

Towards A Neuroscience For Social Psychologists

ABSTRACTS

EASP

Small Group Meeting 2015
Social Neuroscience

St. Martin Castle, Graz. Austria | September 9th - 11th, 2015

SCHEDULE

DAY ONE 9/09/2015

18.30 - 21.00 Reception and keynote lectures. Klaus Fiedler, Carsten De Dreu

DAY TWO 10/09/2015

9.30 - 11.00 **Methods.** Lasana Harris, Susanne Quadflieg, Johannes Klackl

11.00 - 11.30 Coffee Break

11.30 - 13.00 Data Blitz. Nadira Faber, Marleen Stelter, Bettina Casad, Xijing Wang, Katie Daughters, Irena Domachowska, Luka Katic, Michal Olszanowski, Niels Van Dorem

13.00 - 14.30 Lunch

14.00 - 15.30 **Pitfalls.** Jennifer Beer, Gayannee Kedia, Bob Spunt, Luca Piretti

15.30 - 16.00 Coffee break

16.00 - 17.30 **Applied.** Alan Sanfey, Lotte Van Dillen, Gadi Gilam, Christoph Eisenegger

DAY THREE 11/09/2015

9.30 - 11.00 **Usefulness.** Frank Overwalle, Gert-Jan Lelieveld, Claus Lamm, Lukas Thurmer, Katharina Banscherus

11.00 - 12.00 Business Meeting

12.00 - 13.00 Lunch

14.00 - 16.00 Walk in the countryside

19.00 - 23.00 Dinner in Graz

ABSTRACTS

In Order of Appearance

In Our Own Image? Emotional and Neural Processing Differences When Observing Human-Human versus Human-Robot Interactions

Yin Wang¹, Susanne Quadflieg²

¹Division of Psychology, New York University Abu Dhabi, UAE; ²School of Experimental Psychology, University of Bristol, UK

Notwithstanding the significant role that human-robot interactions will play in the near future, limited research has explored the neural correlates of feeling eerie in response to social robots. To address this empirical lacuna, the current investigation examined brain activity using functional magnetic resonance imaging while a group of participants ($n = 26$) viewed a series of human-human interactions (HHI) and human-robot interactions (HRI). Although brain sites constituting the mentalizing network were found to respond to both types of interactions, systematic neural variation across sites signaled diverging social-cognitive strategies during HHI and HRI processing. Specifically, HHI elicited increased activity in the left temporal-parietal junction indicative of situation-specific mental state attributions, whereas HRI recruited the precuneus and the ventromedial prefrontal cortex (VMPFC) suggestive of script-based social reasoning. Activity in the VMPFC also tracked feelings of eeriness towards HRI in a parametric manner, revealing a potential neural correlate for a phenomenon known as the uncanny valley. By demonstrating how understanding social interactions depends on the kind of agents involved, the current study highlights pivotal sub-routes of impression formation and identifies prominent challenges in the design and use of humanoid robots.

Some EEG indicators of motivation and their role in social neuroscience

Johannes Klackl, Eva Jonas

University of Salzburg

Electroencephalography (EEG) is a very useful tool for the social psychologist, as it allows insights into a multitude of psychological processes. I will focus on the late positive potential, which is an event-related component whose amplitude presumably reflects motivated attention, and frontal alpha asymmetry, a measure that is sensitive to motivational direction (approach or avoidance), and describe how they are used to advance threat and defense research. In addition, I will talk about methodological aspects, including choice of reference and the 'problem of great freedom' when analyzing EEG data. Finally, I will talk about the problem of reverse inference in EEG research and discuss strategies to deal with it.

(Eye) Tracking the other race bias

Marleen Stelter, Marc Rommel, Juliane Degner

Universität Hamburg

When we encounter people whose ethnic background is different from our own, we often experience great difficulty in distinguishing individuals and remembering their faces. This frequently replicated effect is known as the other race effect (ORE) and is usually explained by interplay of perceptual expertise and motivational factors. In order to better understand these processes, recent research has started employing eye-tracking. For example, different processing mechanisms of same and other race faces (i.e., configural vs. feature based) may lead to distinctive eye movement patterns during face perception. The few available studies, however, have found inconsistent eye tracking data, varying sometimes with observer's race and sometimes with race of the stimulus face.

Our study investigated eye movements of Caucasian German participants processing faces of individuals belonging to four different ethnic groups (Caucasian-European, Asian, African, and Middle-Eastern). Including out-group faces from three different racial groups allowed us to control for different levels of expertise as well as exploring the influence of perceptual confounds. For example, whereas Asian, African and Middle-Eastern faces are all belonging to racial out-groups, German participants tend to have more daily-life exposure with Middle-Eastern faces (Turkish, Arabic) than with African or Asian faces. To our knowledge, this is the first study that included faces from more than one out-group in a cross-race recognition test. Analogous to previous studies, we measured observer's eye movements during the encoding phase and the recognition test. We compared fixation durations of different areas of interest (including eyes, nose and mouth) across all target groups. Also, we analysed more general scanning patterns such as amount and length of saccades. Further, we correlated different eye-tracking parameters with recognition indices from the memory test.

Effects of Prejudice on Women Scientists' Problem Solving Ability

Bettina Casad

University of Missouri

My research program examines the impact of acute prejudice on physiological reactivity and cognitive performance among women and racial minorities in science disciplines. The objective of this research is to examine environmental factors that may buffer effects of prejudice on minority scientists' problem solving ability, specifically the effect of role models and allies. Two experiments examine neurological activity, cardiovascular reactivity, and affective responses as mechanisms through which prejudice impairs problem solving ability. Whereas most studies examine one biological system at a time, my research examines multiple mechanisms of prejudice and thus can assess their interactive effects on problem solving ability.

It is hypothesized that sexism and racism in an intergroup setting impair female science students' performance on a problem solving task; self-reported quantity and quality of contact with science faculty and role models will buffer these effects; and having a cross group ally will also buffer effects of prejudice on performance. Finally, neurological, physiological, and affective responses will converge such that reactivity will mediate the relationship between sexism/racism and problem solving performance.

We are conducting two experiments, one on sexism and one on racism, each assessing the interrelationships among cognitive (perceptions of prejudice, stress appraisals, executive function), affective (depression, anxiety, hostility), and physiological (cardiovascular) responses to acute prejudice. Using electroencephalography we examine alpha asymmetry activation at baseline to assess goal directed motivation. The results have implications for understanding how environmental threats affect cognitive performance on evaluative tasks, and inform interventions to reduce these effects in academic environments.

The Inherent Enjoyment of Choice-Making (temporary)

Ana Guinote, Xijing Wang, Antonia Hamilton, Harry Farmer

University College London

It has been argued that social power - the ability to control and influence others (Fiske, 1993) - activates the behavioural approach system (Keltner, Gruenfeld, & Anderson, 2003), a system that is sensitive to rewards. Using PET, Morgan et al. (2002) found that dominant monkeys, as indicated by their hierarchies, had higher levels of D2 receptors and self-administered less cocaine, compared to those subordinate ones, suggesting a dopamine-related account of power. Yet the neural correlates of social power in humans remains unknown.

This current fMRI study explored a 2 (choice-making / neutral) by 2 (social context / non-social context) within-subject factorial design. Mini-blocks that contained three trials of the same type were randomly presented. In particular, for the social trials, participants played a role of hotel manager to allocate work to three employees (choice-making & power condition) as opposed to observe another person doing the same task and pass on the information (neutral condition). During the non-social trials, participants indicated the alphabet they preferred (choice-making condition) as opposed to observe another person making such choices (neutral condition).

Twenty-four participants (14 female) ($M = 25.4$, $SD = 5.46$) took part in this study. Changes in BOLD signal will be examined in areas related to reward processing (e.g. the ventral striatum, the midbrain, ventral medial prefrontal cortex, and the orbitofrontal cortex), and decision-making (e.g. medial prefrontal cortex and superior temporal sulcus).

Salivary Oxytocin concentrations in males following intranasal administration of Oxytocin: A double-blind cross-over study

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The use of intranasal Oxytocin (OT) in research has become increasingly important over the past two decades. Whilst many have acknowledged a need to further investigate the physiological effects of intranasal administration, few studies have actually done so. In the present double-blind cross-over study we investigated the longevity of a single 24 IU dose of intranasal OT measured in saliva in 40 healthy adult males. Salivary OT concentrations were significantly higher in the OT condition, compared to placebo. This significant difference lasted until the end of testing, approximately 108 minutes after administration, and peaked at 30 minutes. To our knowledge this is the largest and first all-male within-subjects design study to demonstrate this finding. The results are consistent with previous research in suggesting that salivary OT is a valid matrix for OT measurement. The results also suggest that the post-administration 'wait-time' prior to starting experimental tasks could be cut to 30 minutes, from the 45 minutes typically used, thereby enabling testing during peak OT concentrations. Finally, results demonstrated significant individual differences in response to intranasal OT administration, which related to individual differences in psychological factors. Future research is needed to confirm these findings and to further investigate which psychological factors may moderate endogenous OT concentrations.

Positive affect leads to higher distractibility

Irena Domachowska

TU Dresden

When pursuing goals, one needs to focus attention on goal-relevant information and inhibit distracting stimuli. Previous studies have shown that positive affect may broaden the scope of attention and responsiveness to peripheral cues. In the current project we tested the hypothesis that positive affect leads to higher distractibility. In Experiment 1, using Visual Search Task, participants had to categorize pop-out targets and ignore singleton distractors. Before every trial, either positive or neutral IAPS picture was presented. The results showed that positive affect indeed increased reaction times on trials in which distractors were present.

The RT costs were even higher on incompatible trials, suggesting that the distractors were not only noticed, but also actively processed. Experiment 2 will be a direct replication of Experiment 1, using functional magnetic resonance imaging to further examine the neural correlates of attentional capture. As the moderation of attention breadth by positive affect is hypothesized to be modulated by the neuromodulator dopamine, we expect to see heightened activation especially in the basal ganglia and lateral prefrontal cortex. In Experiment 3 we will try to disentangle neural correlates of attention paid to the target and the distractor. In a modified version of the paradigm we will use pictures of tools and faces that are known to elicit category-specific brain activation. Participants will be asked to detect pop-out targets (tools) and to ignore distractors' category (faces). We expect stronger brain activation in the fusiform area elicited by the distractors following positive pictures.

Guilt as relationship repair or practical damage limitation

Luka Katic

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Compared to basic emotions such as fear and happiness, the emotion of guilt lacks easily recognizable facial expressions (Keltner & Buswell, 1996) but it provokes distinguishable action tendencies (Tangney & Tracy, 2012). Besides being considered negative emotion, guilt contributes towards positive consequences for the transgressor, his/her interpersonal relationship and for society in general (Leith & Baumeister, 1998; Baumeister et al., 1994). These beneficial outcomes can be attained by repairing the practical or the relationship damage caused by the transgression. In our view, the main purpose of guilt is to motivate the individual to take reparative steps towards the restoration of the social bonds between the victim and the transgressor. However, contrary findings seem to indicate that individuals experiencing guilt are more concerned with getting rid of negative feelings than attending to the victim's well-being, emotional state and restoration of the interpersonal relationship with the victim.

For example, De Hooge and colleagues (2012) found that the transgressor's level of experienced guilt decreases when the practical damage caused to the victim is repaired by a third party. Based on studies which present guilt as a social emotion (Baumeister et al., 1994; Hareli & Parkinson, 2008; Parkinson & Illingworth, 2009) and on the common observation that humans apologize even when practical damage is done, we manipulated apology in addition to practical repair in our research. Our prediction was that apology would serve to repair the damage to the relationship and hence decrease the level of experienced guilt, independent of any guilt-reducing effects of practical repair. Using vignettes, we analysed differences between the effects of practical repair of the transgression and repair of the interpersonal relationship, as well as their interactions, on general guilt, guilt about practical damage, and guilt about relationship damage. We hypothesised that the transgressor's concern about restoring the relationship with the victim would have a stronger effect on general guilt than the repair of the practical damage, supporting the notion that guilt is a social emotion.

Affective and cognitive biases of communal and agentic trait inference from facial appearance

Michał Olszanowski

Warsaw School of Social Sciences & Humanities

The proposed study concerns three crucial questions in social cognition literature: (1) What could be the source of evaluation about communal and agentic traits of strangers; (2) What facial features are especially important for accuracy and pace of such evaluation; (3) What are the neural correlates of the processes involved in passing the judgment? A facial emotional expression represents an individual's motivational state – a smile or anger may reflect another person's intentions. Numerous data has suggested that decoding emotions expressed in such way can be an exceptionally quick and adaptively useful source of evaluation of other people's behaviours (Haxby, Hoffman, Gobbini, 2000). We tend to avoid people who express their anger, and we are attracted to those who express positive emotions (Ekman, 1972; Fridlund, 1994). Thus, will our judgment about somebody's trustworthiness depend solely on the emotions expressed by them?

In our opinion, an emotional premise is of a situational nature and cannot be treated as a reliable source of such vital social judgment (a person planning on stealing from us can be smiling falsely, and somebody offering help may not be smiling at all). In the proposed project we argue that human face contains another clue about the level of trust towards another person. We know that physical facial features (babyfacedness or a similarity to the familiar person's prototype) determine the personality traits we attribute to the perceived person (Knutson, 1996; Montepare and Dobish, 2003; Hassin and Trope, 2000; Todorov, Said, Engell and Oosterhof, 2008; Zebrowitz and Montepare, 2008). A stronger manifestation of trust towards someone is going to be a prior experience of interaction with a person bearing a physical resemblance to the stranger. In our opinion, an interplay in the level of trust assessment depends more heavily on physical facial aspects unconscious recognition rather than on the emotion exposed on the face. To sum up, in the proposed series of research we are going to prove that the influence of emotional expression will be changeable depending on the facial traits, communicating a similarity to the assessing person.

Neuroimaging the SoMi Paradigm

Niels J. Van Doesum

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The construct of social mindfulness has recently been introduced as an operationalization of prosocial behavior (Van Doesum, Van Lange, & Van Lange, 2013). Social mindfulness, and its flip side social hostility (Van Lange & Van Doesum, 2015), provides people with easy accessible, intuitive, and low-cost options to distinguish between their social relationships. We developed the dyadic SoMi paradigm that lets participants choose first among one unique and three identical products (e.g., one green and three red apples). Taking one of the identical products leaves the second person (the 'other') a choice (i.e., mindful), picking the unique product does limit it (i.e., unmindful). These decisions turn out to be a good way to build trust, or reversely show distrust, and identify between friend or foe.

To establish the neurological underpinnings of social mindfulness and social hostility, we conducted an fMRI study involving two consecutive rounds of the SoMi paradigm: First without, then with instruction to consider the best interest of the other. Spontaneous mindful choices (round 1) activated the frontoparietal network, whereas unmindful choices seemed to activate the default mode network, suggesting thoughts about self and others. Contrasting spontaneous unmindful with mindful choices, making unmindful choices activated the mPFC. Differences between spontaneous and instructed mindful choices elicited strong occipital activation in the instructed condition. For participants who first made a fair amount of unmindful choices, but after instruction predominantly made mindful choices, analysis showed activation in the right occipital area and precuneus when making mindful decisions. ROI-analysis revealed involvement of the ACC in three of the conditions, and strong mPFC and left insula activation when making unmindful choices. The left insula was active in all conditions involving unmindful choices, often together with left caudate and mPFC. ROI-activation in unmindful choices was correlated with the amount of mindful choices.

How to increase the relevance of neuroscience to social psychology

Bob Spunt

Warsaw School of Social Sciences & Humanities

In this contribution, I will argue that the easiest way for social neuroscience to increase its relevance to social psychology is to use the methods of contemporary social psychology. This provides a strong basis for collaboration and ensures that the results of social neuroscience studies will have direct bearing on the theories that concern contemporary social psychologists. To illustrate this, I will take as example my own program of neuroimaging research using variants of the why/how task, which is commonly used to manipulate construal level in contemporary research in social psychology. I have shown that the why/how task produces a map of brain activity that is reproducible across studies, reliable across participants, causally involved in why/how task performance, and identifiable in individual participants in less than 10 minutes. In other words, we now have a map of the cognitive basis of the why/how task. In the first part of my contribution, I will argue that social psychologists can learn about the mechanisms underlying construal level effects by learning about the functional properties of its underlying map. I will describe several approaches to doing so, most of which are based on my own work. In the second part of my contribution, I will consider some of the barriers facing the use of contemporary social psychological methods in social neuroscience studies, and will suggest some practical solutions to overcoming them based on my experience. Finally, I will conclude by considering whether creation of a neuroscience for social psychologists will need to result in disintegrating the maturing field of social neuroscience.

The representation of social groups: Neuropsychological evidence

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To cope with the complexity of the world we rely on categorical knowledge that allows us to infer what to expect from each object we encounter, even if we see it for the first time. Neuropsychological studies reported category-selective deficits affecting either the recognition of living things (e.g. fruit, vegetables and animals) or of non-living things (e.g. tools, means of transportation) in patients with different aetiologies. This double dissociation suggested that our knowledge is represented categorically. However, little is known about conspecifics, especially with respect to the information concerning the social group to which they belong. In the present study we aimed to define whether the conceptual knowledge related to social groups could be independent of the traditional categories of knowledge (living and non-living things) using a neuropsychological approach.

We conducted two studies, one involving patients with dementia and, the other, patients with focal lesions caused by brain tumour. We reported that there was at least one patient that was selectively impaired at categorizing social groups relatively to other categories, while the remaining patients showed category-specific deficits for either living or non-living things (Rumiati et al., 2014). On this ground we argued that the knowledge about social groups may be independent from that about living and non-living categories. Furthermore, to define the network implicated in processing social groups, in the second study we tested tumour patients and, using voxel-based lesion-symptom mapping (Bates et al., 2003), correlated the lesion sites with their behavioural performance on tests tapping their lexical-semantic knowledge about different categories. We found that deficits in processing social groups, but not the other categories, were selectively associated with lesions affecting both frontal and temporal brain areas. The results of our studies converge to indicate that social group knowledge may be independent.

Neural substrates underlying the tendency to accept anger-infused ultimatum offers during dynamic social interactions

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In managing our way through interpersonal conflict, anger might be crucial in determining whether the dispute escalates to aggressive behaviors or resolves cooperatively. The Ultimatum Game (UG) is a social decision-making paradigm that provides a framework for studying interpersonal conflict over division of monetary resources. Unfair monetary UG-offers elicit anger and while accepting them engages regulatory processes, rejecting them is regarded as an aggressive retribution. Ventro-medial Prefrontal-Cortex (vmPFC) activity has been shown to relate to idiosyncratic tendencies in accepting unfair offers possibly through its role in emotion regulation. Nevertheless, standard UG paradigms lack fundamental aspects of real-life social interactions in which one reacts to other people in a response contingent fashion. To uncover the neural substrates underlying the tendency to accept anger-infused ultimatum offers during dynamic social interactions, we incorporated on-line verbal negotiations with an obnoxious partner in a repeated-UG during fMRI scanning. We hypothesized that vmPFC activity will differentiate between individuals with high or low monetary gains accumulated throughout the game and reflect a divergence in the associated emotional experience.

We found that as individuals gained more money, they reported less anger but also more positive feelings and had slower sympathetic response. In addition, high-gain individuals had increased vmPFC activity, but also decreased brainstem activity, which possibly reflected the Locus Coeruleus. During the more angering unfair offers, these individuals had increased dorsal-posterior Insula (dpl) activity which functionally coupled to the medial-Thalamus (mT). Finally, both vmPFC activity and dpl-mT connectivity contributed to increased gain, possibly by modulating the ongoing subjective emotional experience. These ecologically valid findings point towards a neural mechanism that might nurture pro-social interactions by modulating an individual's dynamic emotional experience. This study is of special interest because our interactive paradigm mimicked real-life situations in which one can spontaneously convey feelings, thoughts and intended actions in a response-contingent fashion, acting and reacting to another person's behavior. Such a modification is critical for the advance of social neuroscience in "closing the loop" on social interactions.

The role of status and testosterone in human conspicuous consumption

Christoph Eisenegger, Yin Wu

University of Vienna

People acquire goods such as luxury items for the purpose of status signaling, rather than for its inherent value, which is also known as conspicuous consumption. The hormone testosterone is a plausible modulator of conspicuous consumption, given its well established role in promoting status seeking in humans. However, no study has addressed how the hormone testosterone relates to conspicuous consumption in a controlled laboratory setting so far. In Expt. 1, we validated two experimental tasks on conspicuous consumption, using a willingness-to-pay (WTP) procedure, i.e. the maximum amount an individual would like to pay for a featured product. We also developed an implicit association test (IAT) of conspicuous consumption behavior. In both tasks, real-life status products (BMW vs. Fiat) and 'tagged' products (Harvard University vs. Miami University mugs) were used as stimuli.

Results showed that participants were more likely to pay for high-status products in the WTP task, and that they showed an increase in positive attitude for high-status products in the IAT task. We also found that implicit attitudes for high-status products were correlated with second to fourth digit (2D:4D) ratio, a marker of prenatal testosterone exposure. In Expt. 2, we assessed baseline testosterone levels, examined effects of social competition on endogenous testosterone levels, and tested how these impact on conspicuous consumption. We found that winners compared to losers in the competition task rated high-status products more positively, on both the explicit and implicit measurements, using both naturalistic and artificial status branding. However, we neither found a significant correlation of baseline testosterone levels with conspicuous consumption, nor that testosterone fluctuations induced by social competition affected conspicuous consumption. Despite these null findings, future studies should test whether exogenous modulation of testosterone levels affects conspicuous consumption, and whether this is modulated by the 2D:4D ratio

Pitfalls in Social Neuroscience: The Case of Empathy.

Henryk Bukowski & Claus Lamm

Social, Cognitive and Affective Neuroscience (SCAN) Unit, University of Vienna, Austria.

Social psychologists have long studied interpersonal and intra-personal cognition and behavior through the lens of macro-scale concepts such as attraction, self-identity, norms or personality traits. Social neuroscience exploits methods of neurosciences that rely on micro-mechanisms, such as oxygen consumption, magnetic current, and voltage fluctuation of neurons. The existing gap between the theoretical scales of social psychology and neuroscience is a critical challenge to social neuroscientists and a common pitfall for those denying its existence. We will illustrate our point with the case of empathy and neuroimaging by raising four questions that apply to any topic of social neuroscience. We will question (i) whether there is a specific neural network for empathy, (ii) whether neuroimaging data can be used as a reliable marker of empathic behavior, (iii) whether studying empathy as a single concept helps or hinders the understanding of its neurobiological underpinnings, and (iv) whether the methodological constraints of neuroimaging allow inferring ecologically valid conclusions. Finally, we will discuss possible remedies of these issues based on our research experience. We will argue that social neuroscience should try to go beyond the current dominant research approach, which consists in explaining social affect, cognition and behavior by an almost exclusive focus on localizing their neural correlates with fMRI. While fMRI certainly is a very powerful method, we would like to advocate a truly integrative research approach spanning different levels of observation. These levels should range from molecules via affect, cognition and the body, to social behavior. Notably, addressing information on these levels will necessitate the use of tailored methods and hence extensive interdisciplinary collaboration far beyond what we see in social neuroscience at the moment. Besides generating converging evidence, we expect this multi-method and multi-level approach to generate insights which will do better justice to the complexity and beauty of sociality.

Peeking Into the Black Box Before a Response: How Neuroscience has Advanced Implementation Intention Theory

J. Lukas Thürmer, a, Frank Wieber, a, and Peter M. Gollwitzer, b

a, University of Konstanz, b, New York University

Perhaps even more than other behavioral sciences, social psychology values well-spelled out process theories that go far beyond mere cause-effect relations. To test these theories, social psychologists use elaborate behavioral and cognitive paradigms. Although providing important insights, these measures often only provide indirect evidence for the phenomenon under investigation. For instance, implementation intention theory assumes that if-then planning can automate responding by delegating action control to the environment (strategic automaticity). The two components of this strategic automaticity—increased mental activation of the situational cue and facilitated response initiation—have been tested with behavioral measures where changes in responses are interpreted to reflect stimulus-driven attention (e.g., worse performance in an unrelated task when the situational cue appears as a distractor) or automatic responding (e.g., faster response times in a sequential priming paradigm). However, even these elaborate cognitive paradigms rely on observing overt responses and infer preceding processes indirectly. Anything that occurs before these overt responses therefore remains in a black box.

Neuroscientific methods record continuous brain activity in addition to behavioral responses, and therefore help peek into this black box before any overt response. Neuroscientific methods can therefore critically test implementation intention theory, for instance by using EEG and fMRI measures. Neuroscientists have recently started doing this: Two EEG studies showed that implementation intentions allowed modulating neural P1 and P300 responses that are usually assumed to be beyond willful control; two fMRI studies found that action control with implementation intentions was associated with those medial, pre-frontal areas typically involved with more automatic, stimulus driven responses. These studies therefore complement existing tests of implementation intention theory. We will summarize this contribution of neuroscientific research on implementation intentions and outline how more systematic neuropsychological investigation may further advance implementation intention theory.

Early influence of comparison on social information processing - Evidence from two EEG studies

Katharina Banscheraus, University of Cologne

University of Cologne

A large body of research has shown that comparison plays a fundamental role in how humans perceive themselves and others. Yet, when exactly comparison takes effect during the stream of social information processing remains unclear. This is largely because self-report and behavioral measures typically used in social psychological research have a relatively distal relation to the mental event of interest and the exact moment of comparison is unavailable to a participant's introspection. To bridge this gap, aimed to profit from the excellent temporal resolution of electroencephalography (EEG) when investigating the neural time course of attractiveness and trustworthiness comparisons, two essential social dimensions. Size comparisons served as the non-social control condition in both studies. To determine the moment of comparison, we used a distance effect (DE) paradigm. This effect capitalizes on the fact that stimuli close on a certain dimension take longer to compare than stimuli clearly differing on this dimension. Here, we manipulated the distance of faces regarding their levels of attractiveness/size (Study 1) or trustworthiness/size (Study 2).

Behaviorally, it took participants significantly longer to perform social (attractiveness and trustworthiness) than nonsocial (size) comparisons. Remarkably, despite this divergence on the behavioral level, comparison related effects in our EEG data of Study 1 were apparent 200 milliseconds (N2) after stimulus onset for both attractiveness and size comparisons. In Study 2, we observed comparison related differences even earlier, that is, already after 100 milliseconds (N1) for both trustworthiness and size comparisons. These results speak in favor of an early encoding of comparative information and emphasize the primary role of comparison in social information processing. Moreover, they demonstrate how neuroscientific techniques can inform social psychological theories about underlying processing mechanisms that are inaccessible to classical behavioral measures.

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