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Neural basis of **irony** in patients with Multiple Sclerosis: an exploratory fMRI study

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**INTRODUCTION**

- **Irony** is a complex form of social language which requires the involvement of various cognitive processes (working memory, theory of mind). Its use contributes to the development and maintenance of social relations.
- **Multiple Sclerosis (MS)** is a neurodegenerative disease leading to a progressive and unpredictable increasing level of disability.
- Knowledge about cognitive and theory of mind impairments in MS has been growing recently and is recognized for participating in social disability of MS patients. However, to the best of our knowledge, no study has explored the neural basis of social language, like irony, using fMRI.

**RESULTS**

- **MS patients perform equally than controls when judging irony but are significantly slower**

**MATERIAL & METHODS**

**Subjects**

- **Subjects** were matched for education
- **3x3x3 mm³**
- **840 volumes (28 min) across 3 runs**

**Reaction time**

- **% Correct answers**
  - Healthy controls: 94.7%
  - MS Patients: 90.1%
  - Unrelated: 96.6%

**Imaging**

- Statistical map of irony vs sincere statements in healthy controls and MS patients (p<0.001 uncorrected)
- Statistical map of irony vs sincere statements in MS patients (p<0.05 FWE)

**CONCLUSION**

- **MS patients** perform equally as healthy controls when judging the irony of items in every experimental condition
- **MS patients** are significantly slower than healthy controls
- The imaging results suggest that **MS patients** show more extended activations in the left middle temporal gyrus and left postcentral gyrus than healthy controls
- These preliminary results are in line with recent data in the field of emotion recognition and support the idea that **MS patients** benefit from **brain adaptation mechanisms** to compensate for neurological and functional impairment

**REFERENCES**