PERSON PERCEPTION
WAHRNEHMUNG VON PERSONEN

DFG RESEARCH UNIT I FSU JENA - GERMANY

Person Perception

From cortical areas to social functions

Programme and Abstracts for the 9th PPRU
Workshop

April 4-5, 2014
Place: Großer Rosensaal, Fürstengraben 27
Friedrich Schiller University Jena

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Adrian Simpson, Daniela Schulze-Hennig, Kathrin Wiese, Jürgen M. Kaufmann, Stella J. Faerber, Helene Kreysa & Ella M. Kreysa, Jim W. Tanaka, Marlena L. Itz, Kornél Németh, Lisa Fröhlich, Martin Eimer, Olga Klimecki, Erika Schulz, Stefan R. Schweinberger, Sally Andrews, Sven Kachel, Dana Schneider, Claudia Menzel, Andrew J. Dowsett, Swantje Puls, Carolin S. Altmann, Zoltan Vidnyanszky, Romi Zäske, John Towler, Mareike Grotheer, Oliver Langer, Sarah V. Stevenage, Stefanie Hechler, n.n., Géza G. Ambrus, Kathrin Rauscher, Gernot Gerger, Verene Skuk, Christian Wolfram, Bettina Kamchen, Gyula Kovács, Holger Wiese, Janek S. Lobmaier, Jessika Golle, Petra Kovacs.

Person Perception – From cortical areas to social functions

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EVENT SCHEDULE

FRIDAY, APRIL 4, 2014

1ST SESSION:	ATYPICAL

09.00 – 09.40   Mechanisms of typical and atypical face perception and recognition: Evidence from ERP studies

Martin EIMER (Dept. Psychol., Birbeck, Univ. London, UK)

09.40 – 10.20   Person and emotion perception in autism

James TANAKA (Dept. Psychol. Univ. Victoria, CA)

10.20 – 10.40   Coffee Break

2ND SESSION:	NETWORKS

10.40 – 11.20   Short talks on the perception of within-person variability

Sally ANDREWS (Univ. Aberdeen, UK) & Carolin ALTMANN (Dept. Gen. Psychol., Univ. Jena, D)

11.20 – 12.00   Functional specialization within the face network: insights from intrinsic functional connectivity analysis

Zoltán VIDNYÁNSZKY (Cent. Nat. Sci, Hung. Acad Sci., Budapest, H)

12.00 – 13.30   Lunch Break

3RD SESSION:	SOCIAL I

13.30 – 14.10   Plasticity of the social brain

Olga KLIMECKI (Cent. Aff. Sci., Univ. Genf, CH)

14.10 – 14.50   Effects of aging on perceiving and remembering person-related information

Jessica KOMES/ Holger WIESE (Dept. Gen. Psychol., Univ. Jena, D)

14.50 – 15.10   Coffee Break

4ᵀᴴ SESSION: SOCIAL II

15.10 – 15.50	Facing beauty: How hormones shape face preferences
	Janek LOBMAIER (Dept. Psychol., Univ. Bern, CH)
15.50 – 16.30	Face gender and age modulates female and male brain activity differently
	Gyula KOVÁCS (Inst. Psychol., Univ. Jena, D)

16.30 – 19.00 POSTER SESSION

SATURDAY, APRIL 5, 2014

08:30 – 09.00 *Internal meeting of the Person Perception Research Group*

5ᵀᴴ SESSION: METHODS

09.15 – 09.55	Instance-weighted transfer learning of active appearance models
	Joachim DENZLER (Computer Vision Group, Univ. Jena, D)
09.55 – 10.35	Speaker perception
	Stefan SCHWEINBERGER (Dept. Gen. Psychol., Univ. Jena, D)
10.35 – 10.55	Coffee Break

6ᵀᴴ SESSION: VOICES

10.55 – 11.35	Neural correlates of processing angry voices in social anxiety disorder
	Thomas STRAUBE (Inst. Med. Psychol., Univ. Münster, D)
11.35 – 12.15	Voice recognition
	Sarah STEVENAGE (Psychol., Univ. Southampton, UK)
12.15 – 12.30	Closing remarks

12.30 END OF WORKSHOP

ABSTRACTS – ORAL PRESENTATIONS

1   MECHANISMS OF TYPICAL AND ATYPICAL FACE PERCEPTION AND RECOGNITION: EVIDENCE FROM ERP STUDIES

MARTIN EIMER

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People with developmental prosopagnosia (DP) show severe face recognition deficits that typically emerge in early childhood, without history of neurological damage. I will present and discuss recent findings from ERP studies of face perception and face recognition in DP. The generic face-sensitivity of the N170 component to upright faces is preserved in most DPs, suggesting intact rapid detection of face components. However, DPs show atypical modulations of the N170 component under some conditions where faces appear in unusual spatial configurations, suggesting impaired configural face processing. Visual aspects of face recognition (as reflected by the N250 component) are often normal in individuals with DP, but longer-latency ERP modulations that are generated during later stages of face recognition are strongly attenuated or absent. This dissociation suggests that face recognition impairments in DP can result from disconnections between visual face memory and later semantic stages of face processing where individual faces are identified.

2   PERSON AND EMOTION PERCEPTION IN AUTISM

JIM TANAKA

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Despite the considerable perceptual demands of face processing, most of us are face "experts" - able to recognize a familiar face and interpret a facial expression in a blink of an eye.   However, there are occasions when people perform more like face ³novices.² For example, face recognition breaks down when people try to identify faces from an unfamiliar race or in circumstances where face recognition skills are compromised due to autism. An important question is whether face processing skills can be learned like other forms of perceptual expertise. In my talk, I will discuss training research intended to teach the perception and production of facial emotions to children with autism employing new interactive technologies.

3   3A: ERP CORRELATES OF FAMILIARITY SHOW THE DEVELOPMENT OF STABLE FACE REPRESENTATIONS THROUGH EXPERIENCE WITH NATURAL WITHIN-PERSON VARIABILITY

SALLY ANDREWS, A. MIKE BURTON, & HOLGER WIESE

University of Aberdeen, United Kingdom
   s.andrews@abdn.ac.uk

We are usually able to recognise novel instances of familiar faces with little difficulty; yet unfamiliar face recognition can be dramatically impaired by natural within-person variability. When asked to sort naturally varying instances of unfamiliar faces into piles corresponding to their respective identities, participants often fail to sort different imagers of the same person together (Jenkins, White, Van Montford & Burton, 2011). We used a sorting task with the added constraint of expectancy-based context information (i.e. informing

unfamiliar observers how many identities are present) as a learning task. With this constraint, people make few errors – i.e. they tend not to confuse identities. We hypothesise that this constrained sorting task provides an efficient way to learn a face – by forcing viewers to bring together images which are superficially different. In a subsequent ERP study, we compared perception of faces learned through constrained sorting to familiar and unfamiliar faces. Once again, this study supported the hypothesis that experience of natural variability supports the development of generalizable representations. Overall, it is clear that any comprehensive account of how we learn faces should incorporate the experience of natural variability, as a way of developing stable representations [The topic of this talk was also presented during the poster session, poster 6].

3   3B: HAVEN'T WE MET? EFFECTS OF ATTRACTIVENESS ON FACE MEMORY SEPARATED FROM DISTINCTIVENESS: EVIDENCE FROM EVENT-RELATED BRAIN POTENTIALS

CAROLIN S. ALTMANN[1,2], HOLGER WIESE[1,2], & STEFAN R. SCHWEINBERGER[1,2]

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The present study examined effects of attractiveness on behavioral and event-related potential (ERP) correlates of face memory. Extending previous reports, we controlled for potential moderating effects of distinctiveness, a variable known to affect memory. Attractive and unattractive faces were selected on the basis of a rating study, and were matched for distinctiveness. In a subsequent recognition memory experiment, we found more accurate memory for unattractive relative to attractive faces. Additionally, an attractiveness effect in the early posterior negativity (EPN) during learning, with larger amplitudes for attractive than unattractive faces, correlated significantly with the magnitude of the memory advantage for unattractive faces at test. These findings establish a contribution of attractiveness to face memory over and above the well-known effect of distinctiveness. Additionally, as the EPN is typically enhanced for affective stimuli, our ERP results imply that the processing of emotionally relevant attractive faces during learning may hamper their encoding into memory.

4   FUNCTIONAL SPECIALIZATION WITHIN THE FACE NETWORK: INSIGHTS FROM INTRINSIC FUNCTIONAL CONNECTIVITY ANALYSIS

ZOLTÁN VIDNYÁNSZKY

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Processing of faces in the human brain involves an extended network of cortical areas. However, the functional specialization of the different areas within the face network remains poorly understood. In this talk I will present the results of our research aiming at indentifying the neural processes directly involved in the processing of deteriorated, noisy face images. First, I will show that the behavioral effect of adding phase noise to the face stimuli is closely associated with the noise-induces reduction of the fMRI responses in the right fusiform face area (FFA), but not in other regions of the face network. Furthermore, analysis of intrinsic functional connectivity of the right FFA measured during rest, revealed a significant positive correlation between the behavioral noise effect and the strength of the functional connectivity between the FFA and a subset of regions of the extended face network (including the Supplementary Motor Area, Precentral Gyrus and Insula). On the other hand, intrinsic functional connectivity between the FFA and the anterior part of the inferior temporal cortex showed a negative correlation with the behavioral noise effect. These findings imply

that right FFA plays a primary role in processing of deteriorated face images and the strength of its intrinsic functional connectivity with specific regions of the extended face network predicts the inter-individual differences in the efficacy of handling noise in case of face stimuli.

5   PLASTICITY OF THE SOCIAL BRAIN

OLGA KLIMECKI

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In social situations, empathic skills allow us to share other persons' feelings. This additional information greatly facilitates social interactions. However, sharing negative emotions of others can at times be challenging. An important question is thus whether emotional responses to a given social situation can be modified through interventions. I present longitudinal studies showing how training social emotions such as empathy and compassion can induce distinct affective and neural plasticity in response to videos depicting others suffering. More specifically, training empathic sharing led to an increase in self-reported negative feelings. This was accompanied by augmented neural activations in areas related to shared pain perception (insula and anterior cingulate cortex). Practicing compassion, however, strengthened positive affect in response to the same social stimuli and increased neural activations in areas related to positive emotions and affiliation (medial orbitofrontal cortex and striatum). These data show that our reaction to other persons does not only depend on the characteristics of the observer and the situation. In fact, the targeted cultivation of social skills can change the way we perceive others on a psychological and biological level.

6   EFFECTS OF AGING ON PERCEIVING AND REMEMBERING PERSON-RELATED INFORMATION

JESSICA KOMES[1,2] & HOLGER WIESE[1,2]

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Older adults commonly complain about difficulties in person perception and memory, and the ability to learn and recognize faces and names is known to decline with increasing age. However, it is not clear at present to what degree these deficits result from less efficient processing at early perceptual, representational, or episodic memory-related stages. In this talk we present a series of experiments, which aimed at investigating this issue by analyzing event-related brain potential correlates of person perception and memory. Overall, our results indicate that early perceptual face processing (as reflected in the N170) is relatively less affected by aging than later representational and memory-related stages (as reflected in N250, N400, and old/new effects).

7   FACING BEAUTY: HOW HORMONES SHAPE FACE PREFERENCES

JANEK LOBMAIER

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Attractiveness plays an important role in mate choice for human as well as non human animals. Why are we attracted to some faces more than others? Why do we look the way we look? I will argue (a) that gonadal steroids influence why we prefer certain faces over others and (b) that gonadal steroids play an important role in shaping the face we have. I base these claims on evidence from experiments where we measured face preferences as a function of baseline hormone levels and from experiments where we looked at independent and combined influences of gonadal steroids on facial attractiveness. I will end this talk by showing that the shape of the face is not rigid but underlies subtle cyclic changes. Specifically, I will demonstrate that faces of women are perceived as being more attractive during fecund days of the menstrual cycle compared to days when conception risk is low. Such cyclic changes, though subtle, can be detected by male observers.

8   FACE GENDER AND AGE MODULATES FEMALE AND MALE BRAIN ACTIVITY DIFFERENTLY

G.KOVÁCS[1,3], J. KOMES[2,3], M. GROTHEER[3], & H. WIESE[2,3]

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Young adults consistently show an own-age bias and women typically exhibit an own-gender bias in face processing. Recent studies implicated the fusiform gyrus and the inferior temporal sulcus in processing the gender and age of faces, respectively. However, so far no study tested how the encoding of facial gender and age relates to each other and to the gender of the observers. For this end we used an fMRI adaptation paradigm by presenting blocks of female, male, young and old faces. In addition to the conventional univariate analysis of the signal strength and of the signal adaptation we also applied an advanced multivariate pattern classification technique. These techniques revealed that gender and age interact with each other and with the gender of the observer during face encoding in the occipito-temporal areas of the human brain.

9   INSTANCE-WEIGHTED TRANSFER LEARNING OF ACTIVE APPEARANCE MODELS

JOACHIM DENZLER

Computer Vision Group, Friedrich-Schiller-University, Jena, Germany
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There has been a lot of work on face modelling, analysis, and landmark detection, with Active Appearance Models being one of the most successful techniques. A major drawback of these models is the large number of detailed annotated training examples needed for learning. For standard application, like estimation of the basic emotions, there is sufficient training material available from publicly available data bases. However, for estimating activations of action units for non standard facial activities, for example during exercises in the treatment of facial paralysis, such training material is missing at all. Therefore, we present a transfer learning method that is able to learn from related training data using an instance-weighted transfer technique. Our method is derived using a generalization of importance sampling and in contrast to previous work we explicitly

try to tackle the transfer already during learning instead of adapting the fitting process. In our studied application of face landmark detection, we efficiently transfer facial expressions from other human individuals and are thus able to learn a precise face Active Appearance Model only from neutral faces of a single individual. Our approach is evaluated on two common face datasets and outperforms previous transfer methods.

10   SPEAKER PERCEPTION

STEFAN R. SCHWEINBERGER[1,2]

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While humans use their voice mainly for communicating information about the world, paralinguistic cues in the voice signal convey rich dynamic information about a speaker´s arousal and emotional state, and extralinguistic cues reflect more stable speaker characteristics including identity, biological sex and social gender, socioeconomic or regional background, and age. Here I discuss how recent methodological progress in voice morphing and voice synthesis has promoted research on current theoretical issues, such as how voices are mentally represented in the human brain. Special attention is dedicated to the distinction between the recognition of familiar and unfamiliar speakers, in everyday situations or in the forensic context, and on the processes and representational changes that accompany the learning of new voices. I describe how specific impairments and individual differences in voice perception could relate to specific brain correlates. Finally, I consider that voices are produced by speakers who are often visible during communication, and present evidence that shows how speaker perception involves dynamic face-voice integration. Overall, the representation of para- and extralinguistic vocal information plays a major role in person perception and social communication, could be neuronally encoded in a prototype-referenced manner, and is subject to flexible adaptive recalibration as a result of specific perceptual experience.

11   NEURAL CORRELATES OF PROCESSING ANGRY VOICES IN SOCIAL ANXIETY DISORDER

THOMAS STRAUBE

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Individuals with social anxiety disorder (SAD) show increased amygdala responses to angry facial expressions. A previous study found no comparable effect to angry voices, even though angry expression of both voices and faces represent disorder-related cues in SAD. The present study investigated whether effects to angry voices in SAD might depend on the amplitude of prosodic stimuli. In an event-related functional magnetic resonance imaging study, we investigated brain responses to neutral and angry male and female voices in healthy control participants (HC) and individuals with SAD during a gender decision task. Importantly, all prosodic stimuli were presented either with normal or high sound amplitude. Results show an interaction of Amplitude, Prosody and Group, which was based on increased responses specifically to loud angry voices in SAD compared to HC. This finding indicates the role of loudness for a hypersensitivity of the amygdala to angry prosody in SAD.

12   VOICE RECOGNITION

SARAH STEVENAGE

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Cognitive understanding of voice recognition has borrowed much from the area of face processing, both in terms of the theoretical framework within which results are interpreted, and the methodology used to assess performance. A considerable body of research now exists to suggest that voice recognition may proceed in parallel with face recognition, and that the two pathways may combine to inform person recognition. However, rather than being independent or equivalent, these parallel pathways appear to interact to reveal interesting interference effects. Here, we explore a body of work from a considerable and growing literature. The relative vulnerability of voice processing will be examined relative to face processing, and the interaction of these two pathways will be considered with reference to broader theoretical frameworks for person recognition.

ABSTRACTS – POSTERS

1   A TEMPORALLY SUSTAINED IMPLICIT THEORY OF MIND DEFICIT IN AUTISM SPECTRUM DISORDERS

DANA SCHNEIDER[1,2]; VIRGINIA P SLAUGHTER[1]; ANDREW P BAYLISS[3]; PAUL E DUX[1]

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2 Department of General Psychology, Friedrich-Schiller-University, Jena, Germany
3 School of Psychology, The University of East Anglia, Norwich, United Kingdom
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Eye movements during false-belief tasks can reveal an individual's capacity to implicitly monitor others' mental states (theory of mind - ToM). It has been suggested, based on the results of a single-trial-experiment, that this ability is impaired in those with a less severe autism spectrum disorder (ASD), despite neurotypical-like performance on explicit ToM measures. However, given there are known attention differences and visual hypersensitivities in ASD it is important to establish whether such impairments are evident over time. Further, investigating implicit ToM using a repeated trial approach allows an assessment of whether learning processes can reduce the ASD impairment in this ability, as is the case with explicit ToM. In this study we investigated the temporal profile of implicit ToM in individuals with ASD and a control group. Despite similar performance on explicit ToM measures, ASD-diagnosed individuals showed no evidence of implicit false-belief tracking even over a one-hour period and many trials, whereas control participants did. These findings demonstrate that the systems involved in implicit and explicit ToM are distinct and hint that impaired implicit false-belief tracking may play an important role in ASD. Further, they indicate that spontaneous learning processes do not alleviate this impairment across multiple trials.

2   NEURAL BASIS OF GAZE PROCESSING IN SOCIAL ANXIETY

CLAUDIA SCHULZ[1], STEPHANIE BÖHME[2], BERND LANGOHR[3], MARTIN MOTHES-LASCH[1], THOMAS STRAUBE[1]

1 Institute of Medical Psychology and Systems Neuroscience, Muenster, Germany
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3 Department of Biological and Clinical Psychology, Friedrich-Schiller-University, Jena, Germany
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Individuals with social anxiety exhibit altered processing of directly gazing faces. In this event-related functional magnetic resonance imaging study, we investigated brain responses to angry, happy, and neutral faces with either direct or averted gaze in healthy control participants and individuals with social anxiety disorder (SAD), under a gender discrimination task. Compared to healthy controls, patients showed increased activation to direct vs. averted gaze across facial expressions in the insula and somatosensory cortex. This effect was more pronounced for angry and neutral compared to happy faces. These findings suggest a role of the insula and somatosensory cortex, i.e., areas implicated in self-awareness of a person's own body, in the processing of potential observer-directed threat in SAD.

3   IMPAIRED PERCEPTUAL SENSITIVITY TO THE LOCATIONS OF FACIAL FEATURES IN DEVELOPMENTAL PROSOPAGNOSIA

JOHN TOWLER, JOHANNA PARKETNEY, & MARTIN EIMER

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Developmental prosopagnosia (DP) is an impairment in face recognition ability despite normal low-level vision and general cognitive ability. Prosopagnosia may be caused by visual perceptual deficits or by memory impairments accompanied by normal perception. Here we provide evidence from event-related brain potentials (ERPs) that early visual perceptual stages of face-sensitive neural processing, occurring within the first 200ms after stimulus onset, are atypical in DP. Face images were created with the locations of the internal features (eyes, nose and mouth) spatially scrambled within the upright face outline. ERPs triggered by scrambled faces were compared to intact upright faces. Age matched control participants show both N170 amplitude enhancements and latency delays for scrambled faces as compared to intact faces. In contrast, DP participants do not reliably demonstrate these neural markers that are sensitive to facial configuration, and importantly, the between-group difference in N170 amplitude enhancement for scrambled faces was also statistically reliable. These ERP findings suggest that perceptual deficits in DP may be characterised by a lack of sensitivity to deviations in the locations of facial features from a canonical upright face template.

4   DO EMOTIONAL FLANKERS GRAB ATTENTION? IT DEPENDS

SWANTJE PULS [1], OLIVER LANGNER[2], & KLAUS ROTHERMUND[3]

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2 University of Luebeck, Luebeck, Germany
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The present research investigated the extend to which attention is automatically allocated to emotional faces, a finding that is often presupposed in literature. Initially, classic flanker tasks did not reveal any emotional effects, but later we could show an influence of task-irrelevant facial expressions in a variant of the flanker-paradigm where participants had to encode both gender and age of the presented faces to accomplish the task. Interestingly, attentional effects appeared only for young negative faces but not for old ones, probably reflecting the motor component of deficient emotion expression in ageing which was described in the literature. We further observed significant interactions of facial age and gender, demonstrating most likely a mixture of morphological changes during ageing and differential stereotypic associations between masculinity/femininity and old/young faces.

5   IMPROVING UNFAMILIAR FACE MATCHING USING MULTIPLE IMAGES AND FEEDBACK

ANDREW J. DOWSETT & A. MIKE BURTON

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It is well established that our ability to match unfamiliar faces is highly error prone (Burton & Jenkins, 2011). Yet despite this we still rely heavily on photographic identification to prove our identity. Conversely, when matching familiar faces, we perform almost perfectly (Bruce et al., 2001). When we are familiar with a face we are able to overcome inherent within-person variability to make an accurate match (Jenkins et al, 2011). However, when we are unfamiliar, we lack this experience and are forced into a pictorial based match. In this series of studies we ask whether this within-person variability can be used to train individuals in unfamiliar face recognition. We used a difficult face matching task to show that the presence of within-person variability can improve performance for target individuals, but not for face matching in general. Furthermore, trial-by-trial feedback was introduced to demonstrate performance can be improved upon further. We consider the implications of these results for training face matching performance.

6   ERP CORRELATES OF FAMILIARITY SHOW THE DEVELOPMENT OF STABLE FACE REPRESENTATIONS THROUGH EXPERIENCE WITH NATURAL WITHIN-PERSON VARIABILITY

SALLY ANDREWS, A. MIKE BURTON, & HOLGER WIESE

School of Psychology, University of Aberdeen, Aberdeen, United Kingdom
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We are usually able to recognise novel instances of familiar faces with little difficulty; yet unfamiliar face recognition can be dramatically impaired by natural within-person variability. When asked to sort naturally varying instances of unfamiliar faces into piles corresponding to their respective identities, participants often fail to sort different imagers of the same person together (Jenkins, White, Van Montford & Burton, 2011). We

used a sorting task with the added constraint of expectancy-based context information (i.e. informing unfamiliar observers how many identities are present) as a learning task. With this constraint, people make few errors – i.e. they tend not to confuse identities. We hypothesise that this constrained sorting task provides an efficient way to learn a face – by forcing viewers to bring together images which are superficially different. In a subsequent ERP study, we compared perception of faces learned through constrained sorting to familiar and unfamiliar faces. Once again, this study supported the hypothesis that experience of natural variability supports the development of generalisable representations. Overall, it is clear that any comprehensive account of how we learn faces should incorporate the experience of natural variability, as a way of developing stable representations.

7   PICTURE PERFECT – WHAT CONSTITUTES WITHIN-PERSON-VARIABILITY OF ATTRACTIVENESS?

CAROLIN S. ALTMANN[1], SALLY ANDREWS[2], ROB JENKINS[3] & MIKE A. BURTON[2]

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Facial attractiveness is usually seen as a stable characteristic of a person. It has been shown, though, that perceived attractiveness varies strongly across images of one and the same face. This variance may even be greater than between-person-variability. Thus, the attractiveness preference for one over another face can easily be reversed depending on photograph choice. It is largely unknown, however, which image characteristics constitute these variations. We used multiple hierarchical linear regressions to determine predictors of within-person-variability over a large number of ambient photographs of several faces. Results showed that, beyond a contribution of expression and the model's behaviour, attractiveness variation within a face also depends on global low-level visual features and complex image statistics relating to aesthetic perception of artwork.

8   IT FELT FLUENT, BUT I DID NOT LIKE IT - FLUENCY EFFECTS IN FACES

GERNOT GERGER, MICHAEL FORSTER, & HELMUT LEDER

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The processing fluency theory assumes that fluent processing results in positive affect which in turn leads to increased liking ratings. Fluency can stem from different sources such as stimulus clarity, symmetry, prototypicality, or stimulus presentation duration. It has been repeatedly shown that longer presentation durations increase positive affect and liking. Usually, in these studies rather neutral (e.g., everyday objects) or stimuli with little or no meaning (abstract patterns, random dot patterns) are used which normally exert no strong liking preferences. Hence, fluency might be used as a source guiding liking ratings. Liking rating of faces, however, depend on a variety of sources including biological, experiential, social, and sociosexual factors. Thus, fluency might not be used in the same way as compared to rather neutral stimulus materials. Here we tested in two experiments whether longer presentation durations of faces increase positive affect (Experiment 1), increase liking (Experiment 2), and whether this is accompanied by changes in subjectively perceived fluency (Experiment 2). Experiment 1 showed that longer presentation durations only increased positive affect - indicated by a stronger activation of the M. zygomaticus major - for meaningless abstract patterns but not for faces. Experiment 2 showed - contrary to fluency theory - that longer presentation durations even led to

reduced liking ratings in faces. However, longer presentation duration still led to higher subjectively perceived fluency. These results show that fluency is not necessarily linked to higher liking and underpin the special status faces have in human perception.

9   ADJUST THE RATIO OF FINE DETAIL AND COARSE STRUCTURE UNTIL YOU LIKE THE IMAGE!

CLAUDIA MENZEL[1,2], GREGOR HAYN-LEICHSENRING[1,2], OLIVER LANGNER[1,3], CHRISTOPH REDIES[1,2]

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2 Experimental Aesthetics Group, Institute of Anatomy I, University Hospital Jena, Jena, Germany
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Images of graphic art and natural scenes share $1/f^2$ characteristics of the Fourier power spectrum. This property reflects scale-invariance in the Fourier domain, i.e. a scale-invariant, high ratio of fine detail versus coarse structure in the image. In contrast, face images in general possess a lower ratio of fine detail versus coarse structure. Here, we investigated the effect of a modified ratio of fine detail versus coarse structure on face perception. We asked two groups of participants to adjust this ratio in face images until each image reached the highest possible subjective image quality, or until the face looked most attractive, respectively. In both experiments, subjects significantly increased the ratio of fine detail and coarse structure in comparison to the original images. In a second study, we asked participants to rate the hedonic value of images with original, increased or decreased ratios. In this part of the study, we used not only face images but also images of cars, facades, landscapes and art portraits. Participants disliked face images with a strongly decreased ratio of fine detail versus coarse structure. However, landscape images with a strongly decreased ratio were preferred over those with a strongly increased ratio. For the other image categories, similar manipulations had no effect on liking. We conclude that the liking of face images is affected by higher-order image statistics that can be processed at early stages in the visual system.

10   THE ADAPTATION OF SSVEP SIGNAL EXPLAINS INTER-INDIVIDUAL DIFFERENCES IN FACE-PERCEPTION

KORNÉL NÉMETH[1], PETRA KOVÁCS[1], PÁL VAKLI[1], MÁRTA ZIMMER[1], GYULA KOVÁCS[1,2,3]

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Due to their face-sensitivity and facial identity-sensitive processes, the occipito-temporal areas of the human cortex have been proposed as the "core" visual representation system for faces. Recent electrophysiological and neuroimaging studies of developmental prosopagnosics (DPs) raised the question whether these measures relate to face processing skills. While DPs show face-processing impairments, altered brain activity in the core areas of the face processing network have not been shown unequivocally in them. To study the facial identity processing in DPs, we measured the identity-sensitive adaptation of steady-state visual evoked potentials (SSVEPADA) in a group of 26 participants with DP and 26 matched healthy control participants while applying factor analysis to derive behavioral components related to face identification. We found a compelling relationships between identity-sensitive SSVEPADA over the face-sensitive occipito-temporal electrodes (P7/8)

and the efficiency of face perception across our sample. While the amount of SSVEPADA increased as a function of the perceptual efficiency in the right hemisphere, this relationship was negative in the left one. In other words, the larger/smaller the SSVEPADA over the right/left hemisphere the better face perception is. Our findings are the first to associate individual differences in identity-sensitive adaptation of the SSVEP signal with feature-related perceptual processing abilities rather than face recognizing per se.

11   REPETITION PROBABILITY EFFECTS FOR INVERTED FACES IN THE FUSIFORM FACE AREA

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The magnitude of repetition suppression (RS) in the Fusiform Face Area (FFA) is influenced by the probability of repetitions for upright faces (Summerfield et al., 2008), implying that perceptual expectations affect repetition related processes. These findings unify repetition suppression (RS) with the predictive coding (PC) model of perceptual inferences (Rao and Ballard, 1999). Surprisingly, however, macaque single-cell (Kaliukhovich and Vogels, 2011) and human fMRI (Kovács et al., 2013) studies have failed to find repetition probability (P(rep)) modulations of RS with non-face stimuli in the occipito-temporal cortex, suggesting that the effect is face specific. As of today, the reason behind this specificity in P(rep) effects on RS is unclear. One possibility is that the special processing steps, responsible for the holistic/configural processing of upright faces leads to the different neural mechanisms of RS. As the inversion of the face is known to interrupt these configural/holistic processing steps here we tested upright as well as inverted faces in a similar paradigm as used in previous studies. We manipulated P(rep) for pairs of faces in individual blocks of fMRI recordings. We observed significant RS for both upright and inverted faces in the FFA. Interestingly, the P(rep) influenced RS independently of face inversion. Our results suggest that neural processing steps leading to holistic/configural processing of upright faces are not the factor determining P(rep) category specificity in the FFA.

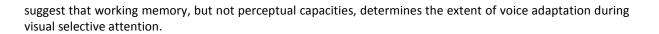## 12   VISUAL WORKING MEMORY LOAD ENHANCES VOICE ADAPTATION

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Prolonged exposure to female voices causes subsequent voices to be perceived as more male and vice versa. This aftereffect of voice adaptation is abolished by spatial inattention to adaptors, suggesting that voice gender is not processed automatically. According to Lavie et al. (2004), the extent to which task-irrelevant stimuli are processed during selective attention depends on the availability of perceptual resources and working memory. In two experiments we investigated if the voice gender aftereffect (VGAE) depends on perceptual (Exp. 1) or working memory (Exp. 2) demands of a relevant visual task. Participants adapted to irrelevant female or male voices either while searching digit displays for a "5" (Exp. 1) or while recognizing digits as learned or novel (Exp. 2). The selective attention tasks were either easy (low load) or hard (high load). The VGAE, as assessed in gender classifications of subsequent test voices, was unaffected by visual perceptual load, similar to findings that visual adaptation is unaffected by auditory perceptual load. By contrast, and in line with Lavie's theory, the VGAE was increased under high relative to low visual working memory load during adaptation. Our findings

suggest that working memory, but not perceptual capacities, determines the extent of voice adaptation during visual selective attention.

13 GENDER-BASED PERCEPTION OF CHILDREN'S VOICES

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This study investigated the perception of prepubescent children's voices in conversational German speech by adult listeners who were primed for hearing girls or boys only. Picture naming task samples were recorded from 21 children aged from 4 to 5 years. Recordings were pretested for gender-related utterances which were excluded. The remaining 17 samples were rated by two groups of 14 and 15 adult listeners respectively based on a seven-point semantic differential. Samples were presented to the groups as girls' (group 1) or boys' (group 2) voices only. Listeners who considered the children to be boys perceived the voices irrespective of the real sex of the speaker as significantly higher in voice pitch than the other group. For the perceptional correlates slow/quick, melodious/monotonous, precise/careless and loud/soft no significant group differences were found. This indicates that listener don't apply gender-related stereotypes in the action of listening. Additionally, listeners showed no signs of irritation with respect to the presetting of the speaker's sex. The results were discussed in relation to the findings of Günzburger, Bresser and Ter Keurs (1987).

14 THE BDNF VAL66MET POLYMORPHISM INFLUENCES CATEGORIZATION PERFORMANCE - A TRANSCRANIAL DIRECT CURRENT STIMULATION STUDY

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The exact roles of different memory systems and brain regions involved in categorization are still not well understood, but it has been suggested that in this process the dorsolateral prefrontal cortex (DLPFC) plays a key part (Mack, Preston, & Love, 2013; Seger et al., 2000). Here, we used excitability-enhancing anodal transcranial direct current stimulation (tDCS) over the right DLPFC in a prototype distortion task to widen our knowledge about the contribution of this area to categorization performance. The role of the BDNF Val66Met polymorphism status and the effect of the gender of the participants in relation to the stimulation and task performance was also investigated. In line with our previous results (Ambrus et al., 2011), anodal tDCS was shown to abolish the prototype effect. Furthermore, we have found that the Val66Met genotype had a pronounced effect on the rate of the categorization performance, with Val/Val homozygotes reaching a higher performance compared to Met carriers. We have also found indication that anodal tDCS had a detrimental overall effect on categorization in male, but not in female subjects. As the Val66Met polymorphism has previously shown to have a relatively specific effect on episodic memory our results are in support of an episodic model of categorization. The differential tDCS effects seen in male participants should motivate further research exploring the effects of gender and brain plasticity.

15   EFFECTS OF CARICATURING FEATURAL VS. CONFIGURAL INFORMATION IN GOOD AND POOR FACE RECOGNIZERS: AN ERP STUDY

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Recent research showed that effects of shape caricaturing are particularly prominent in poor face recognizers. By presenting faces upright and inverted, we studied in poor and good recognizers whether caricaturing effects are driven by configural or featural information. As inversion is believed to hamper configural information, preserved caricature effects could be attributed to features. After learning veridical and spatially caricatured faces, learned and novel faces were tested upright and inverted. Response times for upright faces replicated poor recognizers exhibiting caricaturing effects for novel and learned faces, and good recognizers demonstrating effects to novel faces only. In accuracies, caricaturing benefits were only significant in poor recognizers. For inverted faces caricaturing effects on response times disappeared in both groups, and only poor recognizers showed a small caricaturing benefit in accuracy. ERPs replicated established effects of face inversion on N170, and effects of caricaturing on P200 and N250, which again were clearer for upright faces. Moreover, good recognizers exhibited both a larger P200 overall, and a larger N250 familiarity effect. Overall, results suggest that i) the shape caricature effect is mainly, but not exclusively driven by configural information and ii) poor recognizers focus more on features than good recognizers.

16   SPECTRAL FEATURES OF /s/ AND /?/: GAY, LESBIAN AND HETEROSEXUAL GERMAN NATIVES

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In English-speaking countries the stereotype prevails that gay English speakers lisp. Studies on the acoustic features of /s/ could not confirm this. They found, however, that gay men produce longer /s/ with higher peaks and a more negatively skewed spectrum than heterosexual speakers. Are these findings language-independent and hold for German speakers with different sexual orientation as well? And what about female speakers that have been neglected in most parts in former studies? The spectral features of the fricatives /s/ and /?/ in read speech of German natives, 26 heterosexual men, 25 gays, 20 straight women and 19 lesbians, are investigated. Gay German-speaking men produce /s/ and /?/ with higher Centre of Gravity and spectral peaks, higher /s/-variance and a more negatively skewed spectrum for /s/ than straight men. Thus, peaks and form of the spectrum are similar to those found in English-speaking gays. Lesbian German natives have a more negatively skewed /s/ with a flatter spectrum and less variance than straight women and they produce shorter /?/ than heterosexual women. These differences do not hold across all phonetic contexts and groups, except for the higher spectral peaks of /s/ of gay speakers compared to straight men. /s/-peak increases the more men relate to the gay group and decreases the less men identify with their gender role.