Research Group Prof. Dr. Dirk Scheele

Master Project 1: Do social influences during image encoding alter recognition accuracy and brain representations of remembered stimuli?

Social contexts influence both the encoding and retrieval of episodic memories (Hirst & Echterhoff, 2011). For instance, the mere presence of others can affect subsequent memory via socially shared encoding of stimuli (Shteynberg, 2010). Also, joint encoding of partner- and self-relevant stimuli can trigger false memories for partner-assigned stimuli (Eskenazi et al., 2013; Wagner et al., 2022). These memory effects suggest that social contexts may affect the construction of (true or false) episodic memories via a spontaneous attunement of the situational self to others' concurrent information processing and enhanced use of socially encoded information.

It is currently unclear whether joint encoding effects are driven by enhanced allocation of attention (co-attention; (Shteynberg, 2010) and/or alternative processes (e.g., spontaneous co-monitoring of socially relevant information, anticipation of stimulus-related interaction, depth of elaboration from perceived relevance/mentalizing).

The main aim of the project is to examine the behavioral and neural processes underlying social context effects in generating episodic memories. Participants will be presented with pictorial stimuli in a joint encoding setting or in a task in which participants will be instructed to memorize self-relevant stimuli, but not partner-relevant items (social distributed-response task). We will employ fMRI during the recognition task to examine how social encoding shapes hippocampal representation of correctly remembered items and false memories.

Students participating in this project will be conducting behavioral and fMRI experimental sessions.

Requirements:

- Interest in social neuroscience and memory research
- Experience with statistical analyses, preferably in R
- Programming experience in Matlab is highly desirable
- Advanced German language skills (to conduct experimental sessions with German speaking participants)
- Experience with analyzing fMRI data is a plus

Literature:

Eskenazi T, Doerrfeld A, Logan GD, Knoblich G, Sebanz N (2013) Your words are my words: Effects of acting together on encoding. *Q J Exp Psychol 66*,1026-1034.https://doi.org/10.1080/17470218.2012.725058

Hirst, W., & Echterhoff, G. (2012). Remembering in conversations: The social sharing and reshaping of memories. *Annual review of psychology, 63*(1), 55-79.

Shteynberg G (2010) A Silent Emergence of Culture: The Social Tuning Effect. *J Pers Soc Psycho*l *99*, 683-689.https://doi.org/10.1037/a0019573

Wagner U, Schlechter P, Echterhoff G (2022) Socially induced false memories in the absence of misinformation. *Sci Rep 12*, 7725.https://doi.org/10.1038/s41598-022-11749-w

Supervision: Madeleine Bregulla and Prof. Dr. Dirk Scheele

Master Project 2: Using fMRI and cognitive re-appraisal to understand and influence negative touch perception in traumatized individuals

Traumatic life events are often associated with altered perception of touch as touch is perceived more negatively by traumatized individuals. In this project, we aim to understand the neurobiological foundations of this altered touch perception using fMRI by investigating whether these changes are linked to alterations in sensory or cognitive brain structures. Furthermore, we want to use a behavioral cognitive re-appraisal intervention to reduce the negative effects of trauma on touch perception. Students working on this topic will conduct behavioral and fMRI experiments in individuals with traumatic experiences as well as healthy controls. As the participants have to be tested in German, fluency in German is required to apply for this project.

Methods:

- Neuroimaging (fMRI)
- Behavioral testing

Literature:

Maier, A., Gieling, C., Heinen-Ludwig, L., Stefan, V., Schultz, J., Güntürkün, O., Becker, B., Hurlemann, R., & Scheele, D. (2020). Association of Childhood Maltreatment With Interpersonal Distance and Social Touch Preferences in Adulthood. The American Journal of Psychiatry, 177(1), 37–46.

Packheiser, J., Hartmann, H., Fredriksen, K., Gazzola, V., Keysers, C., & Michon, F. (2024). A systematic review and multivariate meta-analysis of the physical and mental health benefits of touch interventions. Nature Human Behaviour, 8(6), 1088–1107.

Stevens, L., Bregulla, M., & Scheele, D. (2024). Out of touch? How trauma shapes the experience of social touch – Neural and endocrine pathways. Neuroscience and Biobehavioral Reviews, 159, 105595.

Supervision: Dr. Julian Packheiser; Prof. Dr. Dirk Scheele, Marcel Blumenthal

Master Project 3: Trustworthiness Impressions under Social and AI Influence in Lonely vs. Non-Lonely Individuals

Recent reviews emphasize the growing importance of loneliness and social isolation research, highlighting their cognitive impacts (e.g., Taylor et al., 2023). Our recent persective also suggests that loneliness may alter predictive processing and the resulting effect of influence on lonely brains (Haihambo et al., 2025). Loneliness has been shown to alter social cognition, including how people interpret and respond to others' behaviors and trustworthiness (Cacioppo & Hawkley, 2009; Inagaki et al., 2016). Additionally, lonely individuals may have a tendency to trust more while expecting others to be less trustworthy (Bellucci & Park, 2024; Hedrih, 2024). This project investigates how social and AI influences impact our judgments of how trustworthy we rate others to be, and how this influence may impact lonely and non-lonely individuals.

The project is part of the SOLACE study, which also includes a wide range of psychometric data (e.g., loneliness, depression, social distancing, trust propensity) and task-related measures that support individualized research questions.

Methods:

- Behavioral
- fMRI

Requirements:

- Interest in social and affective neuroscience
- Familiarity with statistical analysis (R preferred)
- Experience with MATLAB and/or fMRI analysis is an advantage
- Intermediate German proficiency is desirable for participant testing

Literature:

Haihambo, N., Layiwola, D. M., Blank, H., Hurlemann, R., & Scheele, D. (2025). Loneliness and social conformity: A predictive processing perspective. *Annals of the New York Academy of Sciences*, *1547*(1), 5-17.

Cacioppo, J. T., & Hawkley, L. C. (2009). Perceived social isolation and cognition. *Trends in Cognitive Sciences, 13(10),* 447–454. https://doi.org/10.1016/j.tics.2009.06.005

Inagaki, T. K., et al. (2016). Yearning for connection? Loneliness is associated with increased ventral striatum activity to close others. *Social Cognitive and Affective Neuroscience, 11(7),* 1096–1101. https://doi.org/10.1093/scan/nsw006

Bellucci, G., & Park, S. (2024). Trust dynamics in lonely individuals: paradoxical effects of social cognition. *Journal of Social Psychology*.

Supervision: Dr. Naem Haihambo, Prof. Dr. Dirk Scheele

Master Project 4: Social Influence on Memory Accuracy after Positive Social Interaction

Social interactions can shape how memories are encoded, retrieved, and even modified (Edelson et al., 2011; Hirst & Echterhoff, 2012). This project explores how prior positive social interactions influence susceptibility to memory conformity. In our perspective, we propose that given potential difficulties with memory retrieval in lonely individuals, social influence may affect memory conformity in lonely individuals (Haihambo et al., 2025). Recent studies have already demonstrated how social identity can enhance collaborative memory, improving recall accuracy (Li & Wu, 2024), however loneliness was not an integral part of this study. For this reason, we would like to investigate how recognition memory may be impacted by the influence of a positive other.

This project is embedded in the SOLACE study, which provides rich behavioral and questionnaire data (e.g., baseline memory performance, loneliness, depression, trust orientation), allowing for hypothesis-driven and exploratory subprojects.

Methods:

- Behavioral testing (task based and questionnaires)
- Neuroimaging (fMRI)

Requirements:

- Interest in social and affective neuroscience
- Familiarity with statistical analysis (R preferred)
- Experience with MATLAB and/or fMRI analysis is an advantage
- Intermediate German proficiency is desirable for participant testing

Literature:

Haihambo, N., Layiwola, D. M., Blank, H., Hurlemann, R., & Scheele, D. (2025). Loneliness and social conformity: A predictive processing perspective. *Annals of the New York Academy of Sciences*, *1547*(1), 5-17.

Deuker, L., Müller, A. R., Montag, C., Markett, S., Reuter, M., Fell, J., ... & Axmacher, N. (2013). Playing nice: a multi-methodological study on the effects of social conformity on memory. *Frontiers in Human Neuroscience*, *7*, 79.

Edelson, M., et al. (2011). Following the crowd: brain substrates of long-term memory conformity. *Science, 333(6038),* 108–111. https://doi.org/10.1126/science.1203557

Hirst, W., & Echterhoff, G. (2012). Remembering in conversations: The social sharing and reshaping of memories. *Annual Review of Psychology, 63,* 55–79. https://doi.org/10.1146/annurev-psych-120710-100340

Supervision: Dr. Naem Haihambo, Prof. Dr. Dirk Scheele