410083;
2. Department of Radiology, Third Xiangya Hospital, Central South University, Changsha 410013;
3. Department of Information Science and Engineering, Hunan First Normal University, Changsha 410205, China

Abstract: Objective: To investigate the functional magnetic resonance imaging (fMRI) data of deception in antisocial personality disorders (ASPD).

Methods: A total of 32 criminals meeting the criteria for ASPD underwent fMRI at 1.5T while responding truthfully questions or lying. We compared the brain activities between truth-telling and lie-telling, and then computed the correlation coefficient between the contrast brain activities and the inclination to deception.

Results: The left anterior cingulate gyrus, the bilateral dorsolateral prefrontal cortex, and left inferior parietal lobule were associated with the executive aspects of deception among people with ASPD. But with the greater inclination to deception, the blood oxygen level dependent (BOLD) activities in those regions decreased.

Conclusion: Evaluations of truthful and untruthful communications pertaining to ASPD subjects may be differentiated in terms of brain BOLD activities, though those activities may decrease in habitual liars, which remains a challenge to the diagnostic accuracy in lie detection.

Keywords: antisocial personality disorder functional MRI deception lie detection a forced-choice task

收稿日期 2012-05-29 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1672-7347.2012.11.011

基金项目:

中南大学基础研究基金(394201067);湖南第一师范学院科研基金(XYS09N13)。

通讯作者: 唐艳, Email: tangyan@csu.edu.cn;王维, Email: wawe01cn@yahoo.com.cn

作者简介: 蒋伟雄, 博士研究生, 讲师, 主要从事磁共振图像处理、脑网络组方面的研究。

作者Email: wawe01cn@yahoo.com.cn

参考文献:

1. Fazel S, Danesh J. Serious mental disorder in 23000 prisoners: a systematic review of 62 surveys [J]. Lancet, 2002, 359(9306): 545-550.
2. Spence SA, Kaylor-Hughes CJ. Looking for truth and finding lies: the prospects for a nascent neuroimaging of deception [J]. Neurocase, 2008, 14(1): 68-81.
3. Kaylor-Hughes CJ, Lankappa ST, Fung R, et al. The functional anatomical distinction between truth

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(1870KB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 反社会人格障碍
- ▶ 功能磁共振
- ▶ 欺骗
- ▶ 测谎
- ▶ 强迫选择任务

本文作者相关文章

- ▶ 蒋伟雄
- ▶ 廖坚
- ▶ 刘华生
- ▶ 唐艳

PubMed

- ▶ Article by JIANG Weixiong
- ▶ Article by LIU Huasheng
- ▶ Article by TANG Yan
- ▶ Article by

- telling and deception is preserved among people with schizophrenia [J] . Crim Behav Ment Health, 2011, 21(1): 8-20.
4. Verschuere B, Spruyt A, Meijer EH, et al. The ease of lying [J] . Conscious Cogn, 2011, 20(3): 908-911.
 5. Lee TM, Liu HL, Chan CC, et al. Neural correlates of feigned memory impairment [J] . Neuroimage, 2005, 28(2): 305-313.
 6. Chiu VW, Lee TM. Detection of malingering behavior at different levels of task difficulty in Hong Kong Chinese [J] . Rehabil Psychol, 2002, 47(2): 194-203.
 7. Donders FC. On the speed of mental processes [J] . Acta Psychol (Amst), 1969, 30: 412-431.
 8. Spence SA. The deceptive brain [J] . J R Soc Med, 2004, 97(1): 6-9.
 9. Abe N, Okuda J, Suzuki M, et al. Neural correlates of true memory, false memory, and deception [J] . Cereb Cortex, 2008, 18(12): 2811-2819.
 10. Baumgartner T, Fischbacher U, Feierabend A, et al. The neural circuitry of a broken promise [J] . Neuron, 2009, 64(5): 756-770.
 11. Paulus MP, Feinstein JS, Tapert SF, et al. Trend detection via temporal difference model predicts inferior prefrontal cortex activation during acquisition of advantageous action selection [J] . Neuroimage, 2004, 21(2): 733-743.
 12. Garavan H, Ross TJ, Li SJ, et al. A parametric manipulation of central executive functioning [J] . Cereb Cortex, 2000, 10(6): 585-592.
 13. Grezes J, Decety J. Functional anatomy of execution, mental stimulation, observation, and verb generation of actions: A meta-analysis [J] . Hum Brain Mapp, 2001, 12(1): 1-19.
 14. Crottaz-Herbette S, Anagnoson RT, Menon V. Modality effects in verbal working memory: Differential prefrontal and parietal responses to auditory and visual stimuli [J] . Neuroimage, 2004, 21(1): 340-351.
 15. Martin RC, Wu D, Freedman M, et al. An event-related fMRI investigation of phonological versus semantic short-term memory [J] . J Neurolinguist, 2003, 16(4/5): 341-360.
 16. Fulbright RK, Manson SC, Skudlarski P, et al. Quantity determination and the distance effect with letters, numbers, and shapes: a functional MR imaging study of number processing [J] . Am J Neuroradiol, 2003, 24(2): 193-200.
 17. Stemmer B, Vihla M, Salmelin R. Activation of the human sensorimotor cortex during error-related processing: a magnetoencephalography study [J] . Neurosci Lett, 2004, 362(1): 44-47.
 18. Menon V, Adelman NE, White CD, et al. Error-related brain activation during a Go/NoGo response inhibition task [J] . Hum Brain Mapp, 2001, 12(3): 131-143.
 19. Abe N, Suzuki M, Tsukiura T, et al. Dissociable roles of prefrontal and anterior cingulate cortices in deception [J] . Cereb Cortex, 2006, 16(2): 192-199.
 20. Brown JW, Braver TS. Learned predictions of error likelihood in the anterior cingulate cortex [J] . Science, 2005, 307(5712): 1118-1121.

本刊中的类似文章

1. 王渊¹, 张明¹, 刘海², 章士正², 鱼博浪¹. 不同强度电刺激诱发丘脑激活的功能磁共振成像[J]. 中南大学学报(医学版), 2008,33(01): 26-30
2. 余君¹, 谢鹏¹, 杨泽松¹, 吕发荣¹, 李勇¹, 罗天友¹. 尼泊尔人尼泊尔语、英语和汉语三语阅读的fMRI定位[J]. 中南大学学报(医学版), 2006, 31(05): 759-762
3. 周炳¹, 谭长连¹, 唐劲松², 陈晓岗². 早发性精神分裂症脑功能连接的功能磁共振[J]. 中南大学学报(医学版), 2010,35(1): 17-24
4. 刘想林¹, 王玉忠¹, 刘海洪², 刘哲宁², 周文斌¹. 青年重性抑郁症患者弥散张量和静息状态下的功能磁共振成像[J]. 中南大学学报(医学版), 2010,35(1): 25-31
5. 王微微^{1, 2}, 张明¹, 王渊¹, 金晨望¹, 闫斌¹, 麻少辉¹. 脑内5-HT参与S I及S II脑区痛觉调控的功能磁共振成像研究[J]. 中南大学学报(医学版), 2010,35(3): 185-193
6. 张燕, 段炼, 廖梅, 杨帆, 刘军, 单宝慈, 李凌江. 未治疗惊恐障碍患者脑结构和脑功能的功能磁共振研究[J]. 中南大学学报(医学版), 2011,36(12): 1170-1175