

UK Orthographies Group

3rd Workshop

14th September 2012



Department of Psychology

Middlesex University

Hendon Campus, London

Convened by

Dr Ilhan Raman

Programme

9.15 – 9.50 Arrival, tea & coffee, and registration* payment** at Hatchcroft, Hendon Campus (<http://www.mdx.ac.uk/aboutus/Location/hendon/index.aspx>)

(Talks in HG02, Lunch/Refreshments in HG09/10)

9.50 - 10.00 Welcome

10.00 - 12.00 *Session 1*

12.00 -1.30 Lunch

1.30 - 3.00 *Session 2*

3.00 - 3.30 Coffee break

3.30 - 5.00 *Session 3*

5.00 - 5.15 Closing remarks

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Please email me directly on i.raman@mdx.ac.uk to register your interest if you plan to attend the Workshop by 12th September 2012.

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Please note that to cover the catering and refreshment costs for the day, a small registration fee of £25.00 is payable on the day. Kindly pay either in cash (preferred) or by cheque made payable to 'Middlesex University'.

Speakers

Session 1

10.00- Initial processing of words during reading: Parafoveal preview of consonants and
10.30 vowels

Sarah J. White, University of Leicester, UK

10.30- Can individual differences in grapheme-phoneme correspondences account for
11.00 variability in nonword pronunciation?

James S. Adelman, University of Warwick, UK

11.00- Sublexical properties of words are important for reading: Evidence from the Russian
11.30 language

Anastasia Ulicheva, University of Hong Kong, Hong Kong (SKYPE Conferencing)

11.30- On the interaction of form and meaning in visual word recognition: Evidence from
12.00 comparative case-series neuropsychology

Anna M. Woollams, University of Manchester, UK

Session 2

1.30- Lexical and semantic effects on word naming in Spanish
2.00

Robert Davies, University of Oxford Brookes, UK

2.00- Task sensitivity to extreme primes: Masked-priming same-different verses sandwich
2.30 priming

Andrew N. Kelly, University of Nottingham, UK

2.30- Individual differences in masked neighbour priming: The role of lexical competition
3.00

Sally Andrews, University of Sydney, Australia

Session 3

3.30- Naming acronyms: What's the difference between an EEG and an EGG?
4.00

Cristina Izura, Swansea University, UK

4.00- Does 'blacheap' look like 'cheapize'? An investigation of affix class, lexicality, and
4.30 letter string frequency in early visual word processing

Lauren Heathcote, University of Oxford, UK

4.30- The measurement and predictive power of orthographic typicality
5.00

Colin J. Davis, Royal Holloway, University of London

Abstracts

Session 1

1. Initial processing of words during reading: Parafoveal preview of consonants and vowels

Sarah J. White¹, Breen, M.² & Rayner, K.³

1 University of Leicester, UK, 2 Mount Holyoke College, USA, 3 University of California, San Diego, USA

Two experiments examined the role of consonants and vowels in parafoveal preview during reading using the boundary saccade contingent change technique. In order to manipulate the preview of only vowels or consonants, Experiment 1 presented parafoveal previews in which vowels or consonants were replaced with symbols (*lπk+* - *lake*) and Experiment 2 used uppercase repeated letter previews (*LLKK* - *LAKE*). In Experiment 1, the symbols disrupted parafoveal processing such that partially correct previews provided no more advantage than incorrect previews. However in Experiment 2, reading times were significantly shorter for the consonant compared to vowel-only previews, indicating that parafoveal preprocessing of consonants facilitated subsequent word processing more than parafoveal preprocessing of vowels. The study demonstrates that differential processing of consonants and vowels occurs during initial processing of English words. Importantly, this effect occurs prior to fixation when the words are available only as visually degraded parafoveal previews.

2. Models of reading propose competing accounts of influences on reading a word or nonword of other known words.

James S. Adelman

Psychology Department, University of Warwick, UK

Patterns of nonword pronunciation give evidence regarding such processes, such as: A given nonword does not always yield the same pronunciation (Andrews & Scarratt, 1998). Zevin and Seidenberg (2006) modeled such inconsistency by retraining the same backpropagation model multiple times to instantiate different individuals.

Pritchard, Coltheart, Palethorpe, and Castles (2012) compared new nonword pronunciation data with the grapheme-phoneme-correspondence-based nonword reading of the dual-route-cascaded (DRC) model and the delta-rule-learning-based nonword reading of the connectionist-dual-process models. The DRC's pronunciations were more often used by people, and rarely was a DRC pronunciation for a nonword used by no participant. For a strictly rule-based process to account for variability in pronunciations of a nonword, individual differences in rules can be invoked. I examine whether this explanation is feasible with a re-analysis of Pritchard et al.'s data.

3. Sublexical properties of words are important for reading: Evidence from the Russian language

Anastasia Ulicheva & Brendan Weekes

The University of Hong Kong, Hong Kong

The current study focuses on the effects of feedforward and feedback regularity in the Russian language. Letter to sound (feedforward) mappings in Russian are highly regular and predictable based on the context, whereas sound to letter (feedback) mappings are irregular. 18 Native speakers of Russian took part in the experiment. Reading times for 1184 Russian monosyllabic words were recorded. Mixed-effect modeling was subsequently implemented in R. In line with predictions, feedback irregularity was found to slow down the reading times (Davies, Weekes, 2005). In addition, a more striking effect was detected: in spite of an extremely high feedforward regularity of Russian, characteristics of letters comprising a word were found to have a robust effect on reading. For instance, words containing letters that map onto a less frequent phonological representation yielded longer reading times than words that contain letters mapping onto a unique or its dominant phonological representation. This finding suggests that, first, sublexical word characteristics influence reading (Perry, Ziegler, Coltheart, 2002), and second, that reading in Russian is not as regular as is generally thought.

4. On the interaction of form and meaning in visual word recognition: Evidence from comparative case-series neuropsychology

Anna M. Woollams, Gemma A.L. Evans, & Matthew A. Lambon Ralph

Neuroscience and Aphasia Research Unit, School of Psychological Sciences,

University of Manchester, UK

Recent neuroscientific research suggests that visual word recognition is underpinned by a strongly interactive network in which higher-level semantic activation supplements incoming form-based information. We sought neuropsychological evidence for this account using a case-series approach in which we compared the visual lexical decision performance of semantic dementia patients, with damage to anterior temporal regions associated with the representation of meaning, to that of pure alexic patients, with damage to left occipito-temporal regions associated with visual processing of orthographic stimuli. Both groups showed impaired lexical decision performance relative to control participants, but in contrasting ways. Controls showed semantic effects only with difficult pseudohomophone foils, whereas semantic dementia patients did not show any evidence of semantic effects and pure alexic patients showed reliable semantic effects even with easy consonant string foils. These results demonstrate the importance of context dependent interaction between orthography and semantics to support efficient visual word recognition.

Session 2

5. Lexical and semantic effects on word naming in Spanish

Robert Davies¹, Analia Barbón² & Fernando Cuetos²

1 University of Oxford Brookes, UK, 2 University of Oviedo, Spain

We report a study of the factors affecting reading in Spanish, a language with a transparent orthography. We focused on the influence of lexical semantic knowledge in phonological coding. This effect would be predicted to be minimal in Spanish, according to some accounts of semantic effects in reading. We asked 25 healthy adults to name 2,764 mono- and multisyllabic words. As is typical, variables capturing critical word attributes were inter-correlated. Therefore we used Principal Components Analysis (PCA) to derive orthogonalized predictors from raw variables. Linear mixed-effects analyses indicated significant effects due to lexical frequency (the impact of a PCA component relating to frequency, AoA and familiarity) and semantic knowledge (the impact of the component relating to AoA, imageability and familiarity), alongside an effect due to the component relating to length and orthographic neighbourhood size. Semantic knowledge influences word naming even when all the words being read have regular spelling-sound mappings

6. Task Sensitivity to Extreme Primes: Masked-Priming Same-Different versus Sandwich Priming

Andrew N. Kelly, Walter J. B. van Heuven, Nicola J. Pitchford and Timothy Ledgeway

School of Psychology, University of Nottingham, UK

Recently, two variations of the masked priming paradigm, the masked-priming same-different task and the sandwich priming task, have been presented as tasks more sensitive to orthographic processes than standard priming paradigms. To test these claims, four different six-letter scrambled primes, which varied the orthographic overlap between the prime and target (e.g., primes *ypilms* & *mspyil* – shares three and seven open bigrams respectively with the target *SIMPLY*), were used in both tasks. The results showed robust priming effects for all scrambled primes, compared an ALD control prime for both tasks. However, only the sandwich priming task showed any variation in the size of the priming as a function of the degree of orthographic overlap between the prime and target. This suggests that the tasks maybe measuring processes at different levels, with the same-different task measuring more general orthographic processes, and the sandwich priming task the processes specific to visual word recognition.

7. Individual differences in masked neighbour priming: The role of lexical competition

Sally Andrews, Steson Lo & Marius Mather

University of Sydney, Australia

This research extends previous evidence that masked priming from orthographic neighbours is modulated by individual differences in spelling ability to investigate the contribution of decision difficulty. The same word targets were embedded in 'easy' and 'hard' nonword contexts. One experiment used short target words of High and Low neighbourhood size and the other used long words with few neighbours. Samples of 100 undergraduate students completed the 'hard' and 'easy' version of the task in counterbalanced order, along with tests of reading comprehension and spelling. Mixed linear analyses showed that, for short words, higher spelling than reading ability was associated with significantly greater sensitivity to nonword context, and a pattern of inhibitory rather than facilitatory neighbour priming. By contrast, for long words, higher spelling ability was associated with a smaller effect of nonword context. The implications of the results for understanding the role of lexical competition in visual word identification will be discussed.

Session 3

8. Naming acronyms: What's the difference between an EEG and an EGG?

Cristina Izura and David Playfoot

Swansea University, UK

Acronyms are a growing and an idiosyncratic part of our everyday vocabulary. In this study acronym naming and recognition times were examined with reference to the variables known to affect the processing of common words. The factors under consideration were age of acquisition, acronym frequency, imageability, acronym length, number of orthographic neighbours, bigram and trigram frequencies, voicing and print-to-sound characteristics. The factors were entered into a multilevel regression analysis. Results indicate that acronym naming is affected by lexical and sublexical variables. The overwhelming influence of orthographic measures in acronym naming as opposed to standard word naming (i.e., effects of bigram and trigram frequencies are difficult to detect in standard word naming studies) indicates that a crucial difference between acronyms and mainstream words might reside at a pure orthographic level. The challenges that acronym naming imposes in current models of word reading will be discussed.

9. Does 'blacheap' look like 'cheapize'?

An investigation of affix class, lexicality, and letter string frequency in early visual word processing

Lauren Heathcote & Kate Nation

Language and Cognitive Development Laboratory

Department of Experimental Psychology, University of Oxford, UK

Much research suggests that words comprising more than one morpheme are decomposed into these morphemes in the early stages of visual word recognition. I investigated whether or not decomposition occurs for both prefixed and suffixed words, for complex novel words, and for novel words which are nonmorphological but which comprise a stem and a highly-frequent letter string. Participants made visual lexical decisions to stem targets when these targets were preceded by prefixed or suffixed novel masked prime words. Both prefixed and suffixed novel words significantly facilitated the recognition of their stem targets when they shared a semantically transparent morphological relationship. This suggests that decomposition is insensitive to affix class and stem position, and occurs irrespective of prime lexicality. In addition, primes comprising targets and highly-frequent non-affixal letter strings facilitated the recognition of their stems targets. This suggests that early visual word decomposition could be redefined as frequency-based and orthographic, rather than exclusively morphological.

10. The measurement and predictive power of orthographic typicality

Colin J. Davis and Sebastian Loth

Royal Holloway, University of London, UK

Most people would agree that CRIBLE is more wordlike than BEOTTS, and lexical decision latencies from the British Lexicon Project show that participants take longer to reject the former. At some level, the explanation for this is that CRIBLE is more similar to existing words than BEOTTS. But how should we quantify this similarity? Two widely used measures of lexical similarity are Coltheart's N and OLD20, both of which are good predictors of lexical decision latency to nonwords. However, there are problems with both of these measures, and neither can explain the difference between CRIBLE and BEOTTS (which have no orthographic neighbours and equivalent OLD20 scores). One factor that distinguishes pairs like this is the extent to which their orthographic structure resembles words in general. We refer to this factor as orthographic typicality (OT), and present a method of measuring OT based on n-gram transition probabilities. This measure is a substantially better predictor of nonword decision latency than previous measures such as log bigram or trigram frequency, and is also a better predictor than existing measures of lexical similarity; the combination of OT with lexical similarity measures allows an impressive amount of variance to be explained. The OT measure may be useful for researchers when controlling their stimuli and when constructing nonwords.