



Language & Cognition

Lexical Processing

Tutorial

OVERVIEW

A central problem in language understanding is to identify the smallest meaningful units in the speech signal i.e., words and morphemes. A number of general properties of lexical access are well attested including the role of frequency, word/non-word effects, context and degradation effects and the word superiority effect.

Readings

- *Whitney, P. (1998) *The Psychology of Language*. Boston, Houghton Mifflin. Chapters 5 and 6, Chapter 9 (271–284), Chapter 10 (302–320), Chapter 12(359–377).
- Altmann, G. T. M. (1997) *The Ascent of Babel*. Oxford. OUP. Chapters 4, 5, 6 and 9.
- Pinker, S. (1994) *The Language Instinct*. New York, Morrow. Chapter 5.
- Berko Gleason, J., & Bernstein Ratner, N. (Eds) (1993) *Psycholinguistics*, (1st or 2nd Ed.) Chapters 4 and 7.
- Osherson, D. N. & Lasnik, H. (1990) *Language: An invitation to Cognitive Science. Volume 1*. Cambridge, MA. MIT Press. Chapter 5.
- *Harley, T. (2001) *The Psychology of Language* (2nd Ed), Hove, Psychology Press. Chapters 6, 7, 8, 10 and 12 or (2007) (3rd Ed.) Chapters 6, 9, 11 and 15.
- Garnham, A. (1985). *Psycholinguistics: Central topics*. London: Methuen. Chapter 3.
- *McLeod, P., Plunkett, K., & Rolls, E. T. (1998) *Introduction to connectionist modelling of cognitive processes*. Oxford: Oxford University Press. Chapters 8 and 11.

Methods of Investigation

The variety of methods to investigate lexical processing, e.g. tachistoscopic presentation, the lexical decision task and naming—all seem to show a sensitivity to different stages in the process of accessing lexical representations. More recently, imaging techniques have provided insights into the manner in which the lexicon is organised in the brain.



Language & Cognition

Lexical Processing

Tutorial

Readings

- Antos, S. J. (1979). Processing facilitation in a lexical decision task. *Journal of Experimental Psychology: Human Perception and Performance*, 5, 527–545.
- Forster, K. I., & Chambers, S. M. (1973). Lexical access and naming time. *Journal of Verbal Learning and Verbal Behaviour*, 12, 627–35.
- Osterhout, L., McLaughlin, J., & Bersick, M. (1997). Event-related potentials and human language. *Trends in Cognitive Sciences*, 1(6), 203–209.
- Price, C. J. (1998). The functional anatomy of word comprehension and production. *Trends in Cognitive Sciences*, 2(8), 281–288.
- Milberg, W., & Blumstein, S. E. (1981). Lexical decision and aphasia: Evidence for semantic processing. *Brain and Language*, 14, 371–385.

Models of Lexical Access

It is possible to distinguish two distinct types of model of lexical access—one in which processing is highly interactive embracing both top-down and bottom-up effects, and one in which processing is described in terms of a serial process in which the identification of words is compartmentalised into a distinct stages. Needless, to say intermediate positions between these two extremes exist.

Readings

- Forster, K. I. (1976). Accessing the mental lexicon. In R. J. Wales & E. C. T. Walker (Eds.), *New Approaches to Language Mechanisms*. Amsterdam: North Holland.
- Morton, J. (1970). A functional model for memory. In D. A. Norman (Ed.), *Models of Human Memory*. New York: Academic Press.
- McClelland, J., & Rumelhart, D. (1981) An interactive activation model of context effects in letter perception. Part 1: An account of basic findings. *Psychological Review*, 88, 60–94.

The Role of Context

Much current work is concerned with the manner in which context effects operate and the extent to which multiple meanings of ambiguous words are activated and the time course for the resolution of the ambiguity. Most work has been concerned with on-line



Language & Cognition

Lexical Processing

Tutorial

recognition of visually presented material though recognition of speech has also been addressed recently.

Readings

Norris, D. (1986). Word recognition: Context effects without priming. *Cognition*, 22, 93–136.

Marslen-Wilson, W. D., & Tyler, L.K. (1980) The temporal structure of spoken word recognition. *Cognition*, 25(8), 1–71.

Swinney, D. A. (1979). Lexical access during sentence comprehension: (Re)consideration of context effects. *Journal of Verbal Learning and Verbal Behaviour*, 18, 545–69.

Acquisition

Children start producing their first words around their first birthday. However, they seem to make significant progress in developing a mental lexicon before this.

Readings

Jusczyk, P. (1999). How infants begin to extract words from speech. *Trends in Cognitive Sciences*, 3(9), 323–328.

*McLeod, P., Plunkett, K., & Rolls, E. T. (1998). *Introduction to connectionist modelling of cognitive processes*. Oxford: Oxford University Press. Chapter 9 (187–194).

Schafer, G., & Plunkett, K. (1998). Rapid Word Learning by Fifteen Month-Olds under Tightly Controlled Conditions. *Child Development*, 69(2), 309–320.

Production

Much has been learnt about the structure of the mental lexicon from the mistakes people make while talking.

Readings

Dell, G. (1995) Speaking and Misspeaking. In L.R.Gleitman & M. Liberman (eds) *An invitation to Cognitive Science: Language (2nd Ed) Volume 1*. Cambridge, MA. MIT Press. Chapter 7

Levelt, W. J. M. (1999). Models of Word Production. *Trends in Cognitive Sciences*, 3(6), 223–232.



Language & Cognition

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Tutorial

Essay Questions or Presentation Topics

1. How does context affect word recognition?
2. Do we access multiple interpretations of ambiguous words during the process of word recognition?
3. Are serial and interactive models of word recognition necessarily incompatible with each other?
4. How do slips of the tongue inform our understanding of the mental lexicon?
5. How are words represented in the brain?
6. Is the vocabulary spurt a significant event in lexical development?