PERSON PERCEPTION
WAHRNEHMUNG VON PERSONEN
DFG RESEARCH UNIT | FSU JENA - GERMANY

Person Perception:

Current Topics and Perspectives

Programme and Abstracts for the 12th PPRU Workshop

October 15-16, 2015
Place: Großer Rosensaal, Fürstengraben 27
Friedrich Schiller University Jena

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Catherine J. Mondloch, Sarah Laurence, Dana Schneider, Kathleen Kang, Xiaomei Zhou, Carolin S. Altmann, Verene Skuk, Stella J. Faerber, Mareike Grotheer, Romi Zäske, Adrian P. Simpson, Helene Kreysa, A. Mike Burton, Jürgen M. Kaufmann, Stefanie Hechler, Stefan R. Schweinberger, Katharina Limbach, Gyula Kovács, Catarina Amado, Géza G. Ambrus, Claudia Menzel, Kathrin Wiese, Romina Palermo, Marlena L. Itz, Galia Avidan, Christoph Redies, Gregor U. Hayn-Leichsenring, Nilly Weiss, Juliane Braeuer, Christian Dobel, n.n., Anja Brödel.

12th PPRU Workshop

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October 15-16, 2015 - Place: Großer Rosensaal, Fürstengraben 27

EVENT SCHEDULE

THURSDAY, OCTOBER 15, 2015

1ST SESSION: PERCEPTION OF IDENTITY INFORMATION

09.00	– 09.10	Welcome *Stefan R. SCHWEINBERGER (Univ. Jena, DE)*
09.10	– 09.50	Building a Face Space: The Contributions of Inter-person and Intra-person Variability *Catherine J. MONDLOCH (Brock University, CA)*
09.50	– 10.30	Processing identity information from faces *Jürgen M. KAUFMANN (Univ. Jena, DE)*
10.30	– 10.50	Coffee Break

2ND SESSION: FACE LEARNING AND FACE REPRESENTATION

10.50	– 11.30	Learning new faces: Some experiments and some theory *A. Mike BURTON (Univ. York, UK)*
11.30	– 11.50	Encoding of faces caricatured in shape or reflectance improves recognition of veridical counterparts *Marlena ITZ (Univ. Jena, DE)*
11.50	– 12.10	Impact of familiarity on representations in norm-based face space *Stella J. FAERBER (Univ. Jena, DE)*
12.10	– 13.30	Lunch Break

3RD SESSION: INDIVIDUAL DIFFERENCES IN FACE PERCEPTION

13.30	– 14.10	Altered topology of neural circuits in congenital prosopagnosia *Galia AVIDAN (Ben Gurion University, ISR)*
14.10	– 14.50	Poor, average and excellent: what individual variability can tell us about the mechanisms of face perception *Romina PALERMO (Univ. Western Australia, AU)*
14.50	– 15.10	Coffee Break

	4TH SESSION:	NEURONAL MECHANISMS
15.10	– 15.50	Impressions for Predictions in The Brain *Moshe BAR (Bar-Ilan Univeristy, ISR)*
15.50	– 16.30	Future in the past: a brief summary of the neural mechanisms behind various repetition related phenomena *Gyula KOVÁCS (Univ. Jena, DE)*
16.30	– 18:30	POSTER SESSION

FRIDAY, OCTOBER 16, 2015

	5TH SESSION:	IMAGE PROPERTIES, COMPARATIVE PERSPECTIVES
09.00	– 09.40	Statistical image properties affect perception of individual person characteristics in face images *Christoph REDIES & Gregor HAYN-LEICHSENRING (Inst. Anatomy, Univ. Hosp. Jena, DE)*
09.40	– 10.20	Domestic dogs´ ability to take human´s perspectives *Juliane BRAEUER (Univ. Jena, DE)*
10.20	– 10.40	Coffee Break
	6TH SESSION:	VOICE PERCEPTION
10.40	– 11.20	Determinants of voice learning: Past, present and future research *Romi ZÄSKE (Univ. Jena, DE)*
11.20	– 11.40	Individual differences in familiar voice identification *Verena G. SKUK (Univ. Jena, DE)*
11.40	– 12.00	Perceived sexual and gender role orientation based on voice *Sven KACHEL (Univ. Jena, DE)*
12.00	– 12.20	Plenary Discussion
12.20		END OF WORKSHOP

ABSTRACTS – ORAL PRESENTATIONS

1 BUILDING A FACE SPACE: THE CONTRIBUTIONS OF INTER-PERSON AND INTRA-PERSON VARIABILITY

CATHERINE J. MONDLOCH, SARAH LAURENCE, XIAOMEI ZHOU, KRISTEN BAKER, & CLAIRE MATTHEWS

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Expertise in face recognition is refined during childhood and limited to categories of faces with which the observer has abundant experience (e.g., own-race and young adult). Most studies of face recognition use highly controlled stimuli, typically involving only one or two images of each identity. By design, such studies emphasize one challenge in recognizing faces: The ability to tell faces apart. Individuals' ability to better recognize own-race/age faces has lead to the conclusion that adults possess a more well-refined face space (prototype; dimensions along which faces vary) for the face categories with which they are highly familiar (Valentine, 1991). A refined face space increases inter-face distances in face space, enhancing discrimination. Likewise, accounts of the development of face perception emphasize an increasing ability to discriminate between identities as children become more sensitive to differences along the dimensions of face space. A largely ignored challenge in face recognition is the ability to recognize an identity despite natural variation in appearance. Although this is a trivial challenge when an identity is familiar, when adults view an unfamiliar identity they often attribute multiple images of the same person to different identities (Jenkins et al., 2011; Burton, 2013). Such findings demonstrate that experience with a particular person matters. Here we examine how experience with a face category impacts not only the ability to discriminate between unfamiliar identities, but also the ability to recognize an unfamiliar identity despite natural variation in appearance. We will report a series of studies showing that: a) adults' ability to recognize identity in ambient images is especially impaired for other-race faces, b) children are less able than adults to recognize identity in ambient images, even when faces are familiar, and c) that experience with both inter- and intra-person variability contributes to more robust representations of individual identities, as predicted by Tanaka et al's (1998) attractor field model.

2 PROCESSING IDENTITY INFORMATION FROM FACES

JÜRGEN M. KAUFMANN[1,2], MARLENA L. ITZ[1], & STEFAN R. SCHWEINBERGER[1,2]

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It has been consistently shown that the processing of identity information is remarkably reliable for familiar, but highly error prone for unfamiliar faces. In the context of the Person Perception Research Unit, we investigated the bases for this difference. Mainly using event-related potentials (ERPs), we studied what marks the transition from an unfamiliar to a familiar face, and looked at the contributions of different visual characteristics such as shape and texture as well as influences of semantic and voice information on face identity processing. In addition, we have started to use this basic research to get a better understanding of the large inter-individual differences in face identity processing skills that exist within the "normal" population. We are currently evaluating whether our findings can be used to improve both diagnostic tools and training programs for individuals with poor face recognition skills.

3 LEARNING NEW FACES: SOME EXPERIMENTS AND SOME THEORY

A. MIKE BURTON

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Differences in the perception of familiar and unfamiliar faces are well-documented. However, we understand very little about the processes by which faces move from being unknown to known. This problem has recently begun to attract more attention in the face recognition literature, and is acknowledged as a critical issue in the field. I will present some recent experiments which aim to uncover the key components of face learning. Consistent with our previous research, I will argue that an understanding of within-person variability is important in this field. However, I will also try to establish the theoretical constraints on a statistical understanding of face familiarisation.

4 ENCODING OF FACES CARICATURED IN SHAPE OR REFLECTANCE IMPROVES RECOGNITION OF VERIDICAL COUNTERPARTS

MARLENA L. ITZ[1], JÜRGEN M. KAUFMANN[1,2], STEFAN R. SCHWEINBERGER[1,2]

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Recent findings show performance advantages and modulation of face-sensitive event-related potentials (ERPs) for learning and subsequent recognition of faces caricatured in shape or reflectance, but there is little evidence on whether this caricature learning advantage generalizes to recognition of veridical image exemplars. The aim of the present study was to examine whether learning faces as caricatures improves subsequent recognition of their veridical counterparts, the so-called reverse caricature effect. Facial images derived from a 3D camera system were caricatured selectively in either shape or reflectance by 50%. At learning, faces were presented across different viewing angles either as veridicals, shape caricatures, or reflectance caricatures. At test, all faces (learned and novel) were presented as veridicals. Participants performed a speeded old/new task, and accuracies, reaction times, as well as face-sensitive event-related potentials (ERPs) were assessed. In the performance data, faces learned as caricatures were recognized more accurately and rapidly than faces learned as veridicals. In the ERP data at learning, N250 and a late-positive component (LPC) were largest for shape caricatures. At test, LPC was largest for faces that had been learned as reflectance caricatures. Overall, the findings suggest that initial encoding of distinctive facial shape or reflectance generalizes to and, importantly, facilitates recognition of veridicals.

5 IMPACT OF FAMILIARITY ON REPRESENTATIONS IN NORM-BASED FACE SPACE

STELLA J. FAERBER[1,2], JÜRGEN M. KAUFMANN[1,2], HELMUT LEDER[3], EVA M. MARTIN[2] & STEFAN R. SCHWEINBERGER[1,2]

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According to the norm-based version of the multidimensional face space model (nMDFS, Valentine, 1991), each face representation is related to a norm or prototype. Thereby, for any given face a corresponding anti-face (which deviates from the norm in exactly opposite direction as the original face) can be created. It is supposed that (1) faces and their anti-faces are connected via a trajectory through the norm and (2) that faces and their anti-faces are equidistant to the norm and thus should bare the same level of typicality. We tested the neurophysiological basis of the first prediction by combining an adaptation with a priming paradigm, in which we induced illusory perception of facial identities in an average face after anti-face adaptation. Results were in line with the norm-based version of the face space model, showing more negative early occipitotemporal ERPs to familiar target faces that followed an average face prime after anti-face adaptation, consistent with identity priming. In a further experiment, we tested the second prediction via two frequently used operationalizations of typicality/distinctiveness (deviation-based: DEV, and face in the crowd: FITC). We were particularly interested in the impact of familiarity, since familiarity may affect perceived typicality and since representations of familiar faces have been described as being qualitatively different (e.g., more robust and image-independent) from those for unfamiliar faces. In line with the predictions of the nMDFS, our results demonstrate comparable levels of perceived typicality (DEV) for unfamiliar faces and their corresponding anti-faces. By contrast, familiar faces were perceived as less typical than their anti-faces. Both familiar and unfamiliar faces received higher distinctiveness (FITC) ratings than their anti-faces. Implications of these results on the concept of face space will be discussed.

6 ALTERED TOPOLOGY OF NEURAL CIRCUITS IN CONGENITAL PROSOPAGNOSIA

GALIA AVIDAN

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Converging studies suggest that face processing is mediated not by a single, localized brain area, but rather by the contribution of multiple posterior ‘core’ and anterior ‘extended’ regions which constitute a coherent, distributed network. One approach to understanding the properties of this face network is to explore its dysfunction in individuals who have difficulties in face processing in the absence of any obvious brain abnormality and in the presence of intact sensory and intellectual functions (congenital prosopagnosia, CP). Intriguingly, individuals with CP exhibit a seemingly normal pattern of functional magnetic resonance imaging (fMRI) activation profile in the 'core' face system. However, both structural and functional MRI studies have documented impairments in the connectivity patterns between the 'core' and the 'extended' systems, and specifically, connectivity with the anterior temporal cortex. To evaluate the pattern of abnormal connectivity in CP, in the current study, using a novel, fMRI-based brain network procedure, we compared the cortical topology of neural circuits for face processing in participants with CP and matched controls. The anterior temporal cortex served as the major hub for the control participants but not for the CPs. In contrast, the CPs evinced hyper-connectivity in posterior visual regions. While consistent with our previous functional and structural results, these results offer new insights by providing a computational, quantitative framework for

assessing network structure and topology in cases of impaired face processing and can be applied to other populations with neurodevelopmental perturbations.

7 POOR, AVERAGE AND EXCELLENT: WHAT INDIVIDUAL VARIABILITY CAN TELL US ABOUT THE MECHANISMS OF FACE PERCEPTION

ROMINA PALERMO

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Our research seeks to determine which mechanisms are involved in the recognition of face identity and face expression. One way that we have tried to determine which mechanisms are important is via neuropsychological studies of people with compromised abilities. The other way is via the study of individual differences in people with typical abilities. In this talk I will review our work examining whether individual differences in face mechanisms (e.g., holistic and norm-based coding) and personality (e.g., social anxiety, social motivation) are linked to the ability to recognise facial identity and expression in typical adults. I will also present some recent data that examines individual differences in face perception in children. I will also discuss the advantages and disadvantages of using an individual differences approach.

8 IMPRESSIONS FOR PREDICTIONS IN THE BRAIN

MOSHE BAR

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It is proposed that the human brain is proactive in that it continuously generates predictions that approximate the relevant future. This proposal posits that coarse information is extracted rapidly from the input to derive analogies linking that input with representations in memory. The linked stored representations then activate the associations that are relevant in the specific context, which provides focused predictions. These predictions facilitate perception and cognition by pre-sensitizing relevant representations. In the talk I will concentrate on top-down predictions particularly in visual recognition and in the application of contextual knowledge in the human brain. This cognitive neuroscience framework provides a new hypothesis (The Lasting Primacy Hypothesis) with which to consider the purpose of memory, and can help explain a variety of phenomena, ranging from recognition to first impressions, from preferences to aesthetic evaluations, and from the brain's 'default mode' to a host of mental disorders.

9 FUTURE IN THE PAST: A BRIEF SUMMARY OF THE NEURAL MECHANISMS BEHIND VARIOUS REPETITION RELATED PHENOMENA

GYULA KOVÁCS[1,2]

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During the funding period of the Person Perception Research Group we studied the role of temporal context in face recognition from many different angles. In the current talk I will summarize briefly our work related to how previous encounters with other stimuli modifies our perception. We will discuss the different neural background of various repetition related phenomena such as priming and adaptation; the interaction of top-down and bottom-up processes and the statistical properties of the previous exposures. We will give special attention to the predictive processes in the human brain as a general theoretical frame of identifying the effects of the temporal cortex.

10 STATISTICAL IMAGE PROPERTIES AFFECT PERCEPTION OF INDIVIDUAL PERSON CHARACTERISTICS IN FACE IMAGES

CHRISTOPH REDIES[1,2], GREGOR U. HAYN-LEICHSENRING[1,2], & CLAUDIA MENZEL[1,2],

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We studied higher-order statistical properties of face images and their relation to the perception of individual characteristics of a person. A particular focus was on face attractiveness, but facial emotions, age and gender were also studied. In an earlier study, we had found that artists portrait human faces with a spatial frequency spectrum that resembles the spectrum of natural scenes rather than of veridical face images (Redies et al., 2007). These results suggested that the Fourier spectrum might have an effect on perceived beauty (or attractiveness) of face portraits. In a series of experiments, we show, first, that artificially altered faces with “more natural” image statistics and faces in front of backgrounds with natural statistics are rated as more attractive (Menzel et al., 2015). Second, in an ERP study, we demonstrate that the adaptation to random noise patterns with natural amplitude spectra has a beneficial effect on face perception (Menzel et al., in preparation). Third, controlled changes in morphology and color of artificial face images, as used by Todorov and colleagues, lead to specific changes in image properties (Hayn-Leichsenring, in preparation). Fourth, facial expressions coincide with consistent patterns of low-level image properties in face photographs, suggesting that such properties might facilitate early recognition of personal characteristics and emotion processing (Menzel et al., in preparation). In conclusion, evidence from diverse experimental perspectives indicates that higher-order image statistics, which can be processed at early stages of visual perception, have an effect on different aspects of face perception.

11 DOMESTIC DOGS´ ABILITY TO TAKE HUMAN´S PERSPECTIVES

JULIANE BRAEUER

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There has been a growing interest in how animals perceive their environment and what they understand about it. Domestic dogs are an especially interesting model, as they have evolved various skills for functioning effectively in human societies (see Kaminski & Marshall-Pescini, 2014 for a review). A number of recent studies have investigated various aspects of person perception in dogs (i.e. Müller et al., 2015; Andics et al., 2014; Bräuer et al., 2013; Huber et al., 2013; Custance & Mayer, 2012). One skill that would be highly adaptive in the human environment is the ability to assess what humans can perceive. The question is whether dogs are able to take the visual perspective of humans`, i.e. to really understand that the human sees an object when she is looking at this object and if there are no obstacles blocking her view (Flavell, 2004). Here I want to present a number of studies in which we investigated dogs' ability to take the perspective of humans. According to these findings dogs do not only use behavioural cues to assess whether a human is attentive or not, but they are sensitive to human's visual perspective even if that differs from their own. However, dogs seem not to be able to know what a human can see when they themselves do not see the human. In contrast, they seem to be able to assess what humans can hear.

12 DETERMINANTS OF VOICE LEARNING: PAST, PRESENT AND FUTURE RESEARCH

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While the ability to recognize speakers from their voices is fundamental to successful social interaction the neural correlates of voice memory remain poorly explored. Here I will present recent electrophysiological and neuroimaging data to elucidate the neural mechanisms and brain areas subserving the acquisition of voice representations during learning and their subsequent access during recognition. I will argue that voice learning entails the establishment of speaker representations that are independent of the speech content a voice conveys. As speaker perception is often multimodal in nature I will further discuss the role of facial information in voice learning and will challenge the notion of a general benefit of audiovisual learning over voice-only learning. I will also talk about ongoing research on voice adaptation demonstrating that voice representations are not only shaped by recent perceptual experience but that short-term plasticity in voice memory is also highly dependent upon selective attention. Finally, I will outline how the experimental paradigms established within the present project may be applied to clinical research questions.

13 INDIVIDUAL DIFFERENCES IN FAMILIAR VOICE IDENTIFICATION

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Research on the recognition of personally familiar voices is rare, due to the challenge of identifying standardized voice samples from a sufficiently large number of speakers who are familiar to a sufficiently large number of listeners. Here we investigated the recognition of personally familiar voices in a gender-balanced sample of 30 listeners, all 11th grade pupils (aged 16-19 years) from the same local secondary school. Listeners performed two tasks both including voices from 20 familiar classmates as well as 20 matched unfamiliar speakers from a different local school (10 female speakers per group). In Experiment 1, listeners discriminated between familiar and unfamiliar speakers based on vowel-consonant-vowel utterances, using 2-alternative-forced-choice responses. In Experiment 2, they identified their classmates´ voices from standardized sentence utterances, by selecting the appropriate name or face. Experiment 1 revealed better performance for male than female voices, with effects both in sensitivity (d´) and response bias (C). Importantly, Experiment 2 revealed a symmetrical own-gender bias, with better identification of voices of a listener´s own gender. Finally, an analysis of individual differences revealed a significant negative correlation between listeners´ voice identification performance and their autism quotient (AQ). Autistic traits have been recently linked to poorer face perception skills (Rhodes, Jeffery, Taylor, & Ewing, 2013); complementing these observations, our present findings establish a link between autistic traits and auditory person perception.

14 PERCEIVED SEXUAL AND GENDER ROLE ORIENTATION BASED ON VOICE

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Gaydar research consistently demonstrated an above-chance accuracy for correctly identifying targets' sexual orientation (Tskhay & Rule, 2013). However, previous studies mainly referred to visual cues, ignored further target characteristics, and disregarded involvement with other judgments (e.g. of masculinity-femininity). In Experiment 1 and 2, we investigated whether sexual orientation of 123 targets (lesbian/gay and straight men and women) is judged more accurate by a total of 131 raters when faces and voice samples (i.e., one sentence) are presented, as compared to faces or voice samples only. Additionally, we tested which psychological features lead to more accurate judgments and which acoustic characteristics are accompanied by higher detection rates in voice condition. In Experiment 3, same targets as in Experiment 1 should be rated by an independent group of raters regarding masculinity-femininity. Findings are discussed regarding implications for further research.

ABSTRACTS – POSTERS

1 THE ROLE OF SURPRISE ENHANCEMENT IN PREDICTIONS

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In recent years, several functional magnetic resonance imaging (fMRI) studies showed that correct stimulus predictions reduce the neural responses when compared to surprising events (Todorovic & Lange, 2012). Further, it has been shown that such fulfilled expectations enhance the magnitude of repetition suppression (RS) in face selective visual cortex as well (Summerfield et al., 2008) and current MEG and neuroimaging studies suggest that the underlying mechanisms of expectation effects are independent from that of RS (Grotheer & Kovács, 2015; Todorovic & Lange, 2012). However, it is not clear as of today how perceptual expectations modulate the neural responses: is the difference between correctly predicted and surprising stimuli due to a genuine response reduction for correctly predicted stimuli (expectation suppression, ES) or is it due to an increased response for surprising stimuli (surprise enhancement, SE)? Therefore, here we used a modified version of the paradigm of Grotheer & Kovács (2015) to induce predictions independently from repetition probability by presenting pairs of faces (female, male or infant) that were either repeated or alternating. Orthogonally to this, predictions were manipulated by the gender of the first face within each pair so that it signalled high, low or equal probability of predictions and alternations. An unpredicted, neutral condition with equal probabilities for alternating and repeated trials was used to identify the role of surprising and enhancing modulations. Similarly, to Grotheer & Kovács (2015), we found significant RS and significant expectation effect in the FFA. Importantly, the expectation effect was driven by a larger response for surprising events in comparison to the neutral and correctly predicted conditions for alternating trials. Altogether, these results suggest the role of surprise enhancement in prediction effects.

2 CAN PEOPLE READ OTHER'S MINDS BASED ON CLUES IN THEIR FACES?

KATHLEEN KANG

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Past studies have shown that people's behaviour, particularly their facial expressions, offers telltale clues about their mental state and the event that caused it. However, it is not known if people engage in a classification strategy or a mindreading strategy when performing these tasks and the aim of this study was to clarify matters. Thirty 'target' participants were asked to choose an emoticon which best represents the facial expression that was being displayed. At the same time, the target was covertly filmed by the laptop's webcam. Fifty-one participants ("perceivers") viewed target's reactions and in one group, they were instructed to match the emoticon to the target's facial expressions ('classification' task). The other group was instructed to guess which emotion the targets chose ('mentalizing' task). The results revealed that perceivers responded differently in the two groups. Those in the mentalizing group took a longer time to answer as compared to those in the classification group. A further eye-tracking study also revealed a difference in eye gaze strategy

between both conditions. Therefore, these findings suggest that perceivers in the mentalizing group engaged in a level of processing that is more elaborated than would be needed for matching the expression of the target with a particular emotion. In this case, mentalizing enabled the perceiver to infer an antecedent state (which expression appeared in front of the target) through the lens of the target's mind.

3 ARE YOU CLASSIFYING OR MENTALIZING? USING ERP SIGNATURES TO DIFFERENTIATE PROCESSING STRATEGIES

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Theory of mind, or mentalizing involves the ability to understand other´s mental states (e.g., emotions), which is an important component of social interaction. Many of the tasks used to investigate this phenomenon ask perceivers to identify mental states, which are pictorially displayed. However, it is not known whether perceivers in such circumstances engage in a processing strategy, which actually reflects a representation of a mental state or rather some form of registration/classification process. The aim of the present study was to investigate ERP components during two tasks that used different instructions to separate classification and mentalizing processing strategies. In the classification group, participants were required to choose a photograph (out of a judgment scale), which best represents the facial expression of a seen target person. In contrast, in the mentalizing group, perceivers were required to guess which photograph (out of the judgment scale) targets had seen before. We present ERP results reflecting group differences at perceptual, memory retrieval and decision making stages of information processing.

4 PERCEPTION OF SOCIAL INFORMATION IN VOICES BY COCHLEAR-IMPLANT USERS

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Voices are highly complex acoustic signals that transmit not only verbal information (speech), but also convey a large amount of nonverbal socially relevant information about a speaker, such as gender, age, or emotional state. However, little is known on the perception of social cues in voices in cochlear implant (CI) users. Here we investigated the relative importance of acoustical cues for the perception of gender and age in 28 CI users (15 female, 13 male) and compared their performance to a normal-hearing control group of 19 (12 female, 7 male) listeners. A novel parameter-specific voice morphing approach based on Tandem-STRAIGHT (Skuk & Schweinberger, 2014) was used to control various acoustical cues in the stimuli. Specifically, we generated voice morphs along various male-female (Experiment 1) or young-old (Experiment 2) morph continua. Importantly, we varied in each experiment selected acoustical cues along the continuum, in order to measure their impact on the discrimination task, while keeping the residual cues at an intermediate "androgynous" or "middle-aged" morph level. In Experiment 1, we varied either the fundamental frequency (F0) or the timbre in short vowel-consonant-vowel syllables. In Experiment 2, we varied F0, the timbre, or timing information along the gender-congruent young-old morph continua, using sentence stimuli. The results showed that the

perception of social information in voices was highly variable among CI users, with few CI users performing similar to normal hearing individuals. Importantly, while normal listeners made more usage of the timbre information in the voice gender discrimination task in Experiment 1, CI users discriminated gender almost exclusively based on F0. In Experiment 2, the control group predominantly relied on timbre for discriminating age, whereas F0 and timing information were relatively less important. In CI users, individual differences were substantial: while some CI users showed a similar pattern as normal hearing listeners, other CI users discriminated age based on F0, thus consistently perceiving female voices as younger and male voices as older. Overall, the present approach provides a promising novel tool to objectively assess the perception of social information in voices by CI users.

5 MULTIMODAL AFTEREFFECTS IN THE PERCEPTION OF VOCAL AGE ELICITED BY FACES AND VOICES

HANNA KOEHLER[1], VERENA G. SKUK[1,2], & STEFAN R. SCHWEINBERGER[1,2]

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High level adaptation aftereffects have been found for a number of social cues, independently in both faces and voices. For instance, the prolonged viewing of a young (old) face (or voice) causes middle-aged faces (or voices) to be perceived as older (younger) compared to a baseline condition without adaptation. However, interactive processing of facial and vocal age cues have rarely been investigated. Here we study effects of multimodal adaptation on the perception of vocal age. Based on a prior rating study, we selected voice recordings (sentences) of 20 (10 female) young and 20 (10 female) old speakers, with perceived mean ages of 28.8 and 63.4 years, respectively. These stimuli were used as adaptor stimuli in a baseline unimodal (voice only) condition. Simultaneously recorded videos of the speakers' faces were taken for both a crossmodal (face only) and a bimodal (voice-face) adaptation condition. 24 (12 female) listeners participated in the experiment. The expected contrastive adaptation aftereffect was found for the unimodal adaptation condition, showing that test voices (/igi/ stimuli, morphed along 8 (4 female) young-old morph continua) were perceived as older after adaptation to young voices, and vice versa. Of particular importance, both crossmodal and bimodal adaptors elicited contrastive aftereffects of equivalent magnitude compared to the unimodal adaptation condition. Our results are the first evidence for a crossmodal transfer of adaptation effects in vocal age perception and suggest a higher level integrative voice-face processing in age perception.

6 EFFECTS OF POSITIVE EMOTIONAL EXPRESSION ON THE PERCEPTION OF FACIAL ASYMMETRY

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Facial palsy is a relatively common affliction, resulting in temporary loss of movement in half the face. Despite good rates of recovery, patients often complain of profound impacts on their social life; they feel that communicative partners are disturbed by their asymmetric looks, leading to social stigma and high risk of depression (e.g. Bradbury, Simon, & Sanders, 2006; Dobel, Miltner, Witte, Volk, & Guntinas-Lichius, 2013). In three studies, we investigated the validity of this perception by assessing the willingness of healthy participants to interact with patients depicted during acute palsy and again after complete recovery. In addition, we tested

the effect of smiling in these faces with and without facial palsy, compared to a neutral expression. The facial movement required for a smile increases the asymmetry of patients' faces and could therefore appear particularly disturbing. On the other hand, healthy smiling faces are generally rated as more attractive and more approachable than neutral faces, and this could be the case in facial palsy as well. Study 1 was an eyetracking study in which student participants rated smiling and neutral faces of patients with acute facial palsy and after recovery, indicating the extent to which they would like to interact with the depicted person. Studies 2a and 2b looked at the same behaviour in teenagers aged 10 and 17, reasoning that small differences between conditions in Study 1 might be due to social desirable responding by the student participants. This would be less likely in children and adolescents, who are still in the process of internalising social norms. All three studies found that healthy faces were rated more positively than faces affected by facial palsy. Importantly however, smiling substantially reduced the negative effect of the palsy in all three age groups. This suggests an opportunity for counselling patients on how to behave in social situations. In addition, these findings add to more general ideas on how person perception combines a variety of facial cues into a distinct percept.

7 PAUL MCCARTNEY YESTERDAY AND TODAY: AGE-DEPENDENT REPRESENTATIONS FOR FAMILIAR FACES IN YOUNG AND OLDER ADULTS

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Our representations for familiar faces are thought to be invariant to changes in their appearance. However, one aspect of invariance that has received little attention is whether our familiar face representations are invariant to the changes brought about by aging. Young and Bruce (2011) pose the question "Do we have one FRU for Paul McCartney when he was in the Beatles and one for when he was 64, or what?" (p. 970). The current study was designed to explicitly test this question using Face Identity Aftereffects. Young and older adults were adapted to two familiar celebrities (e.g., Paul McCartney and Steve Martin); the adapting faces were young on some trials (e.g., Paul McCartney when he was in the Beatles) and old in others (e.g., Paul McCartney from the present day). They subsequently made 2AFC identity decisions with morph faces (e.g., 50% McCartney/50% Martin) that were young on some trials and old on others. Data-to-date (n= 30 Young adults; n = 22 Older Adults) suggest that young adults show adaptation only when the age of the adaptor matches the age of the test faces. Older adults, like young adults, show adaptation when the age of the adaptor matches the age of the test faces, but also when the adaptor is an old face and the test faces are young. These findings have implications for our representations of familiar faces and how these representations change across time. Young adults who learned both young and old celebrity faces simultaneously (i.e., who were not alive for Beatlemania) appear to store separate representations whereas older adults, who aged with the celebrities, appear to have a more integrated representation with some asymmetry in the relation between current (old) and past faces.

8 NEURAL CORRELATES OF INTENTIONAL VOICE LEARNING

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The neural processes underlying voice memory are still poorly understood. Recent electrophysiological evidence suggests a rapid acquisition of speaker representations during learning with differential voice processing during study (from ~250 ms) and retrieval (from ~290 ms) based on recognition performance at test. As voice recognition depends on intention of learning we explore event-related potential (ERP) effects of intentional vs. non-intentional learning by using a variant of the directed forgetting paradigm. At study, participants were cued to either remember or forget voices while detecting an occasional target voice to sustain attention across 12 study blocks. Furthermore, the location of voices (left/right channel) was varied between speakers. On a subsequent test, participants performed an old/new recognition task on both to-be-remembered (TBR) and to-be-forgotten (TBF) study voices. Recognition performance was above-chance for both memory conditions but higher for TBR than for TBF voices. During study TBR voices elicited more positive ERPs (~250–1400 ms) than TBF voices over widespread frontal, central, and parietal areas confirming differential voice processing during intentional vs. non-intentional learning. At test, voices correctly classified as "old" compared to "new" elicited a more positive LPC (500–1500 ms) over central sites and the P3. This OLD/NEW effect was polarity-reversed at F3 and independent of memory condition. It may thus reflect familiarity with studied voices independent of intentions to remember voices. Incidental memory for the location of correctly recognized study voices was above-chance only for TBR voices suggesting successful recollection of context information only when voices were intentionally processed.

9 RECRUITMENT OF FACE-SELECTIVE BRAIN REGIONS FOR OBJECTS OF EXPERTISE IN A CASE OF CONGENITAL PROSOPAGNOSIA

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A major question in face perception is whether faces comprise a distinct visual category that is processed by specialized cognitive and neural mechanisms, or whether face processing merely represents an extreme case of visual expertise. Here, we address this issue, by studying O.H, 22 years old woman with congenital prosopagnosia (CP), a lifelong impairment in face perception in the absence of an obvious brain damage. Interestingly, despite her deficit, O.H reported having superior recognition skills for horses, due to her work with horses since she was 7 years old. We conducted an fMRI scan in order to investigate the implications of expertise on neural responses to faces and horses. O.H performance was compared to data obtained from two age and gender-matched control groups that were either horse experts, having 7-23 years of experience with horses or non-experts, and to that of S.R, an age matched non-expert participant with CP. O.H exhibited an enhanced fMRI BOLD response for horse stimuli that was in the same magnitude as the response to face stimuli in the FFA, but only in the right hemisphere. Importantly, this pattern was dissociated from the response in both expert and non-expert control groups and the non-expert CP, in which faces elicited a greater response compared to horses within the same regions. These results suggest that visual expertise can be acquired despite impaired face perception mechanisms, and may be mediated through right lateralized core face-selective regions.

10 THE RELATIONSHIP OF ATTRACTIVENESS AND DISTINCTIVENESS IN VOICES AND FACES OF YOUNG ADULT SPEAKERS

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Facial attractiveness has been linked both to the averageness (or typicality) of a face and, tentatively, to the attractiveness of the voice of the corresponding speaker. However, the relationship between vocal attractiveness and distinctiveness has not been studied before. Here we report correlations between ratings for attractiveness and two common measures of distinctiveness ("distinctiveness-in-the-crowd" - DITC, and "deviation-based distinctiveness" - DEV) for both face photographs and voice samples from a set of 64 young adult speakers (32 female). Intriguingly, we found strong negative correlations between attractiveness and DEV, both for voices and faces, thus supporting the averageness account of attractiveness for both domains. By contrast, the correlation between attractiveness and DITC was absent for voices, and was moderately positive for faces. This strongly suggests that both measures of distinctiveness reflect different constructs. In contrast to earlier findings with smaller sets of speakers, vocal and facial attractiveness were uncorrelated in the present data, as were vocal and facial distinctiveness ratings.

11 PERCEPTUAL EXPERIENCE INFLUENCES THE PRECISION OF VISUAL WORKING MEMORY FOR OWN- AND OTHER-RACE FACES: EVIDENCE FROM A CONTINUOUS-RESPONSE PARADIGM

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Considerable research examining the other-race effect (e.g., better recognition of own-race than other-race faces) has proposed that impaired recognition of other-race faces can be attributed to the inefficient storage and retrieval of other-race face representations from memory. However, little is known about the precision with which own- versus other-race faces are mentally represented in visual short-term memory. We addressed this question using a continuous-response paradigm. We developed a set of face continua comprising morphs between all possible pairings of four Caucasian or four Asian identities and we measured the precision (sd) and capacity (p) of participants' visual working memory for own-and other-race faces. On each trial, participants were sequentially presented with two faces (e.g., 60%A/40%B; 80%C/20%D) that were cued by different colors (red and green) and asked to hold each one in short-term memory. They then were shown a "face wheel" (analogous to a colour wheel) comprising four anchor faces and a morphed continuum between adjacent pairs (e.g., A-B; B-C; C-D; D-A) and a red or green square appeared in the center of the wheel indicating which face was the target. Their task was to locate the target face in the wheel. The observed distribution of errors is a von Mises distribution centered on the correct identity; the height of the distribution reflects the probability that the face was stored in VWM and the standard deviation of the distribution reflects the precision with which each face is represented. Results (n = 15) indicate that the capacity of working memory was significantly impaired for other-race faces (M = 57.4%) compared to own-race faces (M = 77.9%). However, the precision of working memory was comparable for own- and other-race faces (Msd = 35.40 and 33.23, respectively), as was the probability of incorrectly selecting the non-target face (discrimination error) (Me = 0.19% vs. 0.17%, for own- and other-race faces, respectively). The current study provides first evidence of a fundamental difference in how own- and other-race faces are represented in visual working memory and highlights the functional role of perceptual experience in shaping such representations.