



## Pragmatics in (non-)typical handers: in search for evidence of reversed localization

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## Pragmatics in (non-)typical handers: in search for evidence of reversed localization

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### Introduction

Pragmatic abilities refer to the set of skills including holding an appropriate conversation in a given context, and correct usage of non-literal and figurative expressions (e.g., idioms and humor) and non-verbal communication means (e.g., gestures and proxemics; Parola et al., 2016). Most of the studies attribute pragmatic processing to cortical structures of the right hemisphere (RH; e.g., Cutica et al., 2006). However, there are many open questions regarding the RH involvement in pragmatic processing. One of them is neural organization of pragmatics in people with non-typical handedness (e.g., in left-handers). For instance, there is limited evidence that left-handed might present a reversed pattern which implies that pragmatics is processed in the left hemisphere (LH; Gloning et al., 1969). The aim of the present study is to explore the brain substrates of the pragmatic abilities in people with typical and non-typical handedness by researching the effects of RH lesions on pragmatics in these two groups.

### Methods

A case-series approach is used. Currently, five people with a chronic RH stroke participated in the study. Two were left-handed, and 3 were right-handed. All participants were tested with the Russian Aphasia Test (RAT; Ivanova et al., 2019) to evaluate the presence of the language deficit, and with the Test for the Assessment of Pragmatic Abilities and Cognitive Substrates (APACS; Arcara & Bambini, 2016; Russian version: Tomas et al., *in preparation*). All participants underwent a standard clinical structural MRI. The detailed demographic information is presented in Table 1.

### Results

The behavioral results are presented in Table 1, and the lesion overlay is presented in Figure 1. None of the participants demonstrated language impairment. At the same time, left-handed participants scored below cutoff on APACS meaning that pragmatic abilities were impaired. No pragmatic deficits were revealed in the right-handers. However, by coincidence, all the left-handed participants had a cortical lesion, and all the right-handed participants had a lesion restricted to the subcortical structures (see Figure 1).

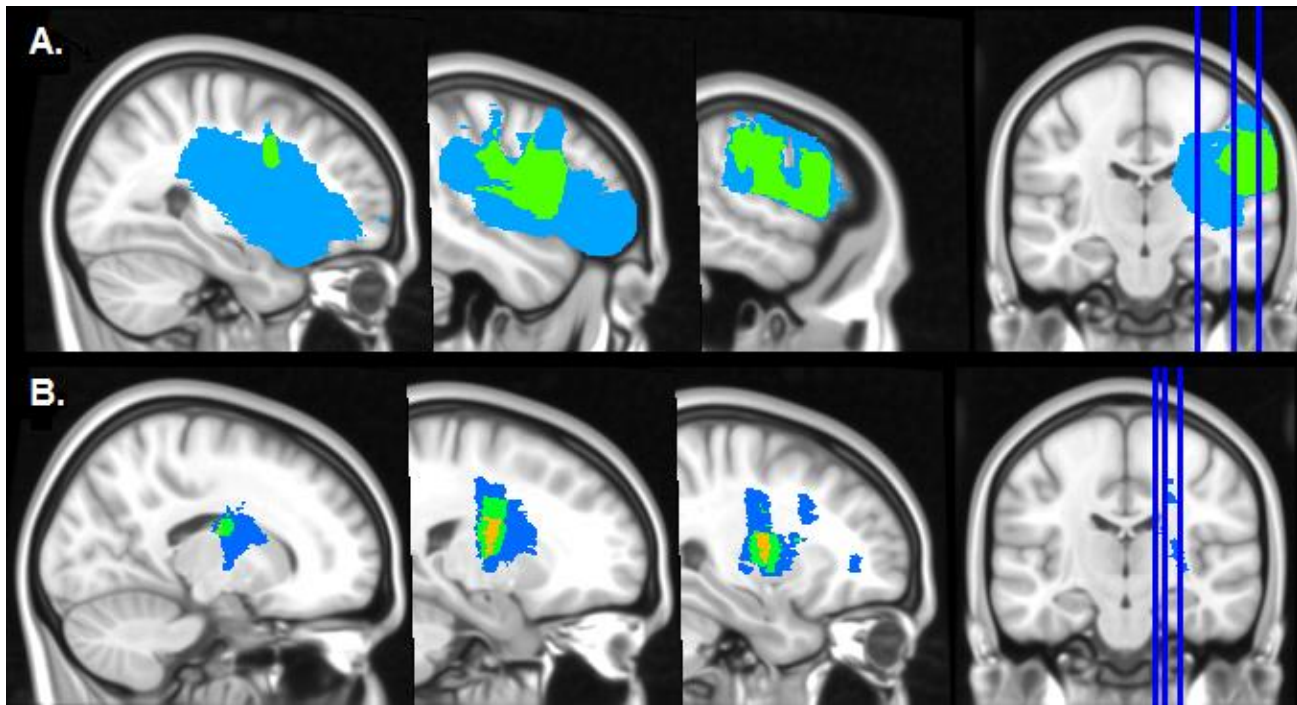
### Conclusions

So far, our results are consistent with existing literature to the extent that an RH cortical lesion causes pragmatic deficits. At this stage, we were not able to establish the effects of

typical and non-typical handedness due to the lesion distribution in our patient cohort. More data are being collected to ensure an appropriate comparison between the two groups.

## References

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Note: A – Participants with cortical RH damage (P1 & P2); B – Participants with subcortical RH damage (P3, P4 & P5).

Figure 1. Lesion overlay

Table 1. Demographical information and results of behavioral testing

ID	Gender	Handedness	Lesion	Age	Education years	APACS – Total (%)	RAT – GAQ (%)
P1	Male	Left	Cortical	56	15	78.00*	97.85
P2	Male	Left	Cortical	63	13,5	66.50*	91.69
P3	Male	Right	Subcortical	49	15	91.50	97.46
P4	Female	Right	Subcortical	64	12	91.00	96.17
P5	Female	Right	Subcortical	56	12	88.50	97.15
<b>Mean</b>				<b>57.60</b>	<b>13.50</b>	<b>83.10</b>	<b>96.06</b>
<b>SD</b>				<b>7.67</b>	<b>7.67</b>	<b>9.25</b>	<b>2.57</b>

Note: \* - The value is below the cutoff score. GAQ- General Aphasia Quotient.