Project Details	
Project Code	MRCNMH25Ca von dem Hagen
Title	Recognising uniquely human emotions
Research Theme	Neuroscience & Mental Health
Summary	Being able to read other people's emotions can convey considerable social benefits. But it remains unclear how humans perceive others' uniquely human emotions (such as envy) that may lack typical facial expressions. Drawing on contemporary models of person perception, this project combines psychology and neuroscience to investigate how social context can facilitate (or hinder) complex emotion detection.
Description	**Background:** Epidemiological research suggests that people's ability to build lasting and trusting social relationships helps to protect their mental and physical health across the lifespan. But this ability typically requires the skilled understanding of other people's complex emotional states. In humans, these states often go beyond basic emotions (such as happiness or sadness) and concern complex social emotions (such as feelings of pride, gratitude, envy, or shame). Though the latter are widely considered uniquely human, little is understood about how the human mind and brain can detect and monitor their arousal in other people. **Key Research Questions:** Contrary to basic emotions, social emotions do not seem to elicit prototypical facial or bodily expressions. Nevertheless, many humans regularly succeed at recognising these emotions in others by engaging in a cognitive process known as relational impression formation. This process relies on the rapid integration of social context cues and people's ambiguous nonverbal expressions to infer their complex emotional states. But, at this point, it remains unclear how this integration is accomplished. Therefore, the project will aim to address three main questions. First, what are the mental processes that contribute to effective social emotion perception? Second, is it possible to predict difficulties in social emotion perception? Third, which brain networks support social emotion perception and how are these similar and/or different to basic emotion perception networks? **Objectives and Timeline:** During their first year, the student on this project will familiarise themselves with the literature on mental mechanisms that may underlie the detection of social emotions in humans. Relatedly, their first objective will be to determine the relative importance of these mechanisms (from perceptual to inferential) using experimental behavioural studies. Inspired by recent progress in the field, these studies will use a novel paradigm (as recently piloted in Dr. Quadflieg's lab; Westmoreland, Gilchrist, & Quadflieg (2024)) that captures the perception of social emotions as an inherently dyadic process involving meaningful interactions between two people. During their second year, the student will then focus more strongly on individual differences in social emotion perception. Their second objective will lie in identifying behavioural characteristics that may help to predict difficulties in social emotion perception (e.g., non-clinical mental health difficulties, insecure attachment styles, neurodivergent thinking). During their third and fourth year, the student will examine the neural networks (e.g., person perception network, mentalizing network, empathizing network) involved in social emotion perception in

	order to better understand how the processing of these emotions is similar to and/or different from basic emotion perception. Throughout their project, the student will receive support and encouragement to share their research findings with academic beneficiaries locally, within the GW4, as well as via national and international conferences (e.g., on social neuroscience) and within top-ranked academic journals (e.g., Nature Human Behavior, PNAS). **Taking Ownership**: At each stage of the project the student will be expected to shape their work based on their strengths and interests. Initially, they will be involved in determining which type(s) of social emotions (e.g., self-conscious, self-transcending) will be studied in this project, and will aid in refining the novel dyadic paradigm with these emotions in mind. Subsequently, they will choose which behavioural phenotype(s) to study. Finally, when planning the neuroimaging component of this work they will be actively involved in the design of the study and choosing between competing approaches that can be used to capture activity within and across brain networks (e.g., dynamic causal modelling, representational similarity analysis etc.)
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