

## Category-specific Semantic Deficits: A Case Study \*

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**Abstract** Brain - damaged patients with selective impairment to specific semantic categories of knowledge, like living things and nonliving things, have been reported repeatedly in the literature on various languages. These deficits have helped reveal how semantic knowledge is organized in the brain. In this study we present a Chinese patient, WJX, who has a selective deficit to living things compared to non - living things. His non - lexical processes (e. g. digit memory span, visual and phonetic discrimination, bucco - facial apraxia) are spared to a great extent. However, he often makes semantic errors in lexical tasks, including auditory/visual picture recognition, and oral picture naming. Furthermore, WJX makes a significantly larger percentage of errors on living things rather than non - living things. These results add further evidence from Chinese language to support the theory that brain damage can selectively affect semantic knowledge in the brain. We inter-

pret these results as consistent with the proposal that the semantic system is organized along categorical dimensions.

**Keywords:** Organization of semantic knowledge. Category - specific semantic deficit. Living things

cits (e. g. , tools, body parts or musical instruments) has given us a way not only to understand whether semantic knowledge is organized along categorical dimension, but also how it may be organized. Although the literature on selective deficits with living things is rather rich and has a long history, the majority of the studies are with Indo - European language speaking patients, especially English. It would add value to the understanding of the human brain to look at other lan-

tence generation. On this screening battery he was able to copy words and pictures, was able to repeat words, and was able to match an auditory presented word with its written rendition. However, he had difficulty with comprehension and production of words. In these tasks, he often made semantic errors (e. g. apple for banana, dog for cat). On these tasks he seemed to have more difficulty with comprehension and production of names of living things relatively to nonliving things.

Difficulty in object recognition or naming caused by

specific characteristics and semantic knowledge representation has been of great debate in various contexts.

brain damage could be due to at least two different sets of deficits. On the one hand, a patient may have a def-

and there are five pictures of the following 19 are exactly the same with the target picture, the other 14 are slightly different from the target in details. The subject needs to tell one by one whether the picture is the same with the target.

whether or not the word is the name of the object in the picture by saying 'yes' or 'no'. There are 162 pictures in this verification task, each picture (e. g., apple, /ping2guo3/) is presented on three different occasions, each time associated with a different word. Each picture

Table 3 Living things vs. non-living things

	Living	Nonliving
Oral picture naming	29% (21/72)	50% (80/160) *
Auditory picture verification	45% (29/64)	63% (62/98) *
Visual picture verification	38% (24/64)	43% (43/98)

The difference between percentage of correct re-

ognition process for the written word as well, which is also impaired in this patient (as shown in the case background). The double deficit may overshadow the categorical pattern of semantic knowledge.

As discussed in the introduction familiarity, name frequency or visual complexity may be confounding fac-

system is organized along categorical dimension, or that it reveals how the semantic system is internally organized. There are at least three classes of theories that can account for our results, as well as for similar results from Indo-European language-speaking case. One such theory is the sensory/functional theory (SFT), which suggests that semantic knowledge is organized into perceptual and nonperceptual information, which are differentially important for different semantic categories. Selective impairment to a type of information would result in a deficit to those categories for which such information is most salient. To apply the idea to our case, it is the type of information (perceptual

gy of neuropsychological investigations to the Chinese language and that will foster further investigations on this topic.

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### References

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## 语义范畴特异性损伤：一项个案研究

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**摘 要** 一些脑病患者对特定的语义范畴出现了选择性损伤,如有生命类和无生命类。他们的这种缺陷将有助于揭示人脑中语义知识的组织方式。本研究报道一例汉语患者,WJX,他选择性地损伤了有生命类知识,而对无生命类知识保存的相对较好。研究发现,他的非词典加工系统比较正常,如数字记忆广度,视觉及听觉辨认,嘴部肌肉运动等。但是,他在词典任务(如,听觉/视觉图形再认和图形命名)中却常常犯大量的语义错误。更重要的是,他对有生命类知识的正确率明显低于无生命类知识。该结果从汉语的角度为脑损伤能够选择地影响语义知识这一理论提供了新证据。本研究的调查结果也在一定程度上支持语义系统是按范畴组织起来的观点。

**关键词** 语义知识的组织,语义范畴特异性损伤,有生命类。

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