

# **Finding evidence of Deductive and Abductive Reasoning abilities: an experiment with Lateral-Brain-Damage patients**

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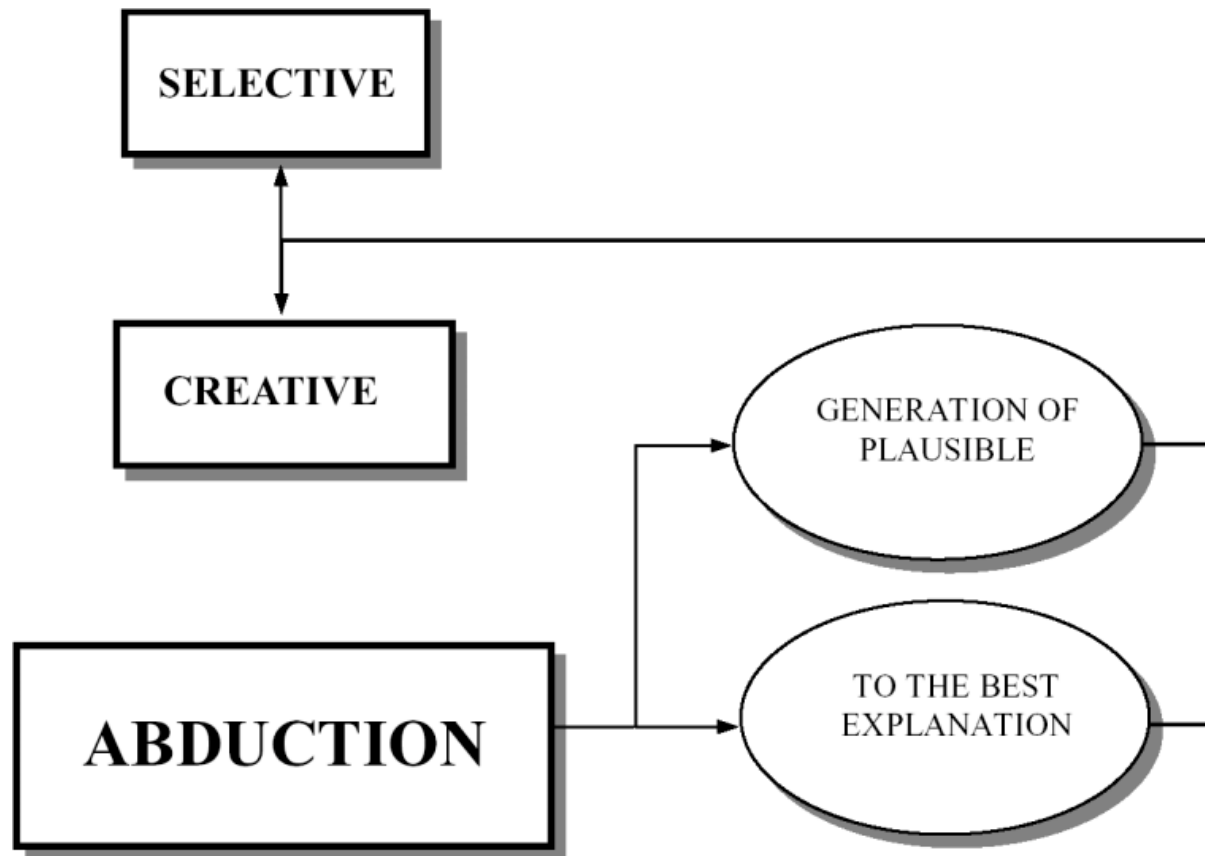
# Agenda

- Brain damage
- Reasoning
- Data analysis
- Conclusions

# Left and Right Hemisphere Patients

- Left Hemisphere – aphasia
- Right Hemisphere

# Creative Reasoning

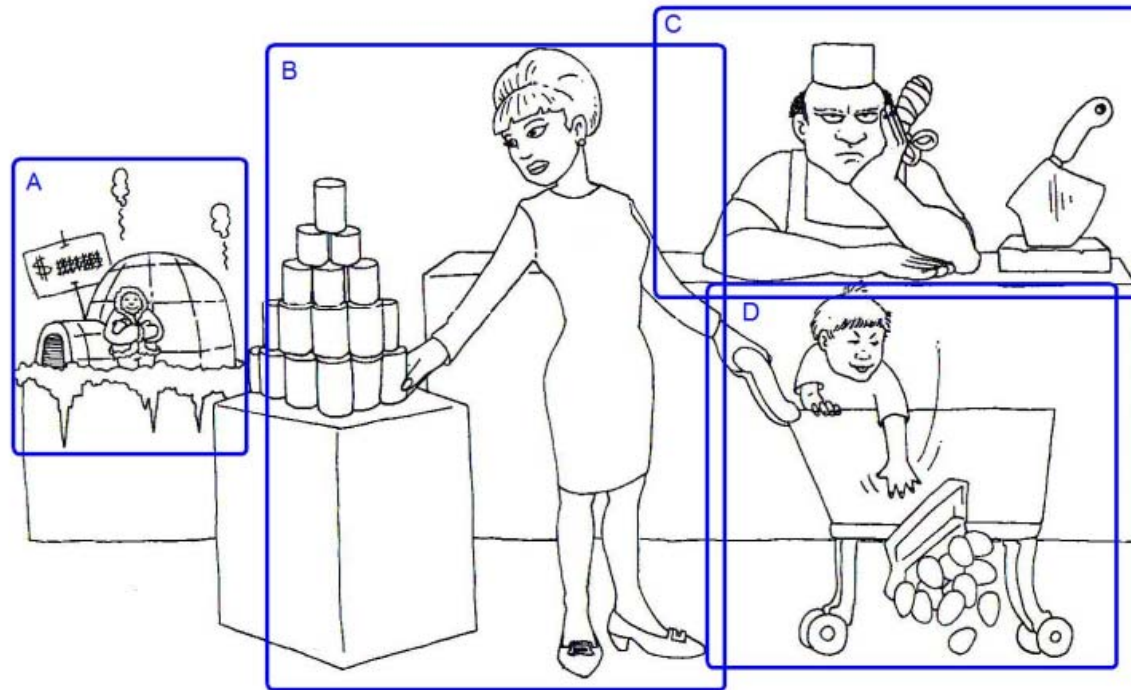


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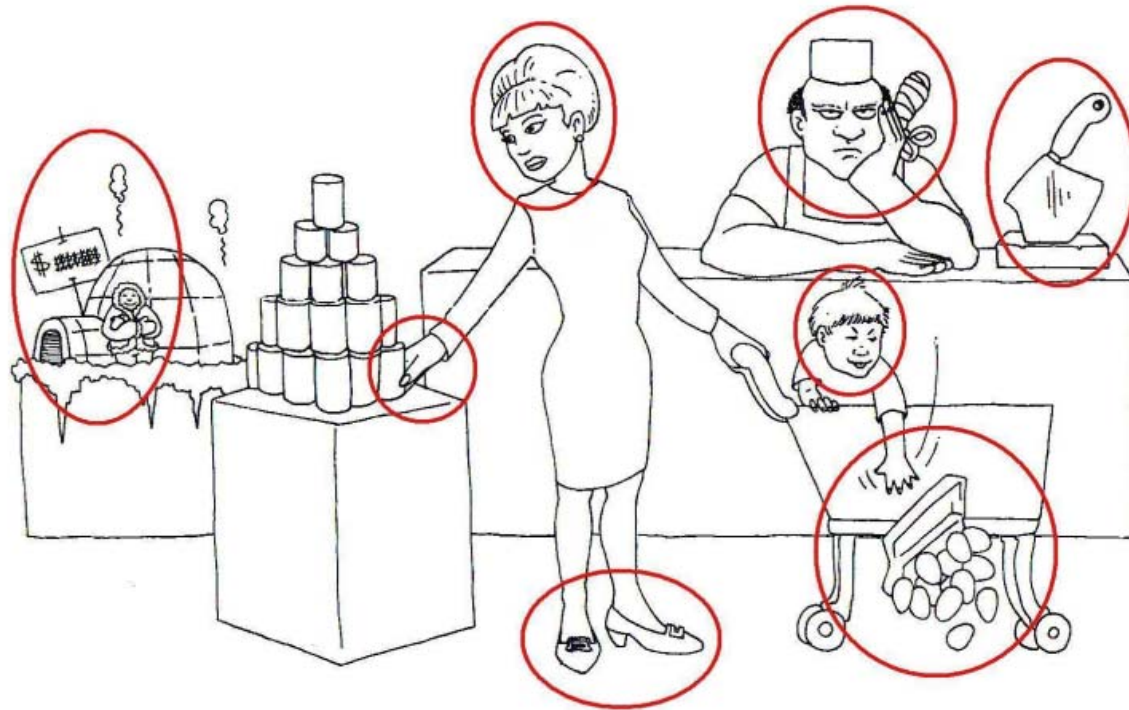
*“I have a picture here. As you see, there’s  
a lot going on.  
Look it over and tell me about it.”*



## 4 scenes. . .



. . . many details



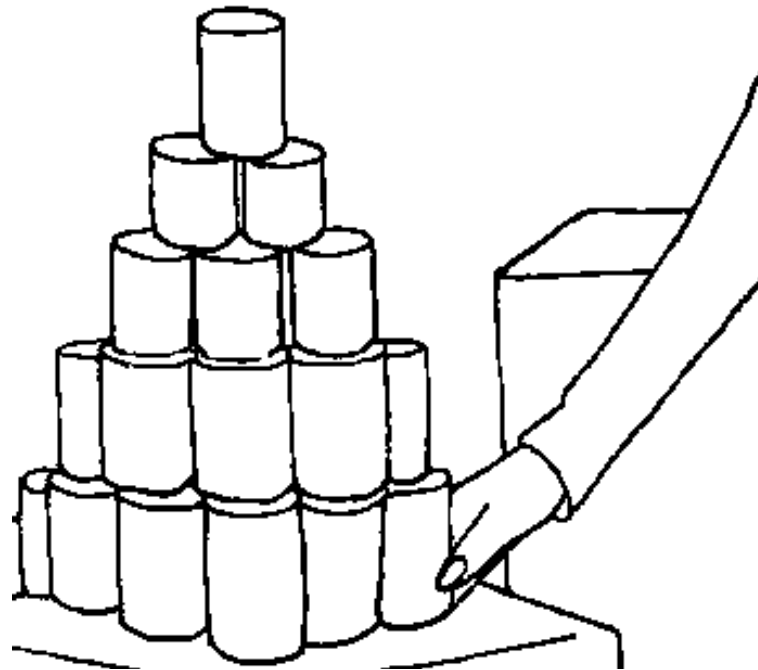
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*“The butcher cut his thumb with the cleaver.”*





*“The lady is going to make the cans fall.”*



*“Probably a special display for ice cream.”*

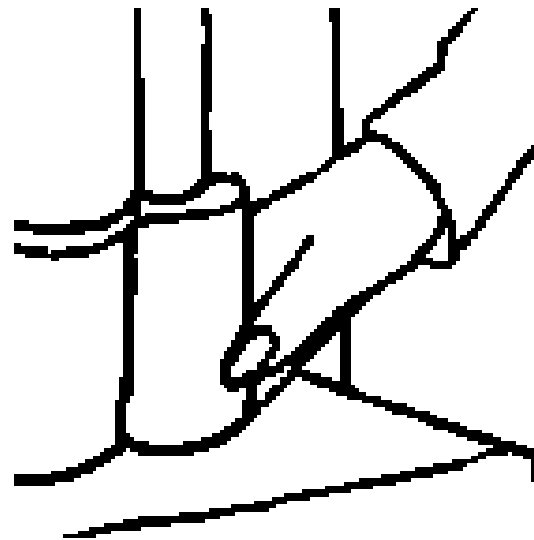


# Lexical Evidence of Reasoning

- Only reasoning about the picture will be labeled
- Prediction is future and explanation is past



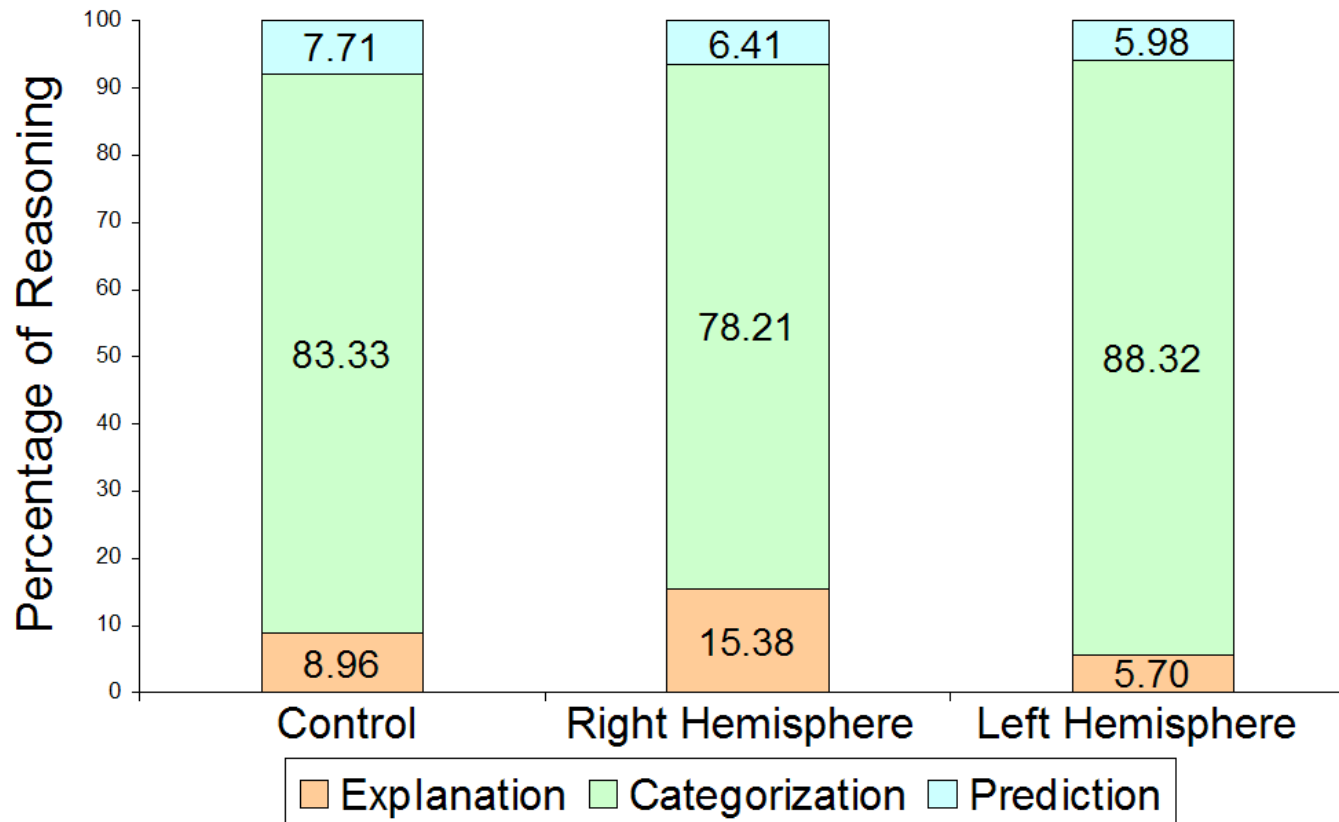
**Telicity:** *Pulling, taking, reaching for a can.*



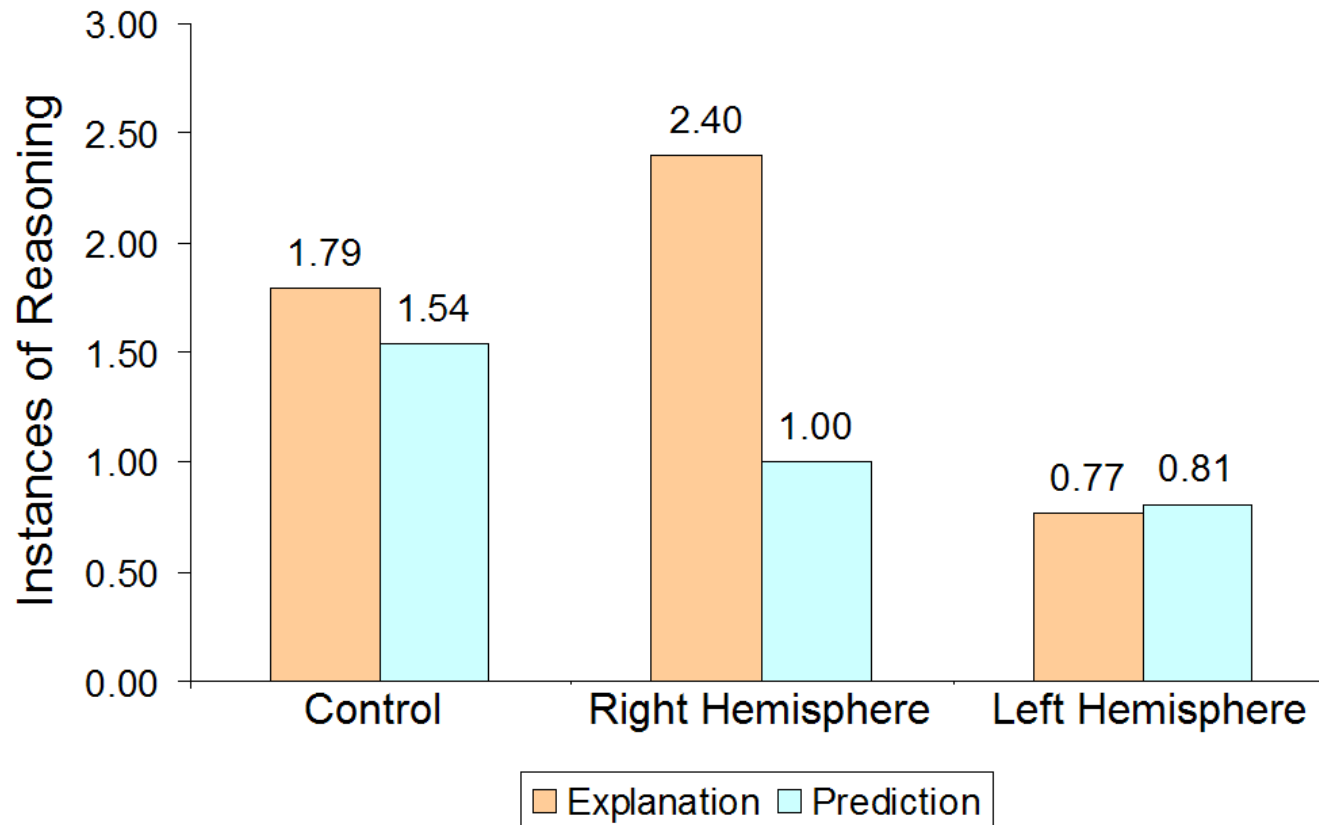
## Results: Left Hemisphere Patients

Patient ID	Word Count.	Exp.	Cat.	Pre.
000001	90.00	3.00	17.00	4.00
044033	93.00	0.00	13.00	2.00
080007	111.00	0.00	16.00	0.00
⋮	⋮	⋮	⋮	⋮
sum	1960.00	20.00	310.00	21.00
mean	75.38	0.77	11.92	0.81
std.dev	67.43	1.07	7.25	1.10

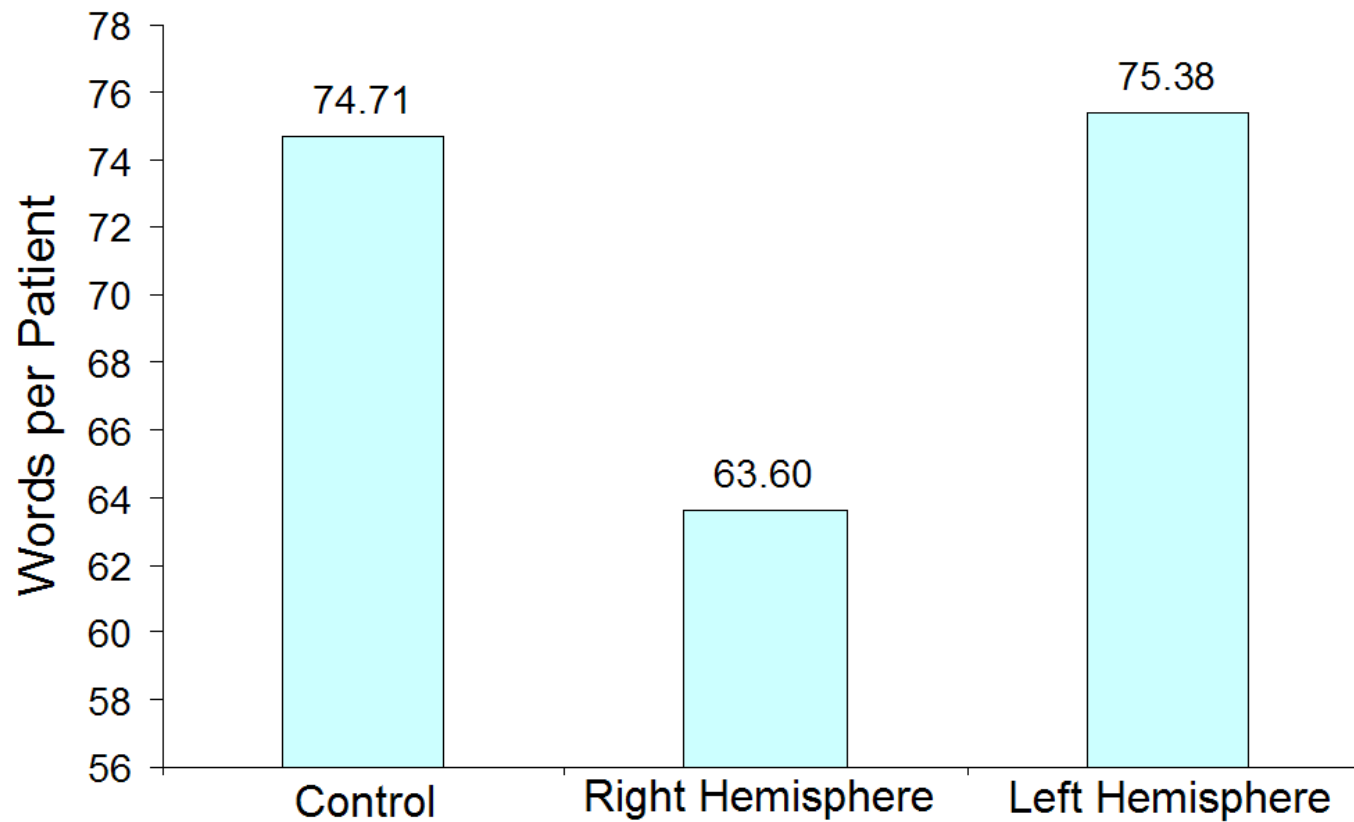
# Percentage of reasoning per group



# Explanation and Prediction per Patient

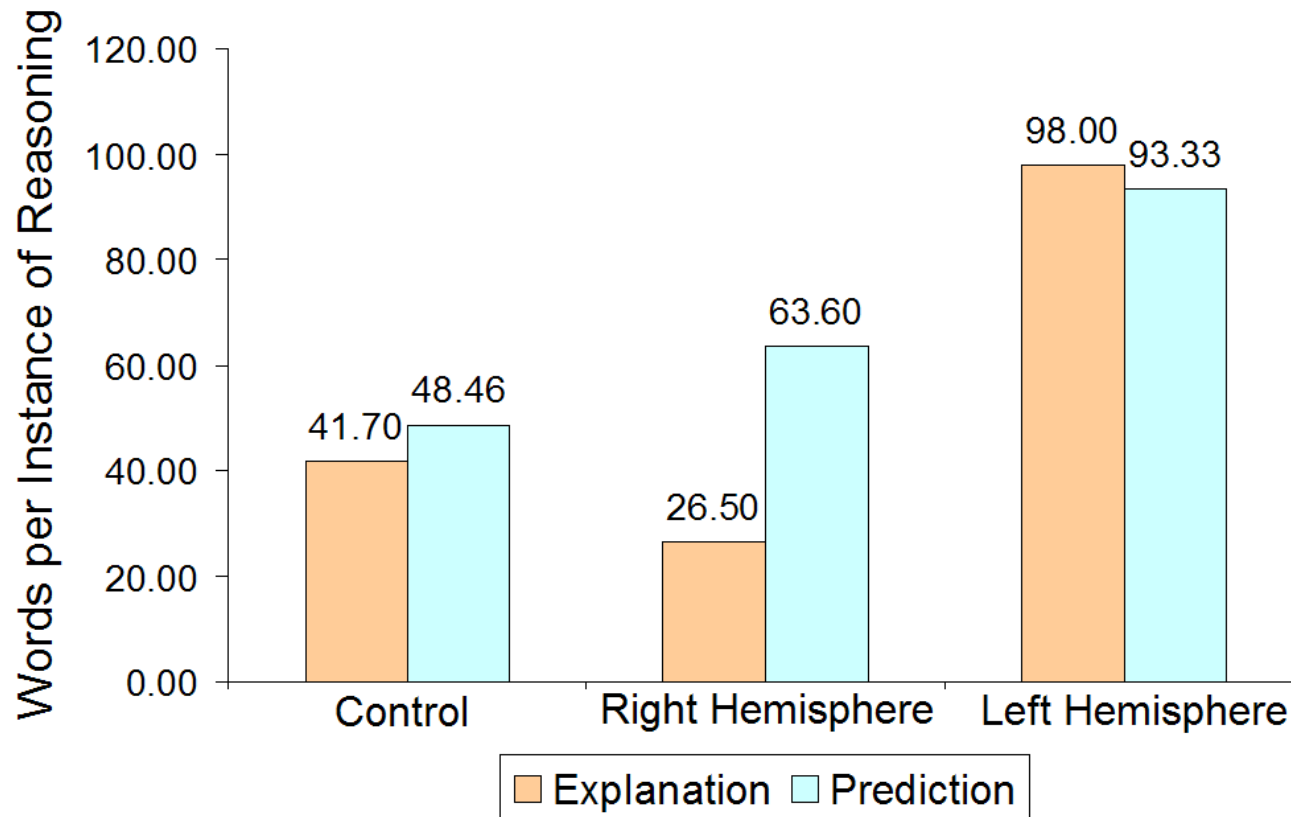


# Results: Words per Patient





# Results: density of Reasoning



# Conclusions

- Right Hemisphere best in “creative” reasoning
- Association of Right Hemisphere and creativity might need to be re-examined
- Aphasic perform fewer linguistic instances of reasoning

# Acknowledgments

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# Questions . . .

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**. . . thank you.**