

Teaching and Learning Guide for:

Pragmatics: From theory to experiment and back again

Napoleon Katsos and Chris Cummins

Research Centre for English and Applied Linguistics, University of Cambridge

Authors' introduction

Experimental pragmatics has emerged in recent years as a thriving and productive domain of linguistic research. The main contribution of experimental pragmatics is twofold: first, empirical psycholinguistic techniques can be used to provide objective data about utterance interpretation without the biases of linguistically-trained users of language who rely on reflective intuition. Second, such techniques permit the study of pragmatic processing below the level accessible to introspection: for example, we can examine the time-course of inferential processing which reflects the stages of processing rather than the eventual interpretation of a certain expression. This is particularly important if we wish to evaluate theories of pragmatics which lay claim to psychological reality, but which are not falsifiable by reflective intuition. For instance, in the much-discussed case of scalar implicature, a crucial issue is whether implicatures are derived by default and cancelled if their licensing conditions are not met, or whether they are only derived if the licensing conditions are met. These theories agree as to when scalar implicatures ultimately proceed, but they yield different predictions about the time-course of scalar inferencing which can be empirically distinguished. Similar debates have occurred for metaphor, reference assignment and several other phenomena. Broadly, as pragmatic theories achieve greater levels of conceptual precision and clarity, empirical data becomes an increasingly vital tool for establishing the data that the theories need to account for, and for discriminating between theories.

Authors Recommend

1. Sperber, D. & Noveck, I. A. (2004). Introduction to Experimental Pragmatics. In Noveck, I. A. & Sperber, D. (eds.), *Experimental Pragmatics*. New York: Palgrave Macmillan. 1-23.

In the introduction to their edited volume, Sperber and Noveck set out the aims and motivations of experimental pragmatics as a distinct, promising but not-so-new discipline of linguistics. They provide both the theoretical context (discussing Gricean, Neo-Gricean and relevance-theoretic pragmatics, among others) and the empirical (citing earlier and recent experimental work on pragmatics, and considering the extent to which this has shaped aspects of pragmatic theory).

2. Noveck, I. A. (2001). When children are more logical than adults: experimental investigations of scalar implicature. *Cognition*, 78: 165-88.

In this study, Noveck aimed to demonstrate the psychological reality and widespread nature of scalar inference, in response to the reasoning literature that he argued had hitherto minimized its significance. He also demonstrated how experimental techniques could be used to shed light on developmental questions in pragmatics, in this case documenting the emergence of children's inferential abilities with scalar terms.

3. Bott, L. and Noveck, I. A. (2004). Some utterances are underinformative: The onset and time course of scalar inferences. *Journal of Memory and Language*, 51: 437-57.

This paper tests the competing predictions of Default Inference and Relevance Theory accounts of scalar implicature, using a sentence verification paradigm and underinformative statements. Over the course of four experiments, Bott and Noveck obtain evidence that responses to under-informative statements which give rise to scalar implicature are slower than those which do not. They interpret this as evidence that the Relevance Theory account (in which the derivation of inferences is contextual and effortful) is favoured over the Default Inference account (in which the derivation of inferences is lexically-based and automatic).

4. Breheny, R., Katsos, N. and Williams, J. (2006). Are generalised scalar implicatures generated by default? An on-line investigation into the role of context in generating pragmatic inferences. *Cognition*, 100: 434-63.

Breheny et al. investigate scalar inference empirically using a text comprehension paradigm, in which the preceding context determines whether or not an implicature is relevant. They document that, in cases where the implicature is not relevant, responses are faster, hence that there is no indication that the implicature is being drawn and then cancelled. In this way, they exhibit additional evidence in favour of context-driven accounts of scalar implicature.

5. Sedivy, J., Tanenhaus, M. K., Chambers, C. G. and Carlson, G. N. (1999) Achieving incremental semantic interpretation through contextual representation. *Cognition*, 71: 109-47.

Sedivy et al. used an eye-tracking paradigm to investigate the influence of context in hearers' interpretation of adjectival modification. In addition to providing evidence for the early integration of contextual information, this work foreshadowed a great deal of subsequent empirical research using eye movements as an index of semantic and pragmatic processing.

6. Musolino, J. and Lidz, J. (2006). Why children aren't universally successful with quantification. *Linguistics*, 44(4): 817-52.

in conjunction with

Gualmini, A., Hulsey, S., Hacquard, V. and Fox, D. (2008). The Question-Answer requirement for scope assignment. *Natural Language Semantics*, 16: 205-38.

Further developing the body of research on the semantic and pragmatic abilities of young children, these papers present evidence that young children do have access to adult-like competence in the case of the interpretation of scopally ambiguous sentences (such as 'all the horses did not jump over the fence'). However, this competence is more fragile than in adults in the sense that it is subject to discourse constraints. These papers refine previous research

which had argued for a categorically distinct pragmatic competence in children than that in adults.

7. Geurts, B. and Pouscoulous, N. (2009). Embedded implicatures?!? *Semantics & Pragmatics*, 2, article 4: 1-34.

This paper investigates the occurrence of scalar implicatures in embedded positions, such as in the complement of belief verb or under a modal verb, as predicted by lexicalist or syntax-based accounts. Geurts and Pouscoulous demonstrate that these are in fact rarely available, contrary to the claims of the advocates of lexicalist theories. On this topic, they raise interesting issues about the nature of examples adduced to support such theories, arguing that these are often highly marked or atypical usages. In this respect, they emphasise the importance of experimental support when making generalisations about linguistic behaviour.

8. Geurts, B., Katsos, N., Cummins, C., Moons, J. and Noordman, L. (2010). Scalar quantifiers: logic, acquisition, and processing. *Language and Cognitive Processes*, 25(1): 130-48.

in conjunction with

Cummins, C. and Katsos, N. (2010). Comparative and superlative quantifiers: Pragmatic effects of comparison type. *Journal of Semantics*, doi: 10.1093/jos/ffq006.

These papers identify aspects of the meaning of superlative ('at least' – 'at most') and comparative ('more than' – 'fewer than') quantifiers that cannot be straightforwardly captured by the standard approach, according to which these quantifiers are inter-definable. Geurts et al. provide robust evidence that superlative quantifiers have an additional modal component of meaning, which they place it in the core semantics of these expressions. Cummins and Katsos further corroborate the evidence for the modal meaning, but use a series of empirical tests to argue that this meaning arises out of pragmatic considerations.

9. Rubio, P. (2007). Suppression in metaphor interpretation: Differences between meaning selection and meaning construction. *Journal of Semantics* (Special Issue on Processing Meaning), 24(4): 345-371.

This paper discusses some of the differences between the theories that postulate that metaphor interpretation involves enhancing properties of the metaphor vehicle that are relevant for interpretation, while suppressing those that are irrelevant. Besides its strong theoretical background and relevance, the paper uses a very interesting methodology which has been widely employed in lexical processing: cross-modal lexical priming.

10. Noveck, I. A. and Reboul, A. Experimental Pragmatics: a Gricean turn in the study of language. *Trends in Cognitive Sciences*, 12(11): 425-31.

In this short review article, Noveck and Reboul consider the relation between Grice's linguistic philosophy and the development of experimental pragmatics. They also catalogue the specific areas of pragmatic enquiry for which empirical work has been forthcoming, and identify some research questions that remain open.

Focus Questions

1. How important is it that a pragmatic or semantic theory should be psychologically plausible? Are there differences between pragmatic and semantic theory, and syntax or morphology?
2. How can we prove the psychological reality of theoretical constructs, such as *implicature*, *presupposition* etc? Can we ever *disprove* their psychological reality?
3. Do we elicit naturalistic linguistic behaviour under experimental conditions? In what ways might it be unrealistic or unrepresentative?
4. How can we operationalise the predictions of psychological theories? For example, how do we experimentally measure ‘effort’ in reasoning? What might confound these measurements?
5. What are the advantages and disadvantages of gathering pragmatic intuitions from a broad array of participants rather than linguistically-trained specialists?
6. How should we interpret variability between participants in their responses or intuitions?

Sample Unit: Introduction to Experimental Pragmatics

Overview

This course provides an introduction to experimental pragmatics, situating it in the context of traditional pragmatic theory. We examine the motivations for experimental work as a means of distinguishing between competing accounts of meaning in context, and discuss the importance of psychological validity to contemporary theoretical approaches. We then present a series of case studies which illustrate how experimental techniques have provided insights into widely-discussed issues in theoretical pragmatics.

Week 1: Pragmatics: From theory to experiment

We review traditional Gricean pragmatics, and subsequent developments in neo-Gricean and post-Gricean pragmatics, asking the question: can these accounts make empirically testable predictions? If so, is it important for them to be empirically testable? Thus we trace the emergence of a consensus (and the exceptions) that pragmatic theories should be psychologically plausible.

Suggested reading:

Katsos, N. and Cummins, C. (2010). Pragmatics: From theory to experiment and back again. *Language and Linguistics Compass*, 4/5: 282-295.

Noveck, I. A. and Reboul, A. Experimental Pragmatics: a Gricean turn in the study of language. *Trends in Cognitive Sciences*, 12(11): 425-31.

Horn, L. (2004). Implicature. In Horn, L., and Ward, G. (eds.), *Handbook of pragmatics*. Oxford: Blackwell. 3-28.

Week 2: Experimental methods for pragmatics

Some key research papers which could function as an introduction to some of the techniques used in experimental pragmatics, from pencil-and-paper questionnaires to eye-tracking methods.

Suggested reading:

Using off-line questionnaires and the self-paced reading paradigm:

Katsos, N. (2008). The semantics/pragmatics interface from an experimental perspective: the case of scalar implicature. *Synthese*, 165: 385-401.

Using the sentence-verification paradigm:

Bott, L. and Noveck, I. A. (2004). Some utterances are underinformative: The onset and time course of scalar inferences. *Journal of Memory and Language*, 51: 437-57.

Using the silent reading eye-tracking paradigm:

Panizza, D., Chierchia, G. and Clifton, C., Jr. (2009). On the role of entailing patterns in the interpretation and processing of numerals and scalar quantifiers. *Journal of Memory and Language*, 61: 503-18.

Using the visual-world eye-tracking paradigm:

Sedivy, J., Tanenhaus, M. K., Chambers, C. G. and Carlson, G. N. (1999) Achieving incremental semantic interpretation through contextual representation. *Cognition*, 71: 109-47.

Week 3: Scalar implicature – default or contextual?

Turning first to the widely-discussed topic of scalar implicature, we examine the different theoretical proposals concerning the default-ness of these inferences.

Suggested reading:

Geurts, B. (forthcoming, 2010). *Quantity implicatures*. Cambridge: Cambridge University Press.

Levinson, S. (2000). *Presumptive meanings: The theory of generalized conversational implicature*. Cambridge, MA: MIT Press.

These are two overview papers, discussing the relevant empirical findings of the four papers in week 2:

Noveck, I. A. and Reboul, A. Experimental Pragmatics: a Gricean turn in the study of language. *Trends in Cognitive Sciences*, 12(11): 425-31.

Katsos, N. and Cummins, C. (2010). Pragmatics: From theory to experiment and back again. *Language and Linguistics Compass*, 4/5: 282-295.

Week 4: Scalar implicature and child development of pragmatic competence

We discuss the empirical evidence for the developmental trajectory of scalar inference, and its implications for children's pragmatic abilities in general.

Suggested reading:

Pouscoulous, N., Noveck, I., Politzer, G. and Bastide, A. (2007). Processing costs and implicature development. *Language Acquisition*, 14(4): 347-76.

Katsos, N. (2009). Evaluating under-informative utterances with context-dependent and context-independent scales: experimental and theoretical implications. In Sauerland, U. & Yatsushiro, K., *Experimental Semantics and Pragmatics*. Basingstoke: Palgrave Studies in Pragmatics, Language & Cognition. 51-73.

Guasti, M.T., Chierchia, G., Crain, S., Foppolo F., Gualmini, A., and Meroni, L. (2005). Why children and adults sometimes (but not always) compute implicatures. *Language and Cognitive Processes*, 20 (5): 667-696.

Week 5: Reference assignment in adults

We look at the role of contextual information in the establishment of correct reference, with particular focus on whether hearers exploit adjectival modification on-line and incrementally to pick out the intended referent. The importance of perspective-taking and theory-of-mind is also discussed.

Suggested reading:

Keysar, B., Barr, D. J., Balin, J. A. and Paek, T. S. (1998). Definite reference and mutual knowledge: process models of common ground in comprehension. *Journal of Memory and Language*, 39: 1-20.

Hanna, J. E., Tanenhaus, M. K. and Trueswell, J. C. (2003). The effects of common ground and perspective on domains of referential interpretation. *Journal of Memory and Language*, 49: 43-61.

Week 6: Children's referential abilities

Following on from the characterisation of adults' referential behaviour, we now turn to the corresponding case of children, aiming to establish how adult-like their performance is, and whether it is limited by considerations of perspective-taking and their attitude towards pragmatic infelicity.

Suggested reading:

Nadig, A. and Sedivy, J. (2002). Evidence of perspective-taking constraints in children's on-line reference resolution. *Psychological Science*, 13: 329-36.

Davies, C. and Katsos, N. (2010). Over-informative children: Production/comprehension asymmetry or tolerance to pragmatic violations? *Lingua (Special Issue on Asymmetries in Child Language)*, doi:10.1016/j.lingua.2010.02.005.

Week 7: Numerical quantification

We consider some recently-discussed issues of numerical quantifier usage, in which researchers have aimed to discern which aspects of interpretation are semantic and which are due to pragmatic enrichment.

Suggested reading:

Musolino, J. (2004). The semantics and acquisition of number words: integrating linguistic and developmental perspectives. *Cognition*, 93: 1-41.

Geurts, B., Katsos, N., Cummins, C., Moons, J. and Noordman, L. (2010). Scalar quantifiers: logic, acquisition, and processing. *Language and Cognitive Processes*, 25(1): 130-48.

Cummins, C. and Katsos, N. (2010). Comparative and superlative quantifiers: Pragmatic effects of comparison type. *Journal of Semantics*, doi: 10.1093/jos/ffq006.

Week 8: The interpretation of scopally ambiguous sentences by children

We consider children's ability to access the adult-like interpretation of scopally ambiguous sentences with particular emphasis on the semantic and pragmatic competence required to do so, and factors that facilitate this.

Suggested reading:

Lidz, J. and Musolino, J. (2002). Children's command of quantification. *Cognition*, 84(2): 113-54.

Musolino, J. and Lidz, J. (2006). Why children aren't universally successful with quantification. *Linguistics*, 44(4): 817-52.

Gualmini, A., Hulsey, S., Hacquard, V. and D. Fox (2008). The Question-Answer requirement for scope assignment'. *Natural Language Semantics*, 16: 205-38.

Week 9: Metaphor and the distinction between literal and non-literal language

We look at some of the empirical work on the processing and acquisition of metaphorical expressions, with particular emphasis on whether metaphorical language involves a significant departure from literal language, as well as on the processes that underlying the construction of metaphorical meaning.

Gibbs, R. W. (1994). *The poetics of mind: Figurative thought, language, and understanding*. New York: Cambridge University Press. (Chapters 3 and 5.)

Rubio, P. (2007). Suppression in metaphor interpretation: Differences between meaning selection and meaning construction. *Journal of Semantics* (Special Issue on Processing Meaning), 24(4): 345-71

Giora, R. (2007). Is metaphor special? *Brain and Language*, 100: 111-4.

Week 10: Pragmatics and atypical language development

We look at some of the experimental work relating to atypically-developing populations, such as people with autistic spectrum disorders. We are particularly interested in the pragmatic competence of these populations, and how any other cognitive differences, such as a deficit in Theory-of-Mind, can tell us about the processing of pragmatic meaning in the mind.

Suggested reading:

For metaphor:

Happé, F. G. E. (1993). Communicative competence and theory of mind in autism: A test of relevance theory. *Cognition*, 48: 101-19.

For scalar implicature:

Pijnacker, J., Hagoort, P., Buitelaar, J., Teunisse, J.-P. and Geurts, B. (2009). Pragmatic inferences in high-functioning adults with autism and Asperger syndrome. *Journal of Autism and Developmental Disorders*, 39: 607-18.

For scopally ambiguous sentences:

Noveck, I.A., Guelminger, R., Georgieff, N. and Labruyere, N. (2007). What autism can tell us about Every...not sentences. *Journal of Semantics*, 24: 73-90.