Abstract: [Objective] Cerebral function with a language task was evaluated by functional magnetic resonance imaging (fMRI), and the differences of activated pattern and signal changes were compared between autistic patients and normal controls.

[Methods] Ten autistic and ten normal subjects were tested by fMRI with a language task requiring the attribution of complex mental states. Activation maps analyzed between two groups were generated and the asymmetry indexes calculated by the quotient of activated pixels of the right frontal lobe divided by those of the left frontal lobe were statistically compared by unpaired t-test.

[Results] Both the autistic and the normal subjects showed activation at the bilateral prefrontal cortical areas and the ventral occipito-temporal regions. However, the autistic patients demonstrated more activation at the right frontal lobe than the normal controls. Thus it was considered that in the autistic patients the right-hemisphere was more dominant for the language task than that of the normal controls. The result is consist to the theory that autism is related to early left-hemisphere dysfunction.

[Conclusions] We considered that fMRI may be a useful non-invasive method to evaluate the cerebral functional abnormality in autistic patients. J. Med. Invest. 51:59-62, February, 2004

Keywords: autism; functional MRI (fMRI); language task
M. Takeuchi et al.  Cerebral function of autism evaluated by fMRI

Please read the following sentences and answer the question in silence.

Hiroshi and Taro were very close friends, and they play together usually. One day Hiroshi broke Taro’s minicar carelessly. Taro felt sad and felt like crying. Hiroshi also felt like crying. But Taro said "Don’t worry. This minicar is old, and so unnecessary."

Question1. Was it truth that the minicar was unnecessary for Hiroshi?
Question2. Why did Hiroshi say to Taro that the minicar was unnecessary?
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### Table

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![Brain scans](image)

**Mean R/L ratio**

- **P=0.0035**

![Bar chart](image)

**Notes**

- The scans show significant differences in brain structure between normal and autistic individuals.
- Statistical analysis indicated a highly significant difference in the R/L ratio.
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Cerebral function of autism evaluated by fMRI