Research Seminars in General Psychology and Cognitive Neuroscience

("Forschungskolloquium für Absolventen, Doktoranden, und Mitarbeiter")

**„General Psychology and Cognitive Neuroscience"**

(Prof. Dr. Stefan R. Schweinberger)

Winter Term 2008/09

Place:  Am Steiger 3/EG, SR 009

Contact: kathrin.wiese@uni-jena.de. For more information on current and past presentations see:
*http://www2.uni-jena.de/svw/allgpsy/researchseminars.htm*

Event Schedule

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|---|---|---|
| 09.02.2009 | Claus-Christian Carbon, Bamberg/Wien | Menschen mögen Experten sein, aber nicht im Erkennen von nicht-persönlich vertrauten Gesichtern |
| 02.02.2009 | Tarik Mohamed Abdelrheem, Jena | The influence of attentional selectivity and perceptual load on living and non-living object processing: Behavioural and neural correlates. |
| 19.01.2009 | Johanna Stahl, Jena | Modulation of ERP-correlates in the perception own- and other-race faces |
| 12.01.2009 | Stefan R. Schweinberger, Jena | Young without plastic surgery: Perceptual adaptation to facial age |
| 15.12.2008 | Romi Zäske, Jena | Neural correlates of perceptual adaptation to voice gender |
| 08.12.2008 | Jürgen M. Kaufmann, Jena | Unforgettable faces: influences of caricaturing on face learning and recognition |
| 04.12.2008 | Rik Henson, Cambridge | "The role of attention and awareness in face repetition priming: evidence from fMRI, EEG and MEG" |
| 24.11.2008 | Holger Wiese, Jena | Categorical and associative priming in person recognition are mediated by different processes: Evidence from masked priming |
| 10.11.2008 | Ulla Martens, Ulm | Top-down modulation of masked priming by task sets |
| 03.11.2008 | David Robertson, Jena | Audiovisual integration for person identification |
| 20.10.2008 | Stefan R. Schweinberger, Jena | Initial meeting |

**Claus-Christian Carbon**

*Universität Bamberg*

## Menschen mögen Experten sein, aber nicht im Erkennen von nicht-persönlich vertrauten Gesichtern

Menschen können in vielen Bereichen als „Experten" gelten. Ihre Fähigkeiten im Bereich Lesen, Sprache zu formulieren und vertraute Gesichter zu erkennen, sind z.B. außergewöhnlich stark entwickelt. Oft wird jedoch der Fehler gemacht, menschliche Fähigkeiten in solchen „Expertise-Gebieten" zu pauschal und breit zu interpretieren. Zwar existieren zwar zahlreiche Alltagsbeobachtungen und wissenschaftliche Befunde zum Thema Erkennung persönlich vertrauter Gesichter, die in der Tat Expertise nahelegen, die Evidenzlage für die expertenhafte Erkennung von persönlich nicht-bekannten Gesichter ist jedoch eher dünn. Viele vermeintlich hohe Leistungen kommen durch artifizielle Testprozeduren oder durch artifizielle Antwortstrategien zustande. Durch Verwendung alternativer Testszenarien kann jedoch demonstriert werden, dass Gesichter von berühmten Persönlichkeiten (Stars, Politiker, Künstler), die zwar oft gesehen, aber nicht persönlich bekannt sind, kaum erkannt werden können, wenn die bekannt gewordenen Abbildungen manipuliert oder durch weniger bekannte Bildmaterialien ersetzt werden. Es wird geschlossen, dass nicht-persönlich vertraute Gesichter eher piktoral oder „ikonisch", persönlich vertraute Gesichter dagegen strukturell und ganzheitlich verarbeitet werden. Gründe hierfür werden diskutiert.

**Rik Henson**

*MRC Cognition & Brain Sciences Unit, Cambridge*

## "The role of attention and awareness in face repetition priming: evidence from fMRI, EEG and MEG"

I will describe four recent neuroimaging experiments that argue that attention, but not awareness, is necessary to observe behavioural and neural correlates of repetition priming (in this case, with faces). While some have argued that priming effects can occur in the absence of attention, or at least are less sensitive to attentional manipulations than, for example, recognition memory, such claims are either questionable, or in the latter case, can be explained by the lower sensitivity of typical priming tasks. Indeed, others have argued that spatial and temporal attention is necessary for priming effects. In an fMRI experiment, we found no evidence of "repetition suppression" (a reduced haemodynamic response for repeated vs initial stimulus presentations) for faces that were not attended spatially on either their initial or repeated presentation. However, one can attend to a location in space (and time) but still not be aware of a stimulus, such as when it is presented briefly between a forward and backward mask (ie, subliminal). In three further experiments using fMRI, EEG and MEG, we found behavioural priming for faces that was not simply explicable by measures of participants' ability to see the prime. This was accompanied by repetition suppression in occipital and fusiform face areas, demonstrating that modulation of activity in such ventral stream areas can occur without awareness. This occurred across different views of both familiar and unfamiliar faces. An EEG version of this paradigm revealed two subliminal repetition effects: an early one (100-150ms post-prime onset), which was sensitive to view but not familiarity (much like the fMRI data), and a later one (300-500ms post-prime onset), which was sensitive to familiarity (much like the behavioural priming). More recently, we replicated these effects with MEG, and are trying to

relate the generators to the fMRI data. We are also extending this work to subliminal semantic (categorical) priming, though here effects appear largely explicable in terms of responselearning. More generally, masked priming would appear a useful way to investigate the extent of unconscious processing in the brain that does not rely on the more typical attentional manipulations.

**Ulla Martens**
*Universitätsklinikum Ulm*

## Top-down modulation of masked priming by task sets

In classical theories of automaticity, unconscious automatic processes are usually thought to occur autonomously and independently of higher-level top-down factors such as attention, intentions and task sets. However, recent research has challenged this view: There is evidence that a prototypical example of an automatic process, priming elicited by unconsciously perceived masked stimuli, depends on attention and action intentions similar to conscious controlled processes. This demonstrates the necessity to refine the classical concept of automaticity. My colleagues and I investigate the functional and neuronal mechanisms underlying the modulatory influences of top-down factors on priming. Based on a gating framework, we assess how previously activated task sets affect priming effects elicited by unconsciously perceived masked stimuli. A newly developed cueing task allows us to systematically assess within one and the same paradigm the effects (i) of different task sets (e.g., attentional focus on perceptual or semantic word features) (ii) on different forms of priming (e.g., priming based on word meaning or on sensory-motor preparation) (iii) elicited by unconsciously and consciously perceived stimuli, respectively. This research will help us to address the question whether conscious and unconscious perception are governed by the same set of computational principles.