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

#3310

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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.

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

MATERIAL & METHODS

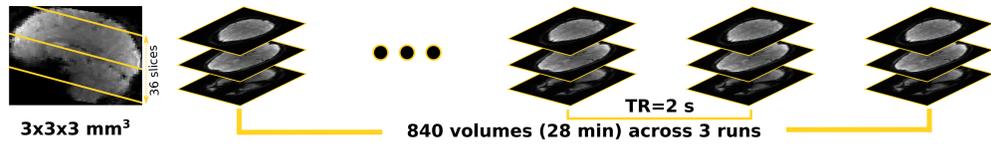
Subjects

N	Group	Women	Men	Age
21	Healthy controls	14	7	44
20	MS Patients	14	6	46

Subjects were matched for education

Data Acquisition

3T MRI Scanner Magnetom Verio VB 17



Irony detection task

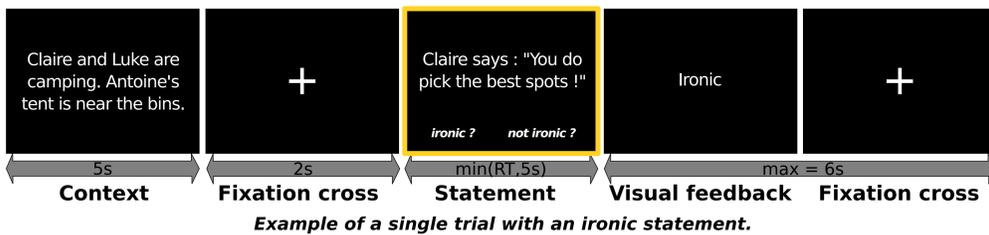
90 Trials

Context

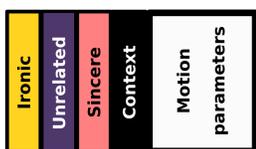
Statement

30 Ironic	Claire and Luke are camping. Antoine's tent is near the bins.	Claire says : "You do pick the best spots !"
30 Unrelated	Roger and Luke are at a conference. The professor is very interesting.	Roger says : "You are an excellent fisherman !"
30 Sincere	Simon comes watch a game at Luke's place. The television is very big.	Simon says : "You have a very recent TV !"

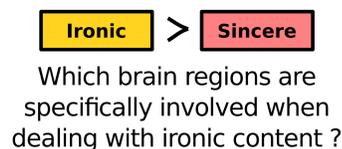
Participants were presented 90 stories. They had to evaluate if the statement was ironic or not. A single session contained 10 trials of each condition.



GLM



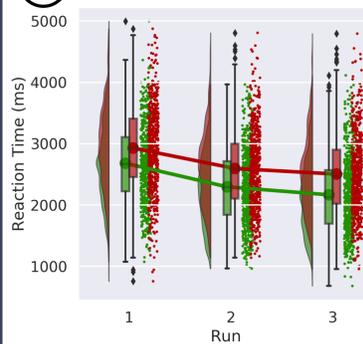
Contrast



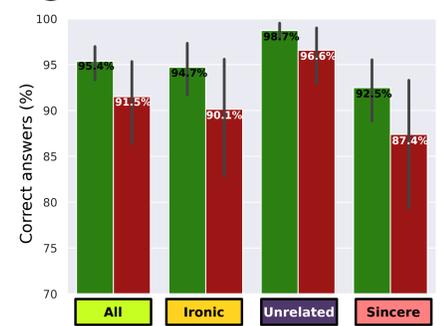
RESULTS

Behaviour

Reaction time

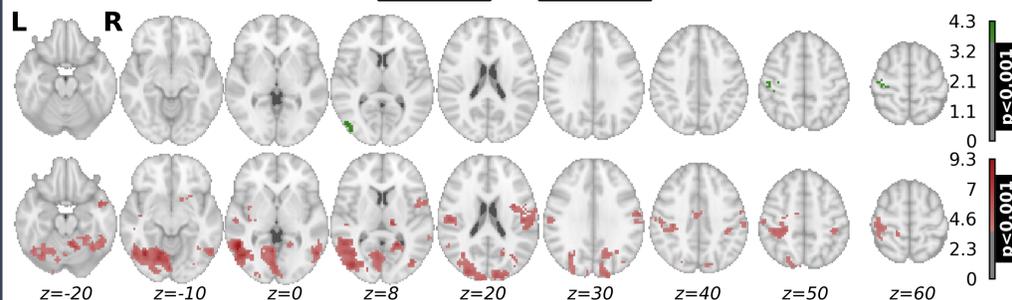


% Correct answers

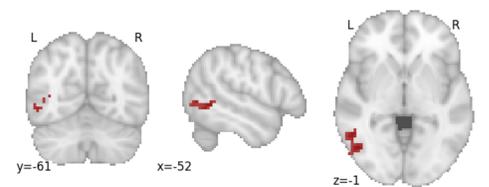


Imaging

Ironic > Sincere



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)

Healthy controls Multiple sclerosis patients

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

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