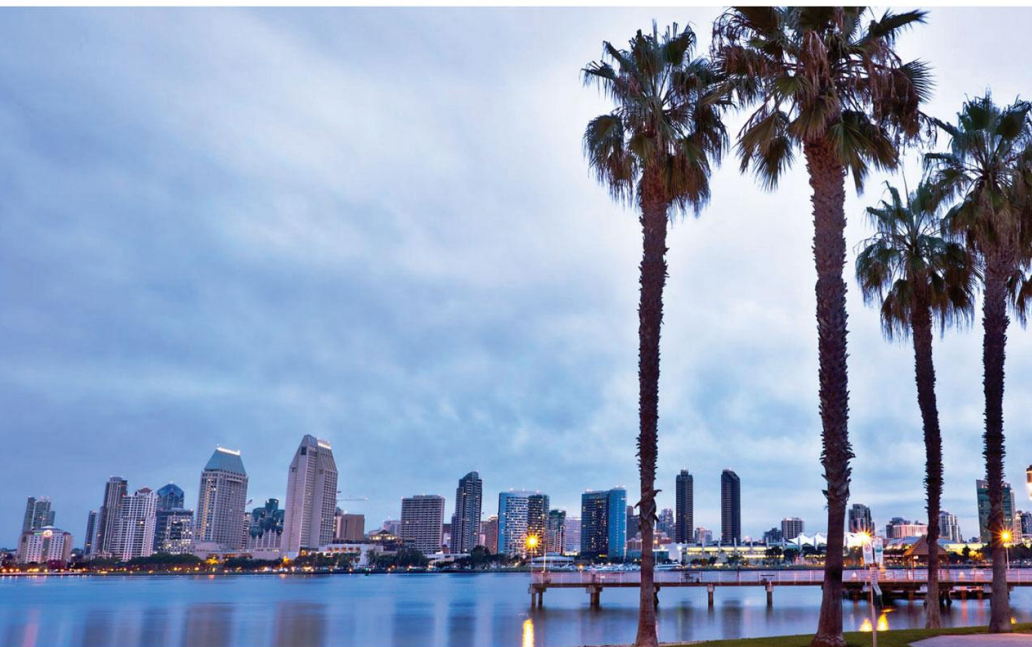


SANS

Social & Affective Neuroscience Society



Abstract Book

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Presidential Speaker

Thursday, April 16 14:00-15:00



Steve Chang

Yale University

Behavioral and Neural Mechanisms of Social Decision-Making

The defining feature of the primate brain is its social acumen. Humans and other advanced social species continuously navigate diverse social contexts and make decisions shaped by prosocial, antisocial, or other strategic preferences. This talk will present an overview of ongoing research efforts aimed at understanding the neural mechanisms of social decision-making and social interaction. Focusing on the prefrontal-amygdala circuits, we will first examine the neural codes representing decision variables for self and other, as well as the inter-areal coordination that supports social preference. In the context of naturalistic and unstructured social interactions, we will examine how prefrontal-amygdala circuits encode multiple interactive social gaze variables that guide dynamic social attention, and how the prefrontal cortex integrates social evidence gathered from strategic gaze to support cooperative decision-making. Together, these studies help inform basic neural principles of social decision-making and interaction, providing insights into the evolutionary roots of human social cognition.

Keynote Speaker Talk

Friday, April 17 14:45-15:45



Elizabeth Phelps

Harvard University

The Human Amygdala, Threat, and Anxiety: Translational Progress and Challenges

Animal models of associative threat learning provide a basis for understanding human fears and anxiety. This talk explores the successes and failures in translating the neural mechanisms of threat processing identified in animal models to complex human learning and the treatment of anxiety-related disorders. First, I will briefly review how extinction and emotion regulation techniques adapted in cognitive behavioral therapy treatments can be used to control learned defensive responses via inhibitory signals from the ventromedial prefrontal cortex to the amygdala. One drawback of these techniques is threat responses are often weakly inhibited and can return, which has been proposed to underlie the significant relapse rate following cognitive behavioral therapies. I will then describe novel behavioral interventions that might result in a more lasting fear or threat reduction and will discuss efforts to incorporate these novel techniques to innovative treatments for anxiety-related disorders. Finally, I will reflect on how we might improve efforts to translate insights from the neurobiology of threat learning to the treatment of anxiety-related disorders.

SANS Conference Oral Presentations

Thursday, April 16 09:30-10:45

Symposium 1: New Directions in Social Learning & Memory

Clara Sava-Segal ¹, Yi Yang Teoh ², Anna Vannucci ³, Meghan Meyer ⁴

¹ Dartmouth College, ² Brown University, ^{3,4} Columbia University

1. Self- versus other-generated interpretations of ambiguous social information are asymmetrically remembered
2. Medial temporal lobe encodes cognitive maps of real-world social network
3. Neural representations of ambiguous social-emotional events in adolescents vary by early caregiving experience
4. The default network prioritizes social memory consolidation during rest

How humans learn and remember social experiences is central to social and affective neuroscience. Yet, we know surprisingly little about how people encode and retain some of the most critical information permeating social life. Although there is a tradition of studying the brain basis of social associative memory (e.g., person-trait associations), as well as face and identity recognition, these processes only scratch the surface of interpersonal learning and memory. People also track more complex information, such as who said what in a conversation and who is friends with whom. On top of that, we also integrate prior social knowledge with the ever-changing social landscape. The goal of this symposium is to showcase innovative directions in the neuroscience of social learning and memory in effort to reinvigorate this critical area of research. The symposium theme will be tackled from multiple angles, with talks highlighting the neural processes that allow us to

1) integrate other people's perspectives into our own episodic memories of the same events, 2) form efficient social maps of human relationships to help navigate real-world social networks, 3) rely on schemas laid down as early as infancy to guide new social learning in adolescence, and 4) consolidate these types of rich social experiences into long-term memory while we rest. Together, the talks offer a cohesive look at how our brains learn from and remember our intricate social lives. The symposium also contributes to the diversity of SANS Conference speakers and topics by showcasing speakers across career stages (graduate student/postdoc/professor) who draw from a breadth of methods (e.g., computational neuroscience; social network analysis) and theoretical frameworks (e.g., social neuroscience; developmental neuroscience; cognitive neuroscience).

Thursday, April 16 11:15-12:30

Symposium 2: Clinical and Translational Perspectives on Affect

Diego Pizzagalli ¹, Brian Sweis ², Hedy Kober ³, Kevin LaBar ⁴

¹ University of California, Irvine, ² Icahn School of Medicine, ³ University of California, Berkeley, ⁴ Duke University

1. SMART Trial to Boost Antidepressant Response in Major Depression
2. Translational neuroeconomics: Capturing complex decision-making processes across species.
3. fMRI-Based Neuromarkers for Craving and Substance Use Disorders
4. An affective neuroscience-guided brain stimulation intervention for transdiagnostic emotion dysregulation

Friday, April 17 9:15-10:30

Symposium 3: Affect & Decision-Making

Oriel FeldmanHall ¹, Robb Rutledge ², Kate Wassum ³, Dean Mobbs ⁴

¹ Brown University, ² Yale University, ³ Caltech, ⁴ UCLA

1. Rethinking Emotion as a Dynamic Landscape for Prediction and Social Coordination
2. A computational and neural model for mood dynamics
3. Brain circuits of stress, agency, and habit
4. Safety Coding in the Prefrontal Cortex

Saturday, April 18 8:30-9:45

Symposium 4: Naturalistic Hyperscanning: Mechanisms, Plasticity, and Network Complexity

Dr. Suzanne Dikker ¹, Dr. Giacomo Novembre ², Prof. Simone Shamay-Tsoory ³, Dr. Anat Dahan ⁴

¹New York University, New York, USA, ² Istituto Italiano di Tecnologia, ³ University of Haifa, ⁴ Karmiel, Israel

1. Social Biofeedback and Interactive Neuroscience in Naturalistic Settings
2. Causal Mechanisms of Interpersonal Synchrony via Brain Stimulation
3. Brains that Fire Together Wire Together: Inter-brain Plasticity Underlies Improved Empathy
4. Beyond Bivariate Correlations: A Network Approach to Inter-Brain Coupling

These four talks address a central challenge in social neuroscience: understanding the neural mechanisms underlying naturalistic social interaction. Each speaker examines inter-brain coupling from a distinct methodological perspective, advancing the field from correlational observation toward mechanistic explanation. The symposium follows a logical progression. Dikker demonstrates that inter-brain coupling can be reliably measured in ecologically valid contexts (museums, classrooms, public spaces) using portable neuroimaging. Her work establishes the phenomenon's robustness beyond laboratory settings and shows that social biofeedback about inter-brain states can modulate trust and social experience. Novembre addresses a fundamental limitation of correlational hyperscanning: the inability to infer causality. Using transcranial alternating current stimulation (tACS) to experimentally manipulate inter-brain synchrony, he provides evidence that enhanced neural coupling causally improves social coordination and learning, shifting the field from correlation to mechanism. Shamay-Tsoory examines whether inter-brain networks exhibit plasticity. She demonstrates that enhanced inter-brain coupling through dyadic neurofeedback training targeting the inferior frontal gyrus predicts improvements in empathy and connectedness, with implications for understanding social skill development and potential interventions. Dahan challenges the adequacy of bivariate correlation approaches. Applying graph theory to fNIRS hyperscanning data from mother-infant dyads, she reveals network-level organizational principles (hub structures, modularity) invisible to pairwise analyses but differentiating dyads by maternal autistic traits. This demonstrates that inter-brain dynamics exhibit topological complexity requiring multivariate analytical frameworks. Together, the symposium moves from establishing ecological validity (Dikker), to testing causal necessity (Novembre), to demonstrating plasticity (Shamay-Tsoory), to revealing organizational complexity (Dahan). This represents a systematic approach to understanding inter-brain coupling as a mechanism rather than merely a correlate of social interaction. The symposium contributes to conference diversity across multiple dimensions. Geographically, speakers represent institutions in the United States, Italy, and Israel. Methodologically, we employ portable EEG, fNIRS, brain stimulation, neurofeedback, and computational network analysis. Research populations include adults, mother-infant dyads, and individuals varying in autistic traits. Theoretically, we integrate observational field studies, experimental causal manipulation, training paradigms, and computational modeling. Speakers span different career stages, from early-career researchers to established faculty, reflecting the breadth of contemporary social neuroscience research.

Saturday, April 18 10:15-11:30

Symposium 5: Advancing Emotion Regulation Research: Neural Mechanisms and Translational Applications

S5-ADVANCING EMOTION REGULATION RESEARCH: NEURAL MECHANISMS AND TRANSLATIONAL APPLICATIONS

Bryan Denny ¹, Richard Lopez ², Nicole Giuliani ³, Kateri Mcrae ⁴

¹Rice University, ² Worcester Polytechnic Institute, ³ University of Oregon, ⁴ University of Denver

1. Investigating multivariate neural signatures for reappraisal training success
2. Training in cognitive reappraisal alters whole-brain indices of emotion regulation in borderline personality disorder
3. The role of emotion regulation in feeding young children
4. Neural mechanisms of reappraisal: Lessons for emotion regulation interventions to result in long-term adaptive change

Recent advances in emotion regulation research have shed light on neurobiological and biobehavioral mechanisms underlying cognitive reappraisal and its translational applications. This symposium integrates clinical, developmental, and intervention-based affective neuroscience approaches to explore how emotion regulation training impacts neural and behavioral outcomes across diverse populations. Bryan Denny will present multivariate fMRI findings from a recently-completed clinical trial with bereaved spouses, identifying neural predictors of stress reduction following reappraisal training. Richard Lopez will share results from a longitudinal fMRI study in patients with borderline personality disorder, demonstrating partial normalization of neural responses to negative affect following training in psychological distancing. Next, Nicole Giuliani will present results from a longitudinal study demonstrating that regulation-related reductions in food cue-related activity in nucleus accumbens predicts later use of restrictive feeding language among mothers of preschool-aged children. Lastly, Kateri McRae will synthesize findings from multiple fMRI studies to examine how different reappraisal tactics and phases engage distinct neural mechanisms, offering insights into optimizing reappraisal-based interventions for long-term mental health benefits. In addition to the merits and innovations of the presented research, this symposium will contribute to the diversity of SANS conference speakers. The symposium features speakers from both early and later career stages, with a lineup that reflects gender balance and includes a first-generation college student, further enriching the diversity of perspectives.

SANS Conference Blitz Talks

Trainee Blitz Talk: Friday, April 17 11:45-12:45

TB1 - Reference-dependent computational model linking social anxiety to social feedback avoidance

Skylar Brooks¹, Sheri Johnson², Ming Hsu¹

¹ University of California, ² University of California Berkeley

BACKGROUND AND AIMS:: Clinical research shows that social anxiety is closely related to avoidance of social evaluation, which disrupts everyday functioning. Less is known about the precise cognitive mechanisms driving decisions to seek or avoid social feedback, as laboratory paradigms to date have not been developed to examine the decision-making processes underlying social feedback avoidance. We address this gap by introducing a novel social decision-making paradigm and computational modeling framework to elucidate the cognitive and contextual factors guiding social feedback avoidance. **METHODS:** Ninety-one undergraduates (59 females, M age = 20.9) completed a social feedback task in which they chose whether to seek or avoid feedback from anonymous peers on personal attributes (e.g., “intelligent”) at a cost measured by effort exerted on a clicking task. Participants uploaded a photo and self-introduction. On each trial, they decided whether to receive feedback and how much effort to expend, with feedback delivered either privately (visible only to the participant) or publicly (visible to others). Participants then rated 50 attributes on three dimensions: self-ratings, expected peer ratings, and desired peer ratings, and completed self-report measures of social anxiety (Liebowitz Social Anxiety Scale, Fear of Negative Evaluation, and Fear of Positive Evaluation). We developed a computational model in which feedback decisions were driven by expected peer evaluations and two reference-dependent components: (1) self discrepancy, defined as the distance between desired and self-ratings, and (2) expectation discrepancy, defined by the distance between desired and expected ratings. Models were estimated using hierarchical Bayesian methods, with social anxiety measures included to test moderation and mediation effects. **RESULTS:** Contrary to rational theories of information acquisition, which predict that individuals should never engage in costly avoidance of information, we found that participants reliably avoided social feedback despite costs. Avoidance was higher in public than private contexts and positively associated with social anxiety. Computational modeling revealed both shared and context-specific components driving avoidance. Across contexts, more negative expectations of peer evaluation predicted greater avoidance. In private contexts, greater expectation discrepancies increased feedback avoidance, whereas in public contexts, greater self discrepancies predicted avoidance. Higher social anxiety was associated with lower expectations, lower self-ratings, and higher desired ratings, resulting in larger discrepancies which mediated the relationship between social anxiety and feedback avoidance. **CONCLUSION:** Using a novel paradigm of decisions involving social feedback, we demonstrate costly avoidance of social feedback that is context-dependent and associated with trait-level variation in social anxiety. Computational modeling elucidates shared and distinct mechanisms underlying feedback avoidance across contexts and clarifies how these mechanisms mediate the effects of social anxiety on behavior. **ACKNOWLEDGEMENT AND FUNDING:** This work was supported by NSF (DRMS 1851902 to M.H.) and NIH (R01 MH112775). M: BenchmarkingM: Computational ModelsM: EEG/ERP/ECOG/MEGM: ESM/EMAM: fMRIM: fNIRSM: Methods DevelopmentM: Naturalistic methodsM: Network ScienceM: Neural networks/LLMsM: PETM: PharmacologyM: Physiological MeasuresM: Reinforcement learningM: Structural MRI/DTIM: tDCS/

TB2 - Social Networks Shape How We Form Impressions

Amber X. Chen¹, Yang Hu², Xiaolin Zhou² & Hongbo Yu¹

¹Department of Psychological & Brain Sciences, University of California, Santa Barbara, ²The School of Psychology and Cognitive Science, East China Normal University

When we form impressions of others, we do not do so in isolation. Every judgment of a person's traits, such as warmth and competence, emerges within the social networks we inhabit. This project examined how both target-level network structure (e.g., centrality) and perceiver-level network structure (e.g., social distance) influence neural representation of face and trait impressions. Participants from a freshmen cohort at a Chinese university completed a 1-back face-viewing fMRI task (N = 51)

measuring neural responses to pictures of their classmates, followed by behavioral trait ratings of these pictures (N = 60). To quantify how social structure influences neural representation of faces, we constructed representational dissimilarity matrices (RDMs) capturing: (a) Centrality RDMs: pairwise differences in three centrality measures—degree (number of connections; index of popularity), betweenness (frequency of lying on shortest paths; index of brokerage), and eigenvector centrality (connections to well-connected individuals; index of social influence); (b) Distance RDMs: perceiver-to-target social distance for each participant (distance RDMs); (c) Neural RDMs: neural pattern dissimilarities for each target in each perceiver's brain, using a priori ROIs spanning face-processing regions (OFA, FFA), social-relational inference regions (mPFC, TPJ), and relational memory systems (hippocampus, amygdala), and (d) Trait RDMs: pairwise dissimilarities in trait impressions across targets (trait RDMs). At the target level, greater differences in targets' degree centrality related to greater dissimilarity in neural representations within face-sensitive regions. Furthermore, this neural similarity predicted greater similarity in trait impressions. Linear mixed models further revealed that betweenness centrality significantly predicted all five trait ratings, with brokers receiving higher ratings on attractiveness, competence, warmth, trustworthiness, and dominance, demonstrating a generalized halo effect of structural advantage on person perception. At the perceiver level, perceiver-to-target social distance likewise correlated with neural dissimilarity. Behaviorally, all five traits showed significant negative relationships with social distance, with attractiveness demonstrating the strongest decay and dominance showed the weakest effect, demonstrating a robust distance-decay effects: socially closer peers were viewed more positively. The results indicate that perceivers' own network positions shape how they encode and evaluate others. Together, these findings show that person perception is not an isolated visual process but one embedded within the social structures.

TB3- Affect and uncertainty in threat-related information seeking

Hayley Dorfman ¹, Haoxue Fan ², Gaston Aime ¹, Elizabeth Phelps ¹

¹ Harvard University, ² Brown University

BACKGROUND & AIMS: When faced with the possibility of receiving bad news, some people seek out this information, while others avoid it. Although threatening information often motivates avoidance, people sometimes instead approach threat, for example, by seeking health information about potential negative outcomes. We used a novel behavioral task to assess information seeking/avoidance about possible threat while measuring pupil diameter and eye movements. We hypothesized that individuals would differentially prioritize distinct components of uncertainty when deciding whether to seek threat information, and that these differences would be related to variations in anxiety, depression, and avoidance-related traits.

METHODS: Adult participants (N = 80) completed a task (Fig. 1) where blocks were associated with either a threatening (electric shock) or safe state (no shock). On each trial, participants chose whether to receive or avoid information about the current state. When they chose to receive information, they viewed a cue that varied along two independent dimensions of uncertainty: informativeness (how strongly the cue signaled the underlying state) and noise (visual degradation), allowing us to dissociate these effects on choice. After each trial, participants reported their belief about the current state and their confidence in that belief. To assess affective processes during decision-making, we measured pupil diameter as an index of autonomic arousal and eye movements to quantify implicit attention. Participants completed self-report measures of anxiety, depression, and avoidance tendencies. **RESULTS:** Participants reported significantly higher anxiety during threat compared to safe blocks ($t = -17.70$, $p < 0.0001$) and had significantly larger pupil diameter when informed they were in a threat block ($t = 3.69$, $p < 0.001$), confirming the effectiveness of the threat manipulation. At the group level, information seeking was sensitive to total uncertainty, with increased seeking when information was both noisy and weakly informative ($t = -5.45$, $p < 0.0001$; Fig. 3A). While confidence judgments reliably tracked informativeness at the group level, individual-level analyses revealed heterogeneous patterns, indicating that people weigh noise and informativeness differently when forming confidence beliefs (Fig. 3C). Gaze patterns and pupil diameter predicted choice and implicitly indexed uncertainty estimation (Fig. 3B/D). Anxiety- and depression-related traits were associated with increased information avoidance during threat relative to safe blocks, whereas higher sensation seeking showed the opposite pattern, with greater seeking in threatening contexts. We developed a computational model that accounts for these findings by formalizing decisions as Bayesian inference arising from a trade-off between uncertainty reduction and avoidance of anticipated negative affect (Fig. 2). **CONCLUSIONS:** These findings suggest that dissociable components of information, including noise, informativeness, and total uncertainty, influence threat-related decision making. This work

advances mechanistic accounts of information seeking and avoidance and clarifies how emotional processes influence decisions under uncertainty and threat.

FUNDING: H.D. is supported by an ORISE IC Postdoctoral Research Fellowship.

TB4 - High-dimensional neural representations of emotional expressions

Gabriel Fajardo ¹, Henna Vartiainen ², Jon Freeman ³

¹ Dartmouth College, ² Princeton University, ³ Columbia University

BACKGROUND AND AIMS::: Human social life is filled with a variety of behavioral expressions that guide how we perceive, interpret, and respond to others. The recognition of these expressions fundamentally structures our social interactions. Longstanding debates in affective science have centered on the nature of emotional representation: Are emotions organized into discrete categories or along continuous dimensions? How many distinct emotions are reliably expressed and recognized? Prior work has argued that mental state inferences from facial expressions rely on a small set of core dimensions or categories. However, more recent evidence, leveraging more sensitive dimensionality-reduction techniques, diverse stimulus sets, and large behavioral samples, suggests that mental state inference from facial expressions may instead occupy a high-dimensional semantic space. **METHODS:** Participants underwent fMRI while passively viewing 120 facial-bodily expressions, selected from a larger set of 1,500 images to maximize representativeness across multiple theoretical models of emotion: the 2D circumplex model, 3D mind model, 6D basic emotion model, and a 28D semantic space model. Stimuli were converted to grayscale and matched on luminance and contrast to control for low-level visual properties. We conducted whole-brain representational similarity analysis using the 200-region Schaefer parcellation. Within each parcel, we extracted multivoxel activation patterns for each condition and computed pairwise dissimilarities between conditions. Representational dissimilarity matrices (RDMs) for each emotion model were derived from behavioral ratings, defined as pairwise distances within each model's respective feature space (2D, 3D, 6D, or 28D). These neural and behavioral RDMs were compared to identify which models best account for the brain's spontaneous encoding of emotional expressions. Future ongoing analyses aim to gain more insight into which brain areas preferentially encode high-dimensional representations and which rely on coarser, lower-dimensional codes. **RESULTS:** All models significantly captured meaningful structure in the neural representation of emotion perceptions from facial-bodily expressions. These regions largely overlapped with key nodes of the social cognition network, including the dorsomedial prefrontal cortex (dmPFC), superior temporal sulcus (STS), temporoparietal junction (TPJ), and precuneus. Crucially, the 28D semantic model consistently provided the best fit to the neural representational geometry across these regions. **CONCLUSIONS:** These findings provide evidence that emotion state inferences from visually-based expressions are supported by a high-dimensional representational structure. Accordingly, we argue that a comprehensive account of emotion perception must embrace the inherently high-dimensional nature of social-semantic representation. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported in part by NIH-NIMH grant R01-MH112640 (J.B.F.)

TB5- Differentiable idiosyncrasy modeling (DIM): A general IS-RSA framework for discovering and testing hypotheses about individual differences

Jinwoo Lee ¹, Eshin Jolly ^{2, 3}

¹ University of California, ² University of California, San Diego, ³ University of California San Diego

BACKGROUNDS: Intersubject representational similarity analysis (IS-RSA) has become the predominant approach for testing how idiosyncratic brain responses can be captured by psychological features. Typically researchers employ a single psychological measure of interest and one of two strategies to quantify the intersubject 'relationship' in a psychological space: (a) Nearest Neighbors (NN), which uses relative metrics (e.g. Euclidean distance); (b) Anna Karenina (AnnaK), which uses scale-sensitive ones (e.g. mean). Here, we demonstrate how these approaches can be thought of more generally under a new framework called Differentiable Idiosyncrasy Modeling (DIM).

DIM allows researchers to either specify or discover relationship functions that integrate multiple psychological variables into a single interpretable model. Through extensive simulations and extended analyses of prior literature, we provide a proof-of-concept that demonstrates DIM's robustness to recovering true cross-domain association while discovering new idiosyncratic structure beyond traditional IS-RSA. **METHODS:** We developed a prototype of DIM, which learns input weights to maximize the correlation between input and target matrices (Fig 1a), while also supporting a 'no-learning' mode with equal weights to replicate

traditional IS-RSA (Fig 1b). As validation, we reproduced and extended Kim & Kim (2022), which tested associations between mean anxiety scores and vPFC-amygdala morphological dissimilarity using the AnnaK. No-learning DIM was applied to young and older groups (N = 119 and 45), with correlation tested via 1,000 Mantel tests. To extend this, we tested whether learning DIM could discover a more predictive and interpretable trait profile than a single anxiety score. Using five additional traits related to vPFC-amygdala structure (reappraisal, suppression, neuroticism, alexithymia, impulsivity), DIM learned their optimal linear combination yielding the most predictive trait profile score. For validation, DIM was trained on the younger group and tested on the older one. Finally, simulation analyses tested DIM's recovery performance across varying noise and multicollinearity levels.

RESULTS: When using a single anxiety measure, DIM successfully reproduces the result from Kim & Kim (2022) (Fig 1c): participants with more anxiety had less similar brain structure. When integrating multiple measures, we find that neuroticism, suppression, and impulsivity better predict brain morphology (18% increased out-of-sample accuracy; Fig 1d). Further, simulation analyses demonstrated DIM's robust recovery of cross-matrices correlations and feature weights across multicollinearity and noise levels (Fig 1e-f). **CONCLUSIONS:** DIM generalizes IS-RSA, extending the analytic scope from testing single trait-brain associations to discovering the optimal axis from multiple psychological variables for maximal alignment with the brain. Researchers can now explore which combinations of psychological variables—beyond isolated measures—best predict neural idiosyncrasy and identify the key features. This enables novel hypothesis generation and testing regarding how interacting factors jointly sculpt idiosyncratic brain patterns, establishing DIM as a robust framework for parsing complex individual differences. **ACKNOWLEDGEMENTS:** This work was supported by UCSD research funding. We thank Dr. Minue Kim for sharing the dataset.

TB6- Trait anxiety is associated with idiosyncratic neural event boundaries during naturalistic movie-watching

Alicia Liu ¹, Jadyn Park ¹, Jiajie Chen ¹, Haena Kim ¹, Yuan Chang Leong ¹

¹ University of Chicago

BACKGROUND AND AIMS::: We experience the world continuously, but our brains naturally organize this stream into smaller units—a process known as event segmentation. These “mental chapters” serve as building blocks for memory and interpretation. In this study, we apply data-driven methods to detect neural event boundaries from a large-scale neuroimaging dataset to compare how anxious and non-anxious individuals neurally segment continuous experience. We leverage computer vision and LLM ratings to relate stimuli features to event segmentation. **METHODS:** We analyzed movie-watching fMRI data from the Cam-CAN dataset. We identified equally-sized control and anxiety groups (N=60 each) based on the anxiety subscale of the Hospital Anxiety and Depression Scale (anxiety mean=10.2, SD=2.4; control mean=2.8, SD=1.3). We first used Greedy State Boundary Search (GSBS) to identify the number of events during movie-watching and then applied Hidden Markov Models (HMM) to estimate individual event boundary distributions. For each participant pair, we identified event boundary timepoints estimated by the HMM and computed pairwise dissimilarity using Earth Mover's Distance (EMD). We fit Bayesian multilevel models to model EMD score as a function of dyad composition (anxious-anxious, control-control, anxious-control), accounting for the dependence structure by including random effects intercepts for each participant. To quantify movie features, we leveraged GPT-4o to generate scene-level anxiety, valence, and arousal ratings. We used OpenCV to extract low-level visual features (brightness, motion, and optical flow). We then fit Bayesian multilevel models to predict boundary variability from the movie features. **RESULTS:** We found that neural event segmentation rate and the posterior to anterior hierarchy of event timescales was preserved across groups. However, anxious individuals had more idiosyncratic boundaries, exhibiting reduced alignment to both control individuals and one another. Network overlap computed with dice coefficient and surface-based spin permutation testing indicated that regions with idiosyncratic boundaries significantly overlap with the dorsal attention network (DAN) and the frontoparietal control network (FPN), suggesting that anxiety-related disruptions in top-down attentional control may contribute to less consistent segmentation. Group differences in event boundary variability was greater during scenes rated as more anxiety-provoking, indicating that event boundary idiosyncrasy was driven by differences in stimulus processing rather than non-specific fluctuations in neural patterns. **CONCLUSIONS:** Together, these findings suggest that idiosyncratic event models in anxious individuals result in non-normative organization of continuous experience, leading to more individualized and inconsistent event boundaries. Such variability in segmentation may have downstream consequences for prediction, memory, and social cognition, offering a potential neural mechanism by which anxiety influences the interpretation and recall of everyday

experiences. Our findings highlight trait-level variability as a lens through which the brain parses temporal information and offers a neurocomputational framework for investigating individual differences in naturalistic event cognition.

ACKNOWLEDGEMENTS AND FUNDING: This study received no external funding.

TB7 - Reliability of brain activation measures from a self-other processing fMRI task across three studies of psychiatrically diverse samples

Nikki Puccetti¹, Athena Biggs¹, Jay Fournier¹

¹ Ohio State University

BACKGROUND AND AIMS:: Across social, affective, cognitive and clinical neuroscience, task-fMRI brain activation metrics often fail to demonstrate acceptable reliability. Specifically, univariate estimates derived from contrasts, or subtractions of one task condition from another, demonstrate poor-fair internal consistency, according to meta-analyses. A measure cannot be valid without being reliable; thus, it is critical to identify analytic methods that improve reliability and capture meaningful neural signal. The current investigation examined the reliability of brain activation metrics during a common self-other processing task and the utility of an alternative modelling approach that does not rely on contrasts. **METHODS:** We examine both internal consistency and test re-test reliability (similarity of estimates from repeated measurements) of brain activation during a self-other processing fMRI task across 3 studies, including psychiatric controls (N=65) as well as current (N=132) and previously depressed (N=35) participants. During the task, participants rated how strongly they believed positive and negative thoughts (Automatic Thoughts Questionnaire) about themselves and famous others. Using the Power-264 atlas, we calculated split-half reliability and intraclass correlations for the 4 conditions themselves (e.g. positive self) and a traditional Self-Other contrast. We hypothesized that condition estimates would demonstrate superior reliability than the contrast and 2) condition estimates, used in repeated measures generalized least squares (GLS) model with r-side modeling to capture the repeated structure, would identify the expected neural signal from the task. **RESULTS:** Across studies and samples, split-half reliability was superior for estimates of the conditions themselves (range=.846-.899 indicating excellent internal consistency) compared with Self-Other contrasts (range=-0.06-.321, indicating poor internal consistency). In 28 participants that repeated a brief version of this task 1 week later, test-retest reliability for self and other condition estimates (Mean ICC range=.41-.46) were higher than the Self-Other contrast (Mean ICC=-.16). Using the condition estimates in a repeated measures GLS model, we observed brain activity in line with self- and social-cognition research and overlapping with Neurosynth keyword maps: the self condition related to greater activity in the visual cortex and ACC, and the other condition related to activity in the cerebellum, superior frontal gyrus, lateral parietal lobe, posterior cingulate cortex, lateral temporal lobe, amygdala, insula, and ventrolateral prefrontal cortex.

CONCLUSIONS: The self-other processing task demonstrates excellent internal consistency, but only when estimating the conditions themselves and not the canonical self – other contrast. The self – other contrast also showed the lowest test-retest reliability.

Our results provide additional support for the ongoing concern around contrast-based analyses of task-based fMRI and we recommend that researchers should always report the internal consistency of their brain measures. Promising alternative methods, including repeated measures modelling of conditions themselves, appear to both improve reliability and capture meaningful social and self-related neural activity. **ACKNOWLEDGMENTS AND FUNDING:** Support came from The Pittsburgh Foundation and NIMH grants 1R01MH112758-01A1 and 1R21MH122674-01 (Fournier).

Faculty Blitz Talk: Saturday, April 18 11:30-12:30

FB1 - Stereotypes activate covert neural representations in social inference, perception, and memory

Jon Freeman ¹

¹ Columbia University

BACKGROUND AND AIMS::: Social categories and stereotypes are known to operate automatically, yet the representational form of their influence in the brain remains poorly understood. The present work provides neuroimaging evidence of “covert” representations activated by categories and stereotypes that are not explicitly present in a social stimulus and often not consciously endorsed. Across three fMRI studies, we examined whether categories and stereotypes covertly shape representational spaces across multiple levels of social cognitive processing, including how we understand, perceive, and remember others. **METHODS AND RESULTS:** In Study 1, subjects (N = 26) viewed faces during fMRI. Multivoxel pattern similarity analyses revealed that neural patterns in a region involved in domain-general concept activation (middle temporal gyrus; MTG) covertly tracked faces’ positions within a trustworthiness–dominance space, even among subjects who explicitly rejected making such inferences ($P < .05$, corrected). Similar representational structure emerged in the temporoparietal junction (TPJ), superior temporal sulcus (STS), and anterior temporal lobe (ATL), but only among subjects who explicitly endorsed these inferences, revealing a dissociation between implicit activation and explicit application of facial stereotypes. Study 2 tested whether similar latent representations extend beyond social inference to shape perception. Subjects (N = 31) viewed images of guns or tools following Black or White face primes. Tool images preceded by a Black face elicited neural patterns more similar to the typical gun pattern than when those images were preceded by a White face across ventral-visual regions involved in object perception ($P < .05$, corrected). The strength of this covert gun-like representation predicted reaction-time delays in identifying these Black-primed tools as tools rather than guns, suggesting confirmation bias at the level of perception. In Study 3, we examined whether similar category-based structure emerges during memory retrieval. Subjects (N = 32) completed an fMRI-adapted “Who Said What?” memory confusion task. When subjects attempted to recall a speaker’s identity, the ventrolateral prefrontal cortex (VLPFC)—a region centrally involved in memory selection—spontaneously reinstated neural representations of other individuals who shared the speaker’s race, even when the speaker was correctly identified and despite the fact that these individuals were never associated with the retrieved statement. **CONCLUSIONS:** Across social inference, perception, and memory, we show that social categories and stereotypes covertly structure neural representational spaces. Multivoxel pattern analyses demonstrated that category knowledge activates latent representational content in domain-general conceptual regions, object-sensitive ventral-visual cortex, and memory circuitry, even when directly absent from the stimulus and not consciously endorsed. These covert representations shape how people are conceptually organized along social dimensions, bias perception of socially-relevant objects, and influence the neural reinstatement of person representations. Together, these findings suggest that covert modulation of neural representational structure is a core mechanism through which social biases arise and persist.

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FB2 - How do daily experiences sculpt neural representations of others? An intensive longitudinal fMRI study

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BACKGROUND: Human minds contain the capacity to maintain rich mental representations (MR)—schemas that guide perception, prediction, and action in social contexts. Mental representations are central to social cognition. They allow us to anticipate others’ actions, infer intentions, and navigate interaction. Importantly, MRs of other individuals are theorized to be dynamic: for representations to help in adaptively navigating our social worlds, they must necessarily be updated as a function of experience. Yet little work has been devoted to investigating how MRs of others evolve across time with accumulated social experience. Most prior work has instead treated representations as relatively static snapshots. In this submission, we leverage intensive longitudinal fMRI, an emerging technique, to examine how daily social experiences sculpt representations of others over time. **METHODS:** N=5 undergraduates completed a study in which each participant underwent n = 20 task-based fMRI sessions over eight weeks (mean gap between scans ~2.5 days) with concurrent daily experience sampling. During each scan,

participants completed two tasks designed to elicit MRs of two friends they had made at university: a trait-judgment task and an autobiographical memory playback task (same two friends for entire study). Concurrently, participants completed daily checklists cataloging everyday behaviors with each friend, including amount of time spent, experiences of friendship cohesion, and susceptibility to each's influence. To align checklists with fMRI data, checklist variables were aggregated for days between scans and then assigned to the ensuing scan session (checklists occurring on a scan day were assigned to the next scan). We applied three complementary analytic approaches to link social experience with fMRI data: Univariate models, RSA, and voxelwise encoding models. Univariate models showed activity in cortical midline regions tracked day-to-day variation in time spent together, cohesion, and susceptibility to influence when participants accessed MRs of their friends. RSA revealed (Fig 1) that social experiences corresponded to fluctuations in multivoxel patterns distinguishing the two friends within anterior temporal cortex (ATC), superior temporal sulcus, temporoparietal junction, and cortical midline regions. Notably, regions less likely to be conceptualized as part of social cognition were also implicated (e.g., lateral, dorsal prefrontal, somatomotor cortices). Finally, voxelwise encoding models indicated fluctuations in friendship cohesion were encoded in semantic content of MRs in the ATC, suggesting experience-dependent updating of representational content. **CONCLUSIONS:** By pairing intensive longitudinal fMRI with ecological measures of social behavior, this is the first study to show that social experiences sculpt social cognitive brain activity over the course of day-to-day timescales. Our findings provide evidence that short time-course neural MRs of close others fluctuate in tandem with lived social experience, implicating canonical 'social brain' regions as well as regions that are not as strongly linked with social cognition. Our work thus helps delineate putative neural mechanisms for how MRs are shaped by daily social life, filling a major gap in the literature. Acknowledgments. This work was supported by funds from the University of Wisconsin. We appreciate the efforts of the Waisman Center Brain Imaging Core staff.

FB3 - Emotion sculpts time in memory: Evidence from a dense-sampling study of real life emotional events

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Emotions are temporally dynamic and sculpt memory for the temporal context in which events occurred. Time is a fundamental contextual dimension of memory, such as remembering when events occurred or how long they lasted—yet precisely how emotional events sculpt temporal memory remains unclear. Previous work in clinical samples—including depression and post-traumatic stress disorder (PTSD)—suggests temporal disorganization in event memory. However, results conducted in the laboratory have been mixed, suggesting occasional enhancement as well as impairment of temporal memory by negative emotion (Petrucci & Palombo, 2021). Here, we used experience

sampling to measure participants' emotional responses and temporal memory for real-life events over a 9-week period.

Participants completed daily diaries reporting on the most negative and positive events from each day, while providing valence and arousal ratings

and uploading a picture that reminded them of each event. We then measured temporal memory for and recovery from those events using weekly surveys. Negative events were remembered with lower temporal memory accuracy than positive ones.

Moreover, positive (vs. negative) events tended to be remembered as having occurred more recently. Next, we used fMRI to examine how emotion modulated temporal context coding in the hippocampal-entorhinal (HPC-EC) system in a subset of participants. Replicating and extending prior work (Nielson et al. 2015), larger temporal distance between events predicted lower neural similarity in HPC and EC. Critically, emotional-valence similarity attenuated this relationship in EC, particularly for negative events—suggesting that negative emotion compresses neural representations that track temporal context. Collectively, these findings underscore that emotion shapes behavioral and neural representations of temporal context for real-life events at ecologically valid timescales, providing new insight into how the HPC-EC system integrates affect and time to support episodic memory.

FB4- Psychosocial and neurobiological mechanisms of empathy decline in medical students and effects on pain treatment decisions

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BACKGROUND AND AIMS::: Empathy declines substantially during medical training, particularly during clinical rotations when exposure to patient suffering intensifies. This decline co-occurs with rising stress and burnout, yet underlying mechanisms remain unclear. Theoretical models suggest repeated exposure to patient suffering leads to emotional overwhelm, triggering protective disengagement that erodes empathic accuracy. We tested whether neural markers of empathic engagement decline across medical training and whether dissociable neural mechanisms differentially predict clinical accuracy versus personal distress. Specifically, we examined the anterior mid-cingulate cortex (aMCC)—implicated in empathic appraisal and perspective-taking—and the anterior insula (AI)—associated with affective resonance and personal distress. **METHODS:** We conducted two cross-sectional studies with medical students (N=135 total): an fMRI study (N=63, University of Miami) and a behavioral telemedicine study (N=72, national sample). In the fMRI study, participants completed a virtual pain management task using validated video stimuli of mock patients experiencing calibrated thermal pain with patient-reported ground truth pain ratings. We assessed self-reported empathy using the Interpersonal Reactivity Index (IRI), neural activation during pain observation, and empathic accuracy operationalized as concordance between clinician and patient pain ratings. Region-of-interest analyses examined activation in aMCC and AI—regions derived from a meta-analysis of pain empathy studies (Lamm et al., 2011). The telemedicine study, involving live interactions with trained patient actors, provided a replication sample for self-reported empathy effects across training years. **RESULTS:** Fourth-year students reported lower perspective-taking than first-year students—an effect replicated across both samples.

In the fMRI sample, fourth-year students also showed reduced neural activity within empathy-related brain regions (Neurosynth empathy automated meta-analysis) during pain observation, as well as reduced empathic accuracy: MS1 students showed near-perfect concordance with patient pain ratings, while MS4 students systematically underestimated pain by ~0.5 points on a 10-point scale. We then examined whether neural declines predicted reduced concordance: average activity within the Neurosynth empathy mask significantly predicted pain rating accuracy ($p \leq .05$). We then conducted region-of-interest (ROI) analyses with the aMCC and AI and found a dissociation with implications for intervention: aMCC activity significantly predicted concordance with patient pain ratings ($\beta = .04$, $SE = .01$, $t(2267) = 2.72$, $p < .01$), while AI activity did not predict accuracy and was instead predicted by IRI Personal Distress ($\beta = 0.20$, $SE = 0.07$, $t(65.50) = 2.68$, $p = .009$). **CONCLUSIONS:** These findings provide novel evidence that neural correlates of pain empathy predict clinician-patient pain concordance and that empathic declines during training extend to both empathic accuracy and its neural correlates. The dissociation between aMCC (linked to perspective-taking and accuracy) and AI (linked to personal distress but not accuracy) suggests that interventions enhancing perspective-taking may improve empathic accuracy without increasing emotional overwhelm—theorized to contribute to empathy decline and burnout. This work provides a foundation for evidence-based approaches to preserving empathic, high-quality patient care while protecting clinician mental health.

FB5- Surprise-related brain regions encode high-level visual features of magic tricks

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BACKGROUND AND AIMS::: Prediction error is one of the strongest and most reliable antecedents of emotion. Prediction errors in lab studies typically involve a human-defined rule structure within which predictions can be made and violated, whether a simple structure like a lab task or a complex structure like a team sports game. However, prediction-error-related emotions like surprise can also arise when seemingly inherent object properties appear to be violated in the physical world. For example, magic tricks elicit subjective surprise when objects appear to violate causal beliefs about object constancy. It remains unclear how the brain tracks specific perceptual features and integrates them over time to calculate such world-knowledge prediction error in the absence of human-generated rules and in-lab associative learning. **METHODS:** To explore this question, we analyzed a dataset of neural responses (N = 49) during viewing of magic trick performance videos (Meliss et al. 2024). Critically, all magic tricks featured familiar objects (e.g., spoons, cards, soda cans) that suddenly appear to violate a constant object property (e.g., disappear, change color). We analyzed multivariate BOLD timecourses in the nucleus accumbens (NAcc) and ventral tegmental area (VTA), dopaminergic reward-processing regions that code for surprise during complex events (Antony et al. 2021), and the amygdala, which processes the valence of surprising facial expressions. We predicted these regions' BOLD activity using two candidate feature encoding models: one model of static visual features for object classification estimated from single stimulus frames (AlexNet, Krizhevsky, Sutskever, and Hinton 2012) and one model of dynamic visual features for human action classification estimated from TR-length subclips of stimuli (MViT2, Li et al. 2022). Critically, both models operate only on

image information, without receiving top-down information about object properties. Encoding model generalization was evaluated using 10-fold cross-validation grouped by subject. **RESULTS:** We found that BOLD patterns in the NAcc, VTA, and amygdala encoded fluctuations in object-related visual features (NAcc: mean cross-validated $r = 0.036$, $SE = 0.003$; VTA: mean $r = 0.055$, $SE = 0.004$; amygdala: mean $r = 0.051$, $SE = 0.004$) and action-related visual features (NAcc: mean $r = 0.035$, $SE = 0.004$; VTA: mean $r = 0.050$, $SE = 0.003$; amygdala: mean $r = 0.050$, $SE = 0.003$) **CONCLUSIONS:** We found that the nucleus accumbens, ventral tegmental area, and amygdala encode fluctuations in visual features. associated with subjectively surprising magic tricks. These results suggest that these regions track not only higher-order belief (NAcc, VTA) and valence (amygdala) components of surprise as it unfolds, but also the high-level visual substrates of that information. Importantly, while both object- and action-related visual features were associated with BOLD activity in all ROIs, neither set of features showed consistent “activation” peaks at experimenter-labeled “moments of surprise,” suggesting that such moments did not appear as linear functions of high-level visual features. Future work is needed to model the specific ways in which the brain extracts subjectively surprising moments from a continuous stream of visual input.

FB-6 Negative Emotion Alters Event Knowledge and Memory Communication

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Memories are not only internal representations to support adaptive behavior for the self, rather they also serve as communicative acts that allow us to convey experience and knowledge to others. Yet affective memory research has focused almost exclusively on the properties of memories as they exist within an individual, leaving open questions on how emotion-related distortions propagate across individuals during memory communication. Here we show that negative emotions disrupt the ability to effectively communicate knowledge to others, and that this effect is driven by disruptions in event knowledge that emerges during encoding, lingers into memory, and ultimately impair a other’s ability to understand the original event. Across multiple behavioral studies, participants viewed a series of horror and neutral video clips and made ratings about the intensity and valence of each clip, as well as how well they understood each event. Participants then recalled these memories after a 24-hour delay. A naïve group of participants then read these memory transcripts and rated how well they understood what was being conveyed. Our results show that negative emotion made events harder to understand during encoding, which in turn produced an over-representation of perceptual details in memory. The degree to which memories were weighed toward perceptual details predicted how poorly naïve listeners understood them. We term this sequence of events confusion contagion — the phenomenon whereby negative emotion impairs event understanding, producing memories structured in a way that transmits that confusion to an audience. Critically, this failure is not attributable to the listener’s emotional state or cognitive capacity, but to the structural properties of the memory itself.

SANS Conference Abstracts

Poster Session 1

Thursday, April 16, 2026 15:30-17:00

P1-A-1 - Affective experiences change less than cognitive evaluations under reappraisal

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Cognitive reappraisal is an emotion regulation strategy that involves reinterpreting a situation to alter its emotional impact, yet studies rarely distinguish between one's hedonic feelings (affective valence) and one's cognitive evaluation of the situation (semantic valence). Although recent work has highlighted a dissociation between these two kinds of valence, it remains unknown how strongly cognitive reappraisal shifts either one. We address this gap through two preregistered studies. In Study 1, N=155 participants completed a classic cognitive reappraisal task in which they either responded naturally to or cognitively reappraised negative images. Critically, we manipulated whether participants rated either affective valence, semantic valence, or "default" valence (conventional instructions). Reappraisal significantly improved valence ratings in all conditions, but reappraisal most strongly influenced semantic valence and least strongly affective valence. Interestingly, default valence behaved most similarly to semantic valence, suggesting that existing reappraisal studies largely document changes in semantic evaluations, more than affective experiences. Study 2 (N=105) replicated these effects within-subjects. Our findings suggest that semantic and affective valence ratings diverge in their responsiveness to regulation and imply that existing research likely overstates the effect of reappraisal on felt emotion. These findings call for a refined understanding of valence and more focused methods to assess the hedonic impacts of emotion regulation.

P1-A-2 - The moral foundations MRI collection: A multi-center, multi-country functional MRI collection for evaluating moral judgment

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BACKGROUND AND AIMS:: The new synthesis in moral psychology has revitalized the pursuit of understanding how and where moral judgment operates in the brain. Inspired by questions concerning morality's unified versus pluralistic nature, representational structure, and emotional versus rational basis, we have run several fMRI projects over the last years to study the neural substrates underlying moral judgment. Many questions concerning the neural basis of moral judgment remain, and we believe that making these datasets publicly available will catalyze joint progress in social and affective neuroscience. To this end, we present the moral foundations MRI collection (MOFOMIC) – four datasets featuring high-quality, multimodal 3T MRI data and detailed demographic and psychometric data, which are publicly available from the OpenNeuro data sharing platform (Fig. 1). **METHODS:** MOFOMIC consists of four neuroimaging datasets featuring variations of moral judgment paradigms for standardized moral foundations vignettes and socio-moral images, "NIMF1" (N=64; Neuroimaging Moral Foundations) and "NIMF2" (N=31), both collected at UC Santa Barbara; "NIMF3" (N=27) collected at Duke University; and "NIMF4" (N=30) collected at the University of Amsterdam. Each dataset contains MRI data from multiple modalities (structural and functional MRI), and a variety of demographics (age, sex, etc.), morally relevant psychometric measures (moral concerns, political ideology, etc.), and behavioral information related to the fMRI paradigms. We offer both raw and preprocessed data from the latest versions of well-established preprocessing and quality control pipelines, all consistently formatted according to the Brain Imaging Data Structure, to facilitate more efficient secondary analyses without the need for executing additional quality control or preprocessing steps.

RESULTS: Across a range of quality control metrics for both anatomical (CNR; CV; EFC; INU; WM2MAX) and functional (tSNR; MeanFD; GCOR; GSR) MRI data, we demonstrate that MOFOMIC's MRI data exhibits high reliability. Statistical parametric maps for task-based, graded moral judgment paradigms showed reliable activation in mentalizing networks across datasets, and dual-regression results for resting-state scans revealed reliable components for functional-connectivity based analyses. Moreover, behavioral response patterns across moral judgment paradigms and self-report questionnaires passed manipulation checks and replicated findings from previous studies. **CONCLUSIONS:** Due to MOFOMIC's size (n=152), multiple scanning centers, and variation in cultures, languages, and paradigms, we envision that it offers several paths for secondary analyses. Importantly, as more neuroimaging studies probing moral judgment in non-WEIRD cultures are conducted, MOFOMIC will offer an important baseline for probing the cross-cultural universality of moral norms and their underlying neural representation. The rich psychometric measures contained in MOFOMIC provide novel ways for constructing machine-learning models that combine sociodemographic with fMRI data for predictive modeling of moral judgment and exploring individual differences in neural representations of moral cognition. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by grants from the Army Research Lab (W911NF-15-2-0115) and John Templeton Foundation to R.W. (W911NF-15-2-0115); the Duke Institute for Brain Sciences to W.S.A.; and the Amsterdam School of Communication Research (ASCoR-u-2023-Hopp; ASCoR-u-2024-Hopp) to F.R.H.

P1-A-3 - Role of sensory afferents and heart rate variability in perception of social touch and its modulation of pain

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BACKGROUND AND AIMS:: Social connection- a sense of belonging and closeness- is important across the human lifespan for health and well-being. Social connection can be maintained by social touch including hugging, hand holding, and stroking. Gentle stroking is an optimal stimulus for C-tactile (CT) sensory afferents, whose activation predicts ratings of touch pleasantness. CT fibers are therefore thought to play an important role in social touch. However, emerging evidence suggests that perception of social touch may also involve myelinated A-fibers. We investigated the dependence of gentle stroking on A versus C fibers using compression (preferential block of A-fibers) and anesthetic nerve blocks (preferential block of C fibers). Since social touch can also reduce pain, we also tested the effects of gentle stroking on acute pain perception and the role of the parasympathetic nervous system (measured by heart rate variability; HRV) in this process. **METHODS:** Healthy adults completed a compression nerve block (N = 24) and an anesthetic nerve block (0.06% bupivacaine; N = 19) in separate sessions. At baseline, participants completed a touch pain modulation task on the arm consisting of heat pain, gentle stroking, heat pain and stroking together, and finally a second heat pain alone. Tests of nerve function were performed every 5 minutes until nerve block criteria were reached (loss of light touch detection for A-fibers; loss of warmth perception for C-fibers). After loss of A or C-fiber function, the touch pain modulation task was repeated. Heart rate was recorded for the duration of the session by an electrocardiogram. The root mean square of successive differences (RMSSD) was used as a measure of HRV. **RESULTS:** Pleasantness ratings of gentle stroking decreased after compression block (confirming A-fiber dependency; $W = 197$, $p = .023$) and anesthetic block (confirming C-fiber dependency; $W = 114$, $p = .018$). Pleasantness ratings were similarly significantly lower on the blocked hand than the control hand after both the compression block ($W = 231.5$, $p < 0.01$) and anesthetic block ($W = 101$, $p < 0.01$). While gentle stroking did not significantly reduce heat pain in our brief paradigm ($W = 43$, $p = 0.82$), HRV increased during the gentle stroking that followed heat pain ($W = 260$, $p = .03$). Greater increases in HRV between the pain and stroking period correlated with lower pain ratings of the subsequent heat pain stimulus ($r(39) = -.31$, $p = .049$). However, these increases in HRV were not correlated with touch pleasantness ($r(39) = -.08$, $p = .61$). **CONCLUSIONS:** Our data demonstrate dependence of social touch pleasantness on both A-fibers and C-fibers. Ratings of heat pain administered after social touch were predicted by gentle touch-associated improvements in HRV. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by NCCIH (R01-AT012048) and the ACTRI at UC San Diego, funded by NCATS (NIH UL1TR001442).

P1-A-4 - Associations between problematic social media use, inhibitory control, and mental health indicators in

young adults: Evidence from a functional near-infrared spectroscopy study

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BACKGROUND AND AIMS::: Social media has become a dominant force in daily life, especially among young adults. While social media platforms may confer benefits such as enhancing social connection, problematic social media use (PSMU) can also occur for some users. PSMU is defined as maladaptive, excessive, or compulsive engagement with social media that interferes with daily functioning. Prior research has demonstrated that higher PSMU is linked to poorer mental health outcomes, including more depression and anxiety symptoms. Neuroimaging studies also have shown that PSMU is associated with altered activity in multiple regions of prefrontal cortex during inhibitory control, including dorsolateral prefrontal cortex (dlPFC), medial prefrontal cortex (mPFC), and ventrolateral prefrontal cortex (vlPFC). However, further research is needed to understand the neural correlates of PSMU among young adults and attendant differences in inhibitory control and mental health indicators. To address this gap, the present study utilizes functional near-infrared spectroscopy (fNIRS) to investigate associations between PSMU, inhibitory control, and anxiety and depression symptoms. We hypothesize that those participants with higher PSMU scores will exhibit performance deficits during a numerical Stroop task reflecting poorer inhibitory control (H1) and report more anxiety and depression symptoms (H2). Moreover, we hypothesize that these relationships will be accounted for by changes in prefrontal cortex activity during a numerical Stroop task, such that those participants with higher (vs. lower) PSMU scores will have lower oxygenated hemoglobin (Oxy-Hb) concentrations in dlPFC and vlPFC during incongruent (vs. congruent) trials of the Stroop task (H3). **METHODS:** We are in the process of recruiting forty young adults, aged 18–25, without current psychiatric diagnoses or psychotropic medication from the Worcester Polytechnic Institute community. Participants will complete a numerical Stroop task to measure inhibitory control while PFC activity is recorded using fNIRS. NIRS channels were positioned using the fNIRS Optodes' Location Decider (fOLD) with the maximum probability method, covering bilateral dorsolateral prefrontal cortex, frontopolar regions, and frontal eye fields. Changes in oxygenated hemoglobin will be calculated using the modified Beer–Lambert Law. Data will be processed using MATLAB and NIRx. Participants will also complete self-report measures assessing PSMU, anxiety (GAD-7), and depressive symptoms (PHQ-8). **RESULTS:** Data collection is underway and will be completed by February, 2026. Once data collection is complete, we will conduct preregistered analyses to test our predictions about whether individual differences in PSMU are associated with deficits in inhibitory control (H1), poorer mental health (H2), and attendant Oxy-Hb changes in different subregions of prefrontal cortex (H3). **CONCLUSIONS:** This study aims to explore the behavioral and neural mechanisms linking PSMU with anxiety and depression symptoms and inhibitory control in young adults, addressing a key gap in literature. Findings are expected to contribute to a growing literature on links between digital media use and mental health by identifying potential neural correlates of maladaptive patterns of social media engagement. **ACKNOWLEDGEMENTS AND FUNDING:** This study was supported by faculty startup funds awarded to the PI (Lopez).

P1-A-5 - Examining linguistic markers of psychological distancing during longitudinal emotion regulation training in bereaved spouses

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BACKGROUND AND AIMS::: Psychological distancing is an effective cognitive reappraisal strategy involving thinking about negative stimuli from an objective and impartial perspective. Previous research has demonstrated how linguistic distancing (i.e., the practice of using distancing related language, for example via low frequency of first person singular pronouns, present tense verbs, etc.), can reduce negative affect and enhance general well being (Nook et al., 2017; Shahanae et al., 2019). An alternative tactic for cognitive reappraisal is reinterpretation, where one thinks of an alternate narrative for how something will get better or is not as bad as it first seemed. The present study aims to examine whether longitudinal training in cognitive reappraisal via psychological distancing or reinterpretation in bereaved spouses reporting at least moderate stress increases the usage of linguistic distancing (LD) markers when speaking about their bereaved partner. We hypothesize that individuals trained in the distancing group will utilize LD more frequently than individuals in the reinterpretation group. **METHODS:** Participants had recently lost a romantic partner within the previous 5-7 months, and were recruited for a larger longitudinal fMRI study.

Participants were randomly assigned to either the distancing training or reinterpretation training group. Participants completed a widely-used reappraisal task involving standardized pictures reflecting general bereavement themes (e.g., grief, loss, sadness, fear, frustration, anger). Participants in the distancing group were trained to reappraise by thinking about the pictures objectively and impartially or having occurred a long time ago, while participants in the reinterpretation group were asked to reappraise by thinking about the pictures as being not as bad as they first seemed, or that things will be better in the future. Training consisted of 5 total sessions over approximately 2 weeks. Participants were asked to speak freely about their lost partner for 6 full minutes at session 1 prior to receiving any training, and at session 5. Interviews were recorded, then transcribed. Each interview was transcribed by two trained independent coders, then merged by a third independent coder. **PLANNED ANALYSIS:** A linguistic distancing composite score will be computed using a previously validated index (Nook et al., 2017; Shahane et al., 2019). We will use linear mixed models to examine effects of group and session, and their interaction, on composite linguistic distancing, as well as on positive and negative affect word frequency. **PROPOSED SIGNIFICANCE:** This study aims to determine whether recently bereaved adults receiving cognitive reappraisal training via psychological distancing are more likely to utilize linguistic distancing relative to bereaved adults receiving training in reinterpretation. If substantiated, results from this study may suggest future personalized clinical interventions in bereaved adults.

P1-A-6 - Neural correlates of positive and detached reappraisal across middle age

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BACKGROUND AND AIMS:: Reappraisal is often treated as a unitary form of emotion regulation (ER), yet this perspective obscures meaningful differences among reappraisal strategies and affective targets (i.e. valence). This has contributed to mixed cognitive neuroscience literature, particularly regarding key neural mechanisms, individual differences, and age-related effects. The present study aimed to distinguish two ER strategies typically grouped under the category reappraisal, namely positive and detached, by investigating whether these strategies have dissociable impacts on positive and negative affect (PA, NA). **METHODS:** Utilizing an event-related fMRI trial-by-trial cueing design and a wide age-range sample, middle to older-aged adults (35-75years; n=68) viewed affective stimuli naturally or were cued to use positive or detached reappraisal. Multilevel mixed-effect models quantified ER success as subjective affect change during each reappraisal type relative to natural viewing, with NA and PA assessed independently. As a form of feature selection, backward stepwise regression was employed to determine the most influential brain regions of interest (ROIs) for both affect type and reappraisal strategy. Exploratory analyses utilized N-back performance as a cognitive control individual difference moderator. **RESULTS:** Both strategies were effective in modulating subjective affect ratings, but a clear double dissociation was observed. Behaviorally, detached reappraisal downregulated NA more strongly, whereas positive reappraisal more effectively increased PA. These patterns were paralleled by strategy- and valence-specific patterns within the fMRI data, which revealed both shared, distinct, and lateralized mechanisms. A greater number of ROIs were linked to increased PA (relative to NA), including reward-related circuitry (ventromedial and orbital PFC, nucleus accumbens), while positive (relative to detached) reappraisal more strongly engaged lateral PFC (IPFC). Detached reappraisal was more strongly associated with the right amygdala and anterior cingulate cortex, particularly in NA downregulation. Age-related analyses revealed that older adults reported higher overall PA, but this did not translate to greater ER success. Instead, age-related reductions in IPFC activity were offset by individual differences in cognitive control function (N-back) that supported positive reappraisal success. **CONCLUSIONS:** Analyses revealed behavioral indicators of ER success depended on type of reappraisal and affect, highlighting mechanistic distinctions that have often been assumed but rarely demonstrated. The fMRI results reinforced this, further emphasizing the need to differentiate contributions to positive versus detached reappraisal, and to PA versus NA, through direct brain-behavior relationships, which revealed different patterns in both IPFC and affect-related neural circuitry. Collectively, these findings suggest that inconsistencies within the cognitive fMRI of ER and aging literatures may stem from ambiguous definitions of ER and affect. Conversely, conceptual clarity in distinguishing strategies and affect dimensions can reveal important dissociations in subjective experience and accompanying brain activation patterns linked to successful ER. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by the MARCER (Mechanisms of Age-Related Changes in Emotion Regulation) Project, funded by the National Institutes of Health (NIH R01 AG070139).

P1-A-7 - Autonomic arousal as a social modulator of pain: Skin conductance responses to pain in low- and high-trust medical contexts

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Skin conductance responses (SCR) have long attracted interest as a potential biomarker of pain due to their high accessibility and sensitivity, primarily serving as an index of nociceptive intensity and autonomic arousal. However, relatively little work has examined the functional role of SCR in shaping subjective pain experience, particularly within socially meaningful contexts. Moreover, it remains unclear how autonomic responses indexed by SCR relate to established neural pain biomarkers, such as the Neurologic Pain Signature (NPS), under conditions of social uncertainty and reduced trust. The present study investigates how social context, operationalized as perceived physician trustworthiness, modulates SCR responses during pain, and how these autonomic responses in turn relate to subjective pain ratings and neural pain representations. Participants (n=42) undergo an functional Magnetic Resonance Imaging (fMRI) experiment in which they receive thermal pain stimulation while interacting with physician avatars with faces manipulated to convey either high or low trustworthiness (Oosterhof and Todorov 2008; Todorov 2011; Todorov and Oh 2021). SCR data were collected simultaneously with thermal pain stimulation during the fMRI experiment. Our primary hypotheses are as follows: (1) SCR magnitude will positively predict pain intensity and unpleasantness ratings, (2) The association between SCR and pain ratings will be moderated by physician trustworthiness, and (3) SCR will explain variance in subjective pain responses that is partially dissociable from NPS expression. To test these hypotheses, we will use linear mixed-effects models with random intercepts for participants and physician avatars, controlling for stimulus intensity, run order, and demographic covariates. Moderation effects will be formally tested via interaction terms, and complementary Bayesian analyses will be conducted to quantify evidence for null effects where appropriate. To address Hypothesis 3, we will further examine fMRI data using general linear models to explore neural regions in which SCR-related variance in pain ratings extends beyond variance associated with NPS activity. Preliminary behavioral analyses indicate that phasic SCR significantly predicts both pain intensity and unpleasantness ratings

(a. intensity: $B = 5.60$, $SE = 1.55$, $t_{1807.41} = 3.61$, $P < 0.001$; b. unpleasantness: $B = 5.60$, $SE = 1.55$, $t_{1807.41} = 3.61$, $P < 0.001$).

Notably, in low-trust conditions, SCR predicts pain ratings more strongly than stimulus temperature, whereas this relationship appears attenuated in high-trust contexts. Building on these findings, the planned fMRI analyses will examine how individual variability in SCR relates to NPS expression and broader pain-related neural responses. Together, this study seeks to clarify the unique contribution of autonomic arousal to pain experience in socially uncertain and low-trust medical contexts. In doing so, it advances understanding of how bodily and neural systems jointly shape pain under conditions of reduced interpersonal trust.

P1-A-8 - Trait self-control is associated with prospective self-control cost estimates at high levels of temptation

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BACKGROUND AND AIMS: Trait self-control, as measured by the Self-Control Scale (SCS; Tangney et al., 2004) is widely used in the literature to predict real-world self-regulatory behavior. Higher scores on this trait self-control measure have been linked to better performance on laboratory self-control tasks (Schmeichel & Zell, 2007). Despite this, little work has sought to establish a relation between trait self-control and self-control behavior in the presence of rewarding stimuli, which may better reflect real-world self-control problems. Here, we examined whether trait self-control predicts choice behavior in an economic decision-making task involving self-control. **METHODS:** Healthy, hungry dieters (N = 94, mean age = 28.72, SD = 8.63; 71.28% female) came into the lab after fasting for 2-3 hours and completed a food-specific economic decision-making task. During the task they were asked to report on a trial-by-trial basis the most they would be willing-to-pay (WTP; from a \$15 study endowment) to avoid food rewards that varied in level of temptation, quantity and exposure time. Participants did this when food rewards were covered (available to view but not to consume) and uncovered (available to both view and consume).

We hypothesized that those with higher trait self-control scores—as measured by the Self-Control Scale—would report higher willingness-to-pay (WTP) to avoid encountering highly tempting food items that could derail their dietary goals. **RESULTS:** To ensure that questions irrelevant to food-related self-control were not influencing our results, we created a subset score for trait self-control by constraining our data to questions that are specifically related to eating behaviors. When temptation intensity was

at its highest (high temptation, quantity and exposure time), we found that trait self-control sub-scores were negatively correlated with participants' bids. For covered trials, we observed marginal significance (Spearman's $\rho = -0.252$; $p = 0.056$) and for uncovered trials we observed significance (Spearman's $\rho = -0.286$; $p = 0.032$). **CONCLUSIONS:** Our results suggest that when self-control demands are high, those with lower trait self-control will incur larger monetary costs to avoid highly tempting foods, suggesting an awareness of the difficulty in exerting self-control and a higher value on avoiding these tempting foods when they are available to consume vs. when they are just able to observe. This work highlights the importance of trait self-control when considering prospective control strategies. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by NIH grants R01 MH130532. Please direct all correspondence to: Candace Raio at candace.raio@nyulangone.org.

P1-A-9 - Cross-examining neural and self-reported emotional synchrony in friends

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BACKGROUND & AIMS: Naturalistic stimuli have been widely adopted in neuroscience research due to their mimicry of daily contextual complexity (Sonkusare, 2019, et al.), with many focusing on emotional responses (Saarimäki, 2021). On the other hand, introspective insight into emotional experiences is most accessible via self-report (Barrett, 2016, cited in Winkler & Appel, 2024). While hedonic and eudaimonic subjective responses to entertainment media are well-documented (Raney et al., 2019), recent work suggests a third category focusing on psychological richness (Oishi & Westgate, 2022). To better bridge these avenues of measurement, this study proposes comparing self-reported, continuous response measurement (CRM) ratings for these 3 types of reactions and region-specific neurological responses. Being time-locked to the same stimulus, we aim to use content-driven similarity to investigate patterns across emotions. H1: There will be a positive zero-lag correlation between the following neural ROI ISCs per condition –Enjoyment: Orbitofrontal Cortex, Insula (linked to how pleasure is represented, Berridge & Kringelbach, 2013) MEANINGFULNESS: Medial Prefrontal Cortex, Temporoparietal Junction (both involved in self-appraisal, Knyazev et al., 2021, rTPJ in ‘theory of mind’ reasoning, Saxe & Wenkler, 2005) Richness: Anterior Cingulate Cortex (linked to signalling need for attention in learning, Bryden et al., 2011), Inferior Parietal Lobule (linked with curiosity induction, Lieshout et al., 2018) H2: Mean neural ISC for related ROIs will be higher than chance during the moments of highest CRM ISC for all conditions. **METHODS:** The first data source is an open-source, whole-brain fMRI dataset published by The Courtois Project on Neuronal Modelling, from 4 subjects (Boyle et al., 2020). We will use the two preprocessed segments of responses to our episode of interest (Season 3, Episode 2). Our second source will be CRM data collected at a large Midwestern university using the Continuous Affect Rating and Media Annotation (CARMA) software (Girard, 2014). Participants rated the episode (~23min) for one of three emotional responses on a scale of 1 to 100 using a mouse after training on a short practice clip. Currently, we have data collected for $n=18$ (enjoyment), $n=16$ (meaningfulness), and $n=17$ (richness), and will continue data collection to acquire at least $n=30$ per condition. **ANALYSIS PLAN:** Neural, leave-one-out ISC will be computed using the BrainIAK package's ISC function to get sliding window-based correlations across conditions. The CRM data will be normalised per participant and resampled to the fMRI TRs. To compare this to the neural ISC/ROI, we will calculate the ISC between participants within each condition (as described in Kim et al., 2023; leave-one-out and cross-correlation approach). We will then examine the zero lag correlation between neural ISC in our ROIs and the CRM ISC for that condition to look for overall time-locked similarities across the two response types. Delay can be tested using cross-correlations. Finally, we will narrow down the top 20% of CRM peaks per condition and calculate the mean ISC for these in each related ROI, testing whether this is greater than in a null distribution. If time permits, we will also explore whole-brain differences in correlations between neural and CRM ISC. **ACKNOWLEDGEMENT:** The CNeuroMod team for sharing fMRI data through Courtois's donation.

P1-A-10 - Daily mood states and variability are associated with large-scale EEG network connectivity and perceptual dynamics

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BACKGROUND AND AIMS:: Daily mood states fluctuate over time and may be accompanied by changes in cognition and interpretation of events. However, it remains unclear whether ongoing mood states are associated with spontaneous perceptual dynamics, and how large-scale brain network states underlying such dynamics vary across daily life. Therefore, the present study aimed to examine how daily mood states and their fluctuations are associated with brain network activity and spontaneous perceptual dynamics, using repeated EEG measurements during eyes-closed resting conditions and Necker cube perception. **METHODS:** Nineteen participants completed 20 sessions over a two-week period. Each session included a mood assessment using POMS2, a 1-min eyes-closed resting-state EEG recording, and a 1-min EEG recording during Necker cube perception, in which participants indicated perceptual switches via key presses. EEG data were analyzed using power spectral density (PSD) and inter-regional coherence measures across seven frequency bands ($\theta 1$, $\theta 2$, $\alpha 1$, $\alpha 2$, $\alpha 3$, $\beta 1$, $\beta 2$). **RESULTS:** Inter-regional coherence analyses among left frontal, bilateral temporal, and occipital ROI pairs revealed that $\beta 1$ (14–22 Hz) and $\beta 2$ (22–30 Hz) band coherence showed significant negative correlations with Total Mood Disturbance (TMD) scores in both resting-state and task conditions (e.g., resting-state Left Temporal - Occipital $\beta 1$ -band coherence: $r_s = -0.21$, $p < 0.001$), suggesting that more negative mood states are associated with weaker β -band functional connectivity. In addition, analyses focusing on intra-individual variability demonstrated that greater day-to-day mood fluctuations were associated with increased variability of inter-regional coherence, consistently observed in the $\alpha 1$ (7–10 Hz) band between the left frontal and left temporal regions across both conditions (e.g., task: $r_s = -0.57$, $p = 0.010$). Furthermore, multiple regression analyses examining the relationships among β -band coherence, TMD scores, and perceptual switch frequency identified significant associations across multiple ROI pairs, independent of the choice of dependent variable, suggesting a shared underlying brain-behavior state rather than a unidirectional relationship. **CONCLUSIONS:** Overall, the present findings suggest that more negative mood states are associated with reduced β -band network connectivity across frontal, temporal, and occipital regions, indicating that β -band coherence reflects the valence of mood state. Moreover, day-to-day mood fluctuations are more closely associated with variability in alpha-band as well as beta-band network coherence. Additionally, β -band coherence may not represent a marker specific to either mood states or perceptual dynamics alone, but rather may reflect a fundamental large-scale brain network state commonly involved in both affective and perceptual processes. **ACKNOWLEDGEMENTS AND FUNDING:** This study was supported by JSPS KAKENHI Grant-in-Aid for Scientific Research (A) (24H00701), JSPS KAKENHI Grant-in-Aid for Challenging Research (23K17457), and a research grant from the Japan Keirin Autorace (JKA) Foundation.

P1-A-11 - Stress regulation in amygdala, anterior cingulate, and insular cortex circuits with a little help from my friends

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BACKGROUND AND AIMS:: Social context strongly influences behavioral and neurophysiological responses to stress. The presence of a conspecific often mitigates negative behavioral and physiological manifestations of stress, a phenomenon termed social buffering. While much is known about the impact that social support has upon the activity of individual brain regions, much less is known about how social context reorganizes coordinated activity across affective networks during stress-related and social behaviors. This information would provide insight into coordinated adjustments across affective systems, or network dynamics, that support socially mediated emotional regulation. In the present study, we aimed to assess how activity is differentially coordinated across three brain regions commonly implicated in emotional contagion and regulation, the basolateral amygdala (BLA), the anterior cingulate (ACC), and the insular cortex (INS) 1) across different social contexts and 2) during stress-related and social behaviors. **METHODS:** We acquired in vivo electrophysiological recordings from the BLA, ACC, and INS of female Sprague-Dawley rats ($N=6$). Rats were placed in an arena for 20 minutes, either alone or with a cagemate, while 10 novel, predator-like stimuli were presented just outside of the arena at random time points. We quantified the occurrence and duration of stress-related behaviors (freezing, and a novel head-swaying behavior) and social behaviors (sniffing,

following, or grooming another). We then estimated oscillatory coherence across the regions during each behavioral state to determine how rhythmic neural circuit activity was differentially recruited across different social contexts and behaviors.

RESULTS: Rats exhibited reduced durations of stress-related behaviors, specifically freezing and head swaying, when a conspecific was present. Oscillatory coherence between the BLA, ACC, and INS was observed in the theta (5–10 Hz) and beta (15–20 Hz) frequency bands and was modulated by both social context and behavior. Specifically, coherence in these bands was substantially decreased during fear-related behaviors when a conspecific was present. Furthermore, coherence was further reduced during social behaviors compared to fear-based non-social behaviors. **CONCLUSIONS:** Our findings identify theta- and beta-band coherence across the BLA, ACC, and INS as a network-level hallmark of heightened fear and anxiety states, with reductions in coherence coinciding with effective regulation of fear. Notably, social behaviors strongly disrupt this coordinated activity, suggesting that social interaction actively disengages fear-related neural circuits to facilitate emotional regulation. Taken together, these results provide mechanistic insight into how these brain areas are recruited during stressful experiences and how social support modulates their interaction, advancing our understanding of the neural basis of social buffering.

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P1-A-43 - An experimental investigation of implicit emotional counter-regulation and its neural correlates using a priming identity task

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BACKGROUND AND AIMS:: Emotion counter-regulation refers to an automatic emotion regulation process in which attentional resources are preferentially allocated to stimuli of opposite emotional valence, thereby preventing the escalation of current emotional states. Prior studies have demonstrated counter-regulatory attentional biases using classic attention paradigms; however, many of these designs have significant limitations. The present study aims to investigate implicit emotion counter-regulation using a novel priming identity task that activates emotion regulation goals outside of conscious awareness, thereby allowing a clearer examination of how counter-regulatory goals influence emotional experience and neural processing of facial expressions. **METHODS:** Thirty-two undergraduate participants completed a priming identity task followed by a facial expression rating task while electroencephalography (EEG) was recorded. During the priming phase, participants matched words and images that implicitly encoded one of three regulation goals: counter regulation, congruent regulation, or neutral control. In the subsequent task, participants viewed happy and sad facial expressions and reported their subjective emotional experience. Event-related potentials indexing early (N170), middle (early posterior negativity, EPN), and late processing stages (late positive potential, LPP) were analyzed alongside self-report emotion rating. Individual-difference measures of trait and state depression, and impulsivity were also collected to examine associations with emotion regulation outcomes. **RESULTS:** For negative facial expressions, self-report ratings revealed a significant effect of regulation condition, with counter regulation leading to a more positive emotional experience compared with congruent regulation and control conditions. ERP analyses showed that counter regulation selectively enhanced N170 amplitudes over the left posterior electrode (P7), indicating modulation of early perceptual processing under counter-regulatory goals. EPN amplitudes were not significantly modulated by regulation condition. For positive facial expressions, no regulation effects were observed in self-report ratings, and LPP analyses revealed no overall main effect of regulation condition; however, exploratory analyses indicated enhanced LPP amplitudes at Pz following counter regulation. Additionally, individual-difference analyses revealed that depression and impulsivity were selectively associated with more positive emotional ratings under counter emotion regulation, with depression effects observed for negative-face trials and impulsivity effects for positive-face trials. **CONCLUSIONS:** Together, these findings provide converging behavioral, neural, and individual-difference evidence that implicit counter-regulatory goals modulate early stages of emotional face processing and subjective emotional experience, particularly in negative emotional contexts. Associations between depression-related measures and altered emotional responses suggest that abnormalities in implicit counter emotion regulation may characterize affective psychopathology. The priming identity task offers a promising paradigm for isolating implicit emotion regulation mechanisms and for investigating emotion regulation dysfunctions relevant to mental health.

P1 -A-56 - Minding your business: How being aware can shape behaviors, mood and cognition

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BACKGROUND: Mindfulness is thought to promote effective emotion regulation and overall well-being through openly curious, aware, accepting, and non-judgmental observation of their internal thoughts and environment. We hypothesized that a mindfulness-based training regimen (MT) would positively affect participants' emotion regulation and rumination processes while reducing symptoms of depression, stress, and worry compared to participants who received a regimen of relaxation training (RT). We further hypothesized that these improved emotional regulation would improve attention in the MT group.

METHODS: Thirty-two participants (ages 19-81; 29 females) were randomly assigned to either a training group that received daily MT for a period of 8 weeks or an active control group that received RT in which they listened to instrumental classical music for the same duration as the MT. To assess the effects of mindfulness training, we compared measures of affect (Positive Affect Negative Affect Scale), depression (Beck's Depression Inventory), stress (Perceived Stress Scale), worry (Penn State Worry Questionnaire), rumination (Rumination Response Scale), and attention (ANT: Attention Network Task) before and after training using Paired and Welch t-tests. Trait mindfulness was assessed using both the FFMQ (Five Facet Mindfulness Questionnaire) and the MAAS (Mindfulness Attention Awareness Scale). Both groups also performed cognitive attention tasks before and after training.

RESULTS: Trait mindfulness showed significant increases in the MT group compared to the RT group in both the MAAS scale ($t = 2.314$,

$p < 0.05$) and FFMQ scale ($t = 2.249$, $p < 0.05$), indicating that the MT manipulation was successful. While emotion regulation did not show significant changes following MT, brooding rumination was significantly reduced in the MT group compared to the RT group ($t = 11.525$,

$p < .01$). The MT group showed reduced depression-related somatization, ($t = 2.026$, $p < .05$) compared to the control group.

Further, after training, the MT group showed significantly lower negative affect compared to the RT group ($t = 2.566$, $p < .05$), and significantly higher positive affect than the RT group ($t = 2.452$, $p < .05$). The trained group showed a significantly greater decrease in depression compared to the control group, ($t = -2.26$, $p < .05$). The training group showed a greater decrease in anxiety compared to the control group ($t = -2.3676$,

$p < 0.05$). There were significant reductions in stress ($t = 2.282$, $p < .05$), worry ($t = 2.787$, $p < .05$), and improved executive function ($t = 2.216$,

$p = 0.045$) in the MT group compared to their baseline, indicating the importance of MT in strengthening attention control.

CONCLUSION: Results indicated that MT did not increase emotion regulation as we hypothesized. It did, however, exert palliative effects on indices of brooding rumination, depression-related somatization, stress, and worry. This suggests that engaging in MT reduces symptoms of depression, increases cognitive function, and overall, positively impacts individuals. The mechanism by which MT exerts these effects, however, requires further exploration. **ACKNOWLEDGEMENTS AND FUNDING:** I thank Dr. Bart Rypma and members of the NPR Lab for their help and support with this project.

P1-A-62 - Prospection explains age-related increases in the use of situation selection for emotion regulation

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BACKGROUND AND AIMS: Individuals of all ages use different emotion regulation (ER) strategies to function adaptively. These strategies include situation selection (choosing situations that align with emotional goals), suppression (inhibiting emotional expressions), and reappraisal (transforming the emotional meaning of a situation). Previous theories suggest that effective ER occurs when individuals employ strategies that align with their available internal and external resources, like their cognitive capacities. However, whether adolescent cognitive development serves as a "gating" mechanism for the use of specific ER strategies remains unknown. Given that prospection (mentally simulating future events), inhibition (suppressing automatic responses), and working memory (temporarily maintaining and manipulating information) increase in efficacy from childhood to adulthood, we predicted that improvements in these cognitive capacities through adolescence shape which ER strategies are

used most frequently during this developmental period. Namely, we expected that prospection would explain age-related change in the use of situation selection (as this strategy relies on future-oriented thinking), inhibition would explain age-related change in the use of suppression (as this strategy relies on withholding emotional expression), and working memory would explain age-related change in the use of reappraisal (as this strategy relies on manipulating information). **METHODS:** To evaluate these hypotheses, N = 157 usable participants (ages 10-20 years) completed indices of each cognitive capacity and ER strategy. A Directed Acyclic Graph (DAG) encoded directional relations ("edges") between age, the cognitive capacities, and the ER strategies ("nodes"). Conditional independence tests performed on the edges revealed whether the ER strategies were dependent upon age and/or the cognitive mechanisms (p -value < 0.05). **RESULTS:** These tests demonstrated that prospection explained age-related increases in the use of situation selection. However, the connection between the inhibition and suppression nodes did not survive in the DAG, nor did the connection between the working memory and reappraisal nodes. **CONCLUSIONS:** These results highlight prospection as a unique mechanism of age-related increases in situation selection, indicating that the emergence of future-oriented cognition may be central to the emergence of proactive ER during adolescence. While further work is needed to examine how other ER skills are "unlocked" during development, the current investigation offers a novel framework for characterizing the interrelations among ER skills and their supporting cognitive processes across adolescence. **ACKNOWLEDGEMENTS AND FUNDING:** We thank Alexandra Rodman for helpful discussion, Daniella Rothstein and Waverly Huang for assistance with data collection, and the Harvard University Department of Psychology for funding.

P1-C-12 - Social curiosity in the brain: Examining overt and covert curiosity using an fMRI natural viewing paradigm

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BACKGROUND AND AIMS: Social curiosity, the drive to understand others and their relationships, is an intrinsic part of human nature. Trait social curiosity consists of two unique components – overt and covert social curiosity – based on how people fulfill their social curiosity by directly or indirectly obtaining information. However, little is known about if and how social curiosity relates to how people spontaneously process information in the world around them. The current study aims to address this gap in understanding using a natural viewing paradigm and fMRI. Specifically, we hypothesize that people high in social curiosity will exhibit greater attunement to the naturalistic (often social) stimuli, and therefore, associated mental processes (e.g., mentalizing, prediction, and valuation) will be similarly engaged in a stimulus-driven way across high-social curiosity perceivers. In contrast, participants lower in social curiosity will show more idiosyncratic responses, such that their responses will be dissimilar to each other's and to those of highly socially curious participants. Furthermore, given that covert social curiosity pertains more to how people observe the social world, we expect that any significant effects observed in this natural-viewing study will be most pronounced for covert, rather than overt, social curiosity. **METHODS:** 40 participants watched audiovisual clips in the MRI scanner, and their social curiosity was assessed using the Five-dimensional Curiosity Scale Revised. **RESULTS:** Preliminary analyses showed that participants high in overt and covert social curiosity processed the video stimuli more similarly to one another in the temporal pole, which has been associated with semantic and socio-emotional processing. People higher in covert social curiosity also processed video stimuli more similarly to one another across multiple brain regions implicated in perception, sensory and emotional processing, and social cognition. As predicted, links between neural responding and social curiosity were much more extensive for covert, rather than overt, social curiosity. **CONCLUSIONS:** Together, these findings suggest that higher levels of social curiosity may lead people to perceive, interpret, emotionally respond to, or process social information more similarly. The more extensive results observed for covert social curiosity may be attributed to the alignment between behaviors closely linked to covert social curiosity (e.g., passive observation) and the experience of the natural viewing paradigm used in the current study. Given that overt and covert social curiosity are correlated with other dimensions of trait curiosity, we will test if these effects are specific to social curiosity (which reflects an orientation towards social information specifically) or if they generalize to other aspects of curiosity (reflecting a more general curiosity driven by other factors, such as positive or negative emotions associated with acquiring new information). Additional analyses will also be conducted to explore how video content (e.g., the amount of social information present in each clip) moderates these observed relationships. As trait-level social curiosity facilitates seeking and building connections with others, this work contributes to our understanding of the processes underlying relationship formation, which may be especially important for physical and mental health outcomes.

P1-C-13 - Mindless tools: Mentalizing is selective for human partners and not conversational AI

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BACKGROUND AND AIMS:: With the rapid development of artificial intelligence (AI), people are increasingly forming social bonds with AI chatbots that emulate human-to-human relationships. Previous research has demonstrated heightened neural activation in the medial prefrontal cortex (mPFC) when participants interact with humans compared to computer-based agents. However, this work predates the emergence of Large Language Models (LLMs), which presents a realistic simulation of human-like conversation and can even engage in emotional prosody (i.e., ChatGPT advanced voice mode). Does interacting with modern LLMs increase the likelihood that people attribute a mind to AI agents? In the present fMRI study, we investigated whether people are more likely to mentalize when interacting with AI partners introduced through voice or text-based conversations relative to a simple computer program and whether these neural patterns resemble those elicited during interactions with human partners. **METHODS:** Twenty-eight right-handed adults between the ages of 18 to 35 participated in this study. First, participants engaged in a task designed to increase intimacy between strangers (i.e., the Fast Friend Task). Participants became familiar with three partners: a human partner, a virtual partner using ChatGPT advanced voice mode, and a virtual partner using ChatGPT text mode. During the subsequent fMRI session, participants believed they were playing a rock-paper-scissors (RPS) game with each partner in addition to a random computer program. In reality, responses in all conditions were random. Following the scan, participants completed measures assessing attitudes and experience with AI chatbots. **RESULTS:** Analysis of the RPS game revealed that participants showed greater neural activity in the mPFC when they believed they were playing against human compared to all other categories (AI voice, AI text, random computer program). There was no difference among the three computer-based categories. Multivariate pattern analyses further supported these results by showing that the neural representation of voice and basic modes more closely resembled computer rather than human. Finally, we tested if any individual differences were associated with mPFC neural activity and found no evidence that attitudes towards AI or prior experience modulated the response during the RPS game. **CONCLUSIONS:** Our study shows that despite the impressive conversational abilities of modern LLM-based chatbots, individuals perceive them as mindless tools. Even following a ten-minute intimacy building exercise with AI partners that acted as fellow students, participants only showed mentalizing-related brain activity in the mPFC for human partners. This effect exists entirely in the eye of the beholder as all responses in the task were random. Moreover, analysis of individual difference in anthropomorphism and attitudes towards AI showed no association with brain activity during the RPS game. This suggests that positive attitudes or a general tendency to anthropomorphize do not necessarily translate into a higher likelihood of attributing a mind to AI agents. Together, these findings suggest that modern conversational AIs while impressive, is not by itself sufficient to trick the brain into attributing a mind to AI agents.

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P1-C-14 - Neural interference from social categories during memory retrieval

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BACKGROUND AND AIMS:: Social cognitive theories have long recognized the tendency to socially categorize others, with the readiness to move toward more individuated representations depending on cognitive and motivational factors. However, little is known about the neural mechanisms underlying the interplay between categorical vs. individuated representations. We adapted a well-established social cognitive memory paradigm for MRI to investigate how racial categories influence memory traces of people when we first learn information about them. **METHODS:** During fMRI (N = 32), participants engaged in a “who said what?” memory confusion paradigm (Taylor et al., 1978). In the encoding phase, participants viewed images of Black and White male targets, with each image followed by a displayed statement the target “said”. At a later retrieval phase, participants were asked to recall “who said what?”, and indicate which target out of 8 had said the previously presented sentence (4 Black & 4 White targets). Classically, this paradigm demonstrates greater within-category vs. between-category errors, namely a tendency to confuse one Black target for another Black target, or one White target for another White target. **RESULTS:** As expected, behavioral data revealed strong tendencies of categorization: participants made more within- than between-category misattributions, indicating

that statements were more likely to be confused among members of the same racial category. Critically, multivoxel pattern reinstatement analyses revealed that the ventrolateral prefrontal cortex (VLPFC)—a region broadly implicated in memory selection processes—selectively reinstated encoding activation patterns associated with within-category foils during the retrieval phase. That is, when participants attempted to recall “who said what”, VLPFC patterns more strongly matched the neural signatures of other same-race targets than of targets from the other race. This category-biased reinstatement in VLPFC occurred regardless of whether the participant ultimately responded correctly or incorrectly. Even on trials in which participants accurately identified the speaker, VLPFC still preferentially reinstated representations of same- as compared to other-race alternatives, suggesting that same-race alternatives entered into retrieval competition even when they were successfully resolved. These findings imply that the VLPFC actively engages category-structured sets of person representations when recalling previous social experiences. **CONCLUSIONS:** Our findings suggest that race categories shape person memory by structuring the set of representations that compete during retrieval. Activity patterns in VLPFC preferentially reinstated same-race individuals when participants attempted to recall who had said a statement, even when responses were ultimately correct. Consistent with the VLPFC’s role in selection among competing memory representations, this suggests that racial categories bias the retrieval landscape itself, not just overt decisions. Category membership determines which alternative identities are activated and evaluated, increasing within-category confusability. Overall, the findings point to an important role of the VLPFC in structuring social memories in ways that cast others more in terms of their category memberships than as an individuated entity. **ACKNOWLEDGEMENTS AND FUNDING:** This was supported in part by NSF BCS-2235130 (J.B.F.).

P1-C-15 - Change in social goals enhances memory and compresses time

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BACKGROUND AND AIMS: How do people structure memories of ongoing experience? Event segmentation research suggests that people naturally divide continuous experience into discrete events, with event boundaries marking moments such as shifts in time, location, or ongoing activity. However, most prior work has focused on perceptual changes, despite experiences, especially social ones, are also organized around goals. Social cognition research shows that people continuously infer others’ goals and intentions, suggesting that changes in inferred goals may also segment experience and shape memory. In this study, we tested the effects of inferred social goals on the structure of memory. **METHODS:** Fifty participants watched four movies (7-12 mins), including three social movies with rich interpersonal interactions and one non-social movie (Rube Goldberg machine with complex perceptual changes but no humans). After each movie, participants completed sequence judgment, time perception and recognition memory tasks. In sequence and time perception tasks, they marked which of two moments occurred first and judged how close or far apart they felt in time. In the recognition task, they answered MCQs about target events from the movie. The pairs were selected from eight seconds before and after a target event in the movie (16s between each pair). Target events belonged to one of three categories: perceptual boundaries, goal boundaries, or non-boundary moments. Perceptual boundaries were identified based on prior work (Sava-Segal et al., 2023). Goal boundaries were derived from a pilot study where participants indicated when they believed a character’s goal or intention changed. **RESULTS:** In social movies, sequence judgment accuracy did not differ between event boundaries and non-boundary moments ($\beta = -0.064$, $p = .554$), either overall or within any individual movie. In contrast, sequence accuracy was higher around goal boundaries than non-boundary moments ($\beta = 0.954$, $p < .001$). Moments spanning perceptual boundaries were perceived as farther apart in time than non-boundary moments ($\beta = 0.368$, $p < .001$) and were recognized better ($\beta = 0.985$, $p < .001$). However, moments spanning goal changes were perceived as closer together in time than non-boundary moments ($\beta = -0.211$, $p < .001$), while still showing enhanced recognition ($\beta = 0.556$, $p = .002$). In the non-social movie, perceptual boundaries showed comparable order accuracy to those in social movies (0.589 vs. 0.635, $p = .136$). However, these moments were perceived as farther apart in time and were recognized less accurately than those in social movies (time: $\beta = -0.116$, $p = .003$; recognition: $\beta = 1.382$, $p < .001$), suggesting that social context attenuates time expansion across event boundaries while enhancing boundary-related recognition. **CONCLUSIONS:** In sum, inferred social goals and perceptual changes differentially organize memory during social experience. Moments spanning goal changes were judged as temporally closer together, with higher sequence accuracy and enhanced recognition at the boundaries, suggesting that goal shifts bind events across time. In contrast perceptual boundaries, while also enhancing recognition at the boundary, expanded subjective time instead. Overall, social context modulated these perceptual effects by

attenuating time expansion and further enhancing recognition. Ongoing analyses examine how eye gaze during encoding of events shapes memory. **ACKNOWLEDGEMENTS AND FUNDING:** Supported by faculty startup funds from N. Rouhani.

P1-C-16 - Stability and flexibility in mental representations of others: an intensive longitudinal fMRI study

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BACKGROUND. Humans encounter and interact with many familiar individuals on a daily basis. To facilitate social interactions, the human brain is tasked with storing, retrieving, and using knowledge about such individuals. Previous research has delineated the neural architecture that supports mental representations. However, surprisingly few studies have examined how mental representations of social partners change over time. The present study addresses this gap using intensive longitudinal fMRI. Here we ask: what are the shared and distinct neural mechanisms that track the stable and fluctuating elements of person knowledge? **METHODS.** N=5 undergraduate participants enrolled in an intensive longitudinal fMRI study wherein they completed 20 hour-long task-fMRI sessions that elicited mental representations of two friends from university (mean days between scans ~2.5). Pilot testing showed high test-retest reliability of scan protocol (> .75). We focused on making trait judgments of others, a core component of person knowledge that shapes mental representations of others. At each scan a widely-used trait judgement task was administered to participants, requiring them to make ratings of trait-indicative statements about each friend. Participants were administered 144 trials (72/friend) at every scan, resulting in 2880 trials total for the study. Trait items were shown more than once across the study, allowing us to examine how the brain encodes stable versus fluctuating trait information over time. We leveraged RSA separately on each individual participant's scan data. Using the Schaefer atlas, we tested where multi-voxel patterns of brain activity encoded stable vs fluctuating trait judgements. For each trait item we operationalized stability as the mean response for each friend across all trials and fluctuations as session-specific deviations from item-friend mean. Analyses controlled for differences in trial number, run, session, and identity of nominated friends. **RESULTS.** Stronger representational encoding was observed for stability of trait knowledge, as evinced by larger effect sizes across the brain for stable judgements than fluctuations. In addition to smaller effect sizes, fluctuations showed as much inverse representational similarity as direct representational similarity. After thresholding, stable trait judgments were largely encoded in default mode network parcels as well as prefrontal parcels implicated in cognitive control. For fluctuations in trait judgments, networks implicated in attention were most strongly represented among direct associations; visual regions and somatomotor regions were strongly represented among inverse associations. Importantly, no two subjects showed the same results, as there was notable inter-individual variability at a parcel level despite overlap in implicated networks. **CONCLUSIONS.** To our knowledge, this is the first neuroscience study that probes the dynamics of mental representations at a near day-to-day timescale. By leveraging intensive longitudinal fMRI we show distinct neural mechanisms for stable versus fluctuating trait judgements over time. Overall, representational encoding of others is more oriented towards stable trait judgements and implicates regions historically associated with social cognition. By contrast, neural mechanisms that support fluctuations in trait judgments appear to be driven by regions not traditionally implicated in social cognition.

P1-C-17 - Different routes to relational well-being: Cultural differences in how trait judgment accuracy and situational sensitivity predict well-being

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BACKGROUND AND AIMS:: Accurate judgment of others' traits (interpersonal accuracy; IPA) is fundamental for building meaningful relationships and promoting relational well-being. However, behaviors result from the interplay between traits and situational influences, such that the same person's action may vary across different contexts. Prior literature found that people from independent (IND) cultures believe that one's behavior is driven predominantly by their traits rather than situations, suggesting that they may rely more on others' trait information to determine whether to build a relationship with those others. In contrast, people from interdependent (INT) cultures are more sensitive to, and more likely to identify, situational influences. However, how these culturally shaped IPA and situational sensitivity influence individuals' relational well-being remains unclear.

This study addressed this gap. **METHODS:** Participants (N = 135; 51 from the United States [IND] and 84 from Taiwan [INT]) learned about six "Givers" who ostensibly donated different number of points to their game partners. The Givers' generosity levels were manipulated, such that two of them shared either 50%, 35%, or 20% of their points to the partners. Importantly, half of the Givers' behaviors were influenced by situational contexts, which either facilitated or inhibited their donations. Specifically, Givers donated 10 more points than their average in facilitating contexts, while they donated 10 less points in inhibiting contexts. Participants knew that some contexts were facilitating while others were inhibiting, but they did not know the exact degrees of contextual influences (i.e., 10 points). The other half of the Givers were never influenced by contexts. After observing each Giver's donation, participants chose between two Givers whom they thought would be more generous, then reported their relational well-being. IPA was calculated as accuracy in identifying more generous targets. Situational sensitivity was derived from a reinforcement learning model as a context weighting parameter (w), quantifying how much participants adjusted for situational influences when updating their beliefs. **RESULTS:** Relational well-being was differentially predicted by IPA and situational sensitivity depending on cultural backgrounds. The higher IPA IND participants showed, the greater relational well-being they reported; yet IPA was not associated with INT participants' well-being. Conversely, the higher situational sensitivity INT participants showed, the greater relational well-being they reported, while it was not associated with IND participants' well-being. **CONCLUSIONS:** Consideration of others' traits vs. situations contributes to relational well-being differently across cultures. In independent cultures such as America, individual characteristics are believed to guide social interactions. Accurately inferring others' stable traits can thus help people build relationships selectively, such as choosing more generous relationship candidates. In interdependent cultures such as Taiwan, social roles and norms are believed to govern behavior and interpersonal interactions. Thus, sensitivity to situational influences can be more adaptive. These findings advance our understanding of how culture contributes to relational well-being and highlight the need for culturally tailored interventions to promote positive social interactions.

P1-C-18 - Resisting social impression updating: Motivation to reduce uncertainty inflates reliance on weak explanations for others' trait-inconsistent behavior

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BACKGROUND AND AIMS:: People rely on their impressions of others' traits to guide predictions about their behavior. When someone acts in a way that contradicts those expectations, it introduces cognitive uncertainty in the form of a credit assignment problem: does the behavior reflect a need to update the prior for the underlying trait belief (e.g., she's not as friendly as I thought), or can it be explained by an auxiliary hypothesis in the form of a transient situational factor (e.g., she was distracted by the news she just received)? Resolving this ambiguity involves weighing the relative strength of the prior and the relevance of the auxiliary hypothesis for explaining expectancy-violating behavior. In this study, we examined how people respond to trait-inconsistent behavior when provided with situational explanations that vary in perceived informativeness and how individual differences in intolerance of uncertainty affect social impression updating. **METHODS:** Across two experiments (total N=495), participants received relevant trait information about an individual (agreeableness level: high or low) and made generosity judgments both before and after they observed the person's trait-inconsistent sharing behavior. While observing sharing behavior, participants received a situational cue about the person, pretested to be either informative (momentary happiness) or uninformative (momentary physical discomfort or the time of day) for predicting generosity. **RESULTS:** Participants were more likely to treat uninformative situational cues as explanatory in the presence of expectancy-violating behavior, despite recognizing these cues as uninformative in isolation, suggesting a motivated shift in explanatory weighting that preserves prior beliefs. This effect was stronger among individuals with higher intolerance of uncertainty, consistent with a greater subjective need to maintain predictability in the face of uncertainty. **CONCLUSIONS:** These findings suggest that impression updating is shaped not only by normative Bayesian inference but also by the motivational dynamics of uncertainty reduction, via processes that could be further adjudicated using fMRI. People appear to flexibly reinterpret information to preserve the coherence of their impressions when social predictions are violated.

P1-C-19 - Person perception in a social network

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BACKGROUND AND AIMS:: Person perception research has largely examined isolated individuals, despite the fact that people are embedded within social networks that shape how they are perceived and represented. This study advanced a network-based account of person perception by investigating how social structure influences neural representations of others. **METHODS:** Participants from a freshmen cohort at a Chinese university completed a 1-back face-viewing fMRI task measuring neural responses to pictures of their classmates, whose dynamic social network was measured through repeated friendship nominations (N = 51). During fMRI, participants viewed photographs of their classmates, enabling neural representations to be directly linked to known social network structure. Using representational similarity analysis, we examined whether allocentric network features, such as centralities, as well as egocentric features, such as social distance from the perceiver, were encoded in neural representational geometry. To quantify how social structure influences neural representation of faces, we constructed representational dissimilarity matrices (RDMs) capturing: (a) Centrality RDMs: pairwise differences in three centrality measures—degree (number of connections; index of popularity), betweenness (frequency of lying on shortest paths; index of brokerage), and eigenvector centrality (connections to well-connected individuals; index of social influence); (b) Distance RDMs: perceiver-to-target social distance for each participant (distance RDMs); and (c) Neural RDMs: neural pattern dissimilarities for each target in each perceiver's brain, using a priori ROIs spanning face-processing regions (OFA, FFA), social-relational inference regions (mPFC, TPJ), and relational memory systems (hippocampus, amygdala). **RESULTS:** Results are expected to show that neural representational geometry systematically reflect social network structure. For example, allocentric centrality measures are significantly associated with neural representational geometry in medial prefrontal cortex and hippocampus, whereas egocentric social distance primarily predicts neural similarity in face-selective regions (FFA, OFA) and amygdala. The results indicate that social networks shape how individuals encode others within the contexts. **CONCLUSION:** With data collection ongoing, we are conducting a longitudinal investigation of how person representations are updated over time as social relationships evolve. Future analyses will examine whether changes in social network structure predict systematic drift in neural representations of classmates. By integrating social network analysis, computational modeling, and social neuroscience, this project reconceptualized person perception as a process embedded within social contexts.

P1-C-20 - Is mind-wandering associated with neural dissimilarity with others?

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BACKGROUND AND AIMS:: Prior work suggests that people spend a significant amount of time mind wandering in their daily lives, and high levels of mind wandering have also been linked to poor health outcomes. Although mind wandering is both pervasive and consequential, it is difficult to quantify and measure given that it is an inherently internal cognitive process and often unfolds outside of conscious awareness. In the present study, we employ multiple measures to capture different aspects of mind wandering and use neuroimaging to examine how these aspects are reflected in neural activity. When attention is disengaged from the external environment and oriented toward internally generated thought, neural activity may become less aligned across individuals exposed to the same stimuli, reflecting reduced reliance on shared perceptual and semantic representations and increased expression of person-specific mental content. Thus, we test whether mind wandering is associated with idiosyncratic patterns of neural responses. **METHODS:** One hundred thirteen participants were recruited for the study. Participants' neural activity was recorded using functional near-infrared spectroscopy (fNIRS) while they watched two naturalistic stimuli (Zima Blue and Splitscreen). Data were collected using a montage setup consisting of 16 light sources and 16 detectors over regions of medial prefrontal cortex (mPFC), lateral prefrontal cortex (IPFC) and temporo-parietal junction (TPJ). To assess mind-wandering at the behavioral level, participants completed a Sustained Attention to Response Task (SART), which measures mind wandering through task performance. We also obtained measures of state-level mind wandering by participants' self-reports of mind-wandering during tasks (i.e., watching videos, SART), asked immediately after each task completion. Trait-level mind-wandering was measured using a 5-item scale via self-reports of general mind-wandering tendencies after completing all tasks. **RESULTS:** We calculated intersubject correlations (ISCs)

of the neuroimaging data as a measure of neural similarity across participants. Associations between the mind-wandering measures and neural similarity were examined using linear mixed-effect models. We found no significant associations between neural similarity and any of the mind-wandering measures. Although state-level mind wandering was consistently associated with lower neural similarity during the viewing of Zima Blue across all regions of interest, these associations did not survive false discovery rate (FDR) correction. **CONCLUSIONS:** The present study examined how multiple measures of mind-wandering relate to neural similarity. Although associations between mind wandering and neural similarity were not consistent across measures, this pattern suggests that different facets of mind-wandering may engage distinct cognitive and neural processes. Rather than constituting a single form of internally oriented thought, mind wandering may differ in the extent to which it disengages from external input and becomes individually constrained, which may help explain why different measures show variable associations with neural similarity. Future work is needed to further clarify the relationships between the different mind-wandering measures as well as their links to neural (dis)similarity. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by research funds from Dr. Elisa Baek at University of Southern California.

P1-C-21 - Education anchors neural representations of gendered narratives

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BACKGROUND AND AIMS:: Neural alignment during naturalistic perception is often taken to reflect shared understanding of social experiences, yet such alignment is not inherently stable: between-subject similarity can decrease with repeated exposure to the same narratives, particularly in brain systems supporting interpretation and evaluation. This pattern suggests that, in the absence of shared constraints, individuals may increasingly diverge in how they interpret the same social information.

Educational settings, however, introduce common interpretive frameworks that are explicitly reinforced over time. Leveraging a naturalistic, longitudinal design, the present study examines whether participation in an introductory Gender Studies course anchors neural and linguistic representations of gendered social narratives, relative to a control cohort. **METHODS:**

Undergraduate students enrolled in an introductory Gender Studies course (n = 30) or an introductory Linguistics course (n = 33; control cohort) underwent functional near-infrared spectroscopy (fNIRS) while viewing movie clips depicting gendered social dynamics at the beginning (T1) and end (T2) of the academic quarter. Neural intersubject correlations (ISC) were computed within default mode network regions of interest. Participants also provided verbal recall of each clip, which was analyzed using latent semantic analysis (LSA) to quantify their interpretive similarity. Mixed-effects models tested Group × Timepoint interactions, with false discovery rate (FDR) correction across regions. **RESULTS:** Across the academic quarter, neural and semantic alignment remained stable among Gender Studies students but declined among controls. We observed a significant Group × Timepoint interaction in ventromedial prefrontal cortex (vmPFC) (z = 3.47, p < .001, q = .002), driven by declining neural synchrony among Linguistics students. A similar but weaker effect was observed in dorsomedial prefrontal cortex (z = 1.97, p = .049), which did not survive correction for multiple comparisons. Semantic analyses revealed a parallel pattern, with a significant Group × Timepoint interaction in within-group semantic similarity (z = 1.96, p = .050) driven by decreasing similarity among Linguistics students ($\Delta T2-T1 = -0.024$, p < .001) and minimal change among Gender Studies students. **CONCLUSIONS** Our findings suggest that shared educational frameworks can anchor how social narratives are interpreted, maintaining common neural and linguistic representations that would otherwise grow increasingly idiosyncratic. Education may thus support shared understanding by limiting interpretive drift over time. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by a National Science Foundation Graduate Research Fellowship.

P1-C-44 - Scrolling away attention? Examining the relationship between short-form video consumption and attention networks

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This submission describes a preregistration, available here:

https://osf.io/u52mb/overview?view_only=bb9ccfbf6b3a449bb9669fd993675fdb

BACKGROUND AND AIMS:: Short-form video platforms like TikTok have gained popularity among young adults, raising concerns about impacts on attention. However, existing research relies primarily on self-reported measures, smaller samples, and

descriptive accounts, creating theoretical and statistical uncertainties. This large-scale, multi-national, and multi-site study examines associations between objectively measured short-form video consumption and performance on the Attention Network Test (ANT, Fan et al., 2002). We hypothesize that greater short-form video consumption and higher ADHD symptoms will negatively correlate with executive control network efficiency, and explore relationships with other attention networks.

METHODS: This two-phase cross-sectional observational study recruits college students ($N = 1876$, with 33% oversampling to $N = 2500$ for data quality) from three universities (Western USA, Midwest USA, Netherlands). Target sample size was determined via G*Power 3.1 using conservative small effect size estimates ($d = .2$, $r = .1$) with $\alpha = .01$ (two-tailed), and power = .8. Participants complete the ANT task (Psychojs) assessing three attention networks: alerting, orienting, and executive control via cue manipulations (no-cue, center-cue, double-cue, spatial-cue), and flanker conditions (congruent, incongruent, neutral). Six dependent variables include: mean reaction time (RT, ms), accuracy (%), error rates (%), alerting network efficiency (RT_no-cue - RT_double-cue), orienting network efficiency (RT_center-cue - RT_spatial-cue), and executive control efficiency (RT_incongruent - RT_congruent). Exclusion criteria include RTs < 200 ms or > 1700 ms (trial-level), and accuracy $< 75\%$ (participant-level). Participants then complete surveys measuring ADHD symptoms (Adult ADHD Self-Report Scale Screener, ASRS-6; Kessler et al., 2005; Kessler et al., 2007), Impulsivity traits (Barratt Impulsiveness Scale, BIS-11; Patton et al., 1995), and upload screenshot of the prior full week's TikTok usage in total minutes. ANT precedes surveys to prevent priming. Statistical analyses include independent samples t-test comparing TikTok users versus non-users on six ANT outcomes, and correlations examining the relationships between video consumption among users, ADHD severity, impulsivity, and attention among users. Bonferroni correction at the IV level ($.05/3 = .017$) controls family-wise error. Exploratory models test three-way interactions (short-form video consumption $\times$ ADHD $\times$ impulsivity); multiverse analyses examine robustness across data cleaning procedures. **RESULTS:** Data collection is in progress. Results will be available for conference presentation. **CONCLUSIONS:** This study will provide the most comprehensive empirical examination of relationships between short-form video consumption and attention performance using objective behavioral measures. The large international sample and the ANT task will establish a robust foundation for understanding how digital media consumption relates to attention. This pre-registered design and planned exploratory analyses will generate hypotheses for future experimental research investigating causality linking specific platform features to attention outcomes. **FUNDING:** No external funding.

P1-C-52 - How the mind learns from the world: Selective tuning of social judgment to ecological cue structure

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BACKGROUND AND AIMS:: People make many inferences of others in daily life, including their personality traits and emotions. How do people make these inferences using rich cues in naturalistic contexts? Why do they use certain cues for certain judgments but not others? I will present three sets of studies that address these questions. **METHODS:** We conducted three pre-registered studies with nationally representative participants in the U.S. and China ($N = 3,734$). These participants viewed naturalistic images ($N = 1,125$) and rated them on a diverse set of seven traits (e.g., warmth, competence, openness, attractiveness) and eight emotions (e.g., happy, angry, fearful, esteemed). We quantified a comprehensive set of 16 cues from 4 channels that were found important in prior research (e.g., action units, gaze direction, body shape, body pose, clothing color, hair style, environmental complexity, and high-level gist), using a combination of deep learning models and human annotations. First, we modeled which cues predicted each inference using representational similarity analysis with Ridge regression in a cross-validation framework. Second, we tested whether the predictive cues in these models causally changed inferences by manipulating one cue at a time in these naturalistic images using vision-language models. Third, we investigated whether people prioritized certain cues for certain judgments based on the information they carry, including the information that was unique in this cue beyond other co-occurring cues, and the information that was shared between this cue and other co-occurring cues, using variance partition analysis. Finally, we examined why many cues that shaped social inferences carried common variance, by investigating whether these subjective shared variances reflect the objective redundancies of cues in the real world, using histogram-based gradient boosting regression analysis with cross-validation. **RESULTS:** We found substantially different cue use patterns and mechanisms underlying trait inferences and emotion inferences in naturalistic contexts. First, the cues predicting trait inferences were sparse and tended to be controllable by the targets (e.g., clothing), while cues predicting emotion

inferences are richer, including biological and contextual cues. Second, the cues used for trait inferences varied substantially across different traits, while the cues used for emotion inferences were highly similar across emotions regardless of valence or arousal. Third, the predictive cues for trait inferences carried either unique or shared information, while most predictive cues for emotion inferences only carried shared information—with two exceptions, facial action units and bodily actions, which carried unique information for all emotion inferences. Fourth, the cues that shared common information when shaping people's subjective inferences were also objectively redundant in the real world—but that trait inferences more closely tracked these ecological cue structures than emotion inferences (and more so for complex emotion inferences than basic emotion inferences).

CONCLUSIONS: These findings suggest that the human mind may leverage the ecological structure of co-occurring cues that it learns in daily life to make inferences. This learning is judgment-specific, with subjective cue use more strictly reflecting objective cue relations for complex than basic emotion inferences, and for physical than abstract trait inferences.

P1-E-22 - Deep neural networks predict human social trait judgements from dynamic faces

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BACKGROUND AND AIMS: Humans constantly infer social traits from faces, and these subjective judgments have real-world impacts on social interactions. Compared to static images, dynamic faces provide information beyond physical facial features, offering contextual cues that support social judgments and create ecologically valid experiences. However, most previous research on computational modeling of social judgments has focused on static faces. As a result, it remains unclear whether deep neural networks (DNNs) can capture the information humans use to make social judgments from dynamic faces. The present study aimed to test whether DNNs can successfully model human social judgments from dynamic facial stimuli, and to examine the specificity and generalizability of the representations across traits and stimulus formats. **METHODS:** We collected human social judgments using a dynamic stimulus set consisting of 707 naturalistic four-second video clips of unfamiliar individuals. A total of 171 participants rated faces on three social traits using a continuous 1–100 scale. To compare dynamic and static face representations, we also included a static stimulus set from the Profile Image Dataset, consisting of 1,224 images rated by 160 participants on a 1–9 scale. Visual features were extracted from both dynamic videos and static images using five DNNs: three face-trained networks (InsightFace, AlexNet-Face, and VGG16-Face) and two object-trained networks (AlexNet and VGG-16). Features were reduced using principal component analysis, and prediction performance was evaluated by correlating model-predicted trait values with human ratings. Variance partitioning analyses were conducted to assess the unique and shared contributions of face-trained and object-trained models. **RESULTS:** Face-trained DNNs successfully predicted human social judgments across all three traits from dynamic faces and consistently outperformed object-trained DNNs. Variance partitioning analyses showed that face-trained networks explained substantial unique variance in human social judgments, whereas object-trained networks contributed only limited unique variance. In addition, models trained to predict one trait showed little generalization to other traits, indicating that these models captured trait-specific information. Most notably, generalization between models trained on dynamic and static faces was limited, suggesting that the shared representations between humans and DNNs differ across stimulus formats. **CONCLUSIONS:** These findings demonstrate that human social judgments from dynamic faces can be successfully modeled using DNNs trained on faces. The information shared between humans and DNNs is face-specific, trait-specific, and differs between dynamic and static facial stimuli. Together, these results highlight the importance of modeling social face perception using dynamic, ecologically valid stimuli and clarify the limits of generalization across stimulus formats in computational models of social judgment. **ACKNOWLEDGEMENTS AND FUNDING:** This work is supported by startup funds provided by the School of Behavioral and Brain Sciences at the University of Texas at Dallas.

P1-E-23 - Default mode network encodes shared emotional narratives during story comprehension

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BACKGROUND AND AIMS:: Default mode network (DMN) has been recognized as a core system supporting meaning construction during naturalistic experience. Naturalistic studies have shown that DMN inter-subject correlation (ISC) reflects shared interpretation rather than shared sensory processing, yet most have relied on explicit manipulations or static comparisons. It therefore remains unclear whether moment-to-moment alignment in narrative interpretation is continuously tracked by DMN dynamics under fully naturalistic conditions, and whether such alignment is reflected not only in regional synchrony but in large-scale coupling structure. Here, we tested whether time-resolved affective alignment predicts both DMN ISC and inter-subject functional connectivity (ISFC) during naturalistic condition across two independent studies. **METHODS:** Study 1 included two movie-watching runs (movieTP, movieDM) from the HBN dataset and one independent movie from the Cam-CAN project (N = 32 and 312, respectively, after control for head motion, handedness, and neurological/psychiatric diagnosis). An independent group of 44 raters provided continuous valence ratings while freely watching the same movies using a nine-point scale. BOLD time series were parcellated into 268 regions (ROIs) using the Shen atlas. Sliding-window ISC (16 s window, 1-TR step) indexed similarity of regional response time courses across individuals, while ISFC quantified similarity of inter-regional coupling patterns, summarized as intra-network connectivity. Valence ISC was computed using the same sliding-window procedure. Brain-behavior coupling was assessed by correlating neural ISC/ISFC with valence ISC across windows. To control for low-level sensory and temporal confounds, partial correlations were computed after residualizing luminance, audio volume, and linear and quadratic temporal trends. Statistical significance was assessed using time-series-aware block-wise permutation testing (5,000 permutations; FDR $q < .15$), with block length estimated from the autocorrelation function of valence ISC to preserve local temporal dependencies. Study 2 consisted of two in-house horror-movie sessions (N = 26), in which participants freely viewed the movies during fMRI scanning and provided continuous “fear” ratings after scanning. All analyses followed the same procedures as in Study 1. **RESULTS:** After controlling covariates, all movies in Study 1 showed significant positive correlations between valence ISC and DMN ISC, particularly in the vPCC and dPCC. In contrast, DMN ISFC was related to valence/fear ISC only in movieTP in Study 1 and only in the first horror-movie in Study 2. Additionally, in Study 2, regional ISC within the vPCC and orbitofrontal cortex was positively associated with fear ISC. **CONCLUSIONS:** These findings demonstrate that moment-to-moment affective alignment during naturalistic viewing is robustly tracked by regional DMN synchrony, especially in the vPCC, across diverse stimuli and cohorts. In contrast, DMN functional coupling reflects a more stimulus-specific mechanism, emerging only under narratives that strongly constrain shared interpretation. This dissociation suggests that variability in DMN functional connectivity – particularly centered on the vPCC – may index individual differences in how affective meaning is constructed under shared narrative contexts. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by the National Research Foundation of Korea (NRF-2025S1A5A2A01005331).

P1-E-24 - Can oxytocin reduce the neural differentiation between ingroup and outgroup emotional faces?

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BACKGROUND AND AIMS:: Humans rapidly categorize others into social groups, shaping emotional perception, empathy, and social behavior, and contributing to real-world phenomena such as prejudice and intergroup conflict. While group-based biases are well-documented behaviorally, less is known about how ingroup and outgroup members are encoded as categorically distinct in the brain, and how this differentiation may be modulated by neurochemical systems linked to social affiliation and prosocial behavior. Oxytocin (OT) has been implicated in social bonding, emotional salience, and group-based perceptions and behavior, but its specific effects on neural responses to emotional facial expressions of ingroup and outgroup members are unknown. Moreover, the effects of OT on neural responses are often complex, resulting in inconsistent evidence for univariate activation, which may not be able to capture how social categories are represented in distributed neural patterns. Using multivoxel pattern similarity analysis, the present study tests the hypothesis that OT reduces the neural differentiation between

ingroup and outgroup emotional faces, reflecting a less categorical encoding of social targets. **METHODS:** Sixty healthy German male participants were randomly assigned in a double-blind design to receive either intranasal OT (24 IU) or a placebo. Participants underwent a minimal group induction and subsequently completed an emotional face viewing task during fMRI. Faces displayed fear, anger, sadness, joy, or neutral expressions and belonged to either ingroup or outgroup members. Functional data were preprocessed using fMRIPrep and analyzed in AFNI. Pattern similarity analysis will be conducted within predefined regions of interest (amygdala, insula, cingulate cortex, fusiform gyrus, and subregions). For each participant, multivoxel patterns will be extracted for each condition, and similarity (e.g., Pearson correlation) between ingroup and outgroup neural patterns will be computed for each emotion. Group-level mixed-effects models will test whether OT increases ingroup-outgroup similarity relative to placebo. **PREDICTED RESULTS:** We hypothesize that participants in the oxytocin group will show increased neural pattern similarity between ingroup and outgroup faces relative to the placebo group, indicating reduced representational differentiation between social categories. This effect is expected to be strongest for emotionally salient expressions, particularly fear, and most pronounced in regions implicated in emotional salience and face processing, including the amygdala, insula, cingulate cortex, and fusiform gyrus. **CONCLUSIONS:** This preregistered study examines whether oxytocin modulates patterns of neural social representations as a function of group membership. If OT reduces neural differentiation between ingroup and outgroup members, this would suggest a unique role of OT modulating the perceived similarity of others, including the potential to explain empathy and prosocial behavior in an intergroup context. **ACKNOWLEDGEMENTS AND FUNDING:** We gratefully acknowledge the support of the Carl von Ossietzky University of Oldenburg and the Karl-Jaspers-Klinik for their collaboration in facilitating this work, as well as the staff involved in participant recruitment, MRI scanning, and data collection. This project is funded by Deutsche Forschungsgemeinschaft.

P1-E-25 - Somatosensory engagement in vicarious threat: Moderation by familiarity and trait empathy

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Vicarious threat refers to experiencing another's threat as if it were one's own. Simulation theories propose that somatotopically matched activation in primary somatosensory cortex (SI BA3b) plays a crucial role in representing another's bodily threat experience. However, whether SI BA3b also contributes to perceivers' own affective responses to vicarious threat remains unclear. Addressing this gap, we used functional magnetic resonance imaging (fMRI) to test whether SI BA3b shows increased activation during vicarious threat and whether this response is associated with factors known to amplify vicarious emotional experience: self-reported affective trait empathy and familiarity with the target. We hypothesized that SI BA3b would show greater activation for threat than for safety, track affective ratings, be stronger for familiar partners than for strangers, and scale with trait affective empathy. Ninety-seven participants (ages 23–26) underwent fMRI while holding hands with either a familiar partner or a stranger in separate runs. In each run, safety or threat cues indicated whether the other individual would receive an electric shock. Contrast estimates for [threat > safe] in SI BA3b were assessed using small-volume correction (SVC; $p < .05$) and analyzed in relation to trait empathy and self-reported affective ratings. Contrary to predictions, SI BA3b showed decreased activation during threat trials compared with safety trials, regardless of target familiarity. Intriguingly, during the partner condition, but not the stranger condition, this deactivation was less pronounced among individuals with higher trait affective empathy. Affective ratings did not correlate with SI BA3b activity. Together, these findings suggest that SI activation may not directly encode perceivers' affective responses to vicarious threat. Instead, SI activation appears to be modulated by familiarity and emotional trait empathy, indicating a more nuanced role for SI in vicarious emotional experiences of threat.

P1-E-26 - Initial linguistic alignment and social outcomes in dyadic co-viewing interactions

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BACKGROUND AND AIMS: Relationship science has increasingly examined similarity from two complementary, but often studied separately, perspectives: pre-existing similarity, where shared traits or interpretations predict later relationship outcomes, and similarity that emerges during interaction, where dynamic alignment during interactions predicts social connection. In everyday social life, however, these processes are intertwined. People often enter interactions with pre-existing

interpretations, which may shape the initial foundations for achieving shared understanding, while shared understanding itself is actively constructed through interaction. Using a dyadic co-viewing paradigm, the current study tests whether baseline alignment in interpreting a shared experience predicts later social outcomes. This study represents a first step in a broader program of research; future analyses will examine how alignment during interaction, captured through conversational text, relates to initial alignment and downstream social outcomes. **METHODS:** This study analyzed dyadic co-viewing interactions among 52 participants (N = 26 dyads) across two 10-minute naturalistic video clips. For each clip, dyads completed four stages: (1) first viewing side-by-side, (2) individual written reflections on the plot, most memorable scene, and thoughts during viewing (capturing initial interpretations), (3) a semi-structured dyadic discussion guided by epistemic and affective prompts, and (4) a second viewing of the same clip. After both sessions, participants completed a final questionnaire assessing their experience and partner perceptions as social outcome measures. Analyses focused on pre-discussion reflections and end-of-study outcomes.

RESULTS: Baseline alignment was quantified from pre-discussion reflections across three dimensions: semantic, sentiment, and affective alignment. Social outcomes included enjoyment, preference for co-viewing, shared reality, and partner evaluation. Dyadic means were computed for each outcome and analyzed separately. Ordinary least squares (OLS) regressions were conducted for each outcome and validated using robust regression (RLM). Overall, baseline alignment was not robustly associated with social connection outcomes. In fact, higher baseline sentiment alignment predicted lower shared reality ($\beta = -0.47$, $p = .01$), with no significant effects for enjoyment ($ps > .58$), partner evaluation ($ps > .06$), or co-viewing preference ($ps > .19$). **CONCLUSIONS:** These findings suggest that initial alignment in interpreting a shared experience may not reliably predict later social connection. Baseline semantic, sentiment, and affective similarity were largely unrelated to enjoyment, partner evaluation, co-viewing preference, or shared reality, although higher sentiment alignment predicted lower shared reality. Overall, the results do not support a broad role for pre-existing similarity in shaping social outcomes. Taken together, these results suggest that interaction may be a stronger driver of social connection outcomes. Rather than being shaped by initial alignment alone, shared experiences may emerge through dynamic conversational processes. Ongoing analyses of the dyadic discussions will test how conversational alignment relates to initial alignment and downstream outcomes and will be presented alongside the current findings. **ACKNOWLEDGEMENTS AND FUNDING:** We thank Chanelle Scheffer and Kylie Huang for their assistance with data collection.

P1-E-27 - More efficient evaluation, not a simple bias, underlies trust in friends across the adult life span

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OBJECTIVE: Socioemotional Selectivity Theory suggests that the emotional significance of social partners should have a greater influence on older adults' choices. This study tested whether this preferential trust in closer relationships stems from a predisposition, which posits that older adults have a preexisting response bias to trust close others, or an efficient evaluation, which proposes that trust decisions are based on more rapid processing of information about close partners, and how these processes change across the adult life span. **PARTICIPANTS AND METHODS:** A sample of 163 healthy adults (18 to 80 years) participated. They completed an economic trust game, making decisions as an investor. In each trial, they decided whether to trust (invest) or distrust (not invest) one of three partners: a reciprocating friend, stranger, or a nonsocial computer. To deconstruct the components of processing related to their decisions, we applied a diffusion decision model (DDM). **RESULTS:** Behaviorally, participants consistently invested more in their friends than in strangers or the computer, confirming a strong in-group trust preference. The DDM analysis provided an explanation for this. We found a higher drift rate for decisions involving friends compared to strangers. This indicates that information supporting a trust decision was accumulated faster for close partners. We found no difference in the starting point bias between partners, suggesting participants did not begin the decision process with a preexisting bias toward trusting friends. Age was positively correlated only with non-decision time, consistent with general slowing in motor and perceptual processes. The enhanced drift rate for friends did not vary with age. **CONCLUSIONS:** These findings demonstrate that preferential trust in friends is not a simple bias but is instead likely due to more efficient and rapid evaluative processes. This social-cognitive mechanism remains preserved throughout the adult life span, supporting the idea that older adults can maintain and use cognitive processes that support their primary socioemotional goals. The study highlights the utility of computational modeling, which moves beyond behavioral outcomes alone to provide neurocomputational insight into these social decisions and inform our understanding of underlying neural systems. For instance,

the enhanced and preserved efficiency of evidence accumulation for friends may be supported by mentalizing brain systems implicated in modulating how strongly prosocial evidence influences decisions.

P1-E-28 - Voices, norms, and meanings: ERP evidence of gendered listening in Chinese

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BACKGROUND AND AIMS: To understand what someone is saying, spoken content alone is often insufficient - comprehending speech inherently requires comprehending the speaker. For instance, our brain may respond differently when a man says he likes to wear lipstick or when a woman talks about dancing with her wife. Nonetheless, how the socially meaningful voice interacts with semantic meaning remains unclear. This project examined implicit gender norms in voice-message integration by manipulating stereotype-voice congruency (Congruency) and voice gender typicality (Typicality). Prior literature suggested that men and women might process and adapt to gender stereotype incongruencies differently, we also explored participant gender (Gender), alongside trial order (Order) to test if participants adapt to gender norm violations over trials. **METHODS:** Two ERP studies were conducted with Chinese participants passively listening to spoken sentences: Study 1 (N = 60, 29 female) focused on socio-cultural gender stereotypes and Study 2 (N = 63, 31 female) sexuality norms. Sentence stimuli (N ≥ 160) followed a 2×2 design, varying in Congruency (sentence gender bias vs. speaker gender) and Typicality (typical vs. atypical pitch manipulation for the speaker's gender). **RESULTS:** In Study 1, mixed-effects modelling revealed a significant Congruency × Gender interaction ($\chi^2 = 12.94$, $p < .001$) for typical voices. Voice gender-stereotype congruency effects produced a robust N400 response only in females ($\beta = .48$, $p < .001$). Separate models for males and females showed that speaker atypicality (e.g., high pitch male) reversed these effects, again, only in females. In Study 2, for typical voices, a Congruency × Gender × Order interaction ($\chi^2 = 15.01$, $p < .001$) revealed significant N400 congruency effects in females during the first half of the session ($ps < .001$), which only occurred for males in the second half of the session ($ps < .01$). For atypical voices, females did not show significant effects ($ps > .05$), whereas males exhibited effects in the second half of the session ($ps < .05$) without Typicality interaction. **CONCLUSIONS:** Our studies provide neurophysiological evidence that speaker identity is integrated simultaneously with semantic content during spoken sentence processing, but the pattern of gender congruency effect varies by gender norm type, listener gender and nuanced vocal features. Females produced robust N400 responses to gender norm violations delivered by speakers with typical voices, and showed heightened sensitivity to voice characteristics, producing reduced or even reversed N400 responses for atypical voices. The disappearance of effects in the second half of experiments suggested females also rapidly adapted to social violations. In contrast, males were less responsive to voice variation and gender norms overall, with delayed congruency effects appearing later, particularly for gender stereotypes compared to sexuality norms. Our results suggest that women are more sensitive to speaker identity, as indexed by voice cues, and adapt more quickly to social norm violations than men. **ACKNOWLEDGEMENTS AND FUNDING:** This study has received funding from the Hong Kong Polytechnic University (grant numbers P0051039 and P0046383) and research support from James Button, Shiyue Li, and Meixian Li.

P1 -E-57 - How loneliness relates to neural processing of self and other emotion transitions

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BACKGROUND AND AIMS: Accurately predicting how the self and social others will transition between different emotional states is fundamental to successful social interaction, yet recent behavioral evidence shows that loneliness disrupts this capacity: lonely individuals show 1) reduced anchoring to self-knowledge when representing others and 2) more idiosyncratic representations of emotion transitions (Ma de Sousa et al., 2025). These patterns align with broader neural findings: lonely individuals show reduced self-other overlap in the mPFC, a region crucial to person representation (Courtney & Meyer, 2020). Loneliness is also associated with idiosyncratic neural responses to social information (Baek et al., 2023). However, it remains unknown whether these behavioral disruptions in emotion processing reflect altered neural processing. Here, we hypothesized loneliness would be associated with 1) reduced similarity between representations of emotion transitions for oneself and others and 2) idiosyncratic neural representations of emotion transitions for oneself and others. **METHODS:** 67 undergraduates completed 1) the UCLA loneliness scale and 2) the Emotion Transition Task, rating transition likelihoods (0-100%) between 7 emotional states (e.g., happy, calm, anxious) for two targets: themselves and a typical student. To test

whether loneliness disrupts self-other neural coupling, we first used GLMs to model each transition, yielding beta maps for 49 transitions for both targets (self and other). We extracted neural patterns from ROIs using Neurosynth meta-analytic association maps for the terms "mentalizing" and "self-referential", and the Schaefer atlas's default mode network regions. For each participant, ROI, and target, we constructed first-level neural representational dissimilarity matrices (RDMs) using Euclidean distance. We then computed representational similarity between each participant's self and other RDMs using Spearman correlations, then tested whether loneliness moderated this coupling. To test whether loneliness is associated with idiosyncratic neural representations, we took an intersubject representational similarity analysis (IS-RSA) approach. For each ROI and target, we created a second-order similarity matrix by computing pairwise correlations between participants' first-level neural RDMs, yielding a participant-by-participant matrix reflecting how similarly each pair of individuals represented all emotion transitions. We then created a loneliness matrix to test an 'Anna Karenina' model (Finn et al., 2020), in which non-lonely individuals' neural patterns converge, while lonely individuals show idiosyncratic patterns, different non-lonely individuals and other lonely people. We then correlated the second-order neural similarity matrix with the second-order loneliness matrix to examine whether the neural data reflect this 'Anna Karenina' pattern. **RESULTS:** All data has been collected with analyses currently in progress. **CONCLUSION:** This study investigates whether biases in how individuals perceive emotional transitions are associated with underlying alternations in neural processing. Identifying potential neural mechanisms may clarify how such alterations perpetuate feelings of isolation in lonely individuals. **ACKNOWLEDGEMENTS AND FUNDING:** We thank Jay Campanell, Zack Culver, Makyala Lui, and Preyashi Poddar for support with data collection. This work was supported by a Brain and Behavior NARSAD Young Investigator Grant #32767.

P1-E-58 - Age- related differences in the perception of musically induced emotions and episodic memory performance

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BACKGROUND AND AIMS: Event boundaries divide continuous experiences into distinct events and support episodic memory. A previous study established that transitions in emotional state can serve as meaningful event boundaries, and impact both item recognition and temporal memory in young adults (McClay et al., 2023). In aging research, there is growing interest and debate as to whether and how the perception of event boundaries is altered and contributes to poorer episodic memory performance. Although there is widespread appreciation that aging affects emotion processing, this line of research has not explicitly examined emotion-defined event boundaries and their impact on memory organization. **METHODS:** We adopted the task described by McClay (2023). Young and older adults ($n = 82$) encoded emotionally neutral objects while listening to custom music containing transitions across emotion categories (sad, anxious, calm, joyous). Participants were shown object pairs and asked to report which object was presented first and estimate their temporal distance. Using an "emotion compass" tracking tool, participants re-listened to the music while providing continuous ratings of felt valence and arousal (Figure A). This supported analyses of age group differences in emotional experience and perception of valence and arousal change points (i.e., event boundaries). Participants completed an object recognition task 24 hours later. **RESULTS:** Broadly consistent with an emotional positivity effect, older adults were more likely to experience the music as being positively valenced relative to young adults (age*valence interaction: $F(1,81)=14.32, p<.001$; Figure B). However, older adults' ability to identify changes in music valence and arousal appeared preserved. Change point analyses of compass ratings indicated change points were similar across age groups and consistent with previously published consensus data (no effect of age or interaction: both $p>.14$). In both groups, we replicated conventional event boundary effects on temporal memory, such that object order memory was poorer and temporal distance judgements were dilated for boundary-spanning pairs. While the impact of emotional event boundaries on temporal memory did not differ significantly between age groups, we observed significant age effects in long-term memory measures of delayed object recognition. Specifically, while young adults demonstrated a memory advantage for objects encoded during emotional event boundaries, this memory benefit was absent in older adults (age*boundary $p's<.05$; Figure C). **CONCLUSIONS:** This study serves as an independent replication of findings reported by McClay and colleagues. Together, these studies demonstrate that emotional states represent meaningful contexts that serve to organize and shape memory across the lifespan. While older adults reported music-induced emotional experiences as more positive, fluctuations in emotional experiences were still observed by older adults and were meaningfully related to episodic memory. The mechanisms

underlying the loss of long-term item memory benefits in aging warrants further investigation. Complementary neuroimaging studies may test the degree to which the perception of event boundaries engages catecholamine systems implicated in novelty detection and arousal as a mechanism to strengthen encoding and consolidation, and such modulation differs across the lifespan. **ACKNOWLEDGEMENTS AND FUNDING:** This research is supported by R01-AG074330.

P1-E-59 - Unilateral damage to anterior cingulate cortex and amygdala differentially disrupts socioemotional responses in macaque monkeys

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BACKGROUND AND AIMS:: Our goal is to determine how interactions of the anterior cingulate cortex (ACC) and amygdala (AMYG) contribute to the detection of/reaction to altered affective states in a conspecific. To this end, we developed a novel behavioral paradigm—the Empathic Arousal and Partner Proximity test (EAPP) to assess socioemotional and empathic responses in nonhuman primates. Here we report preliminary data from this study: we used the EAPP to study how unilateral, selective damage to either the ACC or AMYG alters socioemotional responses in male rhesus monkeys (*Macaca mulatta*). **METHODS:** The EAPP measures physiological arousal (e.g., heart rate) and behavioral changes in a subject (i.e., "Observer") monkey that arise from being paired with a "Demonstrator" monkey. Each EAPP session is comprised of three phases: Acclimation (Observer alone), Pairing (Observer and Demonstrator), and Separation (Observer alone). Prior to pairing, the affective state of the Demonstrator monkey is pharmacologically manipulated via intramuscular injection of either an anxiolytic drug (midazolam, 0.4 – 0.8 mg/kg), anxiogenic drug (β -CCE, 0.4 – 0.8 mg/kg), or saline (0.9%). We repeated the EAPP with Demonstrators that were novel or familiar to each Observer. Physiological arousal was measured via surgically implanted telemetry transmitters that recorded ECG and body temperature signals. Behavior was logged via real-time ethogram scoring by two independent raters with high inter-rater reliability (Pearson's $r > 0.85$). Each Observer was tested before and after receiving unilateral neurotoxic lesions of either the ACC ($n = 2$) or AMYG ($n = 3$). **RESULTS:** Preoperatively, Observers' ($n = 5$) behavior and physiological arousal were significantly influenced by social context. Notably, Observers exhibited elevated heart rate and increased vocalizations when separated from a familiar Demonstrator. In addition, every Observer exhibited sustained arousal and hesitancy to approach while paired with a novel Demonstrator. There was also a significant effect of the Demonstrators' administered drug on the Observers' physiological arousal; specifically, we found that Observers' heart rates were higher when paired with a Demonstrator that received midazolam, relative to when that same Demonstrator received saline. Postoperatively, Observers with lesions of the ACC (but not those with AMYG lesions) exhibited significantly fewer vocalizations when separated from a familiar Demonstrator. In contrast, Observers with unilateral lesions of the AMYG (but not those with ACC lesions) were more likely to maintain close proximity to a novel Demonstrator. **CONCLUSIONS:** Our preoperative data provide evidence that rhesus monkeys exhibit profoundly different behavioral and physiological responses to novel vs. familiar conspecifics, and that Observers can detect changes in the affective states of familiar Demonstrators. The preliminary postoperative data provide evidence of a double-dissociation of function, with the ACC and AMYG each making unique contributions to socioemotional behavior in macaques. We conclude the EAPP is a valuable tool for studying the neural underpinnings of social cognition.

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P1-E-60 - The universal smile is person-specific

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BACKGROUND: Smiles are the most common and universally recognized facial expression. While we intuitively appreciate people have distinctive ways of smiling, it is unknown whether they are distinct enough to serve as identity markers and are used for that purpose. **METHODS:** To test this, we created an ecological dataset of 19,000 smiles from global public figures of a variety of ages and geographic locations. Using neural networks with action unit intensities as features, we examined whether people possess unique smile signatures independent of facial appearance. To further examine whether people are sensitive to the unique individual smile patterns, we used artificial intelligence to project strangers' smile patterns onto still photographs with

neutral facial expressions of either familiar people or strangers. This methodology, dissociating facial appearance and smile patterns, allowed us to examine whether smile patterns function as independent identity cues. The participants ($n = 145$) indicated for each image whether the smile is real or manipulated. We then replicate the study with self-projected smiles as the real smiles, to control for possible AI confounds ($n = 165$). Next, to test whether the brain process facial expressions as part of people's identity, rather than only emotional cues, using the same methodology, we projected a video of a person with emotional facial expressions onto four still photos. We then showed the movies in the fMRI such that each participant ($n = 45$) saw two movies of two different people with the same facial expressions. **RESULTS:** Classification accuracy reached over eight times above chance level, and 80% for pairwise comparisons ($p < 0.0001$), and in the absence of a smiles the performance was near chance. This result was confirmed also with logistic regression ($p < 0.0001$). While 17 extracted action units were activated during smiling, the six most informative ones were sufficient to replicate these results. We found higher recognition accuracy for familiar compared to unfamiliar faces ($t(144) = 9.42$, $p < 0.001$, Cohen's $d = 0.782$), and replicated this effect with self-projected smiles ($t(164) = 4.63$, $p < 0.001$, Cohen's $d = 0.360$), showing that people have individual smile patterns that are used based on familiarity, similar to an individual's facial or vocal signature. An identity-based processing was also manifested in the neural response, with significant intra-subject correlations not only in visual motion processing regions, but also in the ventral visual areas that are typically related to face recognition. **CONCLUSIONS:** We conclude that there is reliable individual variation in smile patterns that people recognize, such that smiles are not just a means of expression but are affective identity markers. **ACKNOWLEDGEMENTS AND FUNDING:** The Klarman Fellowship at Cornell.

P1-E-61 - The neural basis of feeling heard: Characterizing dmPFC responses to meta-evaluations during naturalistic conversation

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BACKGROUND AND AIMS: Feeling connected to others is a universal human need. In conversations, people want to feel heard, and perceptions that other people are listening are associated with positive outcomes in the workplace, romantic relationships, and healthcare settings. Central to a sense of feeling heard is an inference that another person values oneself and is interested in what one says, which constitute meta-evaluations. Accurate meta-evaluations are crucial for communication, and prior work suggests that the dorsomedial prefrontal cortex (dmPFC) may support these inferences. Yet, little is known about how meta-evaluations are dynamically constructed during social interactions and the role that dmPFC plays in this process. In the current study, we examined whether the dmPFC tracks moment-by-moment updates in meta-evaluations of interest ("meta-interest") and fluctuations in meta-evaluation accuracy during conversation. **METHODS:** We recruited 52 pairs of participants ($N = 104$) to have an in-person conversation while undergoing fNIRS neural recording. Conversations covered six topics selected for each dyad to vary in mutual interest and lasted about 25 minutes total. Following the interaction, participants completed a continuous rating task while viewing their video-recorded conversations. For each half of the video, one participant rated actual interest, while the other rated meta-interest, thus providing a metric of meta-evaluation accuracy for each participant. All data have been collected, and analyses are ongoing. **RESULTS (ANALYSIS PLAN):** We hypothesize that dmPFC tracks updates in meta-evaluations of interest during conversation via one of two mechanisms. Specifically, we will test two competing hypotheses: 1., dmPFC tracks momentary fluctuations in meta-interest, and 2., dmPFC tracks update signals to an accumulated belief about a partner's interest. To test the first hypothesis, we will fit a linear mixed effects model that accounts for temporal autocorrelation in the fNIRS signal to predict dmPFC activity (i.e., average oxygenated hemoglobin across the channels in this region) as a function of absolute change in second-by-second meta-interest ratings. To test the second hypothesis, we will use an analogous model to predict dmPFC activity using update signals (i.e., KL divergence) derived from a Bayesian model of interest accumulation. Continuous predictors in both models will first be convolved with a canonical hemodynamic response function. Finally, we hypothesize that dmPFC activity will be higher during segments of conversation when meta-evaluations are more accurate. To quantify meta-evaluation accuracy, we will correlate one participant's actual interest ratings with their partner's meta-interest ratings for each topic. We will then fit a linear mixed effects model to predict dmPFC activity (averaged within topics) using meta-evaluation accuracy. **CONCLUSIONS:** Ultimately, the present work will investigate the neural mechanisms by which people update meta-evaluations of interest in the context of free-flowing conversations. Findings from this work will shed light on the neural bases of social connection and identify potential targets for interventions to help people connect better.

P1-E-63 - Social relationships shape cross-brain linguistic alignment during naturalistic conversation

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BACKGROUND AND AIMS: Human social interaction requires people to transfer the thoughts from their own mind to another person's mind. Language supports this process by aligning neural activity across individuals. Greater neural alignment has been linked to social closeness and better cooperation. However, successful conversation involves more than alignment alone. fMRI hyperscanning—where two individuals are scanned simultaneously—has revealed that friend dyads neurally diverge during conversation more than stranger dyads. We propose that friends may be able to explore more because they benefit from stronger linguistic representational alignment. If so, this could be reflected in greater neural coupling linked specifically to the linguistic content of their conversation. We test this possibility using fMRI hyperscanning during real-time conversation. We examine whether linguistic representations from one individual better predict their partner's neural responses in friends than strangers to reveal how social relationships shape the neural representation of conversational meaning. **METHODS:** Dyads of friends (N = 52) and strangers (N = 50) engaged in real-time conversation while undergoing fMRI hyperscanning. Participants engaged in ten 3-minute free-form conversations on a given topic prompt, taking turns speaking and listening. Participants also listened to a podcast narrative for 13 minutes, allowing us to functionally align their neural responses during conversations. We trained voxelwise encoding models comprising LLM word embeddings, articulatory features, syntactic features, and task confounds, to predict each individual's brain activity during both speaking and listening in the Generate condition with cross-validation. Analyses evaluate cross-brain encoding performance of these models within friend and stranger dyads, compared to both within-brain encoding and cross-brain performance in pseudo dyads. We expect friends to show a cross-brain encoding advantage relative to within-brain encoding baseline, and relative to pseudo dyads. **RESULTS:** Preliminary results suggest that social relationships differentially shape within-brain and cross-brain linguistic encoding during natural conversation. Although strangers exhibited significantly stronger within-brain encoding performance across the whole-brain, friend dyads showed relatively enhanced cross-brain linguistic encoding than strangers within the inferior frontal gyrus, medial prefrontal cortex, and superior temporal sulcus. That is, linguistic representations from friends better predicted their partner's neural responses, but only relative to a strong within-brain encoding baseline in strangers. Ongoing analyses comparing cross-brain encoding performance in real dyads and pseudo dyads will further elucidate the source of this relative cross-brain advantage for friends. **CONCLUSIONS:** Friends show enhanced cross-brain neural coupling relative to within-brain encoding, as captured by linguistic encoding models. Friends may leverage this established common ground when they converse, allowing them to explore more novel ground. This study highlights the utility of encoding-based analyses that go beyond content-agnostic measures of alignment for probing how conversation is represented within and across brains. This framework offers a foundation for future work examining how social factors shape communication and the key yet complementary roles for neural alignment and divergence in effective conversations. **FUNDING:** NIMH R21MH127284, F32MH120951

P1-F-29 - The role of social closeness and affective experience in shaping risk and reward valuation during autobiographical memory recall

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BACKGROUND AND AIMS: Positive life experiences are intrinsically valuable to one's well-being. Recalling such experiences is associated with improved mood, dampened stress responses, and recruitment of reward-related neural systems (Speer et al., 2014; Speer & Delgado, 2020). Additionally, engagement of affective regions (e.g., amygdala) during autobiographical memory retrieval varies depending on event context (Ford & Kensinger, 2019). Memories can vary in both content and social context, such as whether experiences involve risky behaviors and whether they were experienced with close others. While social context can enhance the benefits of recalling positive experiences and recruitment of reward-related systems (Ross & Inagaki, 2023; Speer & Delgado, 2020), less is known about how perceived risk of such experiences interacts with affective and neural responses during recall. In this experiment, we examined how affective and social features of autobiographical memories shape risk and value perception, and the neural correlates of these features during memory recall. **METHODS:** Prior to scanning, participants (N = 51) described 40 personal memories using an Autobiographical Memory Questionnaire adapted from prior work in our lab (e.g.,

Speer et al., 2014). Memories were prompted by common life-event cues intended to vary along scales of perceived risk, positivity, and social closeness with others in the memory. Each memory was rated on subjective feeling after recall, event valence, social context, perceived risk of the event, vividness, and intensity. On a separate day, participants recalled each memory during fMRI in response to personalized cues and elaborated on the details for a maximum of 14 seconds. Participants indicated the onset and offset of each recalled memory and rated how each memory made them feel in the present moment. Neuroimaging analyses leverage parametric modulation to characterize how variation in memory features relates to neural responses during recall. **RESULTS.** Positively valenced events were rated as less risky overall ($b=-0.38$, $SE=0.06$, $p<.001$), and events involving closer others were perceived as less risky ($b=-0.13$, $SE=0.04$, $p<.001$). Interestingly, these effects interacted ($b=-0.15$, $SE=0.03$, $p<.001$), such that social closeness predicted attenuated perceived risk for positively valenced memories but amplified perceived risk for more negatively valenced memories. Positive feeling during memory recall was predicted by greater social closeness ($b=0.35$, $SE=0.04$, $p<.001$) and lower perceived risk ($b=-0.29$, $SE=0.04$, $p<.001$). Preliminary neuroimaging analyses ($N = 30$) show that memory recall recruited the striatum ($Z=4.52$, $p<.0001$) while the strength of subjective positive feelings during recall modulated amygdala activation ($Z=4.92$, $p<.0001$). Future analyses will test whether risk-related neural responses are attenuated for memories that elicit more positive affect and involve closer social partners. **CONCLUSIONS:** Preliminary results suggest that the presence of socially close others in memories impacts how we perceive affective value and risk of past events at the time of recall. Recalling these experiences engages neural regions involved in reward and affect processing, with the amygdala tracking emotional experience during recall. **ACKNOWLEDGEMENTS AND FUNDING:** This study was funded by the NIH (R01DA053311).

P1-F-30 - Prior bias underlying social anxiety and the associated neural mechanisms

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BACKGROUND AND AIMS:: Social Anxiety (SA) is marked by strong fear of social scenarios, which may be driven by negative cognitive biases that have been well-established in previous studies. However, the underlying decision-making mechanisms of the cognitive biases in SA remain elusive. Here, we conducted two experiments to investigate prior biases in SA and the corresponding neural mechanisms. **METHODS:** In Experiment 1 ($N=31$), participants with varying SA traits completed a social-emotional judgment task of faces and biological motions. Decision processes were analyzed using the Hierarchical Drift Diffusion Model (HDDM). In Experiment 2 ($N=48$), fMRI data were collected during a similar social-emotional judgment task in which trials began with a cue presentation to elicit prior expectations. The emotional valence of the presented facial and biological motion stimuli was manipulated to be ambiguous, therefore highlighting contributions of the prior in decision-making. A CNN-RNN machine learning model was trained to distinguish the behavioral responses based on pre-stimulus neural activations. **RESULTS:** HDDM revealed that higher SA traits correlated with less distinct decision starting points for positive versus negative judgments compared to low SA individuals, indicating more rigid prior biases and being less successful to adjust expectations flexibly. ML results yielded accuracies of 73.19% and 79.59% for emotional classification, suggesting prior expectations modulate neural processing before stimulus onset. Attribution analysis identified the angular and posterior cingulate gyri as key regions associated with the a-priori decision-making processes. **CONCLUSIONS:** Together, this study establishes a cross-modality framework and highlights the role of rigid prior biases in SA, offering methodological and empirical support for computational psychiatry.

P1-F-31 - The role of creativity in generating options for open-ended value-based decisions

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BACKGROUND AND AIMS:: Creativity is believed to arise from the flexible navigation of memory space and the formation of novel connections between existing memory representations. This ability may be especially relevant for open-ended value-based decisions, which require self-generation of options prior to a decision. During option generation, memory retrieval typically favors high-value, probable, and easily accessible candidates—promoting efficiency but also imposing limits. Research shows a discrepancy between choices made from self-generated versus externally provided options, suggesting that self-generated

options may reflect a narrower search and exploration of memory space. The present study investigates the role of creativity in option generation and decision making through construal level theory. Specifically, it proposes that creativity serves as a mechanism by which people expand their memory search space and generate optimal options. **METHODS:** The study consists of three phases: creativity, option generation, and decision making. Prior to the creativity and option-generation phases, participants are randomly assigned to either a low or high-level construal induction (imagine life tomorrow vs. ten years from now, respectively). After the inductions, they complete a creativity task (Incomplete Shapes Task) or an option-generation task (imagining a scenario, listing all options they would consider, and selecting one option). The decision-making phase involves a series of binary choices between self-generated options and novel alternatives produced by a large language model that vary in semantic similarity. We hypothesize that adopting a high-level construal (abstract mindset), compared to a low-level construal (concrete mindset), will (1) enhance creativity; (2) increase the diversity and/or content of options generated for value-based decisions; (3) demonstrate that creativity mediates the relationship between construal level and option generation; and (4) promote more adaptive value-based decision making. **Analysis Plans.** All analyses will be conducted within a Bayesian statistical framework. Creativity will be quantified by scoring participants' Incomplete Shapes Task drawings using a neural network-based machine learning model trained on human creativity ratings. Option generation will be measured in two ways: the average cosine similarity between options within each trial and the average Euclidean distance of each option from the centroid of the trial, using semantic embeddings. Bayesian multilevel mediation models will then assess whether creativity mediates the relationship between construal level and these option-generation measures. Finally, we will investigate whether construal level and creativity promote adaptive value-based decision making, defined as the proportion of trials in which participants chose self-generated over novel options. **IMPLICATIONS:** In open-ended value-based decisions where individuals must generate their own options, memory retrieval often favors high value and accessibility, which limits exploration and may result in suboptimal choices. By considering creativity—characterized as the capacity to access more remote associations in memory to form more novel combinations—into the option-generation process, this study begins to elucidate the cognitive mechanisms that support more effective option generation and, ultimately, better decision making. **ACKNOWLEDGEMENTS.** Pre-registration.

P1-F-32 - Using the drift diffusion model to examine relationships between mental health and media selection

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BACKGROUND AND AIMS:: We are experiencing a mental health crisis. In the United States of America, depression, anxiety, and loneliness are widespread. Large-scale studies indicate a substantial number of US adults experience moderate-to-severe depression (8%), anxiety (7%, Terlizzi & Zablotzky, 2024), or loneliness (37%, Albertorio-Diaz & Wheldon, 2026). American college students experience considerably higher rates (37%, 33%, 58%, respectively) across all three dimensions (Healthy Minds Network, 2025). Conflicting research points to media as either a cause of, or cure for, these mental health challenges. For instance, some reports document that media induce negative mental health outcomes whereas others demonstrate that people turn to media to help buffer against life stressors. There are several limitations of this existing research including an over-reliance on self-report measures, a lack of behavioral observation, and a poor understanding of the underlying decision mechanisms. To address these concerns, we study the relationship between anxiety, depression, and loneliness on people's media selection. These studies build on our lab's previous research showing that younger adults prefer negative media content and that placing younger adults in a negative mood amplifies this preference (Gong et al., 2023). We hypothesized that these earlier findings are influenced by underlying mental health concerns. Therefore, measures of depression, anxiety, and loneliness should explain our earlier results. **METHODS:** To test this hypothesis, we replicated our prior media selection paradigm while including a new battery of mental health questions. We used a computational hierarchical Bayesian drift diffusion model (HDDM; Pan et al., 2025) to link people's media selection with mental health measures (PHQ9 – depression; GAD-7 – Anxiety; UCLA Loneliness scale). Our primary outcome of interest was drift rate, although all computational parameters were modeled. **RESULTS:** Replicating our earlier work investigating drift rate, we found that people have an overall preference for negatively valenced and high arousal entertainment media (Fig. 1). This preference is moderated by people's loneliness such that lonelier individuals have a stronger preference for negatively valenced entertainment media (Fig. 2). Finally, we discovered that individuals high in depression and anxiety prefer lower arousal media (Figs. 3-4). **CONCLUSIONS:** Our project begins to offer

mechanistic clarity about how people decide to use media for coping, and for how mental health challenges appear to amplify preferences for negative media content. Our results have important theoretical and practical application as they suggest clear intervention targets. Moreover, they offer further clarity that people use media not for mood management, but instead emotional regulation. **FUNDING:** This project was supported by internal funding mechanisms at UC Davis.

P1-F-33 - Uncertainty, threat, and thrill interpretations of everyday risks

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BACKGROUND AND AIMS:: Outcomes of risky choices are inherently hard to predict, both in whether they will result positively or negatively, and in how likely these outcomes are perceived to be. As a result, risks are diversely interpreted across individuals, some threatened and others thrilled, experiencing varying degrees of predictability – also influenced by traits such as anxiety. Despite the prevalence of risky decisions in daily life, not many studies have examined risks laypeople view as relevant. Utilizing a recently developed inventory of contemporary, real-world risky choices (Frey & Fischer, 2025), we examined (1) whether threat and thrill interpretations of risk are continuous along a single dimension or dissociable, (2) the individual differences in processing, focusing on trait anxiety (TA) and intolerance of uncertainty (IU), and (3) how the nuanced sentiment of the risky scenarios may impact interpretations. **METHODS:** Participants were recruited via Prolific (N = 50; F = 25; mean age = 42.16 ± 12.29). Here, they rated 100 real-life risky choices (e.g., “Accept a new job”) derived from a previous work on how (1) threatening or worrying, (2) thrilling or exciting they seem; and also on (3) the perceived outcome uncertainty or unpredictability. Participants then completed the State-Trait Anxiety Inventory and the Intolerance of Uncertainty Scale. We explored relationships among variables by Bayesian correlation analyses. Further, we applied sentiment analysis using a DistilBERT-based natural language processing model to label items by sentiment (very negative to very positive). Then we fit linear mixed-effects models predicting trial-level ratings from TA/IU, item sentiment, their interaction, and random intercepts for participants and items. **RESULTS:** Across items, mean uncertainty and threat ratings were strongly correlated ($r = .81$, $BF > 100$), whereas the null was more supported for the threat-thrill ($r = -.10$, $BF = 0.41$) and thrill-uncertainty ($r = .13$, $BF = 0.50$) associations. On participant level, TA was positively associated with the mean and standard deviation of uncertainty ratings ($r = .35$, $BF = 4.89$; $r = -.36$, $BF = 5.90$; respectively), but not with threat or thrill; IU was not related to any outcomes. Sentiment analysis showed, treating sentiment as continuous, that more positive sentiment was associated with lower uncertainty ($r = -.25$, $BF = 5.53$), lower threat ($r = -.37$, $BF > 100$), and higher thrill ($r = .34$, $BF = 58.39$). Finally, mixed-effects models revealed consistent sentiment-TA interactions across ratings – higher TA amplified uncertainty for negatively valenced items, while attenuating the effect of sentiment on perceived threat and thrill. IU was not a significant predictor in any model. **CONCLUSIONS:** Our results suggest that threat and thrill may be dissociable dimensions of risk interpretation, whereas perceived unpredictability of outcomes is closely tied to threat. On the individual level, TA was selectively associated with heightened and constant uncertainty evaluation rather than threat interpretation per se. Moreover, we show that TA may exaggerate perceived unpredictability of negatively valenced risks, while rather generalizing across items in threat and thrill responsiveness. These findings contribute to understanding how everyday risks are perceived and how anxiety shapes interpretations of real-world uncertainty. We further plan to explore how these dimensions may be represented in the brain.

P1-F-34 - Affective neural signals forecast movie market performance

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AIMS: Movie watching is a globally popular pastime. In today's saturated entertainment landscape, understanding what drives audience engagement is essential for predicting a movie's success. Traditional forecasting approaches relying on behavioral surveys or historical sales, overlook the underlying affective mechanisms that shape consumer decisions. This study explores whether neural responses, particularly in regions associated with reward (nucleus accumbens, NAcc), aversion (anterior insula, AIns), and valuation (medial prefrontal cortex, MPFC), can forecast real-world movie performance. By examining both individual desires to watch and market revenue, this research investigates how affective brain activity can improve predictive models of media demand. **METHODS:** Two cohorts completed a 32-trailer fMRI task in Fall 2023 (n = 27) and Spring 2024 (n = 15). In each trial, individuals viewed a movie trailer (half comedy, half horror) followed by prompts to rate their desire to watch the movie,

current affective valence, and arousal. Of the 32 movie trailers, 24 corresponded to released films and 8 to unreleased ones; these were used as training and validation sets in the analyses, respectively. **RESULTS:** Findings revealed that individual watching desire is positively associated with self-report positive arousal (PA) for both comedies and horrors ($t = 22.00, p < .001$), and negatively associated with self-report negative arousal (NA) for horrors ($t = -5.35, p < .001$). Individual analysis indicated that onset NAcc responses predicted individual PA ($r = -.09, p < .01$), desire to watch ($r = .1, p < .01$). In contrast, Alns responses at the end predicted individual NA ($r = .12, p < .001$) and negatively predicted watching desire ($r = .09, p < .01$). The forecasting model revealed that onset NAcc responses is positively associated with log-transformed gross B.O. ($r = .54, p < .001$). The validation of the multivariate neural model—incorporating onset NAcc activation ($t = 3.53, p < .01$), offset Alns response, and middle-phase MPFC activity—significantly outperformed the null distribution generated via permutation testing, indicating that the model's performance on unreleased movies was unlikely to occur by chance. Additionally, dynamic spatial intersubject correlation at NAcc is positively associated with the region's predictive strength for self-reported PA ($r = .86, p < .001$) and desire to watch ($r = .71, p < .01$), and B.O. returns ($r = .52, p < .05$); and dynamic spatial ISC at Alns is similarly associated with its predictive strength with self-reported NA ($r = .56, p < .05$), but negatively associated with B.O. returns ($r = -.71, p < .01$). These results showed that group-level behavioral responses to naturalistic stimuli can predict moment-to-moment neural synchrony in NAcc and Alns within a small sample of individuals. **CONCLUSIONS:** Validation of the forecasting model on out-of-sample movies confirmed its generalizability. These findings suggests that affective mechanisms not only drive individual choices but also forecast demand in the industry. The observed statistical link between neural synchrony and predictive power indicates that collective reward responses, coupled with variable individual aversion, enhance the forecasting mechanism. Overall, these insights imply that neural data can inform the optimal design of engaging media content.

P1-F-35 - Agentic and experiential state inference: Friends or foes in mentalizing about others?

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BACKGROUND AND AIMS:: People frequently infer others' agentic states (what they intend to do) and experiential states (how they feel), in close temporal proximity. Although these two types of mental state inference have been studied extensively in isolation, little is known about their functional relationship. Guided by frameworks of mind perception, the present studies examine both the cognitive structure underlying agentic and experiential state inferences and the consequences of engaging each for later decision-making. We distinguish broadly agentic mental content (e.g., intentions, plans, decisions) from broadly experiential content (e.g., emotions, sensations, feelings). Across studies, we investigate (1) whether inferences about agentic and experiential states facilitate, interfere with, or operate independently of one another and (2) how these relationships shape subsequent social decision-making. **METHODS:** Participants are recruited separately for two research goals. In Study 1 (target N = 120), we test the hypothesis that inferences about agentic and experiential mental content inhibit each other, relative to non-mental inferences. An alternative possibility is that inferences about any aspect of a person's mind facilitate inferences about any other aspect of the person's mind, relative to non-mental inferences. Participants will complete a response facilitation task. On each trial, participants will make two consecutive judgments about a person (prime, target), depicted in a face photograph. Response times (RTs) to target judgments about others' agentic, experiential, and non-mental attributes will be analyzed as a function of prime-target congruence. Response times will be analyzed using repeated-measures ANOVA. In Study 2 (target N = 240), we test the hypothesis that focusing on the agentic versus experiential aspects of a person's mind affects later social decision-making. In Part A, participants view a series of faces paired with four questions each. Faces are randomly assigned to questions probing agentic, experiential, or non-mental attributes. In Part B, participants are randomly assigned to a harm or blame condition, in which they read a scenario and are asked to assign half of the previously-viewed targets to receive harm (vs. no-harm) or blame (vs. no-blame). Mixed-effects regression models will test differences in harm and blame decisions across conditions. **EXPECTED RESULTS:** In Study 1, we predict interference between agentic and experiential inferences, such that incongruent trials produce slower RTs than congruent sequences within the mental inference conditions and slower RTs than nonmental-mental pairs. In Study 2, we expect that targets whose experiential attributes were considered will receive more protection from harm than agentic or neutral targets, whereas targets whose agentic attributes were considered will receive more blame than experiential or neutral targets. Future fMRI research adapting these paradigms can further adjudicate the inhibitory versus facilitative effects of agentic an experiential mental state inference. **CONCLUSIONS:** Together, these studies link

mind perception frameworks to testable predictions about mental state inference and its downstream social consequences, informing how people integrate judgments about intentions and emotions in moral evaluation, decision-making, and interpersonal conflict.

P1-F-36 - Nostalgic value influences perceptions of healthiness of food

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BACKGROUND & AIMS: Individuals perceive nutritionally similar foods as having different health values. Such subjective perceptions of healthiness are strong predictors of food choice, despite diverging from the objective nutritional value of foods. Cultural and developmental biases, hedonic value, nutritional knowledge, self-image, and intuition on the body's needs may jointly influence how healthy an item is considered to be. To explore the confluence of these factors and identify the responsible neural mechanisms, we compare the role of nostalgia, hunger, familiarity, and hedonic and nutritional value in the construction of subjective valuations of healthiness. **METHODS:** Participants completed a food image evaluation task in the MRI scanner over two sessions, one week apart. Having arrived for each session in a fasted state, they ingested either a glucose or a sham solution before entering the scanner. Inside the scanner, they viewed and rated images on nostalgia, craving, and healthiness in a rapid-presentation event-related design. Food images comprised of items commonly consumed in the US and India—the study cohort was comprised of 40 Indians and Americans. **RESULTS:** Behavioral data will be analyzed using mixed-effects models with hunger, nutritional value, familiarity, nostalgia, and hedonic value as fixed effects. We expect items, on average, to be rated as healthier when participants ingested the sham solution. Similarly, nostalgically and hedonically valuable items will be higher in perceived healthiness. Nutritional value may diverge from the subjective ratings. Parametric modulation analyses of the neuroimaging data will support the behavioural findings. Contrasts comparing items rated as high and low in healthiness will reveal stronger recruitment of regions implicated in emotional episodic memory, reward, and gustatory representations. **CONCLUSIONS:** Judgements on the health properties of food are susceptible to influence from interactions between complex emotions and the body's present metabolic needs.

P1-G-45 - The self-related processing in relation to attachment style in adolescents with and without major depressive disorder

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BACKGROUND AND AIM: Adolescence is a crucial period for developing self-concepts, influenced by attachment experiences in early life. Individuals with positive self-concepts are likely to have better mental health. Research has demonstrated that adolescents with major depressive disorder (MDD) are characterized by negative self-concepts and maladaptive self-evaluations. The study aims to explore the self-related processing in adolescents with and without MDD and its relations with attachment style. **METHOD:** Event-related potentials (ERPs) were recorded in 38 healthy adolescents compared with 9 adolescents with MDD in a self-referencing encoding task. In the task, they accurately judged the adjective traits (positive vs. negative) that properly describe themselves or others in social and academic traits. **RESULTS:** Behaviorally, the MDD group endorsed fewer positive traits for themselves than the TD group in both social and academic performance. Regarding ERP data, the TD group exhibited more positive late positive potential (LPP) amplitudes for self-positive traits than other-positive ones in social domains. However, the self-positive bias was not observed in the MDD group. The MDD group exhibited larger LPP amplitudes for self-referential descriptions than for others in the academic domain. Adolescents with MDD have higher levels of anxiety attachment to their friends than healthy peers. Depression severity was negatively correlated with the LPP amplitude for positive traits for academic and positively correlated with attachment anxiety toward mothers and friends. **CONCLUSIONS:** The results suggest that self-processing in adolescents, particularly in academic domain, in relation to higher level of anxiety about mothers and friends, is associated with more depression. **FUNDING:** The research was supported by funding from the National Science and Technology Council (NSTC-113-2410-H-037-020-)

P1-G-46 - Age-related differences in default mode network representation of emotion regulation

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BACKGROUND AND AIMS:: According to socioemotional selectivity theory (SST), aging is characterized by a motivational shift toward prioritizing emotional satisfaction, known as the "positivity effect." While this effect is important for mental health in later life, its neurobiological substrates – specifically the role of individual neural variability – remain under-explored. This study aimed to investigate whether the idiosyncrasy of functional connectivity within the default mode network (DMN) predicts positive emotion regulation in older adults and whether this relationship reflects a stable, trait-like neural architecture. **METHODS:** Utilizing the CamCAN dataset, we integrated resting-state (Study 1: 40 young, 30 older adults) and task-based fMRI (Study 2: 23 older adults). We employed Inter-Subject Representational Similarity Analysis (IS-RSA) based on the "Reverse Anna Karenina" model to assess whether individuals with superior emotion regulation abilities exhibit more unique (i.e., idiosyncratic) neural connectivity patterns. Study 1 focused on intrinsic DMN connectivity during rest, while Study 2 explored state-dependent changes during a negative stimulus reappraisal task. **RESULTS:** In Study 1, greater DMN idiosyncrasy during resting-state significantly predicted higher positive affect ratings following reappraisal exclusively in older adults ($r = 0.432$, $p\text{FDR-corrected} < 0.001$), a pattern absent in younger adults ($p\text{FDR-corrected} > 0.30$). Node-wise analysis identified key DMN hubs as primary drivers of this idiosyncrasy in the older group, including the left anterior PFC ($r = 0.428$, $p\text{FDR-corrected} < 0.017$), left ventral PCC ($r = 0.372$, $p\text{FDR-corrected} < 0.017$), and right angular gyrus ($r = 0.317$, $p\text{FDR-corrected} < 0.017$). In Study 2, while network-level effects were attenuated, node-wise results revealed that idiosyncrasy in the bilateral parahippocampal gyrus during the rating phase was significantly associated with positive emotion regulation (Right: $r = 0.591$, $p\text{FDR-corrected} = 0.019$; Left: $r = 0.499$, $p\text{FDR-corrected} = 0.019$). These findings suggest a robust link between individualized experience-based processes and real-time emotion regulation in the aging brain. **CONCLUSIONS:** These findings suggest that aging involves a fundamental shift in the temporal scale of emotion regulation. Specifically, emotion regulation evolves from a transient, state-like phenomenon in younger adults into a stable, trait-like neural idiosyncrasy in later life. We propose that accumulated life experiences and motivational shifts lead to the internalization of regulatory strategies within the DMN. This consolidation into a personalized neural architecture represents a possible key neurobiological mechanism of emotional resilience in aging, moving beyond simple cognitive compensation toward a stable, individualized regulatory style. **ACKNOWLEDGEMENTS AND FUNDING:** We thank the original authors of the CamCAN dataset for their generosity in making it available for use. This work was supported by the National Research Foundation of Korea (NRF-2025S1A5A2A01005331).

P1 -G-47 - Parenthood and brain age in the human connectome project

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BACKGROUND AND AIMS:: Parenthood has been associated with lower brain age in population-based studies of middle-aged and older adults, suggesting that it may have neuroprotective effects. However, it remains unclear whether such differences are observable in early adulthood, a period critical for understanding the temporal emergence of this association. Brain-predicted age is an increasingly used neuroimaging biomarker of population-level variation in brain structure that provides a multivariate summary of global brain structure beyond regional morphometric measures. To date, most applications have focused on midlife or older samples, resulting in uncertainty about its relevance in younger adult populations. Using cross-sectional data from young adult men and women in the Human Connectome Project, we examined whether mothers and fathers exhibit differences in brain-predicted age compared to non-parents. **METHODS:** Structural MRI data were obtained from 1,039 participants in the Human Connectome Project Young Adult dataset (age range: 22–37 years). Analyses included both female and male participants and were stratified by biological sex. Female participants included 300 mothers and 270 non-mothers, and male participants included 147 fathers and 322 non-fathers. Structural images were processed using the CAT12 toolbox for MATLAB, including tissue segmentation into gray and white matter and affine spatial normalization. Brain-predicted age was estimated using a validated machine learning-based BrainAGE framework employing Gaussian process regression, with multivariate features derived from CAT12-based gray and white matter volume maps (Kalc et al., 2024). Group differences were examined using general linear models controlling for chronological age and total intracranial volume, with comparisons conducted between

mothers and non-mothers, and between fathers and non-fathers. **RESULTS:** In unadjusted group comparisons, mothers exhibited significantly smaller brain age gaps than non-mothers (Cohen's $d = -0.40$, 95% CI $[-0.56, -0.23]$, $p < .001$), indicating younger-appearing brain structure relative to chronological age. In general linear models controlling for chronological age and total intracranial volume, this difference remained significant, with an adjusted group difference of approximately 1.5 years in brain age gap ($\beta = 1.53$, 95% CI $[0.66, 2.40]$, $p < .001$). This effect reflects a global difference in brain-predicted age rather than region-specific variation. In contrast, no significant differences in brain age gap were observed between fathers and non-fathers in analogous analyses. Within the mother group, brain age gap was not significantly associated with number of children, age of the youngest child, or age of the oldest child (all $|r| < 0.10$, all $p > .10$). **CONCLUSIONS:** These findings suggest that differences in brain-predicted age associated with motherhood are already present in early adulthood, extending prior population-based observations to a younger adult cohort. **ACKNOWLEDGEMENTS AND FUNDING:** Data were provided by the Human Connectome Project (WU-Minn Consortium), funded by the NIH Blueprint for Neuroscience Research. The authors declare no competing interests. **REFERENCES:** Kalc, P., Dahnke, R., Hoffstaedter, F., Gaser, C., & Alzheimer's Disease Neuroimaging Initiative. (2024). BrainAGE: Revisited and reframed machine learning workflow (Nos. 1065–9471). Wiley Online Library.

P1-G-48 - Neural and behavioral effects of in-phase theta tACS on working memory function in middle-aged adults

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BACKGROUND AND AIMS: Working memory declines with age, with noticeable changes becoming evident in middle-aged adults, and transcranial alternating current stimulation (tACS) has been proposed as a potential approach to enhance working memory. In particular, in-phase theta tACS applied to frontal and parietal regions is thought to enhance phase synchronization between these regions, thereby facilitating interregional communication underlying working memory processes. The present study investigated whether five sessions of in-phase theta tACS combined with working memory training would improve working memory performance in adults aged 50–65 years, and whether such effects transfer to episodic memory. **METHODS:** Healthy adults aged 50–65 years were assigned to an active ($n=14$) or a sham stimulation group ($n=13$). The intervention consisted of five sessions of adaptive n-back working memory training combined with in-phase theta tACS. The adaptive n-back training adjusted task level (N) based on individual performance. In-phase stimulation was applied to the left dorsolateral prefrontal cortex (DLPFC) and the left inferior parietal lobule (IPL) for 20 minutes per session. Sham stimulation was delivered only during the initial 30 seconds. Sessions were conducted on five separate days within a single week. At pre- and post-intervention assessment sessions, participants completed two functional magnetic resonance imaging (fMRI) tasks: a verbal n-back task and a word pair recognition task. In addition, two behavioral tasks were administered outside the scanner: a visual n-back task and the self-ordered pointing task (SOPT). **RESULTS:** Across the five intervention sessions, the active group showed a trend of greater improvement in the adaptive n-back performance during stimulation compared with the sham group. In pre-post analyses, the active group showed a trend toward faster reaction times on the visual n-back task compared to the sham group. Neuroimaging analyses indicated that, relative to the sham group, the active group showed greater pre-to-post activity reduction during the 2-back vs. 0-back contrast in the right anterior cingulate cortex and DLPFC. Similar deactivation was also observed for the 2-back vs. 1-back contrast. **CONCLUSIONS:** Given that the anterior cingulate cortex and DLPFC are typically recruited under higher working memory load, the observed activity reductions in these regions may suggest tACS-dependent increases in neural processing efficiency. Taken together with the observed behavioral improvement, these findings suggest that in-phase tACS may facilitate more efficient neural recruitment during working memory task performance in middle-aged adults.

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P1-G-49 - Risk-aversion & resilience in adolescents with anxiety

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BACKGROUND AND AIMS: Adolescence is characterized by heightened reward sensitivity, particularly in the ventral striatum (VS), which promotes risk-taking behaviors critical for learning and development (Levenson & Galván, 2013). This period also carries increased vulnerability to developing anxiety (Merikangas, et al. 2010). Anxious adolescents are known to be risk averse

to evade negative consequences which can hinder the formation of key problem-solving skills, the ability to cope with uncertainty, and is associated with negative self-perception (Crowley et al. 2022). For People of Color (POC), these patterns may be further compounded by cultural and structural stressors such as discrimination and generational trauma (MacIntyre et al., 2023). In this study, I aim to understand if resilience acts as a protective factor against anxiety and fosters more adaptive decision-making perceptions and abilities in adolescents, specifically for POC. **METHODS:** Participants completed a simulated driving task assessing risk-taking, in which they decided to stop (cautious choice) or cross (risky choice) at yellow lights to maximize monetary rewards. Anxiety was measured using the SCARED. Self-perceived risk aversion was assessed with the ADMQ Evasiveness subscale, and behavioral risk aversion was computed as the log-transformed ratio of cautious to risky choices. Both measures were standardized and used to calculate a discrepancy score (perceived minus actual risk aversion). Mediation analyses tested whether VS activation (risky vs cautious) mediated the relationship between anxiety and discrepancy using linear regressions ($\alpha = .05$). **RESULTS:** Adolescents with higher anxiety symptoms reported greater perceived risk aversion, but this association did not vary by race. In contrast, anxiety severity was not significantly associated with behaviorally measured risk aversion. This relationship did not differ by race or resilience scores. Sex emerged as a marginal covariate, suggesting potential sex differences in risk-aversion behavior. Anxiety severity was significantly associated with a greater discrepancy between self-perceived and behaviorally measured risk aversion, controlling for age, sex, and socioeconomic status. This relationship was not mediated by ventral striatum activation differences, nor moderated by race or resilience scores. Sex showed a significant main effect on discrepancy scores, indicating differences between males and females in the alignment of perceived and actual risk aversion. **CONCLUSIONS:** Adolescents with greater anxiety exhibited a larger discrepancy between self-perceived and behavioral risk aversion, underscoring the role of self-perception in anxious decision-making. Future work should examine cortical and network-level mechanisms underlying overlap of risk evaluation and self-identity. **ACKNOWLEDGEMENTS AND FUNDING:** Support for this project was provided by the National Institute of Mental Health to Dr. Peris and Dr. Adriana Galván (R01 MH110476-01A1) and by the UCLA/Keck Humanistic Inquiry Undergraduate Research Awards.

P1-G-50 - Individual differences in daily caregiver emotion socialization of toddlers

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BACKGROUND AND AIMS:: Early childhood is a critical period for the development of emotion regulation, during which parents play a central role in shaping children's regulatory capacities through their moment-to-moment responses to emotional distress (Eisenberg et al., 1998). Parents use a range of emotion socialization strategies when responding to toddlers' emotions, including supportive strategies (e.g., emotional soothing & problem-solving) and less supportive or dysregulating strategies (e.g., minimization, punitive responses; King et al., 2025). Parents' emotion socialization practices are associated with children's emotional and behavioral adjustment, with supportive strategies linked to better child regulatory outcomes and fewer behavior difficulties (Zimmer-Gembeck et al., 2021). However, much of the existing literature relies on retrospective questionnaires or laboratory-based observations, which are limited in capturing the dynamic, context-dependent nature of daily emotion socialization (Berkowitz et al., 2025). In this study, our goal is to assess daily variability in parents' use of emotion socialization strategies with their toddlers and examine how these daily processes relate to parental emotional distress and child behavioral outcomes. **METHODS:** Data are being collected from a larger study investigating children and caregivers (N= 20; mean age= 32.7 months). Parents responded to questions about their day for up to fourteen days (mean = 11 days). In each survey, parents responded to questions about their current emotional state, frequency of toddler tantrums since last survey, and scenario-based emotion socialization questions adopted from the Coping with Toddlers' Negative Emotions Scale (CTNES; Spinrad et al., 2004). We created supportive (expressive, problem and emotion focused, and granting wishes) and unsupportive (punitive, parental distress, and minimization) parenting composites of these scales. **RESULTS:** Daily supportive and unsupportive emotion socialization composites exhibited moderate within-parent consistency (ICCs = .61-.73), indicating meaningful day-to-day variability in parents' regulatory responses. Average levels of daily supportive and unsupportive strategies were moderately correlated ($r=.78$), while variability in these strategies was largely independent ($r= -.01$). Daily unsupportive strategies showed moderate convergence with trait-level questionnaire measures of emotion socialization ($r=0.47$). Greater parental distress symptoms (stress, anxiety, and depression) were associated with higher average use of unsupportive emotion socialization strategies ($r=.69$) and greater day-to-day variability in unsupportive parenting ($r=.62$). Parental distress symptoms were also positively associated with child internalizing ($r=.40$), externalizing ($r=.59$), and total behavior problems ($r=.52$). Greater

reliance on unsupportive strategies was associated with higher child internalizing symptoms ($r=.42$). **CONCLUSIONS:** These findings highlight the importance of capturing parents' emotion socialization strategies as dynamic, fluctuating processes in daily life. Daily methods can help identify socialization instability as an early risk marker and potential target for interventions aimed at supporting parent-toddler emotional development. **ACKNOWLEDGEMENTS AND FUNDING:** Thank you to our participants and research team and funding source USC Psychology Research Grant.

P1-G-51 - Sex differences in the relationship between total fixation duration to social agents and anxiety symptoms

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BACKGROUND AND AIMS:: Anxiety disorders are more prevalent in women than men, accompanied with sex differences in symptom severity and neurodevelopmental trajectories (Kaczurkin et al., 2018). The amygdala, implicated in anxiety symptoms, (Warnell et al., 2017) demonstrates sex-differentiated patterns in volume maturation during puberty, suggesting differences in anxiety-related cognitive processing of moral behavior. Past studies examining sex and attentional bias associated with trait anxiety have mixed findings. Women with generalized anxiety disorder show more attention to positive stimuli than men (Kinney et al., 2017), yet in other work women exhibit greater difficulty disengaging attention from threatening or unpleasant stimuli, potentially reflecting heightened threat appraisal compared to men (Tan et al., 2011; Waters et al., 2007). Studies on anxiety-related attentional gaze have largely focused on adults despite preadolescents showing greater sex-differences in anxiety symptoms (Ohannessian et al., 2017). We address this gap by investigating sex differences in the association between visual attention to social agents and anxiety symptoms in preadolescents. We hypothesize higher anxiety symptoms will be associated with longer total fixation duration to prosocial actors and antisocial actors, but not neutral recipients, with a greater association in girls. **METHODS:** Participants were 48 preadolescent children (Mage = 10.74, SD = 1.38, 37.5% male) recruited from the Inland Empire of Southern California. Anxiety symptoms were assessed using child and parent report of the Screen for Child Anxiety Related Disorders (SCARED; Birmaher et al., 1997; M = 24.38, SD = 11.25). Visual attention was measured with eye tracking indexed by total fixation duration toward social actors, using linear dynamic areas of interest in Tobii Pro Lab (2019). Children viewed two anthropomorphic cartoon social agents in separate computer-animated sequences: a prosocial actor performing helpful action and an antisocial actor performing hindering action toward a neutral recipient. All data for the present study have been collected. Analyses will proceed in two steps. First, linear multiple regression models will be fit to examine the association between anxiety symptoms and total fixation duration to prosocial and antisocial actors and a neutral recipient, controlling for age. This model will assess whether elevated anxiety symptoms are associated with differences in visual attention allocation. Second, sex will be added as a moderator on the prior model to test whether the relationship between total fixation duration to social agents and anxiety symptoms differ across sex. **EXPECTED RESULTS:** We expect higher anxiety will be independently associated with hypervigilance to prosocial and antisocial actors, but not to neutral recipients. Findings would imply anxious individuals bias attention towards morally salient cues. We expect this relationship will be stronger in girls and weaker in boys due to developmental differences in threat appraisal. Findings will clarify the relationship of anxiety and attentional gaze duration to social actors across sex and inform cognitive processing of moral behavior and threat appraisal within preadolescence. **ACKNOWLEDGEMENTS AND FUNDING:** We would like to thank the families who participated in our study. This research was supported by the UCR Graduate Dean's Dissertation Research Grant.

P1-G-53 - Person predictability biases subjective connection and social memory content

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BACKGROUND AND AIMS:: The quality of our social connections determines the quality of our lives (Holt-Lunstad et al., 2017; Robles et al., 2014). Those that report being the happiest in everyday life also report feeling the most connected to their friends, family, and romantic partners (Diener & Seligman, 2002). However, the cognitive processes by which we form meaningful social connections and how we remember them remain to be fully understood. One possibility is that a person's predictability shapes both how connected we feel to them and what we remember of them. **METHODS:** In the current study, participants watched video clips from Bravo's reality television series, The Valley. This show was chosen because, like much of reality TV, it portrays

real people who show great variability in the predictability of their behavior. Each video clip in the task reveals new social information about a particular character. After viewing each video clip, participants were asked to decide whether they wanted to be friends with the character and to rate how connected they felt to them. Participants returned the next day to perform a surprise memory test consisting of a recognition memory and free recall task. A simple Rescorla-Wagner reinforcement learning model was fit to participants' decision behavior and parameter estimates were used to generate trial-by-trial estimates of the social value and social predictability (prediction error) of the target character. **RESULTS:** Our first hypothesis was that predictable moments of social behavior would correspond with greater subjective connection. In a linear mixed-effects model, we found evidence that signed prediction error ($\beta=0.073$, $p<0.001$), expected social value ($\beta=0.282$, $p<0.001$), and social reward ($\beta=0.578$, $p<0.001$) significantly predicted participants' momentary ratings of subjective social connection. Second, we hypothesized that reinforcement learning parameters, reflecting individual differences in social learning, may meaningfully relate to real-world social success. We found evidence that participants' learning rate (α) was significantly correlated with two-way social support ($r=0.17$, $p=0.011$), and that the inverse temperature of the softmax function (β) was meaningfully related to attachment anxiety ($r=0.19$, $p=0.006$). Lastly, we hypothesized that unpredictable moments of social behavior may be better remembered than predictable moments. We found, however, that recognition accuracy was significantly predicted by participants' subjective connection ratings ($\beta=0.998$, $p=0.015$) and the expected social value of the target ($\beta=1.005$, $p=0.029$). Further, we assessed the accuracy of participants' free recall responses by computing the semantic similarity of their response to that of the video clip transcripts. We found that both social reward ($\beta=-0.061$, $p<0.001$) and signed prediction error ($\beta=-0.003$, $p=0.018$) meaningfully predicted participants' free recall accuracy. **CONCLUSIONS:** Our results suggest we feel more connected to people in moments characterized by high social reward, high social value, and positive unpredictability (e.g. surprise, spontaneity). However, they also suggest we better remember people in moments characterized by low subjective connection, high expected social value, and negative unpredictability (e.g. disappointment, unreliability). Together, these findings better elucidate the latent cognitive processes by which we form meaningful social connections and what we remember of them.

P1-H-37 - Structural cortical alterations associated with trauma burden in adults resilient to PTSD

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BACKGROUND AND AIMS: Trauma exposure is common, with approximately 70% of individuals experiencing a traumatic event in their lifetime. Despite this prevalence, many maintain psychological well-being and do not develop post-traumatic stress disorder (PTSD) or related psychopathology. Identifying neural features associated with resilience is critical for understanding adaptive functioning. While prior work has emphasized neurobiological deficits linked to PTSD, fewer studies have examined how structural brain features vary with cumulative trauma burden in healthy individuals. This study examined surface-based cortical alterations across adults with differing trauma histories to identify neurobiological markers associated with resilience.

METHODS: Healthy adults aged 18–60 with no current psychiatric diagnoses were enrolled following phone screening and standardized clinical assessments. Participants were categorized based on lifetime trauma exposure into No Trauma ($n = 19$), Single Trauma ($n = 17$), and Multiple Trauma ($n = 23$) groups. All participants completed a structural MRI scan. Images underwent quality control following ENIGMA protocols and were preprocessed using FreeSurfer to extract cortical metrics, including gray matter volume, surface area, and Gaussian curvature. Whole-brain ANCOVAs controlling for intracranial volume were conducted to evaluate group differences associated with cumulative trauma burden. **RESULTS:** Analyses revealed distinct neuroanatomical profiles based on trauma burden. Precuneus gray matter volume was greatest in individuals with no trauma, followed by those with multiple traumas, with the lowest values observed in the single-trauma group. A similar pattern was observed for surface area in frontal and motor regions, including the medial orbitofrontal gyrus, pars orbitalis, rostral middle frontal gyrus, and precentral gyrus. Conversely, fusiform Gaussian curvature demonstrated a distinct profile in which single-trauma individuals exhibited the highest curvature, followed by no-trauma individuals, and the lowest curvature in the multiple-trauma group. These effects were statistically significant at the uncorrected level but showed a trend toward significance after FDR correction.

CONCLUSION: These findings suggest that cumulative trauma exposure is associated with distinct and potentially adaptive patterns of cortical organization in healthy adults. Greater precuneus gray matter volume and frontal and motor surface area in individuals with multiple traumas, relative to those with a single trauma, may reflect preserved or compensatory structural

features supporting self-referential processing, executive control, emotion regulation, and motor control. In contrast, fusiform Gaussian curvature followed a distinct pattern (Single Trauma > No Trauma > Multiple Trauma). The elevated curvature observed in single-trauma individuals may reflect a state of heightened perceptual vigilance while the reduced curvature in the multiple-trauma group may indicate longer-term compensatory adaptations that down-regulate perceptual responses after repeated trauma exposure. Overall, these patterns suggest that trauma burden may be a critical factor of how neural systems reorganize, contributing to the mechanisms that underlie resilience. **ACKNOWLEDGMENTS AND FUNDING:** ZVR Lab & R01MH131532

P1-H-38 - Neurometabolic signatures of adolescent depression: A longitudinal analysis linking striatal GSH to clinical symptom ratings

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BACKGROUND AND AIMS: Prior research has established a relationship between neurometabolic activity and symptomology of psychiatric disorders, including Major Depressive Disorder. Glutathione (GSH), the most abundant antioxidant in the brain, plays a critical role in maintaining cellular homeostasis in numerous metabolic pathways. GSH has been shown to aid in mitochondrial health, protect neurons from inflammation and damage, and offset the oxidative load of neural signal propagation, supporting cognition. Low levels of GSH in specified brain regions have been repeatedly observed in neurological diseases, and a growing body of evidence links GSH deficits to psychiatric conditions as well. Cross-sectional studies using proton magnetic resonance spectroscopy (MRS) have identified lower in vivo levels of GSH in the striatum, a key region within the neural reward system, in people with depression. Building on such work, the current study incorporates longitudinal analysis of psychiatric symptoms to examine the utility of GSH as a predictive biomarker for symptom trajectory in adolescent populations using MRS. **METHODS:** We recruited 12–20-year-olds from the New York Metropolitan area (N=111; Baseline Age = 15.0 ± 2.1 Years; 66% Female), including adolescents with clinically significant mood and anxiety symptomatology and healthy controls. Participant survey data for the clinician-administered Children's Depression Rating Scale (CDRS-R) and the self-reported Beck's Depression Inventory (BDI) were collected over 3 timepoints: baseline, 1-Year, and 2-Year follow-ups. MRS data was collected at baseline using a 3T Siemens Skyra scanner, with GSH levels estimated via LCModel and quantified as ratios relative to water (w) and creatine (Cr). We first examined correlations between CDRS-R and BDI at each assessment wave. We then evaluated changes in depressive symptoms across assessments using linear mixed-effects models with categorical timepoint. Finally, associations between baseline MRS markers and depressive symptom severity across assessments were examined using mixed-effects models adjusting for categorical timepoint and testing timepoint-by-marker interactions. **RESULTS :** BDI and CDRS-R scores were strongly correlated at baseline ($p = .85$, $p < .001$) and remained associated at the 1-year ($p = .82$, $p < .001$) and 2-year ($p = .66$, $p < .001$) follow-ups. Mixed-effects models showed no significant change in symptoms from baseline to the 1-year follow-up (BDI: $p = .30$; CDRS-R: $p = .80$), but significantly lower scores at the 2-year follow-up for both measures (BDI: $\beta = -3.8$, $p = .023$; CDRS-R: $\beta = -4.8$, $p = .020$). Higher BDI scores were associated with lower baseline glutathione indexed as GSH/w ($\beta = -0.208$, $p = .044$) and GSH/Cr ($\beta = -0.204$, $p = .038$), in longitudinal models. Higher baseline GSH/Cr was also associated with lower clinician-rated depressive symptoms on the CDRS-R ($\beta = -0.199$, $p = .047$) across assessments. **CONCLUSIONS:** Our findings indicate that neurometabolite levels are meaningfully related to depressive symptom severity across adolescence. Lower baseline GSH concentrations were consistently associated with higher self- and clinician-rated depressive symptoms across assessments. Although depressive symptoms showed a modest reduction at the 2-year follow-up, baseline GSH levels were associated with overall symptom severity. Future work will determine whether these associations vary across specific demographic or clinical subgroups.

P1-H-39 - Increased ventral striatum-mid insula connectivity and social impairment in children with autism spectrum disorder

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BACKGROUND AND AIMS: : Children with Autism Spectrum Disorder (ASD) struggle with initiating and maintaining social interactions due to difficulties reading social cues and altered social reward processing. However, the specific neural patterns

associated with ASD social-communicative symptoms remain ambiguous. The ventral striatum (VS) and mid-insula (MI) are critical neural hubs in reward processing and interoceptive awareness networks, respectively, that work together to process social connection as rewarding. These neural regions have been shown to support multiple aspects of social functioning from social learning to decision-making in typically-developing (TD) children. Yet, existing literature reports incongruent results on the role VS and MI connectivity plays in ASD youth. Therefore, this study assesses differences in VS-MI functional connectivity (FC) and the relationship to social responsiveness in children with ASD, TD children, and children who did not meet ASD diagnostic criteria but were non-TD. Our results will provide an increased understanding of the complex neural and social-behavioral heterogeneity present in ASD by linking FC patterns to social symptom severity. **METHODS:** ASD diagnoses were confirmed using standardized assessments (including the ADOS-2) and expert clinical judgement at the SDSU Center for Autism and Neurodevelopmental Disorders. We examined fMRI resting-state VS-MI FC in 25 children with ASD (age M= 8.5 years; 40% female), 39 typically-developing (TD) children (age M=8.2 years; 51.28% female), and 21 non-TD children (age M=8.5 years; 47.62% female). Parents also completed the Social Responsiveness Scale (SRS-2), which quantifies symptoms of social impairment associated with ASD. Higher SRS-2 scores denote higher social impairment. VS and MI regions of interest were anatomically defined using the WFU_PickAtlas. A general linear model tested for group differences in VS-MI FC and associations with SRS-2 scores (controlling for age and motion). **RESULTS:** In this study, VS-MI FC positively correlated with individual differences in SRS-2 scores in the ASD group ($r = 0.466$, $p=0.03$). In other words, higher VS-MI FC was related to greater social impairment in the ASD group. On the other hand, VS-MI FC negatively correlated with individual differences in SRS-2 scores in both the TD ($r = -0.352$, $p = 0.03$) and non-TD groups ($r = -0.340$, $p = 0.15$), suggesting that unlike in children with ASD, higher VS-MI FC was related to less social impairment. **CONCLUSIONS:** Results suggest that altered interaction between the VS and MI may be characteristic of greater social impairment among ASD children. Given the MI's unique role in multisensory integration and empathy, findings also imply that this reward-interoception circuit might contribute to the heterogeneity in social motivation, emotional processing, and sensory experiences in the ASD population. Additionally, the congruent relationships between VS-MI FC and social impairment found in TD and non-TD individuals hold clinical implications to consider VS-MI FC patterns as potential biomarkers unique to ASD social symptoms. This is particularly relevant as neurodevelopmental disorders typically have overlapping symptoms, and diagnoses are currently based only on social-behavioral observations. **ACKNOWLEDGEMENTS AND FUNDING:** This study was supported by the National Institutes of Health (R01 MH107802, R01 DC017736) and Department of Defense Autism Research Program (AR210041).

P1-H-40 - Examining individual adverse childhood experiences as distinct moderators of links between hippocampal structure and psychotic-like experiences

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BACKGROUND AND AIMS: Exposure to early life adversity is associated with both an increased risk of psychosis development and hippocampal abnormalities. Given the potential role of the hippocampus in the etiology of schizophrenia, developing a fuller understanding of the dynamics among early adversity exposure, hippocampal development, and psychosis could illuminate intervention targets. To date, the literature on these dynamics has largely considered early adversity as a cumulative sum. However, recent work in stress literature has highlighted the importance of a “stressor characteristics” perspective on health and disease, underscoring potential unique effects of specific forms of stressor exposures on health. **Methods** Using the Adolescent Brain Cognitive Development (ABCD) dataset, this study extends Damme et al. (2024)—who examined total exposure to early adversity in relation to psychosis symptoms and hippocampal volume—by examining specific forms of adversity (i.e., taking a stressor characteristics approach) in relation to psychosis symptoms and hippocampal volume. Baseline data from 11,728 individuals included previously validated items for assessing ACE exposure, hippocampal volume, and PLE symptoms severity. **Results** Categories of both physical and emotional neglect were numerically greater predictors overall of a relationship between hippocampal volume and psychosis severity than other categories of adversity. Instances of household violence predicted a positive relationship between normalized hippocampal volume and prodromal psychosis severity. **Conclusions** These results have implications that certain adverse experiences and family stressors may carry different weight when analyzing the relationship of hippocampal volume and psychosis symptoms. Examining categories of neglect in addition to other adverse experiences may result in better predictions of stress and psychopathology rather than examining cumulative stress exposure alone. **Acknowledgements and Funding** Student Undergraduate Research Fellowship (SURF)

P1-H-41 - Exploring cholesterol as a moderator of cortisol and depression links

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BACKGROUND AND AIMS: Prior work has suggested that HPA axis dysfunction (e.g., blunted cortisol responses to stress) is related to symptoms of depression, but a large amount of heterogeneity exists within this literature (e.g., some studies have found heightened responses). This study aims to test a possible explanation of this heterogeneity by considering levels of cortisol's precursor (i.e., cholesterol)—a low level of which is both linked to depression and may prohibit heightened responses in some depressed individuals—as a moderator of links between HPA axis activity and depression symptoms. **METHODS:** We used data from the MIDUS II Biomarker Project dataset to examine relations among HPA axis function, cholesterol, and symptoms of depression. HPA axis function was quantified as cortisol responses to a weak cognitive stressor protocol. Participants also self-reported their depression symptoms using a common scale, and provided blood from which cholesterol levels were assayed. We examined relations among these variables with and without controlling for relevant covariates within a series of moderated regression analyses. **RESULTS** Contrary to our expectations, we found no significant moderation of the link between cortisol responses to the mild cognitive stressor and self-reported depression symptoms by levels of cholesterol. This lack of moderation was consistent across sensitivity analyses. **CONCLUSION:** The lack of moderation of the link between HPA axis activity and depression symptoms by cholesterol ran contrary to our hypothesis. This nonsignificant result suggests that circulating levels of cholesterol are largely unrelated to links between HPA axis activity and depression, though it should be noted that the weak cognitive stressor and depression symptom in this measure may not be the most robust indices of HPA axis activity and depression, respectively. **ACKNOWLEDGMENTS AND FUNDING:** The authors would like to thank the Arkansas Department of Higher Education Student Undergraduate Research Fellowship for funding this research.

P1-H-42 - Subtypes of uncertainty aversion and their relation to autism and social anxiety

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BACKGROUND AND AIMS: People routinely infer the thoughts, feelings and personalities of others to navigate their social world. Although the brain's "mentalizing network" has been consistently more activated when people make inferences about people's minds than during a variety of control tasks, recent evidence suggests that some of these activations may be better explained by the elevated uncertainty that surrounds mentalizing inferences than by their mental content per se. This observation is especially intriguing in light of independent observations that certain conditions associated with social functioning, including Autism Spectrum Disorder (ASD) and Social Anxiety Disorder (SAD) are associated with uncertainty aversion. To date, uncertainty aversion has been treated as a monolithic construct, potentially obscuring useful subtypes that may provide traction into the cognitive underpinnings of ASD and SAD. The present study uses a new uncertainty aversion scale we developed to investigate the degree to which aversion to uncertainty in different contexts (social versus nonsocial) and of different types (epistemic, or reducible, versus aleatory, or irreducible) relate to ASD and SAD. **METHODS:** Participants (target N = 500) will be asked to complete our adapted Intolerance to Uncertainty scale with 48 statements capturing the cross of uncertainty domain (social, nonsocial) and type (epistemic, aleatory). Four uncertainty aversion subscores and a total uncertainty aversion score will be computed for each participant. Traits associated with ASD and SAD will be assessed using the Autism Quotient (AQ) and the Liebowitz Social Anxiety Scale (LSAS) respectively. We will correlate each uncertainty subscores with AQ and LSAS scores. Expected **RESULTS:** To the extent that ASD and/or SAD can be understood as a disorder of uncertainty processing and/or reduction, we should observe positive correlations between scores on uncertainty aversion and scores on the AQ/LSAS, regardless of whether the uncertainty context is social or nonsocial. To the extent that either can be understood as a disorder of social uncertainty processing, we should observe positive correlations between scores on uncertainty aversion and scores on the AQ/LSAS primarily when the uncertainty context is social. Moreover, to the extent that ASD/SAD can be understood as arising from atypical uncertainty reduction, positive relationships may arise disproportionately with epistemic (reducible) uncertainty, whereas to the extent that ASD/SAD arise from discomfort with randomness, relationships should emerge with aversion to aleatory uncertainty. **CONCLUSION:** Distinguishing individuals' discomfort with epistemic and aleatory uncertainty across social

and nonsocial contexts makes it possible to identify distinct subtypes of uncertainty intolerance and test the degree to which they help explain patterns of uncertainty tolerance and social behavior in ASD and SAD. This research may lead to new hypotheses about the cognitive underpinnings of social behavior in ASD and SAD that could be further adjudicated using fMRI in future research.

P1-H-54 - Defining latent dimensions and profiles of autistic early adolescents based on rigidity and social learning

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BACKGROUND AND AIMS:: Symptoms of autism stem from two core dimensions: cognitive rigidity and social cognition (APA, 2013). Autistic (AUT) traits are viewed as a spectrum across neurotypes, but little is known about qualitative differences between AUT and non-autistic (N-AUT) individuals, or latent factors that distinguish diagnosed individuals. Here, we applied data-driven clustering (latent profile analysis; LPA) of the core domains to (1) define subtypes in a large sample of AUT adolescents and (2) compare with N-AUT profiles. To this end, we selected the most parsimonious of the top models in AUT adolescents to optimize clinical utility. We expected that this model would not generalize to N-AUT adolescents. **METHODS:** We preregistered recruitment of 1000 AUT and 600 N-AUT early adolescents (8-12 yrs; <https://osf.io/8tx59>; final sample to be reported at SANS). To date, 761 AUT (187 F) and 430 N-AUT (226 F) adolescents completed an online social learning task and self-preference assessment (e.g., Cahalan et al., 2025), accompanied by parent-reports of rigidity and social impairment. Adolescents rated three peers' preferences using an emoji slider scale and received trial-by-trial feedback. Learning was quantified by prediction errors (PEs), the discrepancy between predictions and feedback. Peer profiles varied in diagnostic status (AUT or N-AUT) and preference distributions (low or high variance) to assess effects on learning. Exploratory graph analysis (EGA) identified the main dimensions of AUT self-preferences, and LPA clustered individuals based on EGA dimensions, other relevant markers of self-preferences (variance and skewness as indicators of restricted interests), and social learning accuracy. **RESULTS:** N-AUT participants showed lower PEs than AUT participants, a group difference that was larger when learning about the N-AUT, low variance peer profile; thus, learning metrics from this peer profile were used for clustering. Among the top three LPA models, the simplest model was selected for clinical interpretability, yielding four AUT clusters. One-way ANOVAs revealed differences across clusters in clinical scores and task-wide mean PE. Post-hoc tests facilitated cluster labels: overall severity defined the high and low symptom load clusters, while the socially disengaged cluster showed social cognitive differences, low social motivation, and high PEs, and the unrestricted interests cluster showed reduced special interests. Adding N-AUT participants yielded six clusters. Distance metrics and parameter means suggested that AUT clusters were preserved except for the socially disengaged group. An adjusted Rand index of .39 indicated above-chance agreement for AUT classification. Bootstrap resampling supported high parameter stability in both models. **CONCLUSIONS:** Using empirically derived metrics of rigidity and social cognition, we stratified AUT heterogeneity into four robust subtypes, supported by parent-reported symptoms. As expected, AUT clusters did not extend to N-AUT participants. Additional clusters were needed to classify N-AUT adolescents. These findings highlight the value of integrating quantitative and qualitative descriptions of AUT symptomology for deep phenotyping in large samples, as well as the utility of objective, continuous measures of the core domains for stratifying AUT subtypes. **ACKNOWLEDGEMENTS AND FUNDING:** This study was funded by Simons Foundation for Autism Research (SFARI) and leveraged the SPARK research match cohort.

P1-H-55 - Unique models of embodied cognition and eco-social niches proposed to validate hypothesis of social attunement and mis attunement with focus on autism

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BACKGROUND AND AIMS: In academic literature, we find clinical or medical references for ASD symptoms or features, but to understand the neural dynamics, we need an intermediate or logical representation using cognitive psychology concepts. This paper uses basic concepts of embodied cognition based on the idea that the biology of the brain is impacted by the physics of movement and the interacting physical objects as well as biological markets or competition. These concepts are leveraged to explain the emergence of autism features and characteristics through multiple hypotheses using hidden states and eco-social niches. **METHODS (MODELING APPROACH):** I begin by defining cognitive granularity, which forms the basis of my embodied cognition hypotheses. These hypotheses leverage cognitive psychology concepts to distinguish three dyads—resource proxy, executor, and evaluator—each with different sensorimotor skills for action control and action perception. Each of these dyads interacts with the environment in physically distinct and beneficial ways leading to iterative honing of the dyads individual skills: dialects of internalization and externalization. The dyads are modelled using intrinsic internal motion variations developed through evolutionary demands and its external object impact through the corresponding external motion thus mapping them on a cognitive granularity scale. Collectively, these interacting dyads further form the basis of social attunement and mis-attunement—dialects of individual and collective. The social attunement hypotheses apply economic concepts of supply/demand curve and Nash equilibrium or game theory to the evolving human (hominin) biological market to derive eco-social niches for modelling the underlying neurotypical dyads: executor and evaluator. **RESULTS (TEST APPROACHES)** Proposal to devise a multi-scale dimensional machine learning model to evaluate the above-mentioned hypotheses, which will result in a positive move towards inter-personalized psychiatry. This modelling needs to be combined with additional research to validate the hidden state hypotheses using motion sickness as a clue or peek into yet to be discovered internal models of the mind and further validate the association to psychiatric illness. **CONCLUSION:** I hypothesize that insufficient sensorimotor integration within a dyad impedes proper participation in the eco-social niche, leading to psychiatric issues. In my model, this mis-attunement is reflected in the characteristics of the resource proxy (ASD) and extreme evaluator dyads (psychosis). Combination of innovative hypotheses, agentic AI economic and social models, application of Active Inference, embodied AI and cutting-edge medical research (neuroscience, genetic, and ASD clinical practice) gives us a unique opportunity to solve long standing medical and scientific problems with significant implications for autism research.

Poster Session 2:

Friday, April 17, 2026 16:15-17:45

P2-A-58 - Grit and default mode network stability in challenging narrative contexts

Nahyeon Lee ¹, Sujin Woo ¹, Jihye Jeon ¹, Yoonjin Baek ¹, Lian Yoo ¹, Nahyun Kwon ¹, Seohyun Park ¹, Minji Kim ¹, Seohyeon Lee ¹, Daeun Park ¹, Justin Minue Kim ¹

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BACKGROUND AND AIMS: Grit is a personality trait characterized by sustained effort toward long-term goals despite repeated failure or adversity, but its neural mechanisms remain poorly understood. Recent work has suggested that functional connectome stability can serve as an index of individual differences. In particular, the default mode network (DMN), implicated in self-referential and internally generated thought, may be relevant for understanding grit-related differences in challenging life narratives. The present study aimed to investigate whether grit is associated with DMN stability during naturalistic movie watching, particularly across narrative contexts that place sustained demands on goal pursuit. **METHODS:** Two independent samples were recruited. Participants completed self-report questionnaires assessing grit, self-control (SC), and conscientiousness (CS). The fMRI sample (n = 71; Mage = 21.8) viewed three movies during fMRI scanning, while a behavioral sample (n = 64; Mage = 20.4) provided valence and arousal ratings on 9-point Likert scales at 20-second intervals while viewing the same movies. The movies differed in narrative structure: adversity-focused (Movie A), challenge-to-success (Movie B), and neutral narrative (Movie C). In both samples, the order of Movies A and B was counterbalanced, while Movie C was always presented between them. fMRI data were parcellated using the Shen atlas, and 20 DMN regions were selected. Functional connectivity among these regions yielded 190 edges per movie, and connectome stability was quantified as the similarity of this connectivity across movie contexts. Associations between grit and DMN stability were tested using linear regression while controlling for SC and CS. Intersubject representational similarity analysis (ISRSA) using an AnnaK model was subsequently employed to test whether individuals with similar levels of grit exhibited convergent or divergent patterns of DMN stability across participants. **RESULTS:** Grit was negatively associated with DMN stability for movie pairs including the adversity-focused film (i.e., AB and AC; $\beta = -.03$, $p < .01$), such that lower grit was linked to more similar DMN connectivity across contexts. This association was strengthened after controlling for CS and SC ($\beta = -.05$, $p < .05$), and was not observed in other large-scale brain networks, indicating DMN-specific effects. Consistent with these findings, ISRSA revealed that individuals with lower grit showed more similar patterns of DMN stability across participants ($r = -.23$, $p < .01$). To evaluate whether these neural effects could be accounted for by differences in emotional responses across movies, independent affective ratings were examined. These ratings revealed distinct emotional profiles across movies, with Movie A showing the most negative valence (M = 4.13) and Movie B showing the highest arousal (M = 5.60). **CONCLUSIONS:** Together, these findings suggest that cross-context DMN stability in challenging narrative may reflect grit-related differences in the neural representation of internal processing states, with affective ratings indicating that these effects cannot be fully explained by differences in emotional response magnitude. **ACKNOWLEDGEMENTS AND FUNDING:** This research was supported by the National Research Foundation of Korea (NRF-2022R1A2C1091871).

P2-A-69 - DLPFC-subcortical phase synchrony during naturalistic viewing tracks individual differences in grit

Seohyeon Lee ¹, Minji Kim ¹, Seohyun Park ¹, Nahyun Kwon ¹, Lian Yoo ¹, Yoonjin Baek ¹, Jihye Jeon ¹, Sujin Woo ¹, Nahyeon Lee ¹, Daeun Park ¹, Justin Minue Kim ¹

¹ Sungkyunkwan University

BACKGROUND AND AIMS: Grit is a non-cognitive trait characterized by perseverance and sustained passion toward long-term goals despite challenges and setbacks. Although conceptually distinct, it is often conflated with related constructs such as self-control (SC) and conscientiousness (CS). To identify grit-specific neural patterns, we examined brain activity using fMRI while subjects viewed two movie clips depicting goal setting, goal-directed behaviors, and challenges, compared with a control clip lacking such content. To capture time-resolved neural dynamics, we applied a phase synchronization approach with single-TR temporal resolution. Grit-related neural patterns were further examined using support vector regression (SVR) and inter-subject representational similarity analysis (ISRSA) for each clip, while controlling for SC and CS. **METHODS:** 72 subjects (30 females;

mean±SD age = 21.75±2.54 years) completed self-report measures of grit, SC, and CS. During fMRI scanning (TR = 2000 ms; 305 volumes), subjects watched three movie clips, with orders counterbalanced: Soul Surfer (Movie A) and The Pursuit of Happyness (Movie B), which depict goal pursuit and setbacks, and Mamma Mia! (Movie C), which served as a control stimulus. Regions of interest included the dorsolateral prefrontal cortex (dlPFC), associated with goal-directed behavior and executive functions supporting the maintenance of affective goals and prediction of future consequences, as well as subcortical regions involved in reward and emotion processing (caudate, putamen, hippocampus, amygdala, and nucleus accumbens(NAc)). Regional time series were band-pass filtered (0.04–0.07 Hz) and transformed using the Hilbert transform, after which phase synchrony was computed between all ROI pairs. The measures were used as neural features in SVR and ISRSA analyses to examine grit-related neural patterns. Linear SVR analyses used leave-one-out cross-validation ($\epsilon = 0.1$; $C = 0.01, 0.1, 1, 10, 100$). When grit-related features (phase synchrony value at each TR) were selected, age, SC and CS were controlled as covariates. Model performance was assessed by correlating predicted and true grit scores, with 1000 permutations. ISRSA tested if individuals with similar grit levels exhibited convergent or divergent neural patterns using AnnaK model. Behavioral similarity was average grit score of each subject pair, and neural similarity was cosine similarity of phase synchrony. Statistical significance was assessed using 10000 permutations. As control analyses, ISRSA was conducted for SC and CS; effects observed exclusively for grit were interpreted as genuine grit-related findings. **RESULTS:** SVR revealed that phase synchrony between left dlPFC–NAc and right dlPFC–NAc predicted grit scores only during Movie A (best $r = .43$ and $.47$, respectively; permuted $p = .001$). ISRSA showed a negative association between behavioral similarity and neural similarity in left amygdala–right NAc connectivity ($r = -0.35$, permuted $p < .001$, $q = 0.04$) only during Movie A, indicating more divergent neural patterns among high-grit individuals. **CONCLUSIONS:** SVR identified individual grit is represented at specific moments of time-dynamic connectivity, whereas ISRSA suggested that high-grit individuals process goal pursuit and adversity in more diverse way. Our findings highlight the NAc, along with the dlPFC, play central roles in grit. **ACKNOWLEDGEMENTS AND FUNDING:** This research was supported by the National Research Foundation of Korea (NRF-2022R1A2C1091871).

P2-A-70 - Individual emotional trajectories correspond to neural state dynamics in MPFC and STS during naturalistic narrative

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¹ Dartmouth College, ² University of California, San Diego, ³ University of California San Diego

BACKGROUND AND AIMS:: Emotional experiences are inherently subjective and vary across individuals, yet most affective neuroscience research relies on group-averaged responses to stimuli with pre-determined normative emotional content. This approach obscures how idiographic emotional experiences are represented in the brain within a single person. Here, we take a naturalistic approach, using emotionally evocative personal narratives from The Moth Radio Hour as stimuli combined with sparse sampling and leverage collaborative filtering machine-learning techniques to generate continuous, individualized emotion timecourses. Our aim was to identify brain regions where neural state dynamics correspond to individuals' unique trajectories of emotional experience. **METHODS:** 124 participants underwent fMRI while listening to eight emotionally evocative personal narratives from The Moth Radio Hour. Emotional experience was sparsely sampled via pseudo-random breaks during which participants rated their current state on 16 emotion scales. To reconstruct continuous individualized emotion timecourses, we combined these sparse ratings with ratings from 2831 online raters using collaborative filtering—a technique that predicts missing ratings based on patterns of similarity across raters. From these timecourses, we computed behavioral state transition matrices capturing moment-to-moment changes in emotional experience. We similarly computed neural state transition matrices from multivoxel activity patterns across brain regions. Finally, we tested the second-order correspondence (Spearman correlation) between behavioral and neural state transition matrices. This allows us to map changes in a single participant's emotional experience to dynamic changes in multivariate patterns of brain activity. **RESULTS:** We found significant correlations between behavioral and neural state transition matrices in the dorsal and ventral medial prefrontal cortex (d/vMPFC) and superior temporal sulcus (STS). These results remained significant under permutation testing using participant replacement. These findings indicate that the MPFC and STS appear to consistently process emotional experiences across participants, even though the dynamics of the experiences and underlying brain patterns may vary uniquely across participants. **CONCLUSIONS:** Our findings add to evidence implicating MPFC and STS in emotional experience. Notably, our approach captures correspondence between neural and emotional dynamics regardless of which specific emotions are experienced—it is driven by

transitions in experience rather than emotional content. Beyond these findings, our methodology demonstrates the feasibility of generating individualized emotion timecourses in naturalistic contexts with minimal interruption and without relying on retrospection. This approach offers a promising direction for affective neuroscience research that takes individual differences seriously. **ACKNOWLEDGEMENTS AND FUNDING:** This work is supported by NIMH grant 2R01MH116026.

P2-A-71 - Looks aren't everything: Regulation strategy shapes how visual attention relates to emotion regulation success

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BACKGROUND & AIMS: Prior research has yielded contradictory findings on whether attending to emotional stimuli facilitates or disrupts emotion regulation goals. To address this discrepancy, we compared cognitive reappraisal and guided attention on gaze patterns, pupil dilation, and self-reported affect. **METHODS:** Participants (N=45) completed an emotion regulation task while eye-tracking recorded gaze fixations and pupil dilation. Per trial, participants viewed negative images with neutral backgrounds (4s or 8s) while implementing cognitive reappraisal (reinterpreting meaning) or guided attention (directing gaze to neutral areas), then reported their affect. Mixed-effects models accounted for the nested data structure (trials within participants), preserving trial-level variability, and allowing examination of within-person predictors of regulatory success. **RESULTS:** Overall, participants achieved greater regulatory success (reductions in self-reported negative affect) when implementing cognitive reappraisal compared to guided attention ($d = 0.59$, $p < .001$). For reappraisal, regulatory success was consistent across 4s and 8s trials ($p = .113$), outperforming guided attention at both 4s ($d = 0.58$) and 8s ($d = 0.55$; $ps < .001$). Despite more successful regulation, participants maintained gaze on negative content during reappraisal ~90% of trial time, compared to ~17% during guided attention. Reappraisal's five-fold greater gaze remained stable across 4s and 8s exposures (90% vs. 91%), while guided attention showed increased avoidance at longer durations (21% vs. 14%)—a significant strategy $\times$ duration interaction ($b = 7.95$, $p < .001$). Baseline-corrected pupil dilation was comparable between strategies ($p = .101$). Examining within-strategy predictors of regulatory success, for guided attention, less gaze to negative content predicted reliably better regulatory success ($b = -0.006$, $p < .001$) and greater pupil dilation ($b = -0.04$, $p < .001$). In contrast, during reappraisal, gaze variation was unrelated to regulatory success, while pupil dilation predicted better regulatory success ($b = 0.01$, $p = .024$). **CONCLUSIONS:** Both strategies involve attention, but in distinct ways. For guided attention, avoidance and effort were linked, with less gaze predicting both greater pupil dilation and better regulatory success, consistent with effortful attentional control. However, for cognitive reappraisal, which involved far more visual engagement (~90% gaze without explicit instruction), gaze and pupil were unrelated, but pupil dilation independently predicted regulatory success. This suggests that, for reappraisal, once visual engagement is established, effortful processes beyond attentional control (e.g., working memory demands, generating interpretations, monitoring regulation success) support successful regulation. Both strategies are effective at reducing negative affect, but reappraisal is more effective and simultaneously allows sustained engagement with challenging content—an advantage as engagement with our environment supports learning, connection, and adaptive behavior. These findings suggest that effective emotion regulation does not merely track with gaze, but rather how attention and cognitive effort work together varies by strategy. For guided attention, effortful avoidance drives success; for reappraisal, maintained attention is present, but other effortful processes beyond attention drive regulation success. **ACKNOWLEDGEMENTS & FUNDING:** None.

P2-A-72 - A sensitive and specific neural signature robustly predicts graded computations of moral wrongness

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BACKGROUND AND AIMS: Humans universally condemn what they see as moral violations, yet the perceived wrongness of distinct moral transgressions varies across individuals, neurodiverse populations, and cultures. We currently do not know how and to what extent the human brain universally computes and translates moral wrongness into subjective, graded moral judgments. Here, we combined fMRI with pattern recognition techniques to identify and evaluate a neural signature predictive of graded moral wrongness judgments. **METHODS:** We used to date's largest database for studying the neural basis of moral judgment, spanning independent, multi-culture fMRI datasets of moral vignettes for discovery ($n=64$), validation ($n=30$),

replication (n=27), and generalization (n=30) analyses (ntotal=151). We trained a linear support vector regression algorithm on the discovery cohort to identify the brain signature that predicts the graded severity of trial-by-trial subjective moral wrongness ratings elicited by validated and standardized moral foundations vignettes. We then evaluated the performance of the established moral judgment signature (MJS) in independent validation studies. Moreover, we evaluated common and domain-isolated (e.g., care, fairness, purity) brain systems for graded moral wrongness and examined shared and dissociable neural representations with negative affect and subjective disgust. **RESULTS:** Graded moral wrongness judgments were robustly computed via a shared and distributed neural code, with reliable contributions from cortical and subcortical regions (Fig. 1). Computations of graded moral wrongness were encoded in a combination of general (common) and domain-specific representations. Brain representations of moral wrongness severity generalized across different kinds of moral norm violations, as well as individuals, cohorts, MRI systems, and two different cultures and languages (U.S. and the Netherlands). Neural representations of moral wrongness and general negative emotion and subjective disgust exhibited shared yet separable representations. Brain representations of graded moral wrongness derived from text-based moral vignettes generalized to graded moral judgment of visual scenes, but not to unfair offers in second-party social interactions probed via the ultimatum game. The MJS could accurately discriminate between moral judgments of intentional versus accidental harms in neurotypical adults, but not in individuals diagnosed with autism spectrum disorder. **CONCLUSIONS:** This systematic evaluation provides answers to fundamental questions in the cognitive neurosciences, namely that there exists a sensitive and specific neural code for computing graded moral wrongness, which is distributed throughout the brain and robustly tracks moral severity across varied scenarios, individuals, and cultures. Our brain markers for graded moral wrongness judgments provide robust measures that can serve to understand pathological moral cognition, track the development of brain representations of moral severity over time and across two Western cultures, and advance the precision and generalizability of moral neuroscience.

ACKNOWLEDGEMENTS AND FUNDING: This work was supported by grants from the Army Research Lab (W911NF-15-2-0115) and John Templeton Foundation to R.W. (W911NF-15-2-0115); the Duke Institute for Brain Sciences to W.S.A.; and the Amsterdam School of Communication Research (ASCoR-u-2023-Hopp; ASCoR-u-2024-Hopp) to F.R.H.

P2-A-73 - The bidirectional interplay between emotion and temporal memory: Evidence from a dense-sampling study of real-life emotional events

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¹ University of California, ² University of Miami, ³ University of California, Santa Barbara

BACKGROUND AND AIMS:: Emotion shapes memory for temporal context—including when events occurred, their order, and the temporal distance between them—yet laboratory evidence remains mixed regarding whether positive and negative emotions systematically enhance or impair temporal memory (Petrucci & Palombo, 2021). Moreover, although lesions in the hippocampus, a core region supporting contextual memory and temporal coding, have been linked to poorer recovery from emotional responses following negative events (Feinstein et al., 2010), it remains untested whether temporal contextualization of memories facilitates emotion regulation. Here, we used experience sampling to examine the bidirectional interplay between emotion and temporal memory in real-life events. **METHODS:** Participants (N = 21) completed daily diaries over nine weeks, reporting the two most negative and two most positive events from each day. Using weekly surveys, we tracked the trajectories of participants' emotional responses to these events and their temporal memory for the relative order and temporal distance between events. Four months later, a subset (N = 5) of the participants returned for fMRI sessions. In the fMRI scanner, participants were presented with a subset of these real-life past events and asked to report on how they felt following event recollection as well as when they thought each event took place (using a timeline ranging from study enrollment to the scan date). **RESULTS:** Negative events were remembered with lower temporal accuracy than positive events. Neurally, replicating and extending prior work (Nielson et al., 2015), greater objective temporal distance between emotional events was associated with lower between-event neural similarity in the hippocampus (HPC) and entorhinal cortex (EC). Critically, this relationship in EC was attenuated by greater emotional valence similarity in negative event pairs, suggesting that negative emotion compresses neural representations of temporal context. To examine the reverse pathway of this likely bidirectional association, we interrogated

whether temporal memory accuracy predicted emotion recovery. We found that negative events with higher original temporal memory accuracy showed faster decay of emotional responses across eight weeks, even after controlling for initial emotional intensity on the day of event occurrence. Echoing this pattern at longer timescales, negative events characterized by more accurate temporal memory were rated as less intense during fMRI, even after accounting for initial emotional intensity.

CONCLUSIONS: Together, these findings underscore a bidirectional relationship between the dynamics of emotion and temporal memory in real-life emotional events, revealing temporal memory distortions by negative emotion at ecologically valid timescales, and identifying a novel affect-regulatory role for temporal memory. **ACKNOWLEDGEMENTS AND FUNDING:** This work is supported by the National Institute of Mental Health Grant R01-MH134000 (to Regina C. Lapate), and by the Hellman Family Faculty Fellowship and Faculty Research Assistance Program from the University of California, Santa Barbara (to Regina C. Lapate).

P2-A-74 - An online test of the sword and shield hypothesis

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BACKGROUND AND AIMS: Prior literature has found that affective motivational states are lateralized in the human brain. Under the “textbook” model, approach motivational states are lateralized to the left prefrontal cortex. The Sword and Shield Hypothesis (SSH) proposes that rather than being generally left-lateralized, approach motivation is lateralized according to asymmetries in hand action. Because approach actions are disproportionately done with the dominant “sword” hand, the left-laterality of approach motivation observed in the literature may be explained by laterality of motor areas in right handers. Supporting SSH, neuroimaging and neurostimulation studies have confirmed the prediction that left handers display reversed laterality of affective motivation. **METHODS:** This study further tested competing predictions of the SSH and textbook models using an established behavioral paradigm administered to two online samples of right and left handers from the United States and the United Kingdom on Prolific (Experiment 1: N = 43; N = 16 left handers & N = 27 right handers; Experiment 2: N = 334; N = 167 left handers & N = 167 right handers). Participants completed an online adaptation of the Nochmani task, a 2x2 factorial design that aims to dissociate affective motivation (approach vs avoidance) from valence (positive vs negative). Participants were instructed to read an article about the Nochmani people, an imaginary culture in which members eat bugs and sweets but do not eat meats or moldy foods. During the task, participants were shown images of bugs, desserts, meats, and fungi, and were asked to respond using their computer keyboard to “eat” or “not eat” the food. **RESULTS:** Within both experiments, our study found that right and left handers each show a greater dominant-hand advantage for approach than for avoidance (Experiment 1: $\beta = -53.72$, $t = -4.48$, $p < 0.0001$ (left handers), $\beta = 24.21$, $t = 2.60$, $p = 0.009$ (right handers); Experiment 2: $\beta = -13.30$, $t = -3.79$, $p < 0.0001$ (left handers), $\beta = 18.21$, $t = 5.19$, $p < 0.0001$ (right handers) and that there is a difference in response hand congruity between groups (Experiment 1: $\beta = 77.93$, $t = 5.14$, $p < 0.0001$; Experiment 2: $\beta = 31.50$, $t = 6.35$, $p < 0.0001$), in support of SSH. **CONCLUSIONS:** This study conceptually replicates previous neuroimaging findings supporting SSH and adds to the body of literature testing the reliability of hemispheric laterality effects. **ACKNOWLEDGEMENTS & FUNDING:** This study was funded by the Cornell University Rawlings Presidential Research Scholars Program, the Cornell University Department of Psychology Halpern & Rosevear Families' Undergraduate Grant, the Cornell University College of Arts & Sciences Undergraduate Research Fund Grant, and the Cornell University College of Arts & Sciences Einhorn Discovery Grant. We thank Stephen Chien for his assistance with coding the task in Inquisit.

P2-A-75 - Instructional prompting and attentional engagement during naturalistic social-emotional video viewing

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BACKGROUND AND AIMS: Cognitive-behavioral therapy (CBT)-informed videos are increasingly used to support emotion regulation in young adults, yet little is known about how viewers attend to and engage with modeled strategies during naturalistic viewing. Engagement is heterogeneous and likely depends on individual differences in attentional and social-cognitive processing. Brief instructional prompts encouraging perspective-taking may scaffold attention to socially relevant cues

and shape affective responses, but their effects on moment-to-moment attentional engagement have not been systematically tested. The present multimodal study employs eye-tracking, behavioral testing, and functional magnetic resonance imaging (fMRI) to examine whether perspective-taking prompts alter attentional and affective engagement during viewing of CBT-strategy modeling videos and whether individual differences in attention and socio-affective traits moderate these effects. **METHODS:** Up to 80 young adults (ages 18–35) are being recruited, targeting at least 60 usable datasets after exclusions. Participants will be randomly assigned to a Prompted (perspective-taking) or Neutral (attention-control) viewing condition. All participants will view four short videos modeling cognitive reappraisal and attentional-deployment strategies, plus a duration-matched nature video control, while in the MRI scanner (counterbalanced). Eye-tracking (gaze position, fixation patterns, blink rate, and pupil diameter) will be recorded during viewing and analyzed at the narrative-segment level as indices of attentional allocation and sustained engagement. Affective responses will be measured pre- and post-viewing using the Positive and Negative Affect Schedule–Short Form (PANAS-SF), along with brief post-video ratings of focus, enjoyment, and perceived relevance and resonance. Selective and sustained attention will be assessed using the d2 Test of Attention, with self-report measures of emotion regulation, empathy, and mindfulness included as contextual moderators. Planned analyses will use mixed-effects models to relate viewing condition, segment type, gaze-based attentional metrics, and affective responses. Neural analyses from the broader study are planned for subsequent integration but are not required for the present behavioral and eye-tracking aims. **RESULTS:** Analyses are ongoing. We hypothesize that perspective-taking prompts will be associated with more focused gaze to strategy-relevant regions of interest, reduced blink rate, and increased pupil dilation as indices of sustained attentional engagement, alongside differences in post-viewing affective responses. We further expect that selective and sustained attention will moderate the magnitude of these effects. **CONCLUSIONS:** This study will clarify how minimal instructional prompts shape attentional engagement with CBT-informed digital content during naturalistic viewing. Identifying low-cost design features that enhance attentional focus may inform scalable improvements to digital mental-health resources for young adults and provide a behavioral foundation for future multimodal investigations of engagement mechanisms. **ACKNOWLEDGEMENTS AND FUNDING:** This work is supported by the NIH Emotional Well-Being Research Network (U24) infrastructure and training support. Additional support is provided by a T32 predoctoral training grant.

P2-A-76 - Differential modulation of amygdala BOLD signal during emotion regulation as a function of reappraisal success

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BACKGROUND AND AIMS:: Cognitive reappraisal is a form of emotion regulation that involves reinterpreting the meaning of a stimulus to align one's emotional response with current goals. Prior work has demonstrated that downregulating negative emotions increases prefrontal cortex BOLD activation and decreases amygdala activation, although the strength and timing of these changes vary with task parameters. In this study, we investigated these effects by isolating the early response (when viewing negative and positive emotional images) and the late response (when rendering affective ratings). Additionally, we explored whether BOLD responses during these trial phases were modulated by reappraisal success. **METHODS:** Thirty-four participants completed an event-related fMRI emotion regulation task in which they viewed negative, positive, and neutral IAPS images. At the start of each trial, a "Look" or "Regulate" cue appeared for 2 seconds, indicating that the participant should view the image naturally or reappraise it, respectively. For negative images, participants were instructed to reinterpret the image to feel less negative, and for positive images they were instructed to make themselves feel more positive. Each image was presented for 7 seconds, followed by a 1-3 second fixation, and two counterbalanced 4-second rating screens ("How bad do you feel?" / "How good do you feel?"). This sequence ended with a 4-7 second intertrial interval. BOLD responses were estimated in 11 regions of interest using a TENT function at each timepoint from 0 to 16 seconds, starting with the onset of the image, and separately, starting with the onset of the rating screen; this was done for each condition: look negative/positive/neutral and regulate negative/positive. An exploratory analysis separated the amygdala BOLD responses according to participants' average reappraisal success for negative images (regulate – look ratings). **RESULTS:** Behaviorally, participants reported a reduction in negative feelings and an increase in positive feelings when downregulating negative emotion; in contrast, no significant differences were observed for upregulation of positive emotion. The BOLD analysis revealed increases in prefrontal cortex

activation during regulating compared to viewing negative images, with corresponding decreases in amygdala activation only during the rating period; positive images showed minimal modulation of activation by condition. Finally, better reappraisers showed a tendency toward greater regulation-related reduction in left amygdala activation during the rating period for negative trials than worse reappraisers ($r = .31$, $p = .08$). **CONCLUSIONS:** Overall, this work supports our prior research indicating that downregulation of negative emotion only modulates amygdala activation late in the trial and specifies that this difference emerges during the rating period rather than during image viewing. The comparison as a function of reappraisal success further suggests that this reduced activity is driven by successful downregulation of the negative response. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by UNL's CB3 seed grant funding.

P2-A-77 - Impressions of human and artificially intelligent agents varying in competency status

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Impressions of human and artificially intelligent agents varying in competency status Andrea L. Wilhelma, Melda Sandikcia, Samuel A. Venezia, Richa Gautama, Andréa Reynoldsa, Andréa Reynoldsa, Andréa Reynoldsa, Giuditta Scalco, Marissa Spears, Nina Lauharatanahirunb,c, Jennifer T. Kubotaa,d, & Jasmin Cloutiera Affiliations: a Department of Psychological and Brain Sciences, University of Delaware, 105 The Green, Newark, DE 19716, USA b Department of Biomedical Engineering, Pennsylvania State University, 531 Chemical and Biomedical Engineering Building, University Park, PA 16802, USA c Department of Biobehavioral Health, Pennsylvania State University, 219 Biobehavioral Health Building, University Park, PA 16802, USA d Department of Political Science and International Relations, University of Delaware, 18 Amstel Ave., Newark, DE 19716, USA.

BACKGROUND AND AIMS: Artificial intelligence (AI) has advanced rapidly, yet public responses to it have remained mixed (Bao et al., 2022). Despite its efficiency and economic potential, AI is often evaluated less favorably than humans and perceived as threatening, even when deemed more capable (e.g., Shank et al., 2021), suggesting that high-competence in non-human agents may itself elicit unease. In the present fMRI study, participants formed impressions of purported future interaction partners described as either humans or AI who also varied in competence (high vs. low). Neural responses were examined within predefined regions of interest (ROIs) implicated in person evaluation. **METHODS:** Participants ($n=58$) completed a competency manipulation designed to support the cover story that they were interacting with real partners, depicted as either humans (faces) or AI agents (symbols). Partner competence was conveyed through a star-rating system, with 10 to 8 stars indicating high competence and 1 to 3 stars indicating low competence. Participants then completed an impression-formation task during fMRI scanning in which they formed private impressions of partners they would later interact with in a decision-making task and escape room. **RESULTS:** There was a main effect of status in the left insula, such that responses were greater to high-competency compared to low-competency status partners ($b=1.271$, $CI_{95\%}=[0.599, 1.943]$, $t(192)=3.728$, $p<0.001$). There was also a main effect of status in the vmPFC, such that responses were greater to low-competency compared to high-competency status partners ($b=-0.899$, $CI_{95\%}=[-1.730, -0.068]$, $t(192)=-2.133$, $p=0.034$). **CONCLUSIONS:** These findings extend prior work on impression formation by demonstrating that competence cues differentially engage neural systems associated with salience detection and value-based evaluation. Greater left insula responses to high-competence targets are consistent with its role in detecting socially relevant or motivationally salient/threatening information. In contrast, increased vmPFC responses to low-competence targets align with its role in person evaluation, particularly in contexts that may promote affiliative or cooperative responses. In the context of this study, participants may have viewed low-competency targets as less threatening. Interestingly, the effect of competency on neural responses associated with person evaluation did not differ by partner type.

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P2-A-78 - Mapping the architecture of fear: Latent dimensions and threat profiles in a nationally representative

U.S. Sample

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BACKGROUND AND AIMS:: Models of threat imminence propose that defensive responses are organized along a continuum from distal to proximal danger, with anxiety predominating under distant, uncertain threat and panic responses emerging as threat becomes increasingly imminent. However, it remains unclear whether sensitivity along this continuum reflects stable individual differences, such that some individuals are systematically more responsive to distal versus proximal threats, or whether distinct subgroups exhibit selective sensitivity to particular classes of threat. More broadly, fear responses span concrete bodily hazards (a dangerous animal), abstract psychological threats (loss of a future opportunity), and large-scale societal risks (economic recession), yet the latent structure of these experiences remains poorly understood. This study aims to identify the dimensional structure of fear in the U.S. population and to test whether threat profiles systematically vary across demographic groups. **METHODS:** Data will be drawn from Wave 10 (2024) of the Chapman Survey of American Fears (N = 1008). Respondents were recruited through the SSRS (Social Science Research Solutions) Opinion Panel using a nationally representative address-based sampling (ABS) design. The sample was stratified by age, gender, race/ethnicity, education, region, and political party identification. Participants rated their level of fear of 170+ threats on a five-point Likert scale, including environmental, economic, political, paranormal and bodily hazards. Exploratory factor analysis (EFA) will be used to identify latent dimensions of threat, followed by confirmatory factor analysis (CFA) for model validation. Hierarchical and k-means cluster analyses will classify individuals into threat-profile subgroups. Multivariate regression will test associations between factor scores and demographic variables (income, education, race/ethnicity, gender, age, religiosity, and political ideology). **RESULTS:** We hypothesize that fear ratings will exhibit a coherent latent structure organized along threat representations that vary by psychological distance (proximal vs. distal), level of construal (concrete bodily harm vs. abstract/psychological threat), scope of target (personal vs. large-scale societal threat), and paranormal content. We further predict that person-centered analyses will identify distinct fear-profile subgroups (e.g., proximal-somatic threat sensitive, societal-existential threat sensitive, paranormal threat sensitive, and globally low fear). Finally, we predict systematic sociodemographic patterning in these dimensions including higher fear of economic insecurity and societal economic threats among lower-income respondents and greater paranormal and existential threat sensitivity among more religious respondents, with additional variation by political ideology, education, and age. **CONCLUSIONS:** Identifying the dimensional structure of threat may clarify how individuals cognitively organize threat information and how sociocultural context shapes emotional vulnerability to different types of threats. These findings may inform affective neuroscience models of threat processing and population-level patterns in threat perception.

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P2-A-79 - Characterizing the neural representation of symptom-relevant autobiographical memories in social anxiety

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BACKGROUND AND AIMS:: Negative autobiographical memories are increasingly recognized as central to symptom maintenance across anxiety disorders. Neuroimaging research has largely focused on trauma-related autobiographical memory retrieval in post-traumatic stress disorder, leaving open whether similar neural mechanisms support the retrieval of non-traumatic but symptom-relevant memories. Social anxiety disorder (SAD) provides a critical test case, as individuals with elevated social anxiety frequently experience vivid, emotionally distressing recollections of socially adverse events that do not meet trauma criteria. The present study aims to characterize neural activity during the retrieval of symptom-relevant negative autobiographical memories in individuals with elevated social anxiety and to examine whether variation in these neural responses is associated with symptom severity. **METHODS:** Adults (N=65) with at least mild social anxiety, as indexed by the

Liebowitz Social Anxiety Scale (LSAS), completed a two-visit study involving structured autobiographical memory interviews and fMRI. At Visit 1, participants identified two personally significant negative social memories and two temporally matched neutral autobiographical memories. At Visit 2, one to three weeks later, memories were retrieved using individualized title cues and imagined for 30s while BOLD activity was measured. Pre-registered univariate GLMs will estimate BOLD responses during negative and neutral memory retrieval. The primary contrast of interest is negative > neutral autobiographical memory retrieval. Primary regions of interest include the amygdala, hippocampus, and ventromedial prefrontal cortex (vmPFC). Secondary exploratory analyses will examine additional autobiographical memory network regions, including the insula, precuneus, posterior cingulate cortex (PCC), dorsomedial prefrontal cortex (dmPFC), and perigenual anterior cingulate cortex (pgACC). Planned analyses will test whether neural responses to negative relative to neutral memories vary as a function of LSAS scores.

RESULTS: H1: Negative (relative to neutral) autobiographical memory retrieval will elicit greater BOLD activity in regions supporting emotional and sensory re-experiencing, including the amygdala, hippocampus, insula, precuneus, and PCC. H2: Negative (relative to neutral) memory retrieval will be associated with reduced BOLD activity in prefrontal regions implicated in regulatory and contextual processing, including the vmPFC, dmPFC, and pgACC. H3: Social anxiety severity (LSAS scores) will positively correlate with differential BOLD activity (negative > neutral) in limbic and posteromedial regions and negatively correlate with activity in prefrontal regions, reflecting heightened emotional salience and reduced regulatory engagement with increasing symptom severity. **CONCLUSIONS:** This study will characterize neural correlates of non-traumatic, symptom-relevant autobiographical memory retrieval in social anxiety as a function of symptom severity. By extending neurobiological models of emotional autobiographical memory beyond trauma-focused frameworks, these findings are expected to clarify how individual differences in memory-related neural processes are associated with SAD symptom expression. **ACKNOWLEDGEMENTS AND FUNDING:** This study is supported by the Brain & Behavior Research Foundation and Harvard University. The authors thank the participants and the Center for Brain Science research staff for their contributions.

P2-A-119 - Why cities hurt more: Affective and neural pathways linking environment and pain

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BACKGROUND AND AIMS:: Research has shown that exposure to nature reduces pain intensity and increases pain threshold and tolerance. At the same time, most people live in cities where exposure to natural environments is limited. Reduced exposure to nature may contribute to “urban stress” and the increased prevalence of mental health-related conditions in urban compared to rural populations. Although the analgesic effects of nature exposure are well demonstrated, it remains unclear whether and how natural versus urban environments differentially influence pain, and what neurobiological mechanisms underlie these effects. Here, we present results from a study using immersive virtual reality (VR) environments varying in vegetation and urban design to examine how natural, residential, and urban settings influence pain, focusing on affective and neural mechanisms.

METHODS: Participants (N=66) were immersed in VR videos depicting downtown, residential, and fully natural environments from three U.S. cities. Participants completed an environmental assessment and a pain task. During the assessment, participants took one-minute virtual walks in each environment and rated their affective state (stress, calm, positive and negative affect). This was followed by three sets of a pain task in which participants viewed additional walks while receiving a painful heat stimulus of constant temperature to the forearm. Neural activity was recorded using functional near-infrared spectroscopy (fNIRS), alongside skin conductance and heart rate. Trait affect and stress were assessed as well. **RESULTS:** Exposure to natural environments led to reduced pain ratings ($b=-0.46$, $p<0.001$) and stress ($b=-0.35$, $p<0.001$) and increased calm ratings ($b=0.70$, $p<0.001$) relative to urban and residential environments. Participants also reported higher positive affect ($b=0.60$, $p<0.001$) and lower negative affect ($b=-0.42$, $p<0.001$) in natural compared to non-natural settings. Affective state interacted with environment in predicting pain: lower negative affect in natural environments predicted reduced pain ratings ($b=-0.05$, $p<0.001$). No interaction was observed for stress, calm, or positive affect. Significant direct relationships between stress ($b=-0.20$, $p<0.05$), negative affect ($b=-0.19$, $p<0.05$), and pain were observed, but no indirect effects from environment to pain via affect. Single-trial fNIRS analyses in orbitofrontal cortex (OFC) and dorsolateral prefrontal cortex (dlPFC) showed reduced right OFC activity during nature exposure ($p<0.001$), replicating previous findings. Reduced right OFC activity predicted lower pain ratings during nature exposure ($p<0.001$). Mediation analyses showed a direct relationship between OFC activity and pain ($p<0.01$), but no indirect effect from environment to pain via OFC. Trait affect shaped neural engagement: higher trait positive affect was associated with

medial frontal engagement across environments, whereas higher trait negative affect was associated with broader frontal recruitment. **CONCLUSIONS:** These findings advance understanding of affective and neural mechanisms linking environment and pain, with implications for VR-based pain interventions and for architectural and urban design strategies supporting well-being and improved pain outcomes. **ACKNOWLEDGEMENTS AND FUNDING:** This research was supported by startup funds from Dr. Elizabeth Losin at The Pennsylvania State University and by the Bennett Pierce Endowment in Caring and Compassion in Adulthood.

P2-A-120 - Modulation of rhythmic circuit dynamics in the anterior cingulate cortex predicts emotional regulation and prosocial action

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BACKGROUND AND AIMS:: Helping behavior is contingent on an organism's ability to perceive conspecific distress and the capacity to sufficiently regulate the resulting emotional contagion in a way that allows for helpful action. Brain regions such as the basolateral amygdala (BLA) and anterior cingulate cortex (ACC) are commonly implicated in affective sharing and in evaluating the impact of one's actions upon others, but we currently have a limited mechanistic understanding of how and when these regions work together to support prosocial actions. The present study aims to investigate the recruitment and coordination of activity in the rat BLA and ACC during the perception of distress in others and the initiation of prosocial actions to better understand how these regions interact to support empathetically driven helping behavior. **METHODS:** We acquired in vivo electrophysiological recordings from the rat BLA and ACC of female Sprague-Dawley rats (N=4) engaged in a helping behavior task. In this task, previously trained "opener" rats were given the opportunity to press a lever that opened the door of a small, confining enclosure containing either a trapped conspecific, food reward, or no stimulus. **RESULTS:** Subjects opened the enclosure more frequently and with shorter latencies when the enclosure contained a trapped conspecific compared to the empty control condition. We leveraged this behavioral difference to examine the temporal dynamics of neural activity within the anterior cingulate cortex and basolateral amygdala, brain regions associated with empathy and fear-driven processing. Within these regions we observed coordinated increases in the power of a 6-12 Hz rhythm and the entrainment of neural spiking activity to this rhythm as rats approached conspecifics in distress. When comparing the mean amplitude of this rhythm during approaches to an empty enclosure and one containing a social partner, we observed a significantly higher amplitude during the trials involving a conspecific in the ACC ($U = 1$, $p < .001$, two-tailed Mann-Whitney U test). Importantly, in trials involving the opener rat's cagemate, a significant suppression of 6-12 Hz oscillatory amplitude preceded trials where the lever was pressed (ACC, $U = 1$, $p < .01$, BLA, $U = 17$, $p = 0.04$, two-tailed Mann-Whitney U test). This suppression was absent during approaches to the trapped conspecific in trials where the lever was not pressed. **CONCLUSIONS:** These findings suggest that the observation of distress recruits distinct rhythmic circuit activity in the ACC, and the subsequent suppression of this activity coincides with increased helping behavior, while its continuation inhibits prosocial action. The occurrence of 6-12 Hz rhythmic circuit activity thus serves as a marker for emotional contagion, while suppression of this activity coincides with the regulation of strong affective states and increased prosocial activity. **ACKNOWLEDGEMENTS:** This project was supported by the Sanford Institute for Empathy and Compassion.

P2-B-59 - Mapping learned threat in virtual reality: Spatial generalization patterns in trauma-exposed and non-exposed adults

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BACKGROUND AND AIMS:: Traumatic experiences may alter how individuals generalize threat, leading to threat expectations that extend into safe contexts. Threat overgeneralization is a hallmark of post-traumatic stress disorder (PTSD), yet it remains unclear whether these alterations emerge only with the disorder or if they are already present following trauma exposure (in the absence of clinical pathology). Because human survival depends on the ability to construct and update spatial representations of threat and safety, clarifying this distinction (i.e., if overgeneralization is a consequence of trauma exposure or PTSD) is

particularly critical. Notably, prior research on threat-related spatial learning has largely examined trauma through the lens of PTSD, neglecting trauma-exposed individuals without the disorder. To address this gap, we aim to determine if trauma exposure alone is sufficient to alter threat learning by investigating whether trauma-exposed individuals differ in their spatial anticipation of threat compared to trauma-naïve individuals, using a novel virtual reality (VR) approach. **METHODS:** This study will compare trauma-exposed (TE) and trauma naïve (TN) healthy adults using a VR spatial threat-learning paradigm. Participants will collect flowers within a virtual arena containing a dangerous zone (i.e., some flowers have a bee inside that will sting them, paired with shock) and a safe zone. As participants explore the environment, they will learn the spatial association between location and outcome. After each trial (flower collection), participants will provide shock expectancy ratings. Location-specific heatmaps will be generated to visualize expectancy ratings across the arena. Additionally, we will record skin conductance response as an indirect physiological measure of arousal. Learning profiles reflecting explicit knowledge of the dangerous zone will also be examined.

RESULTS: Despite spatially defined boundaries of dangerous and safe contexts, we anticipate that TE participants will show broader spatial threat expectancies compared to TN participants, indicated by reduced expectancy ratings and physiological differentiation between dangerous and safe zones. Moreover, we anticipate that TE participants will display a greater tendency toward impaired learning. **CONCLUSIONS:** By characterizing how trauma exposure influences the acquisition and generalization of threat-location associations, this study aims to determine whether trauma exposure alone is sufficient to alter threat learning. In doing so, this work advances our understanding of how traumatic experiences may influence adaptive learning processes and contribute to vulnerability for maladaptive threat generalization across environments. **ACKNOWLEDGEMENTS AND FUNDING:** This research was supported by the National Institute of Mental Health R01MH131532 and the National Eye Institute Core Grant #P30 EY001319.

P2-B-60 - Threat extinction through unrecognizable mid-level visual features

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BACKGROUND AND AIMS: Emotional memories are especially vivid and enduring, and their persistence can contribute to psychological disorders. A primary treatment, exposure therapy, is often effective but can be unpleasant because it requires repeatedly confronting feared stimuli. We explored a less aversive alternative using “texforms,” stimuli derived from images of animals and objects that preserve mid-level visual features and elicit similar ventral stream activation patterns as the original images, but are unrecognizable. We tested whether such mid-level visual representations could support extinction. **METHODS:** We measured threat responses using skin conductance response (SCR) during a threat conditioning paradigm. During the Acquisition phase, participants (N = 96) viewed images of animals and objects. Exemplars from one target category (CS+) were sometimes paired with an uncomfortable shock, while the other category (CS-) was never paired with shock and served as a baseline. During the Extinction phase, participants were randomly assigned to one of three groups: a conventional extinction group that viewed new exemplars from both categories without shock, a texform extinction group that viewed texform versions of those images without shock, or a no extinction group that watched a neutral video. Two minutes later during the Test phase, all participants viewed new exemplars from both categories without shock to assess the persistence of the conditioned threat response. Generalized linear mixed-effects models were fitted to examine the effect of category (CS+ or CS-) and extinction group (conventional, texform, or none) on SCR across the three phases. **RESULTS:** During Acquisition, CS+ exemplars elicited higher SCRs than CS- exemplars across all groups ($p < 0.001$), confirming successful conditioning. In early Extinction trials, conventional extinction participants showed elevated SCRs to CS+ relative to CS- exemplars ($p < 0.05$), consistent with extinction learning. This effect was absent in the texform extinction group, suggesting a lack of physiological threat response to CS+ texforms. In the Test phase, both extinction groups showed successfully reduced threat responses; only the no extinction group continued to exhibit higher SCRs to CS+ than CS- exemplars in the second half of the phase ($p < 0.01$). The CS+ CS- difference was significantly larger in the no extinction group than in either extinction group during the second half of the phase ($p < 0.05$). When asked after the test phase, participants were unable to identify the specific objects or animals corresponding to the texform stimuli. **CONCLUSIONS:** These findings suggest that exposure to unrecognizable images preserving mid-level features may reduce conditioned threat responses without evoking physiological reactions. This approach offers a potentially less aversive extinction method. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by Harvard University SEED

funding. We thank Dr. Xandra Kredlow for assistance with skin conductance recording and preprocessing and Dr. Sam Cooper for contributions to PsychoPy programming.

P2-B-61 - Context matters- the impact of cooperating and competing on mid-size group multimodal synchrony

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BACKGROUND AND AIMS:: Why do some groups function cohesively while others fail? Group interactions rely on biological systems that support coordination toward shared goals, yet the biobehavioral processes that emerge within groups remain poorly understood.

A key biobehavioral emergent feature of group interaction is interpersonal synchrony across neural, physiological, and behavioral systems. Prior work has focused largely on dyads, leaving synchrony's role in larger groups unclear. The present study tested whether multimodal synchrony predicts group cohesion, and whether cooperative contexts elicit stronger, more globally distributed synchrony than competitive contexts. **METHODS:** Groups of five participants engaged in a joint drumming task under three social contexts: (1) cooperation, (2) in-group competition, and (3) out-group competition. Behavioral data were recorded as individual drumbeats using Ableton Live 12 Suite, alongside synchronized facial close-up and bird's-eye-view video recordings acquired via Noldus Media Recorder. EEG data were collected simultaneously from all five participants using a single g.tec HiAmp amplifier (24 channels; 10–20 layout; 512 Hz sampling rate) with individual reference and ground electrodes. EEG preprocessing was conducted in MATLAB using the FieldTrip toolbox, and neural synchrony was quantified as wavelet coherence within frontal, central, temporal, and occipital regions. Physiological data (HRV, RSA, EDA) were collected at 500 Hz using mobile impedance cardiography devices and preprocessed in Mindware. Group-level HRV and EDA synchrony were computed using windowed cross-correlation functions across all dyads. Both overall synchrony and temporal fluctuations in synchrony were examined as predictors of group coherence. **RESULTS:** Preliminary analyses indicate that cooperative drumming elicited earlier and stronger peak alpha-band neural synchrony in frontal and central regions (≈ 72 s post-onset) compared to out-group (≈ 100 s) and in-group competition (≈ 110 – 132 s; see Figure 1). Earlier peak neural synchrony was associated with higher self-reported group cohesion, which was highest following cooperation, intermediate following out-group competition, and lowest following in-group competition. Updated results from 20 groups, including physiological synchrony measures, will be presented. **CONCLUSIONS:** Findings highlight the role of multimodal synchrony in supporting group cohesion and demonstrate how cooperative and competitive contexts differentially shape neural and physiological coordination in human groups. **ACKNOWLEDGEMENTS AND FUNDING:** The current study is funded by the ERC, grant #40030032000. We thank all of the participants that took part in the study, and the undergraduate and graduate students that took part in collecting and preprocessing the data.

P2-B-62 - Physiological indices of induced mood states and the combined influences of mood state and rumination on autobiographical memory specificity.

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BACKGROUND AND AIMS:: Episodic memory specificity, or the ability to recall discrete, temporally bounded personal events, is critical for daily functioning. Reduced memory specificity is reliably associated with the onset, maintenance, and relapse of depression. Theories posit that ruminative thought drives depression-related memory deficits, but mood-related biases in memory retrieval may also play an important role. There is limited empirical work disentangling the relative and combined contributions of ruminative thought and mood state on memory specificity. The objective of the present study is to examine physiological indices of induced mood states and the combined influences of experimentally induced mood state and rumination on autobiographical memory specificity across varying levels of depressive symptomology. We hypothesize that participants induced into both a negative mood and a ruminative cognitive state will exhibit reduced autobiographical memory specificity relative to control conditions. We further predict that memory specificity will be negatively associated with trait depression and trait rumination. Consistent with prior findings, we also hypothesize that higher levels of depression and trait rumination will be associated with blunted physiological responsiveness to emotional stimuli. **METHODS:** Data collection for this

study

is complete. 140 healthy participants with varying levels of depressive symptomology completed the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986) following a between-subjects mood induction (happy vs. sad) and a between-subjects Category Fluency task designed to induce either a ruminative or control cognitive state (adapted from Barnard et al., 2006). Mood state was assessed via self-report and psychophysiological measures, including electromyography (EMG) and electrodermal activity (EDA). Data Analysis Plan: Physiological responsiveness will be quantified using changes in EMG signal amplitude (calculated as a percentage of each participants' baseline) and skin conductance level (SCL) throughout the experiment. Autobiographical memories will be coded as either specific or non-specific, with memory specificity operationalized as the proportion of specific memories to total memories recalled. ANOVA will be used to test main effects and interactions of induced mood and ruminative states on memory specificity. Correlational analyses will examine associations between trait depression, trait rumination, physiological responding, and memory specificity. **IMPLICATIONS:** This study will clarify the independent and interactive effects of mood state and ruminative thought on autobiographical memory specificity, addressing a critical gap in the memory specificity literature. By incorporating physiological measures, the study also provides an objective validation of mood induction procedures and examines how depressive traits modulate emotional reactivity. These findings have implications for theoretical models of memory specificity in both healthy and depressed individuals, for development of behavioral interventions to improve memory specificity, and for the design of future affective and cognitive experiments involving mood induction. **ACKNOWLEDGEMENTS & FUNDING:** The authors acknowledge financial support from the Charles Lafitte Foundation Program in Psychological Research at Duke University.

P2-B-63 - Examining the effects of acute heat exposure on inhibitory control

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BACKGROUND AND AIMS: As the world continues to warm and extreme temperatures increase, so too does the importance of studying the effects of acute heat stress on psychological processes. One psychological process that may be susceptible to heat stress is response inhibition (i.e., the ability to withhold or abort a prepotent or ongoing motor action), as exposure to cold-based stressors influences response inhibition. Prior work has also suggested that perceived life stress moderates the effects of acute stressors on cognitive processes. This study aims to address these gaps by investigating whether acute heat stress influences response inhibition, and whether this effect is moderated by perceived stress. **METHODS:** Participants (N = 50) completed the perceived stress scale (PSS) and were subsequently randomized into an acute heat stress or control condition. In the heat stress condition, participants submerged their nondominant hand up to the wrist joint in water with a temperature of 45.75 °C (114.35 °F) for three minutes. Participants in the control condition submerged their hand up to the wrist in lukewarm water (~25 °C) for three minutes. Participants then completed a go/no-go task in which they either pressed the spacebar or not depending upon the apparent gender of the face. The primary outcome of interest was errors of commission (i.e., response inhibition failures), though we also examined errors of omission (e.g., failing to respond when appropriate). Each session concluded with debriefing and compensation via SONA credits. **RESULTS:** Contrary to expectations, we found no effect of our heat stress manipulation on errors of commission, $F(1, 46) = 0.49$, $p = .488$, nor any moderation of the effect of heat stress by perceived life stress, $F(1, 46) = 2.44$, $p = .125$. Similarly, we found no effect of heat stress on errors of omission, $F(1, 46) = 0.31$, $p = .579$, nor any moderation by perceived life stress, $F(1, 46) = 0.85$, $p = .361$. It should be noted, however, that pre- to post-manipulation changes in self-reported stress did not differ between groups, $F(1, 48) = 3.43$, $p = .070$, indicating that our manipulation may have failed to induce stress. **CONCLUSION:** Contrary to our hypotheses, our acute heat stress manipulation did not induce a subjective stress response, influence errors of commission, or influence errors of omission. Further, perceived life stress did not significantly moderate the effects of our manipulation on our outcomes. These results suggest that a mild acute heat exposure does not exert strong effects on self-reported stress or inhibitory control outcomes. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by a Student Undergraduate Research Fellowship (SURF) grant from the University of Arkansas Office of Nationally Competitive Awards.

P2-B-64 - Increasing the response inhibition demands of a stressor abolishes the beneficial effect of stress on memory encoding

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BACKGROUND AND AIMS: Experiencing a stressor (i.e., stress) generally improves memory encoding. However, this general pattern has one striking exception: Beneficial stress effects on encoding are absent when stress is induced via a particular laboratory stress induction.

In a series of studies, we tested the hypothesis that such an absence occurs if a stressor makes strong demands on response inhibition. **METHODS:** In a well-powered preregistered study and a direct replication, we tested the hypothesis outlined above by randomly assigned participants to complete an encoding task within either a stressor that typically improves encoding, its control condition, or the same stressor with a greater demand on response inhibition. Retrieval was tested 48 hours later. In the third and fourth studies, we instructed participants to recall and describe situations where they either inhibited or engaged in an action to deal with the stressor. We quantified episodic and nonepisodic details in their recalled answers. **RESULTS:** In studies 1 and 2, relative to the control condition, both stress conditions produced stress responses (e.g., cortisol) that did not differ from each other. Critically, however, only the typical stress condition improved memory: The stress + inhibition condition did not. Studies 3 and 4 found that participants recalled more episodic details only when they did not exert response inhibition to deal with the stressor. **CONCLUSIONS:** Although limited by our sample of healthy young adults, our results show that stress effects on encoding can critically depend upon a stressor's inhibition demands. **ACKNOWLEDGEMENTS AND FUNDING:** These studies were supported by funding from the University of Arkansas to Grant S. Shields, Ph.D.

P2-B-65 - Lifetime stress exposure moderates the relationship between acute stress response and decision-making under ambiguity

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BACKGROUND & AIMS: Decision-making under uncertainty is shaped by acute and cumulative lifetime stress, but their joint effects on different types of uncertainty remain unclear. Uncertainty is often differentiated as risk (known outcome probabilities) and ambiguity (unknown outcome probabilities). Prior work suggests that stress effects depend on both stressor type and decision context (Starcke & Brand, 2016): for example, acute stress increases ambiguity preference but not risk preference (FeldmanHall et al., 2016), whereas lifetime stress is associated with reduced ambiguity preference but not risk (Raio et al., 2022). Few studies have examined how acute stress interacts with lifetime stress within the same task. Here, we tested whether acute stress exposure influences risk and ambiguity preferences, and whether these effects depend on lifetime stress exposure.

METHODS: On two separate days, healthy participants (n=62) completed a decision-making task that requires choosing between a certain reward and either a risky or ambiguous lottery (Levy et al., 2010). On Day 2, participants underwent the Socially Evaluated Cold Pressor Task (SECPT) (Schwabe et al., 2008), which elicits an acute stress response measurable through salivary cortisol. Saliva samples were taken pre- and post-stress exposure; analyses used pre-task cortisol (results were consistent using post-task). For measuring lifetime stress, participants completed the Stress and Adversity Inventory for Adults (STRAIN) survey, which captures cumulative stress across domains and developmental periods (Slavich and Shields 2017). Uncertainty preference was measured as the proportion of trials in which the lottery was chosen. We estimated linear regression models to relate Day2-Day1 changes in choice proportions to stress variables, controlling for baseline cortisol, age, and sex. **RESULTS:** Cortisol change following acute stress exposure was not significantly associated with Day 2-Day 1 changes in risky or ambiguous choice proportions (Figure 1). Lifetime stress variables significantly moderated the relationship between cortisol change and choice under ambiguity (Figures 1, 2): Higher lifetime stress was associated with increased ambiguity seeking as cortisol increased, whereas lower lifetime stress was associated with increased ambiguity avoidance. No corresponding interaction effects were observed for risky choices. Independently, lifetime stressor count was associated with both increased risk- and ambiguity-seeking (Figure 1). This association persisted across subjectively perceived stress levels. **CONCLUSIONS:** Ambiguity but not risk preference under acute stress depends on an individual's lifetime stressor exposure. This pattern is consistent with the interpretation that individuals with high lifetime stress may adapt to ambiguity despite initially avoiding it. These findings advance our understanding of how acute stress and lifetime stress history jointly shape decision-making under uncertainty while

dissociating between ambiguity and risk. Future work could dissect the lifetime stress construct and test whether interactions between acute and lifetime stress are domain-specific or domain-general. **ACKNOWLEDGEMENTS & FUNDING:** This work was supported by NIH R01DA038063 (P.W.G.), NIH F32MH110135 (C.M.R.), a NARSAD Young Investigator Grant (C.M.R.), a Society in Science Branco Weiss Fellowship (G.M.S.), NARSAD Young Investigator Grant #23958 (G.M.S.), and NIH K08MH103443 (G.M.S.).

P2-B-66 - A pilot study of stress-related symptoms following a remote group neuropsychological intervention

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Stress-related conditions, including emotional exhaustion, burnout, and anxiety, are increasingly conceptualized as manifestations of disrupted emotional regulation rather than isolated diagnostic entities. Sustained emotional overload reduces regulatory flexibility, increasing emotional reactivity and impairing adaptation to persistent stressors by disrupting the hypothalamic-pituitary-adrenal (HPA) axis. Despite this shared etiology, most interventions remain diagnosis-specific and insufficiently target core stress- and emotion-regulatory mechanisms. This pilot study evaluated a five-week remote neuropsychological group intervention designed to modulate stress responses through integrated emotion regulation strategies. The program combined top-down approaches (cognitive reappraisal, psychoeducation, routine mapping) with bottom-up techniques (breathing and somatic grounding). 92 adults completed pre- and post-intervention assessments of emotional exhaustion (EE), perceived stress (PS), anxiety (AN), affect, and burnout. A physiological subsample (n = 29) additionally provided heart rate (HR), electrodermal activity (EDA), and salivary cortisol (CORT). Significant reductions were observed in EE (p = 0.017), PS (p = 0.006), AN (p = 0.023), and burnout symptoms, indicating improved stress-related emotional regulation. Although psychophysiological changes were not uniform, baseline-dependent effects emerged: individuals with higher initial COR and HR showed greater physiological change over time. COR demonstrated a significant time effect when adjusted for baseline exhaustion, suggesting differential stress responsivity linked to initial emotional burden. These findings support the relevance of scalable interventions targeting emotional and stress-regulatory processes and justify further controlled studies. This study was funded by the EHCM Institute, Brazil. The author is the founder of the institute through which the intervention was delivered and the developer of the evaluated protocol.

P2-C-67 - Social impressions and election: Facial appearance and beyond

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Facial impressions of competence have been shown to predict political election outcomes above chance. However, real-world voting decisions integrate information beyond facial appearance. In this study, 327 U.S. citizens were recruited prior to the 2024 election. Participants briefly viewed images of 140 House of Representatives candidates and reported recognition, perceived job capability, and voting intentions. Consistent with prior research, we replicated a 64% prediction accuracy of election outcomes based solely on facial appearance (Chi-square test: p = 0.053, marginal significant above chance). However, this accuracy attenuates once voters recognize the candidates, in which case competence ratings no longer predict electoral outcomes (accuracy: 58%, Chi-square test: p = 0.272). Extending beyond facial cues, we examined how visual and semantic information contribute to subjective evaluations. Using deep neural networks, human annotation and large language models, we extracted visual features from candidate images and semantic content from 2024 web news. Results show that although both visual and semantic features contribute to predicting competence judgments under zero-acquaintance conditions, the contribution of physical features diminishes while semantic information becomes more influential once candidates are recognized. This result has been verified using both deep neural networks' embeddings, and using human annotated visual cues. Together, these findings highlight the central role of semantic information in impression formation and provide insight into the mechanisms underlying real-world electoral decisions.

P2-C-68 - Homophily and social environment: How neural similarity and perceived dissimilarity predict social motivation in youth

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BACKGROUND AND AIMS: The principle of homophily indicates that similarity is a driving factor in the formation of social bonds, on both behavioral and neural levels. Autistic individuals are objectively different from their peers, and report higher levels of perceived dissimilarity. These attributes create additional social barriers that may reduce a person's willingness to pursue and engage in social interactions. We aimed to investigate how both objective (neural) and subjective similarity affect social motivation in autistic and non-autistic individuals. We expected that individuals with lower neural similarity to their average peer group will have reduced social motivation, and those with increased perceived dissimilarity to their peers will have lower social motivation. Finally, we expected that perceived dissimilarity will moderate the relationship between neural similarity and social motivation. **METHODS:** Our sample consisted of 119 youth (n=85 non-autistic, n=34 autistic; n=74 male; mean age 12.98 ± 1.18 years old). 69% of participants identified as white, 15% as more than one race, and 9% as Black or African American. To capture neural similarity, we used an inter-subject correlation (ISC) of fMRI data in social brain regions. Participants underwent naturalistic movie watching while in the scanner, and their time series was correlated to every other individual's time series, with the average of those correlations being their neural similarity value. For perceived dissimilarity, we composed a composite score of questions relating to how similar the participant feels to other kids. Finally, social motivation was measured using ecological momentary assessment (EMA). We asked participants about how much they desire to interact with others every day for 10 days, and used the average score over the period to create a composite score. **RESULTS:** The effect of neural similarity on social motivation is not significant. However, there is significant moderation of diagnostic group on the relationship ($p < 0.05$). Non-autistic youth who were more neurally similar to their peers were more socially motivated, while autistic youth who were more neurally similar to their peers showed reduced social motivation. Additionally, perceived dissimilarity significantly predicts social motivation with no group effect ($p < 0.0002$). Finally, adding perceived dissimilarity as a moderator did not significantly affect the relationship between neural similarity and social motivation. **Conclusions:** The relation between perceived, but not neural, similarity to social motivation was consistent with our hypothesis. Across both groups, greater perceived dissimilarity predicted reduced social motivation. Interestingly, our objective measure of similarity (neural similarity) showed opposing patterns between groups. Thus, subjective similarity may provide a better explanation for social motivation differences in autism than objective similarity; if one perceives that they are more different from their environment, they are less motivated to interact with others. The finding that greater neural similarity predicts lower social motivation in autism could be explained by greater attention to social information in the higher neural similarity group, which in contexts of reduced peer acceptance could lead to reduced social motivation. **Acknowledgements and Funding:** This study was funded by the National Institute of Mental Health.

P2-C-80 - Digital emotional whiplash and neurovisceral integration: Effects of rapid affective switching in short-video content on emotion recognition and heart rate variability

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BACKGROUND AND AIMS: Short-form video is embedded across TikTok, Instagram Reels, and YouTube Shorts, making a rapid, algorithmically curated viewing routine for many adults. In the U.S., YouTube is used by 84% of adults, and 24% report daily TikTok use (Pew Research Center, 2025a). Across seven experiments, "digital switching" (skipping or switching between videos) increased boredom and reduced satisfaction relative to sustained viewing (Tam & Inzlicht, 2024). Despite growing interest in short-form feeds, experimental work rarely manipulates rapid affective alternation in video streams while simultaneously measuring autonomic regulation and emotion recognition. This study will investigate whether rapid affective switching incurs short-term costs in facial emotion recognition and vagally mediated heart rate variability (Thayer & Lane, 2000). **METHODS:** Healthy young adults aged 18-30 will complete two counterbalanced conditions in one visit, Switching and Coherent Neutral, separated by a 15-minute neutral washout. Target recruitment is ~44 participants, informed by an a priori G*Power 3.1 analysis for a within-subject condition-by-phase effect across baseline, viewing, and recovery ($\alpha = .05$, power = .90, $f = .25$, $r = .50$, $\epsilon = .75$) (Faul et al., 2007; Faul et al., 2009). Switching will present open-licensed short clips (15-30 s) with hard cuts, sequenced to alternate across valence and arousal categories validated by pilot ratings using a

circumplex framework (Russell, 1980). Coherent Neutral will present a same-length stream of neutral, low-arousal, nature or educational clips, arranged to maintain stable affect and minimize abrupt transitions. Each condition includes a 5-minute seated baseline, 10-minute viewing, and 5-minute seated recovery. R-R intervals will be recorded with a Polar H10 and processed in Kubios HRV; segments with >5% corrected beats will be excluded, and RMSSD will be log-transformed (Laborde et al., 2017; Tarvainen et al., 2014). After each viewing block, participants will complete a 60-trial NimStim facial emotion recognition task (Tottenham et al., 2009). On each trial, a face is briefly presented, and participants select the emotion label from a fixed set, yielding accuracy and response time data. Surveys (screening, affect, media use) will be administered in Qualtrics. Primary analyses will employ linear mixed-effects models in R to investigate condition-by-phase effects on log RMSSD and condition effects on recognition performance, incorporating preregistered exclusions and sensitivity checks. **HYPOTHESES:** We predict reduced emotion recognition accuracy and or slower response times after Switching. We also predict lower log RMSSD during Switching relative to Coherent viewing and less complete recovery following Switching. We expect Switching to produce a steeper decline from baseline during viewing and a slower return toward baseline during recovery. **IMPLICATIONS:** The study will probe the affective and biobehavioral consequences of consuming short-video content that includes rapid affective switching, enabling a direct, causal test of the short-term costs of rapid emotional context change beyond correlational digital-use measures. This has the potential to clarify when and for whom rapid affective switching functions as an acute stressor, temporarily reducing autonomic flexibility and socioemotional perceptual efficiency. **ACKNOWLEDGEMENTS AND FUNDING:** The study is supported by the Rice Undergraduate Scholars Program at Rice University.

P2-C-81 - Exploring the human parental brain connectome

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BACKGROUND AND AIMS: In mammals, the transition to parenthood involves neurobiological changes that may prepare individuals for parental behavior, reflect their parental experience, or both. To shed light on parenthood-related neurobiological changes in humans, we used data from the Human Connectome Young Adult project to compare the brains of parents with non-parents. **METHODS:** Our sample was drawn from the Human Connectome Young Adult Project and included young adults between the ages of 22 and 37 ($M=28.78$, $SD=3.72$). The sample included 469 males, 31.3% of whom were parents ($n=147$), and 570 females, 53% of whom were parents ($n=300$). Structural MRI scans, resting state functional MRI scans, and diffusion-weighted MRI scans were processed using the Human Connectome Project Pipelines. **RESULTS:** After controlling for sex, age, and intracranial volume, parents had less gray matter volume than nonparents in the hippocampus and cortical areas in and adjacent to the bilateral superior temporal sulcus. Resting state functional MRI analyses revealed stronger functional connectivity, as measured by partial covariance, in parents compared with nonparents both within the somatomotor network and between the cingulo-opercular and dorsal attention networks. Tractography of diffusion-weighted scans revealed a higher average tract probability in the right acoustic radiation in parents vs. nonparents, and lower average mean diffusivity (MD) within the left superior longitudinal fasciculus I in parents compared with nonparents. Surprisingly few effects of parenthood differed by parental sex. For all three imaging modalities, age and parenthood had opposing associations with neuroimaging defined phenotypes, consistent with the hypothesis that having children is neuroprotective. All results were FWE-corrected at $p<0.05$. **CONCLUSIONS:** These associations between parenthood, age and neuroimaging phenotypes could reflect either changes that occur in parents, or pre-existing characteristics that influence the likelihood that people become parents, as well as the rate at which their brain ages. **ACKNOWLEDGEMENTS AND FUNDING:** Data were provided [in part] by the Human Connectome Project, WU-Minn Consortium (Principal Investigators: David Van Essen and Kamil Ugurbil; 1U54MH091657) funded by the 16 NIH Institutes and Centers that support the NIH Blueprint for Neuroscience Research; and by the McDonnell Center for Systems Neuroscience at Washington University.

P2-C-82 - Neurocomputational changes in mentalizing from adolescence to middle adulthood

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BACKGROUND: Understanding how mentalizing—the ability to understand others' inner mental states, such as their thoughts, beliefs, or feelings—develops across the lifespan and its neural underpinnings remains a central question in psychology and neuroscience. While age-related changes in mentalizing have been documented using reaction time and accuracy, the underlying cognitive computations remain unclear. To address this gap, we combined a mentalizing task with drift-diffusion modelling (DDM) to quantify latent social-cognitive processes and examine their neural correlates across age. **METHODS:** We analyzed data from adults ($n = 182$; 90 females; 18–46 years) and children ($n = 74$; 46 females; 10–16 years) who completed an established social inference task (Why/How task). All participants made rapid judgments requiring either mentalizing (social inference) or factual inference (control). Brain responses were collected for adults using functional magnetic resonance imaging (fMRI). Choices and response times were modelled using DDMs to estimate boundary separation, drift rate, and non-decision time. Moreover, we examined age-related differences from childhood to adulthood in these computational model parameters and applied intersubject representational similarity analysis (ISRSA) in adults to link computational profiles to neural activation patterns observed during mentalizing. **RESULTS:** Behaviorally, mentalizing showed smaller boundary separation, lower drift rates, and longer non-decision times compared to factual inference. Drift rates—reflecting the efficiency and quality of information accumulation—exhibited a nonlinear (inverted U-shaped) association with age across conditions. Neurally, individuals with similar computational profiles showed more similar activation patterns in key social brain regions, including the superior temporal sulcus (STS), posterior cingulate cortex (PCC), and inferior frontal gyrus (IFG). The brain-behavior relationship was moderated by age; for example, younger adults showed greater neural pattern similarity in the PCC with peers sharing similar computational profiles than older adults. **CONCLUSION:** Together, these findings demonstrate that computational models capture the core processes that distinguish mentalizing from factual inference. Moreover, we demonstrate that computational estimates are sensitive to developmental changes from early adolescence through middle adulthood, and that individual differences in these computations aligned with neural activation patterns in key mentalizing regions. These results advance our understanding of how core social-cognitive processes develop across the lifespan and provide a neurocomputational framework linking behavior, latent computations, and brain function.

P2-C-83 - Characterizing the learning of other's traits, outcomes, and situations through social reinforcement learning

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BACKGROUND AND AIMS: To navigate their social world, people need to learn about others through social interactions. This learning includes what kind of traits those others have, what outcomes their behaviors generate, and what situational forces influence them. Reflecting the assumption that traits drive people's behaviors, prior social reinforcement learning literature predominantly focused on the WEIRD population's learning of traits. However, cultural psychology findings indicate that those in the non-WEIRD cultures, especially East Asian cultures, focus on different types of information over and above traits. **METHODS:** To examine the cultural shaping of social reinforcement learning, we recruited representative groups from the WEIRD (European Americans) and non-WEIRD (Koreans) cultures (total $N = 554$). In Studies 1-2, four "targets" ostensibly gave different number of points to the participants out of the targets' trial-by-trial point pool. Employing a 2 (Target trait [generosity]) X 2 (Target behavioral outcome [reward]) design, the targets were either generous or ungenerous, giving a large vs. small proportions of their pool. Independently, the targets gave many vs. few points, creating high vs. low rewards. For example, between targets A and B who gave 20 points out of their 100 points pool vs. 5 points out of 10 points pool, target A gave a higher reward (20 vs. 5 points) but target B was more generous (sharing 20% vs. 50% of their pool). On each trial, participants chose one of the two presented targets and received feedback on how many points the chosen target gave and how many were in their pool. In Study 3, participants learned about four targets' traits, and the situational influences, i.e., the point pool determined by which "territory" the targets were in. Participants chose one of the two targets in two different territories and received feedback on how many points the chosen target gave. Employing a 2 (Target trait) X 2 (Situation) design, the targets were either generous or ungenerous, and the territories had either a large or a small pool; thus, even a generous target might give only a few points

when they were in a small-pool territory. **RESULTS:** By using a reinforcement learning model, we computed how much participants weighted, or relatively learned about, targets' trait vs. behavioral outcomes (Studies 1-2) or the situational influences (Study 3). In Studies 1-2, while European Americans learned more about targets' trait, Koreans learned predominantly about their behavioral outcomes. Given that Koreans regard others' behavioral outcomes as a reflection of both their trait and the situation, they might find this information as more predictive of targets' future behaviors rather than only their traits. In Study 3, European Americans initiated their learning by primarily focusing on targets' trait and less on situational influences, and only later switched their focus to situations. Koreans, in contrast, focused on both pieces of information equally throughout the task. **CONCLUSIONS:** We found the initial evidence that culture critically shapes how people learn about others. These findings challenge the current scope of the social reinforcement learning, promoting a significant expansion of the population of the investigation as well as the targets of learning. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by the National Science Foundation [award number: 2438844] awarded to Dr. Park and Dr. Hackel.

P2-C-84 - Shared recall of relationship origin story induces neural synchrony and buffers conflict in romantic couples

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BACKGROUND AND AIMS:: How one meets their romantic partner is a relationship-defining memory that couples often reminisce about together. What are the consequences of this shared recall? One possibility is that recalling how a relationship came to be reinforces shared understanding, increases closeness, and buffers against conflict. Here, we use functional Near Infrared Spectroscopy (fNIRS) hyperscanning to measure neural activity while couples jointly recall their relationship origin story after having just discussed an unresolved conflict. **METHODS:** Forty-one dyads (n=82) completed self-report measures of relationship commitment, satisfaction, and couple identity clarity—the extent to which they have a clear and coherent sense of who they are as a couple. While undergoing fNIRS, couples engaged in two 10-minute conversations after a brief rest task: a conversation about a recent, unresolved conflict, followed by an “origin story” discussion, where they jointly recalled how they met and reflected on their relationship trajectory. After each task, participants reported their own mood and feelings toward their partner. Participants then individually recalled each conversation from memory in separate rooms. To assess couples' neural alignment, we computed the inter-subject correlation (ISC), where greater ISC indicates greater neural synchrony. We then examined whether ISC was associated with relational outcomes using Bayesian linear mixed-effects models. We quantified subsequent recall performance by first extracting sentence embeddings using Google's Universal Sentence Encoder and then computing the semantic similarity between each conversation and the participant's later individual recall. **RESULTS:** Relative to rest, participants felt more negative after the conflict discussion ($t(81)=-14.54$, $p<.001$) and less negative after the origin story discussion ($t(81)=5.74$, $p<.001$). Participants also reported feeling closer to their partner after the origin story conversation ($t(81)=5.58$, $p<.001$). We found significant ISC in the right ventromedial prefrontal cortex (vmPFC) during the origin story discussion (FDR $q=.02$); no significant ISC was observed during rest or conflict. Greater vmPFC ISC during the origin story discussion was associated with stronger feelings of post-conversation closeness ($\beta=.27$, $p(\beta>0)=.991$), satisfaction ($\beta=.27$, $p(\beta>0)=.993$), and better subsequent recall of the conversation ($\beta=.34$, $p(\beta>0)=.997$). Finally, we found an interaction between vmPFC ISC and couple identity clarity predicting satisfaction: couples lower in relationship identity clarity benefitted more from neural synchrony ($\beta=-.16$, $p(\beta<0)=.966$). All effects remained after controlling for baseline levels of satisfaction, commitment, and relationship duration. **CONCLUSIONS:** Our study identifies the neural and behavioral correlates that emerge during joint recall of relationship-defining memories and their effects on closeness and satisfaction. When jointly recalling their relationship origin story, couples with greater neural synchrony feel closer, are more satisfied, and remember the conversation better. Such synchrony may be especially important for couples with less clearly defined identities, by facilitating the co-construction of mutual understanding. Together, these findings uncover the neural underpinnings of how shared reminiscing preserves closeness and connection between couples in the face of conflict.

P2-C-85 - Statistical learning shapes cognitive maps of signed social networks

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BACKGROUND AND AIMS:: Building cognitive maps of signed social networks—those containing both friendly and antagonistic ties—is essential for navigating social life. While dominant accounts attribute systematic biases in these maps to schemas like Balance Theory, we propose that such biases emerge from statistical learning of real-world relational patterns. **METHODS AND RESULTS:** Across four studies—combining behavioral experiments, computational modeling, and analyses of ten longitudinal signed networks (over 150,000 nodes and 1.6 million ties)—we find that people’s inductive biases simply reflect statistical structures of their social environments. These biases align more closely with naturally occurring motifs than the rules of Balance Theory. When exposed to artificial networks that violate real-world statistics, individuals gradually, yet flexibly adapt their inferences, implicating statistical learning as the underlying mechanism. **CONCLUSIONS:** These findings position statistical learning as a foundational process shaping how humans encode and reason about complex signed social networks, providing a new lens for understanding socio-cognitive map building. **ACKNOWLEDGEMENTS AND FUNDING:** We thank members of the FeldmanHall Lab for useful discussions. This work is supported by the Carney Innovation Grant from the Robert J. and Nancy D. Carney Institute for Brain Science, awarded to Oriel FeldmanHall.

P2-C-86 - Shared neural representations of causal interactions across social and physical domains

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BACKGROUND AND AIMS:: We commonly use the language of physics to describe social interactions, even when no physical contact occurs (e.g., pushing someone to achieve something, or blocking them from doing so). Such descriptions may reflect similarities in how we represent social and physical causation. The present research asks whether processing social interactions, such as helping and hindering, relies on similar neural representations as processing physical force interactions, such as launching and blocking (Wolff, 2007). **METHODS:** Thirty fMRI participants read 3-sentence stories describing causal and noncausal events in 2 domains. “Social” stories depicted nonphysical interactions between people with intentions and goals, whereas “physical” stories depicted physical force interactions between inanimate entities. Half of the causal stories described an “enable” interaction, where the causal agent’s action aligned with the patient’s goals (e.g., a therapist coaching their client to overcome a phobia; a wave freeing a piece of driftwood). The other half described a “prevent” interaction, where the causal agent’s action opposed the patient’s goals (e.g., a boss forcing an employee to stay late; a gust of wind pushing a sailboat off course). “Enable” and “prevent” stories were matched on linguistic features (e.g., length, word frequency, syntactic dependency) and ratings of perceived causality ($p > 0.25$). Noncausal stories were created by combining sentences from unrelated stories and were rated as less causal ($p < 0.001$) but were matched on linguistic features and number of people. A functional localizer (Hauptman & Bedny, 2025) was used to identify regions-of-interest (ROIs) associated with Theory of Mind (right & left temporoparietal junction [TPJ], dorsomedial prefrontal cortex [DMPFC], precuneus) and physical reasoning (right & left inferior parietal lobule [IPL], right & left superior parietal lobule [SPL]). Multivariate pattern analyses tested for representations of causal coherence (“causal” vs. “noncausal”) and interaction type (“enable” vs. “prevent”) using within-domain and cross-domain classification. For cross-domain analyses, classifiers were trained on one domain and tested on the other, with accuracies averaged across directions. **RESULTS:** Representations of social causal vs. noncausal events were found in LTPJ, DMPFC, and RIPL; representations of physical causal vs. noncausal events were found in LTPJ, DMPFC, precuneus, and RIPL ($pFDR < 0.05$). Domain-invariant representations of causal coherence were found in bilateral IPL ($pFDR < 0.05$). Representations of social enable vs. prevent events were found in DMPFC, and representations of physical enable vs. prevent events were found in LTPJ ($pFDR < 0.05$), but no ROI contained domain-invariant representations of interaction type, and a searchlight revealed the same in the whole brain. **CONCLUSIONS:** We found evidence for domain-specific and domain-invariant representations of causal coherence, in regions preferentially engaged during social and physical reasoning. In contrast, we only found domain-specific representations of enable vs. prevent in these regions. These findings suggest that understanding social interactions may leverage abstract causal structures that are shared across social and physical domains, while the specific nature of the interaction (e.g., helping vs. hindering) may be represented in a predominantly domain-specific manner. **ACKNOWLEDGMENTS AND FUNDING:** NSF2404609

P2-C-87 - When structure meets biology: Socioeconomic status, gender, and amygdala reactivity in social support

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BACKGROUND AND AIMS:: Social interaction is essential for health and well-being, yet access to and benefits from social relationships are shaped by broader structural factors. Socioeconomic status (SES)—a key indicator of access to material and social resources—shows a graded association with social support availability. Gender represents another important structural factor, as prior research suggests women may place greater emphasis on emotional aspects of social relationships than men. However, it remains unclear whether SES influences social support similarly across genders or whether it amplifies gender differences in social functioning. At the neural level, amygdala reactivity to social threat cues (e.g., negative facial expressions) has been linked to social behavior, but its role in SES-related social processes remains understudied. This study examined (1) whether SES is associated with social support across genders, and (2) whether SES and social support interact with gender in predicting amygdala reactivity to negative social stimuli. **METHODS:** Data were drawn from 832 young adults (mean age = 29.23 years, SD = 3.51; 55% women) from the Human Connectome Project. SES was operationalized as a composite of z-scored education and household income. Social support was assessed across three domains using NIH toolbox self-report: friendship companionship, emotional support, and institutional support. Amygdala reactivity was measured using fMRI during exposure to negative facial expressions. Multiple regression models examined associations among SES, gender, social support, and amygdala reactivity, adjusting for age and race. Interaction terms tested SES × gender and social support × gender effects.

RESULTS: Lower SES was associated with reduced social support across all three domains for both genders (β s = 0.13–0.21, all p s < .001), with no significant SES × gender interactions, indicating comparable SES-related gradients in perceived social support. In contrast, neural outcomes showed gender-specific patterns. A significant SES × gender interaction emerged for right amygdala reactivity to negative faces (b = −0.16, p = .027). Higher SES was associated with greater right amygdala reactivity in women (b = 0.11, 95% CI [0.01, 0.21]) but not in men. A z-scored composite of the three social support measures also interacted with gender in predicting right amygdala reactivity (b = 0.14, p = .045). Among women, greater social support was associated with lower amygdala reactivity (b = −0.13, 95% CI [−0.22, −0.03]), whereas no association was observed in men. Exploratory analyses indicated that amygdala volume was unrelated to social support but significantly associated with SES. **CONCLUSIONS:** These findings suggest that SES and amygdala reactivity play competing roles in shaping social functioning in women, whereas SES appears to be the primary determinant of perceived social support in men. More broadly, the results highlight gender-specific neural sensitivity to social environments and suggest that amygdala responses to negative social cues may be particularly relevant for understanding how women experience social support under structural constraints.

P2-C-88 - Are Black people perceived as threatening? Perhaps not as we thought.

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BACKGROUND AND AIMS:: If you show White people photos of Black peoples' faces, their brains produce a larger early positivity (the 'P2' ERP component), relative to faces of White people. This has traditionally been interpreted as a response that indexes increased attention to threat, with the assumption being that White people find Black people threatening. While the threat interpretation has become broadly accepted, it overlooks the possibility that the P2 effect could plausibly also stem from two other, more general processes. First, given the almost exclusively white participant pools of prior research, the P2 effect could stem from increased processing effort for White participants viewing Black (vs White) faces, as a result of the relative rarity of Black individuals in many Western contexts. Second, the effect could simply represent ingroup-outgroup distinctions. To disentangle these explanations, we conducted a (somewhat more representative) ERP study on face processing responses in Black and White, female and male participants. **METHODS:** EEG data from seventy-four Black and White women and men was recorded while they completed a face recognition task, in which both the race (Black, White) and gender (female, male) of the faces presented to them were manipulated. We hypothesized that: If the P2 effect reflects threat sensitivity, it should emerge

both when White participants view Black (vs. White) faces and, crucially, when female participants view male (vs. female) faces. If the P2 effect reflects stimulus rarity, it should emerge only for White participants viewing Black faces. If the P2 reflects in/out group effects, it should occur for all participant groups when presented with either a gender or race outgroup. **RESULTS:** Two ANOVAs (examining race and gender separately) revealed no effects of face gender ($p > .1$), but a significant interaction between participant race and face race ($F(1, 72) = 13.36, p < .001$): a significant P2 increase occurred only for White participants presented with Black faces. **CONCLUSIONS:** Our results suggest that White participants expend greater processing effort when viewing Black faces – likely due to input rarity, rather than exhibiting an automatic threat response, as has long been assumed. Moreover, exploratory analyses of later (P3) waveforms suggest comparable responses for White participants in response to Black faces, Black participants to White faces, and female participants to male faces, challenging functional sensitivity traditionally ascribed to the P2, and the notion that Black people are universally perceived as threatening. **Acknowledgment and funding:** This project was funded as part of the New York University Psychology Division research funds.

P2-C-89 - Cognitive modes involved during theory of mind: A human connectome project fMRI study

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BACKGROUND AND AIMS: Theory of mind (ToM), or mentalization, is a core aspect of social cognition that enables individuals to infer the mental states of others. Brain activity underlying ToM has been extensively studied using functional magnetic resonance imaging (fMRI), with a primary focus on the Default Mode (DM). In the current study, our goal was to investigate the interplay of multiple cognitive modes, defined as cognitive processes eliciting distinct fMRI-derived spatiotemporal patterns, involved during ToM, extending beyond but still including the DM. **METHODS:** We applied constrained principal component analysis for fMRI (fMRI-CPCA) to a dataset ($n=500$) from the Human Connectome Project (HCP) Social Cognition task. In this task, participants evaluated whether the movements of animated shapes presented to them depicted social or random interactions. This corresponded to the Mentalizing and Random conditions, respectively. **RESULTS:** Six cognitive modes were retrieved using fMRI-CPCA: (1) DM, (2) Multiple Demand (MD), (3) Language (LAN), (4) Focus on Visual Features (FVF), (5) Auditory Attention for Response, and (6) Re-Evaluation (RE-EV). All exhibited higher activation in the Mentalizing condition, except for the AAR and RE-EV modes. Their functions in the context of the HCP Social Cognition task were characterized as mentally projecting into social narratives (DM), allocating external attention to task-relevant components (MD), processing non-verbal communication (LAN), focusing on the visual features of the social stimuli (FVF), suppressing auditory attention due to increased visual attention (AAR), and re-evaluating for possibly missed social patterns (RE-EV). **CONCLUSIONS:** Our results confirmed the activation of the DM during ToM and specified the contributions of five additional cognitive modes. The ability to measure six cognitive modes provides much more detailed account of the cognitive and biological underpinnings of ToM. Additionally, it shows potential over and above the DM for the purpose of subtyping patients with conditions associated with ToM deficits, such as autism spectrum disorder or schizophrenia, to advance toward precision psychiatry. **ACKNOWLEDGMENTS AND FUNDING:** Data were provided by the HCP (WU-Minn Consortium). The authors declare no conflicts of interest.

P2-C-114 - Characterizing patterns of neural activity among altruistic kidney donors and community controls to naturalistic social-emotional cues

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BACKGROUND AND AIMS: Shared emotional experiences are a fundamental mechanism through which social bonds are formed and maintained (Cheong et al., 2023). Previous work has shown that shared experiences of pain (Bastian et al., 2014; Peng et al., 2024) promote group cohesion and cooperation. Specifically, viewing social cues that are high in emotional intensity (e.g., experiencing others in distress) have been shown to promote social bonding and physiological synchrony (Chung et al., 2024). But individuals vary in self-reported and behavioral indices of responsiveness to emotionally intense stimuli. We tested the extent to which variation in trait-level prosociality is associated with similar or diverging patterns of neural activity to emotionally evocative cues utilizing naturalistic stimuli. Specifically, the present study aimed to characterize patterns of neural activity among highly prosocial adults (altruistic kidney donors) and community controls when viewing naturalistic social-emotional cues. **METHOD:** Participants were 78 adults (Mean age = 42.09, 62% female), including community controls ($n = 52$) and

altruistic kidney donors (n = 26), who had donated a kidney to a stranger. While undergoing functional magnetic resonance imaging, participants watched an 8-minute emotionally evocative documentary, selected to elicit compassion. Participants also completed survey-based measures of self-reported prosocial tendencies (e.g., LovingKindness-Compassion scale). Preliminary analyses included spatial inter-subject correlation (ISC) and inter-subject representational similarity analysis (IS-RSA) to characterize patterns of neural activity to viewing the naturalistic social-emotional stimuli among the whole sample and between groups. **RESULTS:** Preliminary results reveal that, across the sample, time series of participants' neural activation in brain regions implicated in social cognition (e.g., amygdala, vmPFC) display higher ISC (i.e., are more similar to one another) during segments of the documentary with heightened emotional cues relative to less emotional segments. Between-group analyses show that altruists exhibit higher ISC when viewing heightened emotional cues relative to community controls in the same brain regions. Planned permutation testing will be conducted to determine whether groups differ in spatial ISC during these segments.

CONCLUSIONS: These preliminary findings suggest that emotionally evocative social cues elicit shared neural activity in regions involved in social cognition (e.g., amygdala and vmPFC) and that extraordinarily altruistic adults showed greater neural similarity during highly emotional segments compared with community controls. This suggests that trait prosociality may enhance attunement to others' emotions. Overall, these findings provide initial evidence that individual differences in other-orientedness shape neural responses to naturalistic social-emotional information, which may support the formation of social connections and prosocial behavior. **ACKNOWLEDGEMENTS AND FUNDING:** This project was supported by a National Science Foundation (NSF) grant (#1729406) to A.A.M.

P2-C-115 - Providing social support, but not financial support, is associated with younger brain age in mid- to late adulthood

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BACKGROUND AND AIMS:: Social connectedness is a robust predictor of health and longevity. While prior research has primarily focused on the benefits of receiving social support, the neuroprotective potential of providing social support to others remains underexplored. Using a nationally representative sample from the Midlife in the United States (MIDUS) study, we tested whether total monthly hours spent providing instrumental and emotional support to others prospectively predict the brain age estimation gap (BrainAGE), a transdiagnostic biomarker linked to neurodegenerative and psychiatric conditions in mid- to late adulthood. We further compared this association with total monthly financial support provision, a common form of prosocial engagement previously associated with psychological well-being and health. **METHODS:** BrainAGE was estimated from T1-weighted anatomical MRI scans (N = 194; mean age = 55.9 ± 13 years; 105 females) using a machine-learning algorithm trained to predict chronological age from gray and white matter structure (BrainageR v2.0). Hierarchical multiple regression with bootstrapping was employed to assess whether social and financial support provision accounted for variance in BrainAGE and whether observed associations remained robust after adjustment for increasingly stringent controls, including demographics (e.g., age, sex), health conditions (e.g., BMI, chronic illness, depressive symptoms), lifestyle factors (e.g., exercise, smoking, drinking, mental activities), and broader psychosocial contexts (e.g., socioeconomic status, perceived stress, social network size, relationship quality). Social and financial support received were also included to isolate the unique effects of support provision.

RESULTS: Greater social support provision was significantly associated with a lower BrainAGE ($\beta = -.139$ to $-.198$, all P s < .05) (Figure. 1). This association persisted after full covariate adjustment, with the bias-corrected accelerated 95% bootstrapped confidence interval excluding zero in the final model (-2.68 , $-.03$) (Figure. 2). Exploratory analyses further indicated that emotional support more strongly predicted younger brain age than instrumental assistance. By contrast, total monthly financial support provision was not associated with BrainAGE in any model (all P s > .337). **CONCLUSIONS:** Providing social support, but not financial support, may represent a neuroprotective pathway in mid- to late adulthood. Longitudinal research is needed to establish causality and clarify mechanisms, which could inform scalable interventions and policies for healthy aging.

P2-C-116 - What drives impression updating? Distinct social situations differentially update impressions of agreeableness and neuroticism

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BACKGROUND AND AIMS:: Observers update their impressions of social targets when observing targets' behaviors. Previous research has shown that the neural synchrony in the dorsal medial prefrontal cortex (DMPFC) while watching social interactions predicts subsequent alignment in impression updating. Here, we used a reverse-correlation approach to investigate what features of social situations drive impression updating and whether these differ by trait. **METHODS:** Participants (n=29) watched the reality show "The Mole". The Mole is a survival game that elicits diverse types of social interactions, including cooperation, moral dilemmas, betrayal, quarrels, etc. Participants first watched an episode of the show outside the scanner, followed by an additional 40 minutes of the show (from 3 edited episodes) during functional magnetic resonance imaging (fMRI). To measure impression updating, participants rated the 8 main characters on the Big 5 personality items before and after scanning. To identify scenes that drive these updates, we utilized a data-driven "reverse correlation" approach which combines sliding window analysis with Inter-Subject Representational Similarity Analysis (IS-RSA). We conducted IS-RSA between pairwise DMPFC neural synchrony and pairwise similarity in impression updating for every 37.5-second window (2.5-second step) across the entire 40-minute time course. This analysis was used to identify specific scenes where neural synchrony predicted subsequent impression updating. **RESULTS:** Impressions of characters' agreeableness and neuroticism received the largest amount of updating among the Big 5 personality items. The reverse correlation results revealed both common and distinct scenes that contributed to the updating of agreeableness and neuroticism. A content analysis of the video clips showed that the scenes that drove both impressions occurred at the early stages of the story, where the characters discussed the rules of the game. By contrast, the scenes that uniquely drove agreeableness updates happened when characters were facing moral dilemmas and engaging in moral reasoning. The scenes that uniquely drove neuroticism updates happened when characters betrayed others or had a quarrel. Natural Language Processing (NLP) analysis of the dialogue further confirmed the findings. A sentiment analysis result showed that compared to the scenes that drove agreeableness updating, the scenes that drove neuroticism impression updating had more negative words and had a more negative sentiment, suggesting that there were more interpersonal conflicts in these scenes. **CONCLUSIONS:** Our results show that observers preferentially update agreeableness and neuroticism impressions while observing social targets' interpersonal behaviors. Watching scenarios that involve moral dilemmas and moral reasoning tended to update agreeableness impression, as these situations involve targets rationalizing about whether to cooperate or not and talking about self and others' benefits, which can indicate the level of agreeableness of the target(s). Watching scenarios that involve interpersonal conflicts tends to drive neuroticism impression updating, as these scenarios involve targets reacting to negative situations, which can indicate the level of emotional stability of the given targets.

P2-C-117 - Effects of multisession, web-based interpretation training on appraisal of ambiguous social cues and autonomic regulation during social evaluation stress

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BACKGROUND AND AIMS:: Social anxiety is associated with a negativity bias, such that socially ambiguous cues tend to be interpreted as threatening and attention is biased toward threat-related information. Cognitive bias modification for interpretation has been proposed as a potential approach to address such bias. This study employed a multi-session, web-based interpretation training and tested its effects on attentional and perceptual biases to facial emotions, as well as autonomic regulation during social-evaluative distress, indexed by heart rate variability (HRV). **METHODS:** A total of 127 young adults were categorized into high or low social anxiety groups based on self-reported social anxiety scores and were randomly assigned to either the interpretation training or control condition, yielding four groups in a 2 (anxiety: high vs. low) x 2 (condition: training vs. control) design. The training group completed five sessions of web-based interpretation training, learning to associate ambiguous facial expressions with socially favorable labels through corrective feedback. The control group performed a similar task with corrective feedback equally distributed between more favorable and less favorable labels. Training sessions were spaced 1-3 days. Training effects were assessed pre- and post-intervention using a dot-probe task measuring attention bias to facial expressions and a surprise face perception task categorizing surprise faces as positive or negative. Autonomic resilience

was assessed post-intervention during the Trier Social Stress Test (TSST), with HRV indices derived from ECG recordings.

RESULTS: Overall, training increased the selection of socially favorable labels for ambiguous facial expressions (Session $\times$ Condition: $F(4, 476) = 20.52, p < .001$). Although there were no statistically significant group differences in training-dependent changes in attentional bias, the training group showed increased positive interpretations of ambiguous surprise faces following training (Time $\times$ Condition: $F(1, 123) = 6.24, p = .014$). During the TSST, the control group showed a typical stress-related reduction in HRV from baseline, whereas the training group maintained stable levels, resulting in higher HRV during the stress phase (SDNN Time $\times$ Condition: $p = .006$). A similar pattern of preserved autonomic resilience in the training group was observed across RMSSD, NN50, and pNN50. Across tasks, no significant effects involving baseline social anxiety were observed.

CONCLUSIONS: Our findings demonstrate that multisession, web-based interpretation training effectively facilitated tendency to interpret ambiguous facial expressions more positively. Furthermore, participants in the training group showed relatively preserved HRV during social-evaluative stress compared with those in the control group, suggesting that interpretation training is associated with adaptive modulation of physiological stress regulation. However, the absence of training-related changes in attentional bias may indicate that interpretation-focused training exerts its effects primarily at the level of appraisal rather than early attentional processes. This study highlights the potential of accessible, web-based interpretation training to influence physiological processes associated with social anxiety and to promote more adaptive appraisal of socially ambiguous cues.

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P2-E-90 - Is the association between parasympathetic activity and task performance specific to social contexts?

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Accurate recognition of others' emotions is essential for successful social communication. Previous studies have reported that higher levels of parasympathetic nervous activity—either during task performance or as an individual trait—are associated with greater accuracy in recognizing others' emotions. This association has often been interpreted as reflecting enhanced social cognition resulting from increased parasympathetic activity; however, this interpretation has not been directly demonstrated. In contrast, increased parasympathetic activity has been more consistently linked to improvements in executive functioning. Accordingly, the present study aimed to examine whether the facilitative effects of heightened parasympathetic activity are specific to social contexts and task demands. In addition, we investigated whether parasympathetic activity influences the updating of internal models or representations of others' emotional states. Participants completed an emotion inference task and a non-social control task involving hair color judgments. In the emotion inference task, participants were required to judge how happy a presented facial expression appeared. Following each response, feedback was provided, allowing participants to adjust their judgments on subsequent trials. In the hair color judgment task, participants judged how brown the hair color of a presented face appeared and similarly received feedback. Parasympathetic activity was indexed using heart rate variability (HRV), and we examined whether higher parasympathetic activity predicted task performance and the efficiency of internal model updating across trials. At present, data has been collected from 42 participants. Preliminary analyses indicate a general trend whereby greater increases in parasympathetic activity from rest to task performance are associated with better task performance, irrespective of the conditions of the task. Further analyses will examine how parasympathetic activity contributes to the updating of internal models across trials.

P2-E-91 - Impact of feedback on confidence and gaze synchrony during facial pain assessment learning

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BACKGROUND AND AIMS: Accurate pain assessment is essential for effective clinical decision-making. Although prior studies show that clinicians' confidence can increase with training (Topolovec-Vranic et al., 2010; Innab et al., 2022), it remains unclear whether confidence is linked to improved performance of pain assessment, particularly as a function of learning. Eye-tracking

studies show that observers selectively attend to diagnostic facial features when viewing emotional faces compared with neutral faces (Schurgin et al., 2014). Eye-movement synchrony across individuals has been observed to increase under specific socio-cultural or instructional conditions and to be associated with better learning outcomes (Gu et al., 2024). However, it remains unknown whether pain assessment learning, and its improvement through feedback, is accompanied by changes in gaze synchrony across observers. Here, we examined whether confidence and intersubject gaze synchrony track learning and whether associations vary with feedback. **METHODS:** Forty-seven Participants (“observers”) viewed videos of individuals (“targets”) undergoing thermal stimulation at varying intensities. In one task, observers judged whether the person was in pain (Pain/No Pain Judgement Task); in another, they rated pain intensity (Pain Intensity Assessment Task). After each pain rating, participants provided a confidence rating (0 = pure guess, 100 = extremely confident). The Feedback Group (N = 23) received the target’s true rating at the end of each trial, whereas the No-Feedback Group (N = 24) did not. Eye movements were recorded throughout both tasks. Gaze synchrony was quantified as intersubject correlation (ISC) by computing Pearson correlations of participants’ combined horizontal and vertical gaze positions across trials during video viewing. **RESULTS:** In the Pain/No Pain Judgement Task, higher confidence predicted greater accuracy across groups ($B = 0.024$, $p < .001$). For gaze synchrony, the Feedback Group showed significantly higher ISC than the No-Feedback Group (Fisher $z = 0.110$, $p < .001$). In the Pain Intensity Assessment Task, there was no main effect of confidence ($B = 0.019$, $p = .434$), but a significant Group $\times$ Confidence interaction emerged ($B = -0.125$, $p = .011$): higher confidence predicted better accuracy in the Feedback Group ($B = -0.068$, $p = .005$), whereas higher confidence predicted worse accuracy in the No-Feedback Group ($B = 0.096$, $p = .028$). we observed significantly higher ISC in the Feedback Group compared to the No-Feedback Group (Fisher $z = 0.140$, $p < .001$). **CONCLUSIONS:** These findings show that confidence tracks improvements in pain recognition primarily when feedback is available. We also find that feedback enhances gaze synchrony across individuals, likely through improved attentional alignment to pain-relevant facial features. These findings offer important insights and implications for developing effective training protocols to improve pain assessment accuracy. **ACKNOWLEDGEMENTS AND FUNDING:** this work was supported by Center on Compulsive Behaviors (CCB) fellowship to Yili Zhao and NIH intramural grant (ZIA-AT000036) to Lauren Atlas.

P2-E-92 - Beyond the score: Performer expressivity as a conduit for theory of mind and affective response

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OBJECTIVE: Music performance serves as a powerful medium for nonverbal emotional communication, fostering affective resonance and shared understanding through the interplay between a performer’s interpretive vision and a listener’s reception. While AI-generated music can emulate stylistic features, it lacks the intentionality and embodied expression fundamental to human connection. This study investigates how variations in performer expressivity—quantified through expert assessments of visual information combined with machine learning and music information retrieval (MIR) analyses of audio data—influence listeners’ affective, aesthetic, and social-cognitive reactions to music. By examining how performer-driven cues and listener traits jointly shape these responses, the research aims to advance our understanding of how human expressivity fosters emotional connection, aesthetic experience, and social cognition. **METHODS:** A mixed-methods, within-subject experiment will be conducted online with 100 participants. Stimuli consist of three professional audio-visual recordings of Franz Liszt’s *Liebestraum* No. 3, performed by internationally acclaimed pianists selected for their distinct interpretive styles. After viewing each counterbalanced recording, participants will complete the 9-item Geneva Emotional Music Scale (GEMS-9), single-item aesthetic evaluation scales (measuring beauty and pleasure), and both quantitative and qualitative assessments of Theory of Mind (ToM)-like interpretations regarding the performer’s intentions. Baseline measures will capture individual differences in trait empathy (IRI), musical absorption (AIMS), musical training (Gold-MSI), sensitivity to musical reward (BMRQ), and ToM-related affective inference (RMET). Hypotheses and Analysis Plan Acoustic features (e.g., tempo variability, harmonic stability, timbral brightness) will be extracted using *librosa* and *MIRToolbox*. Visual expressivity will be quantified via independent ratings of silent video clips. Quantitative data will be analyzed using Linear Mixed Modeling (LMM) in R, including fixed effects for Performer and listener traits, with random intercepts for participants. Qualitative responses will be analyzed using thematic analysis and compared against extracted acoustic features and visual ratings. H1: Expressive variations between performers will elicit significantly distinct emotional/aesthetic ratings and ToM-like attributions. H2: Performances with greater timing variability, dynamic range, and visual expressivity will be associated with higher emotional engagement and stronger attribution of intention. H3: Individual

differences (empathy, absorption, training) will moderate responses; higher empathy and training will predict richer ToM attributions, while higher absorption will predict stronger emotional responses. **IMPLICATIONS:** This research bridges music cognition, affective neuroscience, and social cognition to reveal how performer cues and listener traits jointly shape the communication of emotion. By integrating behavioral and computational approaches, the project clarifies the mechanisms of shared emotional experience—processes that remain uniquely human despite advances in AI. Practically, findings will inform music pedagogy and may inspire applications in music-based interventions aimed at enhancing empathy and well-being.

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P2-E-93 - Disentangling interpersonal and societal social experiences during the affective processing of words

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BACKGROUND: Our emotional lives consist of social experiences and verbal interactions. Do social experiences grounded in words influence the affective processing of those words? We investigated this using EEG (Electroencephalography). Different from prior studies (Pexman et al., 2023), we proposed that social words are not homogeneous. Specifically, we hypothesized that interpersonal words (gossip), which are grounded in daily experiences, would elicit greater affective responses than societal words (corruption) that most people do not experience firsthand. Non-social words (malfunction) are included as baseline controls. **METHODS:** Twenty-two students participated and data collection is ongoing to reach N=40. Stimuli included 360 words in 9 conditions: 3 word types (interpersonal, societal, non-social) by 3 valence (negative, neutral, positive). First, high- and low-social words were selected from Diveica et al. (2023). Second, high-social words underwent norming (N=30 norming participants) and were further categorized into interpersonal vs. societal words. Third, affective valence was verified, and other word properties (word frequency, length, age of acquisition, arousal, concreteness) were matched between conditions (Gao et al., 2023). In the EEG experiment, words were randomized and presented one word at a time visually. Participants categorized whether each word felt negative, neutral, or positive. **RESULTS:** Accuracy (N=14) was higher for interpersonal than both societal and non-social words in negative conditions (p values < .01). In addition, accuracy was higher for interpersonal than non-social in positive conditions (p < .001). In neutral conditions, accuracy was lower for interpersonal and societal words than non-social words (p < .001, p = .016). In ERPs (N=14, Figure 1), at P200, word type interacted with valence (p = .017). When valence was negative and positive, the P200s tend to be more positive for interpersonal than non-social words. When valence was neutral, the P200s were more positive for non-social than interpersonal words. At N400 and late positive complex (LPC), there were no interactions but main effects of word type (both p < .001). The N400s for interpersonal and societal words were attenuated compared to non-social words (p < .001, p = .035). The LPC for interpersonal words was more positive than both societal and non-social words (p values .001). **CONCLUSIONS:** Behaviorally, interpersonal-societal properties of a word interact with affective valence processing. ERP-wise, words grounded in interpersonal experiences tend to attract more attention for affective processing early on (~200 ms), ease the lexical retrieval of words later (~400 ms), and continue to be processed more in depth later on (after 500 ms). Time-frequency band analysis is ongoing. These preliminary findings tentatively suggest that social words are not uniform, and that how interpersonal a social word is modulates affective processing of the word. **ACKNOWLEDGEMENTS:** The first author and this work are funded by Korean Government Scholarship Study Overseas program.

P2-E-94 - The neural processing of facial emotions relates to moral concerns for care

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BACKGROUND AND AIMS: Moral intuitions are deeply rooted in emotion and feeling. Therefore, variations in moral concern for other people may relate to how the brain processes emotional information. The Care foundation is a key trait that is particularly important at the low end of scoring and can be best conceptualised as a continuum. **METHODS:** Using functional Magnetic Resonance Imaging (fMRI), we analyzed if Moral Foundations Harm/Care scores were associated with differences in neural engagement when processing facial emotions. Fifty participants completed facial emotion tasks that involved either naming the

emotion expressed by the face or judging the intensity of the emotion across separate blocks. Using the Care score from the Moral Foundations Questionnaire as a continuous explanatory variable, we analyzed how whole-brain activity across conditions varied as a function of this moral concern. **RESULTS:** Lower Care scores were associated with greater fMRI signal in the lateral occipital cortex, left amygdala, and brainstem during intensity judgements compared to the relatively simple task of emotion recognition. **CONCLUSIONS:** These findings suggest that people with less concern for Harm/Care depend more on limbic, perceptual, and subcortical systems when the intensity of emotion must be interpreted rather than directly identified. Overall, these findings imply that a moral concern for care and harm for others is connected to distinct neural systems that heavily support emotion processing. Acknowledgments and Funding: We thank the University of Southern California Dornsife Neuroimaging Center for technical support. This study was funded by a grant received from the Templeton World Charity Foundation.

P2-E-95 - Neural alignment in multidimensional representational spaces predicts partner liking during natural conversation

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BACKGROUND AND AIMS:: Successful interpersonal communication often fosters a sense of clicking, a subjective experience central to the formation of social connection. Prior research has suggested that such connection arises from interactive processing mechanisms that enable the emergence of shared representations between conversational partners. However, the neural mechanisms supporting this interpersonal alignment remain poorly understood. In this study, we hypothesize that neural alignment within representational spaces defined by specific conversational features serves as a candidate computational mechanism contributing to social bonding. Specifically, we aim to identify the cortical networks in which inter-brain interactions emerge to support the alignment of conversational representations. **METHODS:** We employed fMRI hyperscanning with 12 participants (6 males / 6 females) in a round-robin design, resulting in 36 unique opposite-sex dyads. The experimental task simulated a naturalistic blind-date scenario consisting of ice-breaking self-introductions, topic-based free conversation, and partner-related quiz solving. Following each type of conversation, participants provided subjective ratings of perceived social connection towards their partners. To model the neural representation of conversational dynamics, we extracted five distinct features—acoustic, linguistic, semantic, self-referential contextual (capturing the speaker's internal states), and interactive contextual (reflecting the partner's inferred mental states and relational dynamics)—from the conversational data. We then performed voxel-wise encoding modeling (VEM) using banded ridge regression, which allowed for optimized regularization for each feature subspace. **RESULTS:** VEM accurately predicted BOLD responses across sensory (auditory) and motor regions as well as higher-order associative networks, including the temporal and parietal cortices, frontal gyri, posterior cingulate cortex (PCC)/precuneus, and medial prefrontal cortex (mPFC). Weight-matrix analysis revealed a hierarchical representational organization, progressing from low-level sensory and motor features to high-level social-cognitive representations. Crucially, inter-individual neural alignment within this representational space significantly explained subjective ratings of social connection and partner liking, suggesting that the extent to which interlocutors share representational manifolds is closely linked to the phenomenological experience of interpersonal rapport. **CONCLUSIONS:** These findings suggest that neural representational alignment plays a key role in supporting human social connection. By linking conversational dynamics to shared neural manifolds across interacting brains, our results provide a computational account of how social bonding may emerge during natural conversation, offering a principled framework for understanding how distinct minds become dynamically coupled through communication. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by the Institute for Basic Science Grant (IBS-R015-D2) and the National Research Foundation of Korea (RS-2024-00348130, RS-2025-02304581).

P2-E-96 - Convergent responses to narrative media: Hierarchy and robustness of physiological audience alignment

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BACKGROUND AND AIMS:: Socially and emotionally evocative narratives drive coupled physiological responses, causing viewers' biological states, from gaze patterns to heart rhythms and skin conductivity, to synchronize with precision. Media content thus acts as an external pacemaker, aligning independent receivers into a shared collective experience. By transitioning to continuous, naturalistic narratives, communication neuroscience (e.g., Falk et al., 2013; Huskey et al., 2020; Schmäzle & Meshi, 2020; Weber et al., 2015) has begun treating the audience as a networked system to investigate how the message's temporal flow aligns processing across multiple receivers. This study explores the mechanisms of audience synchronization by distinguishing between visual attention and autonomic regulation. Using Inter-Subject-Correlation (ISC), we examine how the emotional arcs of a story standardize the evolution of emotional experiences and whether engagement is driven by long-term narrative structure or immediate stimulus intensity. This offers a framework to quantify communicative success based on how effectively a message standardizes audience reception. **METHODS:** 198 university participants were randomly assigned to two conditions (n = 99 each) via iMotions. We collected continuous eye-gaze, pupil size, heart rate, and electrodermal activity during free-viewing of the Pixar film, *Partly Cloudy* (2009), a stimulus chosen for its inherent social nature and its established utility in studying theory-of-mind and emotional processing (Richardson et al., 2018). Drawing on narrative segmentation established by Grady et al. (2022), we utilized the original narrative and a modified version created by swapping the climax and resolution segments to manipulate temporal flow (Fig. 1). Participants also completed assessments of comprehension, attention, entertainment experiences, emotional responses, and narrative engagement. **RESULTS:** The movie prompted highly similar gaze patterns and consistently modulated physiological responses across all groups (Fig. 2). Alignment occurred for both stimulus versions when computed within respective viewing groups. Further analysis revealed that this physiological synchronization is intrinsically tied to narrative structure rather than random fluctuations. Alignment was disrupted by segment reordering but recovered upon chronological realignment (Fig. 3), proving that these responses are driven by specific story events rather than reflecting the random modulations or lingering mood. **CONCLUSIONS:** This study demonstrates that *Partly Cloudy* orchestrates robust physiological ISC across the audience. Restoration of alignment through computational "unscrambling" confirms that these responses are sensitive to narrative chronology and the intended emotional arc, establishing ISC as a theoretical operationalization of communicative success by quantifying the extent to which a message overrides individual idiosyncrasies to standardize audience reception. Beyond this, we propose a total audience response framework, a scalable foundation for integrating physiology with fMRI, EEG, and fNIRS. By demonstrating how physiological synchronization tracks shared social-emotional experiences, this multi-band measurement strategy facilitates a holistic mapping of the social brain. Ultimately, this work positions psychophysiology not merely as a methodological tool, but as a theoretical cornerstone of a comprehensive, integrated communication neuroscience.

P2-E-97 - Brain and behavioral processes in deepfake detection in younger and older adults

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BACKGROUND AND AIMS:: Previous studies suggest that older adults show deficits in detecting suspicious information and heightened vulnerability to online scams. However, it remains unclear whether this difficulty may extend to deepfakes. Deepfake images are AI-generated images that are difficult to detect, in part due to their hyperrealism, a phenomenon where deepfake images are perceived as more real than authentic images. Deepfake detection may depend on the anterior insula (aINS), which has been implicated in processing salient and untrustworthy cues, with evidence of reduced aINS sensitivity in aging. This study examined behavioral and neural mechanisms underlying deepfake image detection in a sample of young and older adults. We expected a stronger hyperrealism effect (i.e., greater perception of deepfake face images as real than real face images), with this effect particularly pronounced in older compared to young adults. We further expected a reduction in aINS activity for deepfake than real face images as the neural correlate of hyperrealism, in both young and older adults. **METHODS:** Sixty-two young (M = 23.58 yrs., SD = 4.75, 18-37 yrs; 51.61% female) and 94 older (M = 72.12 yrs., SD = 7.21 yrs., 60-89 years; 53.19% female) participants viewed 40 real and 40 deepfake images while undergoing functional magnetic resonance imaging. Participants

evaluated each image on a 10-point rating scale ranging from 100% real to 100% fake. All deepfake images were created using StyleGAN2. **RESULTS:** A mixed-effects model assessed the effects of image type (deepfake vs. real), age (young vs. older), and their interaction on participants' veracity ratings, with a random intercept to capture inter-individual variability across trials. This regression showed a significant interaction between image type and age ($B = .87$, $SE = .10$, $t(11610) = 8.25$, $p < .001$). Follow-up analyses revealed that deepfake images were perceived as more real than real images by all participants (hyperrealism; $B = .25$, $SE = .08$, $t(11610) = 3.08$, $p < .05$), with this bias more pronounced in older than young adults ($B = 1.11$, $SE = .07$, $p < .001$). Further, bilateral aINS showed reduced responses to deepfake compared to real images, in both young and older adults. **CONCLUSIONS:** Behavioral results support hyperrealism, with this effect more pronounced in older than younger adults; highlighting vulnerability to online deception and the need for age-tailored interventions. Further, bilateral aINS showed reduced sensitivity to deepfake relative to real images independent of age. This pattern of findings suggests that while muted aINS response to deepfakes underlies difficulties in deepfake detection, additional factors account for older adults' heightened vulnerability.

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P2-F-98 - Sensory pathways to affiliation: Warmth and deeper pressure increase neural processing of close others

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BACKGROUND AND AIMS: Social touch is an underappreciated regulatory behavior that contributes to social bonding. Apart from gentle stroking, scant research has addressed the influence of sensory inputs on affiliative experience. Animal models suggest temperature and pressure are primary sensory components promoting affiliation, and human research indicates warm, deeper pressure—such as during hand holding and hugging—enhances affiliative experience. Though neural mechanisms linking warmth, pressure, and social context are poorly understood, evidence suggests they may share a pathway involving the ventral striatum (VS) and middle-insula (MI). The current study investigates whether warmer, deeper pressure touch enhances affective and neural processing of affiliative experience. We hypothesize that combined warmth and pressure produces greater effects on affiliative emotions and neural activity than either alone. **METHODS:** During a functional magnetic resonance imaging (fMRI) scan, 66 participants viewed provided images of close others and matched strangers under four conditions combining temperature (warm/neutral heating pack on dorsal forearm) and pressure (deep/light weighted blanket over body). Post-scan ratings assessing affiliative feelings were analyzed using repeated measures ANOVA, with follow-up pairwise comparisons between warm deeper pressure and each other condition. For fMRI data, parameter estimates for VS and MI regions of interest were combined into one mask (Fig. 1b). Repeated measures ANOVAs examined temperature x pressure x social target interactions, followed by separate analyses for each social target and post-hoc comparisons. Paired t-tests compared Fisher z-transformed functional connectivity between warm deeper pressure and all other conditions. **RESULTS:** Warm deeper pressure increased affiliative emotions compared to all other conditions (all $ps < .001$, Fig. 1a). For VS-MI activity, a temperature x pressure x social target interaction emerged ($p = .045$). For close others, a marginal temperature x pressure interaction ($p = .051$) revealed warm deeper pressure increased neural activity compared to all other conditions (ps range from .036 to $< .001$, Fig. 1c). No interaction emerged for strangers ($p = .438$, Fig. 1c). VS-MI connectivity was higher during warm deeper pressure to close others versus neutral lighter pressure to strangers ($p = .002$, Fig. 1d). **CONCLUSIONS:** Results suggest a novel sensory-affective pathway underlying the processes that support social bonding. Combined warmth and pressure—features of social behaviors like hugging and cuddling—selectively enhanced VS and MI activity to close others, but not strangers, and increased affiliative emotions compared to warmth or pressure alone. Additionally, warm pressure increased VS-MI connectivity compared to neutral light pressure, suggesting stronger coupling of these interoceptive and salience-related regions. Future research should further investigate how touch-induced processes relate to the link between affiliative experience and well-being. Warm pressure interventions may hold promise for individuals with clinical conditions involving sensory and/or social difficulties.

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P2-F-99 - Cerebellar contributions to social learning in typically developing and autistic adolescence

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Background & Aims Adolescence is a critical stage for social development with increasing social demands. Adolescents generally show less optimal social learning strategies than adults (Rosenblau et al., 2018), and autistic teens face greater social challenges (Picci et al., 2014), which have been tied to altered predictive abilities. Autistic adolescents typically show reduced prediction errors (PEs), the discrepancy between predicted and actual feedback, compared to nonautistic peers (Rosenblau et al., 2020), with variability related to autistic traits and behavioral rigidity (Cahalan et al., in revision). The cerebellar posterior lobe (CPL), implicated in generating predictions and encoding PEs (Ramnani, 2006), is closely connected to the medial prefrontal cortex (mPFC) (Stoodley, 2016) and may play a key role in social learning across neurotypes. In this pre-registered study (<https://osf.io/5qs6d>), we investigate cerebellar contributions to social learning in autistic (AUT) and nonautistic (N-AUT) adolescents and hypothesize that PE encoding differs between groups. Methods 30 AUT and 32 N-AUT adolescents aged between 9 and 17 were recruited and had usable cerebellar data. Participants inferred a peer's preferences for 60 food and activity items and received feedback on the peer's actual preferences after each trial. PEs are the difference between ratings and feedback, with learning defined as PE reductions over time. fMRI data was preprocessed with fMRIPrep (Esteban et al., 2019), and the cerebellum was processed with SUIT (Diedrichsen, 2006). PEs were used as parametric regressors in a linear mixed effects model in FSL's FEAT to investigate cerebellar activity modulation. Results Analysis of behavioral data from a preliminary sample of 13 AUT and 14 N-AUT adolescents showed a reduction of PE over time and a trend of Group-by-Time interaction, suggesting emerging differences in social learning between groups (Fig. 1A). The region of interest (CPL: Lobule VI, Crus I, Crus II) analysis revealed that PEs scaled with activity in CPL, with lower magnitudes in AUT relative to N-AUT adolescents, suggesting differential CPL involvement in PE encoding (Fig. 1B). Exploratory analysis with a dimensional measure of autistic traits, the Social Responsiveness Scale (SRS-2), revealed a Group-by-SRS interaction: PE-dependent CPL activity negatively associated with SRS in the N-AUT group, whereas this association was diminished in the AUT group (Fig. 1C). This indicated group-specific relationships between autistic traits and CPL involvement in PE encoding. Whole-brain analysis with a larger sample (22 AUT, 15 N-AUT) revealed that PEs scaled with activity in the mPFC in both groups (Fig. 1D). Further analyses are planned to analyze PE-scaled CPL activity and functional connectivity between the CPL and mPFC during social learning in the full sample. Conclusions Our study highlights the role of CPL and mPFC in encoding PEs during social learning in adolescence. Analysis with the full sample can clarify the role of the cerebellum and of fronto-cerebellar connectivity in social learning of adolescents. Our study elucidates brain development, highlights adolescence as a sensitive period for cerebellar and fronto-cerebellar connectivity in social learning, and informs our understanding of predictive and cerebellar frameworks in autism symptomatology. Acknowledgements & Funding This study is supported by the National Institute of Mental Health (R01MH116252).

P2-F-100 - Computational signatures of craving social connection across symptom dimensions

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BACKGROUND AND AIMS:: Globally, loneliness and social isolation have become an epidemic and a significant challenge for public health. Social craving, or the desire to connect with others, is a core feature of loneliness that motivates social activity seeking to relieve the distress associated with a perceived lack of social connection. Understanding mechanisms related to social craving is thus crucial for clarifying its connection to mental health symptoms such as depression and anxiety. Identifying how social motivation computations are disrupted across symptom dimensions may inform early interventions and targeted approaches for psychiatric disorders. **METHODS:** Here, we developed a novel paradigm and computational model to characterize the computational basis of momentary social craving. In a pilot sample (N=76) and pre-registered, representative sample of U.S. adults (N=316), participants completed a social cue-induced craving task in which they learned to make choices

that either placed them in social cue-rich environments or not and rated their momentary social craving. They also completed a battery of self-report measures assessing various psychiatric symptoms, including depression and social anxiety. We tested how symptom dimensions varied as a function of social craving computations. Preliminary neuroimaging data will also be examined, with data collection currently ongoing. **RESULTS:** Using a dynamic computational model of decision-making and subjective craving with model comparison, we found that social craving arises algorithmically as a weighted combination of bottom-up signals (i.e., cue-reactivity) and top-down signals (i.e., prior expectations). Furthermore, we found that depression and anxiety symptoms had opposing effects on social craving computations. The impact of current social expectations on future social craving was reduced in depression ($b = -.26$, $t = -2.00$, $p = .048$; controlling for social anxiety) but elevated in people with higher social anxiety ($b = .30$, $t = 2.31$, $p = .026$; controlling for depression). Preliminary neuroimaging data will also be examined (data collection ongoing). **CONCLUSIONS:** These results provide a computational account of momentary social craving, demonstrating how craving emerges from expectations about social environments. Building on this framework, symptom associations reveal differential computational phenotypes that may explain why unresolved loneliness is a major risk factor for the onset and persistence of psychiatric symptoms. These findings position social craving as a transdiagnostic marker bridging mental health dimensions and underscore the potential of computational psychiatry to inform targeted, personalized interventions.

P2-F-101 - Neural mechanisms of fairness and financial exploitation risk across the adult lifespan

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BACKGROUND AND AIMS: Unfair treatment in economic exchanges reliably elicits strong behavioral and neural responses. In the Ultimatum Game (UG), unfair offers are rejected more often than fair offers and are associated with greater activation in the anterior cingulate cortex (ACC; Sanfey et al., 2003). However, it is unclear how these responses are influenced by individual differences in age, vulnerability to financial exploitation, emotional intelligence (EI), and affect. Older adults are especially vulnerable to financial exploitation (Peterson et al., 2014), yet little is known about the neurocognitive mechanisms linking this vulnerability to fairness-related decision making, EI, and affect. To address this gap, the current preregistered study (<https://osf.io/9ezhy>) aims to examine (1) how vulnerability to financial exploitation is related to the acceptance of unfair offers, (2) neural activation and connectivity related to fairness, and (3) how these phenomena are modulated by age, EI, and affect.

METHODS Participants ($N = 275$; ages 21-80) completed the UG as the receiver during fMRI scanning with two potential partners: a stranger and a computer. Offers were either fair or unfair, and participants chose to accept or reject each offer. Behavioral measures included rejection rates across fairness levels and partner type. Individual differences were assessed using the Trait Emotional Intelligence Questionnaire (TEI), the Financial Exploitation Vulnerability Scale (FEVS), and the Positive and Negative Affect Schedule (PANAS). Preregistered fMRI analyses focus on unfair > fair contrasts in social > nonsocial contexts. **RESULTS** Preliminary preregistered analyses show that unfair offers are rejected more frequently than fair offers. Older age, higher EI, and greater positive affect were associated with lower financial exploitation vulnerability. Early neural findings indicate that older adults show reduced ventrolateral prefrontal cortex (vlPFC) activation to unfair offers from human relative to computer partners, along with increased executive control network–ventromedial prefrontal cortex connectivity when evaluating fair offers. Additional analyses reveal that unfair offers recruit regions including the medial temporal gyrus (MTG) and bilateral vlPFC, and individuals exhibiting larger increases in negative affect from pre- to post-UG showed stronger engagement of these regions. **CONCLUSIONS:** This study characterizes behavioral and neural mechanisms underlying fairness processing and financial exploitation vulnerability across adulthood. Findings suggest that older adults may differentially recruit control and valuation systems depending on social and affective context. The results also highlight neural activation and connectivity patterns linked to exploitation risk and their modulation by age, EI, and affect. These insights advance models of social decision making and may inform efforts to protect

vulnerable adults from financial harm.**ACKNOWLEDGEMENTS AND FUNDING:** This work is funded by the National Institute on Aging (NIH R01-AG067011).

P2-F-102 - A rational analysis of growth mindset

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BACKGROUND AND AIMS: A fundamental question in psychology is how individuals adapt to the reward structure of their environment. While research often focuses on static or volatile contexts, many real-world scenarios—such as skill acquisition—are malleable, where sustained effort incrementally enhances future payoffs. Growth mindset theory addresses behavior in such environments, proposing that believing abilities can improve fosters persistence, challenge-seeking, and achievement. Despite its empirical influence, the theory remains primarily descriptive, lacking a specification of the underlying cognitive processes and the boundary conditions under which mindset effects should or should not be expected. This study presents a normative, mechanistic account by formalizing mindset-driven behaviors as rational responses to inferred environmental malleability. We further examine how incentive structures accommodate or eliminate observable mindset effects. **METHODS:** We formalize malleable environments as Markov Decision Processes where agents face a trade-off between Cultivation (potential improvement of state, no immediate reward) and Harvesting (only instant payoff based on current state). Agents infer malleability via Bayesian updating and follow an optimal stopping policy: cultivate till the optimal switch point, then exclusively harvest. Growth- and fixed-mindset agents differ solely in their optimistic versus pessimistic priors regarding malleability. We designed two tasks: Persistence Task: Agents make sequential cultivate-harvest decisions. Goal Selection Task: On each trial agents choose between Easy and Challenging goals (the former has higher reward baseline but lower growth rate), followed by cultivate-harvest decision. We simulated the performance of two mindset agents in two tasks, varying environmental factors—malleability (probability of improving state through cultivation), growth rate and baseline of reward, and time horizon—to evaluate behavior (persistence or challenge-seeking ratio), belief accuracy, and cumulative reward. **RESULTS:** Under baseline condition, a robust mindset effect emerged. Compared to fixed-mindset agents, growth-mindset agents exhibited greater persistence and challenge-seeking, updated their beliefs more accurately, and achieved higher cumulative rewards. Notably, growth-mindset advantages persisted even when both agents started with equally biased priors, suggesting that performance gains stem from a willingness to engage rather than prior accuracy. Crucially, mindset effects were modulated by environmental factors. When lack of incentive (low reward growth rate), under time pressure (short horizon), or tempted by instant gratification (high baseline reward), agents of both mindsets converged on a harvesting-only policy. In these contexts, mindset differences were eliminated as harvesting became the rational strategy. **CONCLUSIONS:** Our model provides a mechanistic account of mindset effects, demonstrating how they emerge from rational inference but vanish under specific environmental constraints. Theoretically, this framework bridges the gap between motivational psychology and formal decision theory; practically, it clarifies the boundary conditions for mindset interventions, suggesting that the environment must support growth for mindset effects to manifest. **ACKNOWLEDGEMENTS AND FUNDING:** We thank Tom Griffiths and Bonan Zhao for their comments on the proposed model. No external funding was received for this work.

P2-F-103 - The impact of temporal discounting on precommitment decisions to avoid future self-control costs

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BACKGROUND AND AIMS: Theoretical accounts have proposed that delay discounting may be related to prospective self-control strategies such as precommitment. We previously demonstrated that a precommitment-based willingness-to-pay task can be employed to behaviorally measure the subjective cost of self-control. Here, we test whether discount rates are associated with differences in the cost of self-control. **METHODS:** Healthy dieters (n = 81) completed a precommitment task. They first completed a 'bidding' phase, during which they were presented with images of snack foods (selected from a pre-task ratings) that varied on level of temptation (low, medium, high), quantity (small, medium, large), and exposure times (1–60 mins). During this phase, they reported the maximum amount (from a study endowment) they would be willing to pay to avoid the food on that

trial. One trial was randomly chosen for realization. Participants could increase their chances of avoiding future exposure to the food by bidding a higher amount on each trial. They also completed a battery of cognitive tasks, including an intertemporal choice (ITC) task for which they made binary choices between pairs of sooner, smaller and larger, later monetary rewards. To quantify delay discounting, we used two measures: (1) the logit-transformed choice probability for the immediate option, and (2) the discount parameter from a hyperbolic discounting model fit. We analyzed the bids from the precommitment task to calculate subject-specific bid means, and performed multiple linear regression of the bids with temptation, quantity, time, and trial number as the regressors for each participant. We also simulated the relation of bids with the rewards and self-control cost associated with foods via an expected-value model of precommitment. **RESULTS:** We found that task variables modulated self-control costs, with a significant and positive effect of temptation, quantity, and time on bids; the effect of temptation was the strongest. Furthermore, the cost of self-control was related to discounting behavior, with a significant positive correlation between (logit-transformed) choice probabilities and average bids across the subjects ($r = 0.28$, $p_{uncorrected} = 0.014$, $df = 78$). **CONCLUSION:** Our results indicate that a greater preference for immediate rewards is associated with higher precommitment (larger bids) to avoiding situations that require self-control. Our results also show that this precommitment decisions, presumably reflecting the estimated cost of self-control, are higher when the rewards are highly tempting or of larger quantity, or when the self-control is to be exercised for longer. In ongoing work, we are using cost of control models to gain mechanistic insights into how delay discounting and other cognitive factors might affect this form of control. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by an NIH R01 grant.

P2-F-104 - Quantifying connection: Neural correlates of willingness-to-pay for social interaction

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BACKGROUND AND AIMS:: Social rewards foster shared social experiences and promote social connection. Yet, few studies have attempted to quantify the desire to engage in social relative to non-social experiences, or the ways in which reward related circuits and those supporting social cognition support social valuation. This pre-registered study (<https://doi.org/10.17605/OSF.IO/6RJY9>) aims to address these gaps by characterizing the neural mechanisms supporting the willingness-to-pay (WTP) for social experiences. **METHODS:** Thirty-two healthy adults completed the study to date (target pre-registered $N = 50$). Prior to undergoing fMRI, participants identified 10 preferred social and 10 non-social activities and also completed self-report assessments of social support and social function. Inside the scanner, participants first completed a monetary reward task to earn an endowment (\$45). Subsequently, they completed a WTP task involving 100 binary choices between their self-selected social and non-social activities at varying price points (\$0.10–\$0.50). Participants used their endowment to 'purchase' hypothetical experiences. fMRI data were processed via fMRIPrep and analyzed using FSL. We performed pre-registered ROI analyses (ventral striatum [VS]; vmPFC) and exploratory whole-brain analyses (cluster-corrected $z > 3.1$, FWE $p < .05$). **RESULTS:** Participants spent significantly more in total of their earnings on social experiences ($M = 16.6$, $SD = 5.4$) than on nonsocial experiences ($M = 9.4$, $SD = 4.2$; $t(31) = 2.68$, $p < .01$, Cohen's $d = 1.49$) and also chose the social option significantly more often than expected by chance ($t(31) = 4.46$, $p < .001$, Cohen's $d = 0.78$). These findings replicate patterns observed in previous work from our group (Ruiz et al., under review). While pre-registered ROI analyses in the ventral striatum revealed no significant differences in activation when choosing to purchase social relative to non-social experiences ($p > 0.3$), we do note a trend in the vmPFC toward a stronger response when choosing social options ($p = 0.076$). Strikingly, preliminary parametric whole-brain parametric analyses reveal a cluster within the vmPFC ($x, y, z = -4.5, 35.5, -14.5$) that tracked the trial-by-trial price differential between social and non-social experiences specifically when choosing to purchase social experiences. Future analyses will examine: 1) relations between individual differences in social support and social function and BOLD responses in the ventral striatum and vmPFC during social choice, and 2) how ventral striatal and vmPFC connectivity (generalized PPI; MacLaren et al., 2012) with the default mode network vary when participants choose social relative to non-social experiences. **CONCLUSIONS:** Our preliminary results suggest that people place high value on the opportunity for future social interaction, often willing to forgo monetary reward for hypothetical experiences. Further, the ventromedial prefrontal cortex, but not the ventral striatum, encodes the relative value of preferred social experiences. Our findings may help enhance

our understanding of disorders partially characterized by atypical social valuation processes such as depression, autism, and substance use disorders.

P2-F-105 - Neuroforecasting aggregate demand for vehicles

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BACKGROUND AND AIMS:: Growing evidence suggests that neural activity in regions associated with affect, integration, and motivation not only predict individuals' own consumer preferences but can also forecast aggregate market behavior. However, less is known about how price information may play a role. In this study, we sought to examine whether activity in these same regions could predict individuals' desire to purchase new vehicles, as well as to forecast market demand for those vehicles. **METHODS.** Participants (n = 38) who were interested in purchasing a vehicle in the next three years completed a rating task while undergoing Functional Magnetic Resonance Imaging (fMRI). During each task trial, participants viewed a vehicle with its make and model name (2 s), fuel type (2 s), MSRP (2 s), and then rated their interest in learning more about the vehicle (4 s) as well as their desire to purchase it (4 s). We conducted Volume of Interest analyses in the Nucleus Accumbens (NAcc), Medial Prefrontal Cortex (MPFC), and the Anterior Insula (AIns) to predict both desire to know more about and purchase each vehicle. To forecast aggregate market demand, we used Signal-to-noise ratio (SNR) in each of these VOIs normalized across participants. **RESULTS.** At the individual level, greater NAcc and MPFC responses to vehicles predicted wanting to purchase those vehicles (ps < .05). The sample's NAcc responses to vehicles before price information also forecast average aggregate market demand (p < .05), above and beyond price, which instead was negatively associated with demand (p < .01). Furthermore, this relationship held after accounting for participants' self-reported desire to know more about the vehicles. **CONCLUSIONS:** Together, these findings demonstrate that neural activity adds value to conventional self-report measures for forecasting consumer demand for vehicles. These findings also highlight the importance of temporal specificity, suggesting that early, pre-price signals in the NAcc combined with price information can track real-world market behavior. **ACKNOWLEDGMENTS AND FUNDING:** We thank Toyota Research Institute for funding this work.

P2-H-107 - Testing neural emotion discrimination as a mechanism linking socioeconomic disadvantage to anxiety symptoms in youth

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OBJECTIVE: Socioeconomic disadvantage (SESD), including low household income, neighborhood safety, lack of insurance access, and low financial resources, has been associated with increased anxiety symptoms in youth. Emotion discrimination, the ability to accurately detect and differentiate emotional cues, is a critical component of adaptive social functioning and has emerged as a potential mechanism linking SESD to anxiety. Separate literature has found differences in brain functioning among individuals with anxiety in brain networks that process emotion cues, such as the ventral and dorsal attention, frontoparietal, and default mode networks. It is therefore possible that neural emotion discrimination may be a mechanism linking SESD and anxiety. **HYPOTHESES:** We hypothesize that neural emotion discrimination moderates the relationship between SESD and childhood anxiety, such that children with low emotion discrimination abilities may be particularly vulnerable to anxiety in economically disadvantaged contexts. Specifically, we predict that moderation effects exist for emotion discrimination in specific brain networks associated with anxiety (frontoparietal, dorsal attention, ventral attention, and default mode). **METHODS:** Data will be analyzed from 620 child participants (ages 5-15 years, 60% male) drawn from the Healthy Brain Network Biobank who successfully underwent fMRI during emotional movie watching. Features were coded from the video stimuli to estimate cortical selectivity to each of 5 emotions (anger, happiness, sadness, fear, and excitement) versus semantic (such as human body parts, animacy, mobility, and social engagement) or low-level (such as pitch and loudness, or brightness) content. Features were then entered into a multivariate regularized regression model. The resulting betas for each feature at each vertex were used as subject-level selectivity maps for further analysis. Neural emotion discrimination (mean absolute difference between negative emotion selectivity maps) will be computed from these maps as an average across the whole brain and each network associated

with anxiety (frontoparietal, dorsal attention, ventral attention, and default mode). Socioeconomic disadvantage (SESD) was assessed using two measures: financial disadvantage (The Financial Support Questionnaire (FSQ)) and neighborhood safety (PhenX Toolkit Neighborhood Safety measure). Generalized, social, and total anxiety symptom scores were measured using the Screen for Child Anxiety Related Disorders (SCARED). **ANALYSIS PLAN:** We will test if neural emotion discrimination moderates the association between SESD and anxiety using linear regression with age, sex, collection site, and average motion during fMRI included as covariates and neural emotion discrimination added as a main effect and interaction term (SESD*discrimination). These analyses will be repeated for each whole brain and network-level neural emotion discrimination. Preliminary whole-brain analyses (n=537) revealed that household income was significantly associated with increased anxiety ($p = 0.003$). However, we found no evidence for brain-average neural emotion discrimination as a moderator ($p > 0.130$). **IMPLICATIONS:** These analyses can further our knowledge regarding the neurobiological basis of anxiety. Identifying network-specific neural mechanisms that moderate the relationship between socioeconomic disadvantage and childhood anxiety could inform targeted interventions for at-risk youth.

P2-H-106 - Functional connectivity of audiovisual narrative speech perception in neurotypical development and autism spectrum disorder

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BACKGROUND AND AIMS: Individuals with autism spectrum disorder (ASD) show reduced multisensory enhancement during audiovisual (AV) speech perception, which may contribute to difficulties in social communication. AV speech perception depends on interactions within a distributed neural network, and atypical functional connectivity (FC) within this network may underlie altered multisensory processing in ASD. In this study, we investigated FC patterns associated with AV narrative speech perception in typically developing (TD) individuals and individuals with ASD across a wide age range (7–63 years). We examined group differences in FC, age-related changes in FC, and their interaction. **Methods** One hundred participants (36 ASD, 64 TD) viewed a continuous narrative presented in auditory-alone, visual-alone, synchronous audiovisual, and asynchronous audiovisual conditions during functional magnetic resonance imaging. Functional connectivity was assessed across 132 regions using the CONN toolbox. We first characterized audiovisual gain (AV-A) in TD adults (N = 44). We then compared age-matched subsets of ASD and TD participants (32 per group; 7–49 years) to assess group differences and developmental trajectories. Finally, we examined associations between autism symptom severity and FC patterns related to the audiovisual condition and audiovisual gain. **Results** In TD adults, audiovisual gain was associated with increased functional connectivity between superior temporal and occipital regions in both hemispheres. No significant group differences were observed in FC during the audiovisual condition or in audiovisual gain. However, a significant Diagnosis × Age interaction was identified, involving connectivity among several regions, including the left insula and bilateral opercular and parietal cortices. No significant associations were found between autism symptom severity and FC measures related to the audiovisual condition or audiovisual gain. **Conclusions** Using a naturalistic speech perception paradigm, our findings indicate that audiovisual narrative processing in neurotypical development engages coordinated interactions among auditory, visual, semantic, and other higher-order cortical regions. Although overall group differences in functional connectivity were not observed, age-related analyses suggest that the maturation of multisensory integration networks follows distinct developmental trajectories in ASD and TD individuals. As one of the first studies to examine functional connectivity during naturalistic audiovisual speech perception across a broad age range, this work underscores the importance of developmental context in understanding multisensory processing in autism spectrum disorder. **Acknowledgments and Funding** Participant recruitment, phenotyping, and neuroimaging/neurophysiology at the University of Rochester were conducted through the UR Intellectual and Developmental Disabilities Research Center (UR-IDDRC; NICHD P50 HD103536 – to JFF). Neuroimaging and phenotyping at the Albert Einstein College of Medicine collaboration site were conducted through the Rose F. Kennedy Intellectual and Developmental Disabilities Research Center (RFK-IDDRC; NICHD U54 HD090260 – to SM). Additional support was provided by a pilot grant from the Harry T. Mangurian Jr. Foundation (to LR, JF, and SM).

P2-H-108 - Inter-subject similarity of neural representations of non-phobic animals in phobic and non-phobic individuals

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BACKGROUND: For 4 - 9% of the population, specific animals induce clinically significant levels of fear that is out of proportion with the danger posed (Eaton et. al, 2018). The most widely supported form of treatment, exposure therapy, has high rates of attrition due to the aversive nature of conscious exposure to fear or panic-inducing stimuli. However, using multi-voxel neuro-reinforcement, it is possible to reduce physiological responses to these stimuli via “unconscious exposure” (Koizumi et al., 2016). This is done by creating a between-subjects decoder in which fMRI data in the ventral temporal area from non-phobic participants who do not experience significant levels of fear while viewing images of a targeted representation (e.g. cockroaches) is hyperaligned into a shared representational space. While we would expect differences in amygdala reactivity between control and phobic participants, it is unclear whether there would be a significant difference in reactivity in low-level visual processing areas like the Ventral Temporal (VT) area. Therefore, this study explores the representational similarity between phobic and non-phobic participants while viewing (non-phobic) animals in the VT area. **METHODS:** Thus, the present study explored the similarity in neural representation of non-phobic animal stimuli. 28 participants (mean age (s.d) = 26.5 (9.40)) with at least two specific animal phobias were enrolled for treatment. 31 healthy control participants’ data were used in constructing the decoder. In the decoder construction task, non-phobic participants viewed images of animals, human faces, and assorted objects. Phobic participants saw the same categories of images, excluding their feared animals. **RESULTS:** Inter-subject representational similarity analysis was used to test for no large difference in subject pairwise similarities between groups using a linear mixed effects, crossed random effects design. The linear mixed effects model revealed no evidence for group differences in inter-subject representational similarity. Relative to the control-control reference group, similarity did not differ for phobic-control dyads ($\beta = -0.01$, $SE = 0.02$, $z = -0.55$, $p = .586$) or phobic-phobic dyads ($\beta = -0.01$, $SE = 0.02$, $z = -0.59$, $p = .558$). There was a significant positive intercept ($\beta = 0.62$, $SE = 0.01$, $z = 45.93$, $p < .001$), indicating reliable similarity across dyads. **CONCLUSIONS:** These results suggest that there is no difference in the neural signatures of non-phobic animals between phobic and non-phobic individuals. This provides further support for the efficacy of neuro-reinforcement in the treatment of specific animal phobias. **ACKNOWLEDGEMENTS AND FUNDING:** H.L. and M.G.C. received financial support from the US National Institute of Mental Health (R61MH113772). H.L. received additional support from Templeton World Charity Foundation (RA537-01). M.K. was supported by AMED under grant number JP18dm0307008. V.T-D. received financial support from the Fonds de Recherche du Québec-Santé (FRQS) and the Fondation de l’Institut Universitaire en Santé Mentale de Montréal. This work was (partially) supported by Innovative Science and Technology for Security grant number JPJ004596, ATLA, Japan.

P2-H-109 - The impact of alcohol on brain response in social context: An ERP hyperscanning study

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BACKGROUND AND AIMS: Alcohol's integration into social life is an enduring tradition, serving roles in social enhancement and coping throughout history. Yet, our understanding of how alcohol influences brain responses in social contexts remains limited. In this study, we combined experimental alcohol administration with an EEG hyperscanning paradigm to investigate how alcohol affects the evaluation of self- and other-linked performance during a cooperative gambling task. **METHODS:** 128 healthy young adult drinkers participated in a study exploring alcohol's impact on social cognition. On the day of the experimental sessions, friend dyads were invited to participate in a social beverage administration session, with either an alcoholic beverage (peak BAC 0.08%) or a non-alcoholic control beverage. Participants were assigned to complete the procedures in the company of either their own friend (Friend Condition) or the friend of another participant (Stranger Condition). Following beverage administration, dyads engaged in a cooperative gambling task. The task involved alternating roles of player and observer, aiming to maximize team earnings by selecting values associated with potential wins and losses. EEG was recorded throughout the task to capture brain responses from both the player and the observer. Evoked brain potentials to task feedback, or the Feedback-Effect (FE), during the task were measured as an index of performance monitoring. **RESULTS:** Our findings indicated a significant

correlation in FEs between players and observers, $b=.194$, $p=.0312$, indicating the interconnected nature of human cognition within social contexts. Findings further revealed alcohol effects that emerged specifically in the social domain, with alcohol intoxication significantly reducing the magnitude of FEs among observers paired with a stranger, $b=.935$, $p=.0165$. In contrast, alcohol's impact on FEs was non-significant among observers paired with their friends, $b=.216$, $p=.6991$, pointing to unique capabilities for alcohol in blunting social-evaluative processes in unfamiliar social settings. **CONCLUSIONS:** By employing experimental alcohol-administration methods and an EEG hyperscanning paradigm, this study elucidates the impact of alcohol on brain responses in social contexts. Further, results of this study not only shed light on how alcohol might interface with neural processes linked with performance evaluation in social context but appear to further bolster the view of the brain as an organ steeped in not only the intra- but also the inter-personal domain. **ACKNOWLEDGEMENT AND FUNDING:** This work was supported by National Institutes of Health Grant Nos. R01AA025969 and R01AA028488 (to CEF), R01AG026308 (to KDF), and F31AA28990 (to DK). The funders of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report. We thank students and staff of the Alcohol Research Laboratory for their help with this project.

P2-H-110 - Temporally resolved deep learning reveals autism symptom-specific neural signatures during naturalistic social experiences

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BACKGROUND AND AIMS: Autism Spectrum Disorder (ASD) is characterized by context-dependent deficits in social communication, yet neuroimaging research predominantly relies on static resting-state fMRI, which fails to capture dynamic neural responses to social-emotional challenges. We hypothesize that ASD neural signatures are not uniform "traits" but transient responses triggered by specific emotional contexts. We developed DualPathNet, an interpretable deep learning framework that decomposes fMRI signals into stable trait-level patterns (GlobalMean path) and dynamic event-level responses (Attention-based Multiple Instance Learning path). We aimed to determine precisely when and under what emotional conditions autistic brains diverge from neurotypical trajectories. **METHODS:** We utilized fMRI data from the Child Mind Institute Healthy Brain Network (CMI-HBN) dataset ($N = 555$; 274 ASD, 281 TD). Participants underwent resting-state scanning and two naturalistic viewing paradigms: The Present (a cohesive social narrative) and Despicable Me (a volatile emotional clip). To test the impact of emotional context, Despicable Me was further segmented into three distinct narrative units: Positive (Seg 1), Emotional Transition (Seg 2), and Neutral (Seg 3). DualPathNet classified participants using ROI-level time series (Brainnetome Atlas) and identified discriminative spatiotemporal features using Integrated Gradients (IG). We aligned these features with semantic content using an automated AI annotation pipeline (CLIP/BLIP-2) (Figure 1). **RESULTS:** Classification performance was strictly modulated by social-emotional context. DualPathNet achieved 73.14% accuracy for The Present and 70.06% for the Emotional Transition segment (Segment 2) of Despicable Me. Both high-demand conditions significantly outperformed resting-state fMRI (63.32%) and the positive/neutral segments of Despicable Me (~61%), confirming that diagnostic neural signals are maximally exposed during emotional challenges (Figure 2). Spatially, Despicable Me Segment 2 revealed a specific limbic-fronto-saliency signature (amygdala, insula), distinct from the mentalizing-related features found in The Present. Temporally, classification in both movies was driven by specific high-saliency events (e.g., social rejection or empathy). Multivariate PLSC analysis confirmed that neural activity during these specific events—but not global trait signals—significantly predicted core symptom severity (SRS/RBS scores; $p < 0.05$) (Figure 3-4). **CONCLUSIONS:** Our results demonstrate that ASD neural signatures are dynamic and context-dependent, emerging selectively during high-demand moments of emotion regulation and social transition. By validating that performance peaks specifically during "Emotional Transition" (DM Seg 2) and "Empathy" (The Present), we challenge the utility of static resting-state markers. This framework provides interpretable, biologically grounded biomarkers that link specific environmental demands to clinical phenotypes. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by the National Institutes of Health (NIH) grant R01MH137325. Data were provided by the Child Mind Institute Healthy Brain Network (CMI-HBN).

P2-H-111 - Pain processing and neurocircuitry in people living with and without HIV

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BACKGROUND: Among people living with HIV (PWH), pain processing and anhedonia are highly prevalent and independently linked to adverse health consequences. Further, pain processing is often impaired in PWH, with chronic pain being a common symptom. Therefore, here we sought to study how pain perception and processing modulate disease perceptions and depression in PWH: a) clinically and b) through a novel neuroimaging paradigm. **METHODS:** Participants were PWH and people without HIV. All underwent psychiatric diagnostic interviews and completed self-reported measures assessing depression, anhedonia, pain perception, general health perception, and pain interference. An fMRI study using an electric pain paradigm (ePain) task measured neural processing of pain. Participants observed cues, received painful or non-painful electric stimuli, and rated subjective pain. As part of the ePain procedure, we measured pain detection thresholds and pain tolerance thresholds. Imaging used multi-echo EPI (2.4mm; TR=1s; TE=11.0/29.5/47.9ms; 2× GRAPPA; 5× MB) at 3T to maximize BOLD sensitivity across the brain. During the task, shape cues were followed by painful or non-painful shocks (15 each), then pain ratings. Analyses adjusted for age/sex/site at cluster-corrected $Z > 2.3$, $p < 0.05$ via FSL-FEAT. **RESULTS:** This study is ongoing. Findings to date include the following: Clinical aim: The clinical cohort included 89 PWH (age: 44 ± 15 years; 45% female). Positive correlations were found between pain perception and depression measures (PCS and MADRS: $r = .56$, $p < .001$; PCS and BDI: $r = .64$, $p < .001$; PEG and MADRS: $r = .48$, $p < .001$; PEG and BDI: $r = .47$, $p < .001$). Additionally, self-reported pain was significantly correlated with health and pain perceptions (PCS and SF-1: $r = .04$, $p < .001$; PCS and SF-8: $r = .05$, $p < .001$; PEG and SF-1: $r = .16$, $p < .001$; PEG and SF-8: $r = .28$, $p < .001$). Neuroimaging aim: The neuroimaging cohort included 34 adults (6 without HIV). Across participants, depression severity correlated with activation in the left posterior insula and somatosensory cortex during painful vs. non-painful shocks. ANOVA revealed a main effect of depression in the dACC during both painful vs. non-painful cues and pain ratings. A depression and HIV interaction was also observed in the dACC during pain ratings. **Conclusions:** Clinically, we found strong correlations between depression and pain scales, supporting the notion that depression alters pain perception. Additionally, depression severity was negatively correlated with anticipatory anhedonia, such that higher depression scores were associated with an increased inability to look forward to or be motivated by future pleasurable events. Lastly, greater self-reported pain catastrophizing reported worse general health and higher pain interference in their life, highlighting the relationship between affective processes and adverse health outcomes. Within our neuroimaging study, depression was associated with the dACC during both anticipation before and reflection after painful stimuli. This region was further linked to an interaction between depression and HIV status, suggesting comorbidity particularly impacts this key region of the pain and salience circuitry. **Funding:** R01MH120601, R01MH131207, R01DA054885, RM1DA055437, R01MH128878, R01MH126821, and R01DA059527 (VG)

P2-H-112 - Loneliness disrupts neural and behavioral responses in updating prior judgments based on social feedback

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BACKGROUND AND AIMS: Loneliness is characterized by feelings of social disconnection, yet how it shapes the processes through which people engage with and learn from social information remains poorly understood. It is unclear whether loneliness alters how individuals incorporate others' judgments when updating their own evaluations. Here, we take a granular approach that views judgment updating as a multi-stage process that requires (1) recognizing a discrepancy between oneself and others, (2) integrating others' judgments, and (3) updating one's own judgments to match that of others. We also consider motivation as a theoretically relevant construct given its importance in social information processing and judgment making. Across two studies (Study 1a and 1b), we found that loneliness is associated with heightened motivation to align with others but reduced behavioral updating following social feedback. An ongoing neuroimaging study (Study 2) investigates the neural

mechanisms underlying these differences. **METHODS:** This project consists of two completed studies (Studies 1a and 1b) and ongoing data collection (Study 2). In all studies, self-reported loneliness is obtained using a validated measure before completing experimental tasks. In Studies 1a (N = 53) and 1b (N = 120), participants completed a facial typicality paradigm, in which they first viewed facial stimuli and made initial ratings on how typical they found each face to be, then they viewed social feedback that conflicted with their prior judgments, and finally had the chance to update their judgments. Study 2 (expected N = ~120) extends this work by obtaining brain activity using functional near-infrared spectroscopy (fNIRS) during the dot estimation paradigm. Participants are shown visualizations of dots and asked to first estimate the number of dots on the screen. They then receive social feedback that is experimentally manipulated to vary in the degree of self-other discrepancy and have the chance to update and finalize their estimations. Participants also self-reported their motivation to align with others in both paradigms. **ANALYTIC PLAN:** Across Studies 1a and 1b, loneliness was associated with heightened self-reported motivation to align with others (1a: $\beta = .42$, $p = .002$; 1b: $\beta = .17$, $p = .07$). However, loneliness was linked to reduced tendency to update one's initial judgment to match others (1a: $\beta = -.25$, $p = .10$; 1b: $\beta = -.20$, $p = .02$), even though motivation itself was positively related to updating judgements (1a: $\beta = .30$, $p = .05$; 1b: $\beta = .53$, $p < .001$). In Study 2, we will further test how loneliness moderates stage-specific behavioral and neural patterns in regions implicated in value integration (ventromedial prefrontal cortex), mentalizing (dorsomedial prefrontal cortex and temporoparietal junction), and value updating (ventromedial and dorsolateral prefrontal cortex). **CONCLUSIONS:** The present work suggests that difficulties associated with loneliness may arise not from an absence of social motivation, but from disruptions in the processes through which social feedback is used to adjust judgments accordingly. By taking a granular approach, this work elucidates the stages at which social judgment updating diverges in loneliness even when individuals are motivated to stay connected. More broadly, this work emphasizes the importance of distinguishing between social motivation and its behavioral and neural implementation when studying social disconnection.

P2-H-113 - Context-dependent mood dynamics: How major losses and agency modulate emotional reactivity

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BACKGROUND AND AIMS:: Mood is a dynamic construct influenced by external reinforcement events, yet how contextual factors modulate momentary mood fluctuations is not fully understood. Recent work suggests mood reflects an accumulation of reward prediction errors, but the mood-outcome relationship may not be fixed. Factors like major affective experiences and sense of agency could dynamically reshape emotional reactivity. We developed a novel Free Operant Multi-Armed Bandit paradigm to investigate how context modulates mood dynamics, specifically examining: (1) how substantial negative and positive events alter subsequent mood-outcome coupling, and (2) how agency (choice vs. no-choice conditions) differentially influences mood responses following wins and losses. **METHODS:** 99 participants completed a free-operant task where on each trial they could freely press two slot machines with different reward probabilities during 8-second windows. Participants provided momentary mood ratings every 1-2 trials. The task included: (1) regular choice trials, (2) non-agency trials where outcomes were passively observed (yoked to regular trials to match sequence of events and reinforcement), and (3) two Wheel of Fortune spins yielding either a large gain or large loss (~\$7; converted at 1/3 rate for payment). We conducted two primary analyses. First, to examine whether substantial affective events alter subsequent emotional reactivity, we computed within-subject Spearman correlations between net gold outcome and mood change across trials, testing whether these relationships differed across task phases (before wheel, after big win, after big loss). Second, to examine agency effects, we compared mood changes between matched regular-yoked trial pairs, testing whether agency modulated mood responses and whether this effect differed for positive versus negative net gold outcomes. **RESULTS:** Two key findings emerged. First, following major losses (but not wins), we observed significant disruption of the mood-outcome relationship: the correlation between outcomes and mood changes was substantially reduced after experiencing large losses ($p=0.40$) compared to baseline ($p=0.52$, $\beta=0.11$, $p<0.001$) or post-win phases ($p=0.50$, $\beta=0.10$, $p<0.001$). This "loss-induced emotional decoupling" demonstrates that major negative events dynamically alter how subsequent outcomes influence mood, reducing emotional reactivity. Second, agency effects on mood were outcome-specific ($\chi^2(1)=13.46$, $p<0.001$): lack of agency (yoked trials) significantly reduced positive mood responses following wins ($\beta=-2.76$, $p<0.001$), but had minimal impact on mood responses following losses ($\beta=0.39$, $p=.537$). This asymmetry suggests that agency amplifies the hedonic impact of positive outcomes while negative outcomes affect mood similarly regardless of personal control. **CONCLUSIONS.** These findings demonstrate that mood dynamics are fundamentally context-dependent, shaped by both recent

major affective experiences and sense of agency. This framework has important implications for understanding affective dysregulation in depression and problem gambling, where altered emotional reactivity and agency may contribute to maladaptive patterns. Future fMRI studies will investigate the neural mechanisms underlying these dynamic mood processes and their potential relevance to clinical populations. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by the Chen Postdoctoral Scholar Innovator Grant at Caltech.

Poster Session 3

Saturday, April 18 14:30-16:00

P3-A-114 - Differential emotional persistence: Facial EMG of corrugator supercilii and zygomaticus major activity during brief emotional episodes shows lower negative inertia and greater positive inertia

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BACKGROUND AND AIMS: Emotional inertia refers to the tendency of emotions to persist over time (Suls et al., 1998). The Evaluative Space Model conceptualizes emotional responses in terms of a negative affect system and a positive affect system (Cacioppo et al., 2011).

It remains unclear, however, whether emotional inertia varies across negative and positive emotions. The psychological perspective posits that negative emotions have greater levels of emotional inertia than neutral and positive emotions (Grafton & MacLeod, 2014; Nesse & Ellsworth, 2009). In contrast, the physiological perspective posits that neutral emotions have greater levels of emotional inertia than negative and positive emotions (Fletcher, 1942; Gibson, 1900). No prior studies have directly compared emotional inertia of negative and positive emotional responses. **METHODS:** The present study tested whether emotional inertia differs between negative, positive, and neutral emotions. 156 participants viewed 45 unpleasant, 45 pleasant, and 15 neutral pictures for eight seconds each. Facial electromyography (EMG) of the corrugator supercilii (CS) and zygomaticus major (ZM) muscle was measured concurrently, serving as measures of negative and positive affect systems, respectively. Regression models estimated mean activation levels and inertia, operationalized as autocorrelations across the time course of each trial. Negative inertia was computed as the difference between negative and neutral CS inertia. Positive inertia was computed as the difference between positive and neutral ZM inertia. **RESULTS:** Mean CS activity differed significantly across trial types, with greater activity for negative than neutral and positive trials and greater activity for neutral than positive trials. Mean ZM activity was higher for positive trials than for negative and neutral trials (Table 1). CS inertia was highest in neutral, intermediate in negative, and lowest in positive trials. In contrast, ZM inertia was highest for positive, intermediate for negative, and lowest for neutral trials (Table 2). Using neutral trials as reference, CS negative trial inertia was lower, whereas ZM positive trial inertia was higher ($p < 0.001$). **CONCLUSIONS:** CS activity differentiated between all three emotional states, while ZM activity only differentiated positive from negative and neutral states, supporting previous literature. With respect to inertia, CS results supported the physiological perspective of greater neutral than negative inertia. ZM results supported the psychological perspective of greater positive than neutral inertia. One possible explanation is lower levels of voluntary control over the CS than the ZM: The CS is bilaterally innervated with a longer innervation pathway, while the ZM is contralaterally innervated with a shorter innervation pathway (Hwang et al., 2017; Rinn, 1984). Thus, reactivity of the CS to emotional stimuli may be more closely tied to homeostatic regulation, whereas reactivity of the ZM may be more responsive to cognitive and emotional influences. Our finding that emotional inertia differs between emotions may suggest separate negative and positive affect systems in terms of both neural substrates and psychological functioning. These findings have implications for models of affective dynamics and emotion regulation. **ACKNOWLEDGEMENTS AND FUNDING:** This research was supported by Swiss National Science Foundation Fellowship PA00P1-139593 awarded to SDK.

P3-A-120 - The relationship between amygdala function and facial emotion recognition across the lifespan: Insights from the adult aging brain connectome cohort

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BACKGROUND & AIMS: Facial emotion recognition (ER) is relevant to social functions and mental health, engaging a network that includes the amygdala and fusiform face complex (FFC). ER of some emotions (e.g., fear) shows age-related decline while others (e.g., happiness) are often spared (Ruffman et al., 2008). The decline may be due to changes in sensory and/or

emotion/arousal systems with age. Using a large lifespan dataset (Adult Aging Brain Connectome), we aimed to determine the role of sensory and emotion/arousal-related neural circuitry in ER across the adult lifespan. We examined mean fMRI activity during the “FACENAME” task and accuracy on the Penn Emotion Recognition Task (ER-40). We hypothesized that changes in ER with age are more strongly related to changes in amygdala vs. FFC function. Since fear and anger processing rely heavily on amygdala circuitry, we predicted a relationship between age-related changes in amygdala function and changes in recognition of these emotions. **METHODS:** Cross-sectional fMRI/behavioral data (N=1192, aged 36-89; 56.8% female) were analyzed. During the ER-40 task, participants were presented with faces depicting one of five emotion categories (happiness, sadness, fear, anger, no emotion) and asked to identify the category. Accuracy was computed using Hu, an unbiased hit rate estimate (Wagner, 1993). In the FACENAME task, participants viewed neutral faces during paired-associate learning. We examined mean amygdala and FFC activity, partialling out variance from all other regions. The amygdala was segmented using Freesurfer and FFC using the Glasser et al. (2016) multi-modal parcellation. Sex and study site were included as covariates. **RESULTS:** ER accuracy of happiness was higher than fear/anger followed by sadness/no-emotion ($F[4,4406.5]=21.25$, $p<.0001$). Accuracy declined with age ($F[11099]=112.53$, $p<.0001$), with some emotions declining more ($F[4,4406.6]=18.09$, $p<.0001$). Pair-wise slope comparisons showed that sadness ER declined most (compared to all other emotions, all $p's<.05$), followed by fear/anger/no-emotion (compared to happiness, all $p's<.0001$) and happiness (compared to all other emotions, all $p's<.0001$). Bilateral amygdala activity was positively related to accuracy (Left: $F[1, 1136.1]=30.47$, $p<.0001$; Right: $F[1,1137]=20.48$, $p<.0001$). We found an emotion-type by left amygdala interaction on accuracy ($F[4, 4554.6] = 2.52$, $p<.05$). Pair-wise slope comparisons showed an amygdala-accuracy relationship that was stronger for sadness vs. happiness ($p<.05$). No relationships were observed for FFC. Age and emotion-type did not interact with amygdala activity when predicting accuracy; however, we found an age x amygdala interaction for fear ($F[1,1096] = 4.00$, $p<.05$), but not anger ($F[1,1097]=.21$, $p=.65$), revealing a stronger positive relationship between left amygdala activity and ER with age. **CONCLUSIONS:** We found age effects for ER, with negative emotions (sadness, fear, anger) declining faster than positive emotions (happiness). Amygdala activity was positively related to ER accuracy, and age-related effects were observed for fear, suggesting more reliance on the amygdala with age for detecting emotional states. Since no relationships were observed with FFC, facial ER may depend more on emotion/arousal related circuitry than high-level visual processing. **ACKNOWLEDGEMENTS AND FUNDING:** U19AG073585, U01AG052564-01, McDonnell Center for Neuroscience at Washington University in St. Louis

P3-A-121 - Relations of schizotypal personality traits and affective and non-affective negative emotion regulation goals in real world settings

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BACKGROUND AND AIMS:: Schizotypal personality traits manifest on a continuum of nonclinical to clinical levels in the general population. Subtypes of these traits emerge within the positive (e.g., aberrant perceptions, interpersonal suspiciousness), negative (e.g., social isolation and withdrawal), and disorganized (e.g., odd and eccentric behaviors) dimensions of psychosis-spectrum psychopathology. Individuals higher in schizotypal personality traits show atypical emotion regulation, such as greater reliance on maladaptive regulation strategies like suppression. They may also demonstrate reduced motivation to engage in goal-directed behavior. Ineffective emotion regulation combined with decreased goal motivation may contribute to intensified negative affect, leading to worse clinical outcomes and functional impairment. Further, while laboratory studies have evaluated the relation between schizotypal traits and the frequency of emotion regulation goals, limited research has differentiated types of emotion goals or used ecological momentary assessment (EMA) to consider real-world context. As a result, differentiating emotion goals by type could identify motivations for emotion regulation across schizotypal traits. Thus, our study examined the relations between schizotypal personality traits across multiple subtypes and the frequency that participants report affective (emotion-focused) goals for regulating negative emotions relative to non-affective (outcome-focused) goals. **METHODS:** We conducted an online survey with undergraduate students, which included the Five Factor Schizotypal Inventory (Edmundson et al., 2011) and Coolidge Axis Two Inventory-Schizotypal Personality Disorder (Coolidge & Merwin, 1992). Oversampling for individuals elevated in schizotypal personality traits, we recruited participants (N = 148) for the ecological momentary assessment portion of the study, during which participants received three surveys per day for one week via a smartphone app. These surveys measured various aspects of positive and negative emotional experiences, including type of emotion regulation

strategy use and goals for using strategies. **RESULTS:** Participants completed an average of 16.68 out of 21 total surveys related to negative emotion regulation goals. Linear regression analyses revealed that higher levels of each subtype of schizotypal traits were associated with a small significant lower proportion of affective goals relative to non-affective goals for regulating negative emotions ($|0.17| < \beta_s < |0.26|$, $p_s < 0.05$). **CONCLUSIONS:** This study may provide insight into motivational processes underlying attempts to regulate negative emotions in real-world settings in individuals with heightened schizotypal traits. Our research may inform the advancement of interventions outside the laboratory environment that aim to enhance motivation for emotion regulation. **ACKNOWLEDGEMENTS & FUNDING:** This study was supported by the University of California, Irvine Undergraduate Research Opportunities Program and the National Institute Of Mental Health of the National Institutes of Health under Award Number F31MH138063 (M. E. Snyder). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

P3-A-122 - When collective events align the mind: Multimodal neural and behavioral synchrony across an election cycle

Feng-Chun Chou¹, Ting-Ruei Wang¹, Pin-Hao Chen¹

¹ National Taiwan University

BACKGROUND AND AIMS:: Human experience is inherently social, emerging not only from individual minds but also from shared social contexts. Prior work has shown that collective exposure to high-salience political events, such as elections, can promote synchronized experiences and behavioral reactions across individuals. However, examining how inter-individual synchrony develops and changes over time requires comparisons before, during, and after the event, an approach that has been largely absent from prior work. Taking the Taiwan election as the target event, the present study employs a three-phase longitudinal movie-viewing paradigm to investigate inter-individual synchrony across two modalities at three distinct phases of the election cycle. **METHODS:** Two independent cohorts of participants were recruited for a longitudinal naturalistic movie-viewing paradigm. One cohort ($N = 31$) completed the experiment while undergoing fMRI scanning, and the other cohort ($N = 42$) completed the same viewing task outside of the scanner with simultaneous facial expression recording. Participants in both cohorts viewed an identical set of 18 short films depicting diverse topics. Each cohort participated in three experimental sessions corresponding to three distinct phases of the election cycle: within three months prior to the election (T1), within three months following the election (T2), and more than three months after the election (T3). To test whether the election event drove inter-individual synchrony, intersubject correlation (ISC) analyses were conducted separately for each phase, with quadratic effects modeled to examine whether the election was associated with increased intersubject synchrony in neural responses and facial expressions. **RESULTS:** Our findings revealed a robust quadratic effect of election timing on intersubject synchrony at the neural level. Synchrony within the default mode network followed a pronounced inverted-U trajectory across T1, T2, and T3, peaking during the period of heightened electoral salience (T2) and declining thereafter (T3), as indicated by a significant quadratic effect, $t = 2.62$, $p = .009$. A comparable inverted-U pattern was also observed in the limbic network, with a significant quadratic trend reflected by $t = 2.05$, $p = .04$, indicating transient alignment of neural responses during the election period. Correspondingly, at the behavioral level, intersubject synchrony in facial expressions also exhibited an inverted-U trajectory across election phases, $t = 3.02$, $p < .001$, consistent with the temporal dynamics observed in neural synchrony. **CONCLUSIONS:** Our findings demonstrate that high-salience political events dynamically modulate neural and behavioral synchrony in a time-dependent, nonlinear manner. A longitudinal naturalistic design reveals that synchrony tracks event salience rather than stable or cumulative effects, while a multimodal approach captures complementary dynamics across neural and behavioral levels. Together, this study provides a temporally resolved account of how collective, salient social events can shape shared emotional experiences and their behavioral reactions. **ACKNOWLEDGEMENTS AND FUNDING:** This research is supported by funding from the NSTC (NSTC 111-2628-H-002-004 and 111-2423-H-002-008-MY4 to P.-H.A. Chen) and NTU (NTU-115L7846 to P.-H.A. Chen) in Taiwan.

P3-A-123 - When feeling and showing diverge: Dissociable neural predictors of emotional valence

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BACKGROUND AND AIMS: Emotional valence is a core dimension of affective experience and is commonly assessed using either subjective self-reports or observable facial expressions. Although these measures are often treated as interchangeable indicators of emotional state, it remains unclear whether they rely on shared or dissociable neural mechanisms during naturalistic video-viewing experiences. As such, the present study tested whether whole-brain neural patterns that predict self-reported valence also predict facially derived valence index, and whether neural predictors of each modality generalize across diverse video stimuli. **METHODS:** Seventy participants viewed 18 short videos during fMRI scanning. For each video, we obtained time-resolved measures of subjective valence from self-reports and a facial-derived valence index computed based on facial expressions. Using LASSO principal components regression (LASSO-PCR) with K-fold cross-validation, we trained separate whole-brain decoding models to predict each valence measure and evaluated their predictive performance and generalizability across videos. **RESULTS:** Cross-validated prediction was reliable for a subset of videos for both subjective and facial-derived valence, with Pearson correlations ranging from 0.20 to 0.60. However, neural predictors of subjective and expressive valence showed only partial overlap. Brain models predicting self-reported valence were more consistent across videos, with predictive weights reliably observed in the orbitofrontal cortex (OFC) and dorsolateral prefrontal cortex (DLPFC). In contrast, models for facial-derived valence varied substantially across videos, suggesting stronger context dependence. **CONCLUSIONS:** These findings demonstrate a functional dissociation between neural patterns that predict subjective emotional feelings and those that predict expressive behaviors. Subjective valence appears to be associated with relatively stable neural patterns that generalize across contexts, whereas facially expressed valence is more strongly shaped by moment-to-moment external cues and attention, which influence what people express. Together, the results highlight the importance of distinguishing between internal experiences and external expressions when modeling affective processes in the brain. **ACKNOWLEDGEMENTS AND FUNDING:** This research was supported by funding from the NSTC (NSTC 111-2628-H-002-004 and 111-2423-H-002-008-MY4 to P.-H.A. Chen) and NTU (NTU-115L7846 to P.-H.A. Chen) in Taiwan. Keywords for Topics: Basic Affect/Emotion, Emotion Perception/Communication. Keywords for Topics: Basic Affect/Emotion, Emotion Perception/Communication Keywords for Methods: fMRI, Naturalistic methods

P3-A-124 - Feasibility of estimating complex emotion cue encoding from movie-watching fMRI in children

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OBJECTIVE: Understanding how the human brain encodes meaning from complex, naturalistic stimuli is critical for understanding real-world social behavior. Traditional encoding studies have relied on static images or auditory narratives, which offer limited insight into real-world emotional and contextual processing due to their reduced ecological validity. Movies provide a richer emotion stimulus that better approximates everyday cognition by presenting dynamic visual and auditory social stimuli than either static images or isolated narratives alone. Encoding models pioneered in adult populations provide a framework for linking high- and low-level stimulus features to neural responses. Applying this framework to emotion and social cue encoding allows us to characterize individual differences in emotion meaning representations, accounting for correlated low-level and semantic stimulus features. Given how commonly social dysfunctions, such as social anxiety disorder, emerge early in development, characterizing emotional cue encoding during early development may inform clinical interventions. In the present study, we test the feasibility of applying an encoding model framework to characterize emotion cue encoding in a densely sampled longitudinal pediatric fMRI movie dataset by adapting established adult pipelines for use in young children. **HYPOTHESIS:** We hypothesize that encoding models applied to movie-derived emotion cues will generalize to pediatric fMRI data, yielding above-chance prediction of voxelwise BOLD responses in held-out data. **METHODS:** Participants: Data collection is ongoing through the Preschool Affective NeuroDevelopment Algorithm Study (PANDA). Children view five 5–10-minute movie clips (e.g., Moana, Frozen) during a 40-minute scanning session, with up to 12 sessions across one year. We aim to enroll 50 children aged 3–4 years; data from 5 participants will be presented. MRI Acquisition and Preprocessing: fMRI data were processed using the oceanproc pipeline (Sylvester et al., 2023; Nielsen et al., 2024). Structural processing was performed with FreeSurfer, preprocessing with fMRIPrep, and post-processing with XCPD

to regress motion and noise. **FEATURE LABELING:** Movie emotion and social cue features were labeled using the externally validated EmoCodes (Camacho et al., 2022). Features were manually coded, converted to time series, normalized, and convolved with a double-gamma hemodynamic response function. **ENCODING MODELS:** Ridge, lasso, and elastic net regularized regression models were used to estimate encoding weights linking emotion and social cue features (X) to voxelwise BOLD responses (y). **Analysis plans:** Model fits will be evaluated using train-test splits and prediction metrics including Pearson correlation (r) and coefficient of determination (R^2). Differences in mean held-out performance across voxels will be used to compare ridge, lasso, and elastic net models, with the best-performing model defined as the one yielding the highest mean held-out r (primary metric), with R^2 reported as a secondary metric. **GENERAL IMPLICATIONS:** This proof-of-concept study establishes the feasibility of emotion cue encoding analyses in pediatric fMRI movie data. Successful implementation of encoding models for emotion and social cues provides a methodological foundation for future work examining the neurodevelopment of affective and social meaning in early childhood.

P3-A-125 - Memory reactivation facilitates episodic item intrusions without altering subjective affect

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BACKGROUND AND AIMS: Studies on memory reconsolidation propose that reactivating a consolidated memory renders it temporarily labile, allowing new information to be integrated before restabilization (Nader et al., 2000; Nadel et al., 2012). In humans, reactivation of a consolidated neutral memory for a list of objects prior to new learning enables episodic memory updating, such that newly learned objects are incorporated into the original memory and intrude on that memory at later retrieval (Hupbach et al., 2007). While these reconsolidation-based intrusions on neutral episodic memory are well established, episodic memories often include affective information, raising the question of whether introducing new affective information during reconsolidation can similarly intrude on consolidated memories. The present study tested whether introducing negatively valenced items during reconsolidation of neutral memory influences (1) the intrusion of new items and (2) subjective feelings associated with the originally neutral memories. **METHODS:** Participants completed a three-session experiment across multiple days. In Session 1, participants encoded 120 neutral images and rated each for pleasantness. After a 24-hour delay, participants returned for Session 2 and were randomly assigned to one of three groups: Reactivation, No-Reactivation, or Reactivation-5min. Memory reactivation was induced using contextual and verbal reminders prior to new encoding. All participants then viewed and rated a mixed set of neutral and negative images. In Session 3, memory was assessed using an old/new recognition task including images from Session 1, images introduced in Session 2, and novel images, alongside repeated pleasantness ratings. Item-level memory intrusions were indexed by intrusion errors, defined as misattributing Session 2 images to Session 1. Changes in pleasantness ratings for Session 1 images between Session 1 and Session 3 served as a measure of affective intrusions. Data were analyzed using Bayesian hierarchical models. **RESULTS:** Item-level memory intrusions were analyzed using a Bayesian binomial mixed-effects model. Reactivation significantly increased intrusions relative to no reactivation ($\beta = -1.38$, 95% credible interval $[-2.26, -0.53]$), corresponding to an ~75% reduction in intrusion probability in the no-reactivation group. Participants tested five minutes after new learning showed fewer intrusions than the reactivation group ($\beta = -3.36$, 95% credible interval $[-4.39, -2.37]$), consistent with higher accuracy at a shorter delay. Changes in subjective affect were assessed using Bayesian mixed-effects models on pleasantness ratings for reactivated neutral items. No reliable group differences were observed, and model-based contrasts against zero showed no significant affective change within any group. **CONCLUSIONS:** Memory reactivation facilitated intrusion of newly learned items into memory for previously encoded neutral images, consistent with prior work. In contrast, introducing negatively valenced material during reconsolidation did not produce corresponding intrusions in subjective pleasantness ratings. This dissociation suggests that item-level episodic recognition and affective evaluation differ in their susceptibility to intrusion during reconsolidation. **ACKNOWLEDGEMENTS AND FUNDING:** This research was conducted in the Department of Psychology at Harvard University under the supervision of Dr. Elizabeth A. Phelps.

P3-A-126 - Beyond trigger sounds: Exploring aversiveness processing in misophonia

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BACKGROUND AND AIMS: Everyday sounds can be mildly unpleasant or disturbing, but in misophonia, certain otherwise innocuous sounds, called triggers (e.g., chewing or sniffing), evoke intense emotional distress. Emerging evidence suggests that individuals with misophonia also exhibit heightened behavioral and physiological responses to non-triggering stimuli (Andermane et al., 2023; Hansen, 2023; O'Reilly et al., 2025). **METHODS:** Functional MRI data were acquired from 40 adults with misophonia, as defined by Duke-Vanderbilt Misophonia Screening Questionnaire, and 26 control participants matched on age, biological sex, handedness, and stimulus presentation. Participants completed three scanning sessions, each corresponding to a single modality: auditory (sounds only), visual (silent videos), and auditory mental imagery. Within each session, trigger, aversive, and non-aversive stimuli were presented in blocks of two (imagery) or three (auditory or visual). Participants rated each block on either their level of distress (misophonia group) or the antisociality of the stimuli (control group). Images were de-identified with PyDeface and preprocessed using the fMRIPrep v25.1.4 pipeline. At the participant level, whole-brain voxel-wise general linear model analyses were conducted to estimate the neural activations in response to trigger, aversive, and non-aversive stimuli collapsed across the modalities. Group differences in processing of aversive compared to non-aversive stimuli were examined within the a priori defined regions of interest associated with audiovisual valence processing (Kim et al., 2017). **RESULTS:** Compared with controls, participants with misophonia showed greater activation in the right inferior frontal junction (IFJ) during processing of non-triggering aversive versus non-aversive stimuli, at a threshold of $p < .05$. **CONCLUSIONS:** This preliminary evidence suggests that misophonia is associated with altered neural valence representation. Our results favor a generalized sensory sensitivity account over a solely trigger-specific account of misophonia. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by a grant from the Misophonia Research Fund.

P3-A-127 - Nostalgia for food reveals socioemotional regulation of homeostatic neural pathways

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BACKGROUND AND AIMS: There is a need to better understand how social, autobiographical, and emotional influences on the perception of food are related to the 'objective' neural response to nutrients. Food is biologically, culturally, and socially salient, as evident in nostalgia for food. We investigate the competition of top-down hedonic information—the nostalgic value of food—with bottom-up satiety signals in shaping subjective and neural representations of food. **METHODS:** We combined an oral ingestion protocol of glucose vs. a calorie-free sham to manipulate blood glucose levels, with individual-centred nostalgia elicitation from images during fMRI. Participants, in a fasted state, arrived for two morning sessions, one week apart. In a session, they either consumed a 50g glucose (to induce satiety) or a sweetness-matched sham solution before entering the scanner. Inside the scanner, they viewed and evaluated food images on nostalgic value, perceived healthiness, and desire to eat (i.e., craving) in a rapid-presentation event-related design. We built an idiographic-nomothetic approach to construct the stimuli, which produced a calorie-diverse, visually standardized, population-specific food image set. To manipulate the developmental exposure to food items, the study cohort had 40 participants from two culturally distinct groups—Indians and Americans.

ANTICIPATED RESULTS: We expect neural response to food calories (glucose vs sham) in the hypothalamus will be modulated both by bottom-up satiety signals (from the brainstem) and top-down perceptions of cultural exposure and personal subjective value (from cortico-limbic structures). Functional connectivity to the hypothalamus will change as a function of satiety. In satiety, nostalgia-involved midline brain regions, implicated in self-reflection, autobiographical memory, and reward processing, will be more strongly coupled with hypothalamic activity, and items craved will be more likely to be highly nostalgically valuable. In hunger, homeostasis regulatory mechanisms will be more involved, such that the caloric value of the food will influence the craving response. Neural population activity evoked by craving will be more similar to representations of nostalgic value in a satiated state, and to representations of caloric information in a hungry state. **CONCLUSIONS:** Nostalgia can override satiety-hunger signals in the hypothalamus to cue item-specific cravings, most potently when unfasted. We show that top-down regulation of homeostasis and food craving by social, autobiographical, and emotional neural processes varies with the body's metabolic needs.

P3-A-128 - Updating social memories through touch: Handholding reduces long-term painfulness

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BACKGROUND Handholding is a potent form of social support known to alleviate physical pain, suggesting its potential to mitigate social pain as well.^{1, 2} While previous research found that handholding doesn't immediately reduce social pain, but rather diminishes it over time, the mechanism behind this delay remains unclear.³ Handholding may reduce social pain over time in part through mechanisms related to memory updating. Prior work has shown that memories can be modified when reactivated and then exposed to new stimuli.⁴ Introducing handholding following the reactivation of an autobiographical memory offers an opportunity to adaptively utilize memory updating to alleviate social pain. **Aims** We predict that handholding following the reactivation of socially painful memories will reduce the pain linked to memories and result in greater neural activation pattern changes in the hippocampus over time as compared to memories relived alone. **Methods** 50 subjects, age 18+ years, who were in long-term relationships, were recruited from the Los Angeles area. They completed an online survey describing 6 socially painful autobiographical memories, which were randomly assigned to the handholding or control conditions. Alone within an fMRI scanner, subjects first activated all memories by viewing their memory descriptions on a screen while providing pain ratings on a scale from 0-10 after each recollection (R1). After reactivating all memories, they repeated the task, this time while either holding their partner's hand or a squeeze ball (control). Subjects returned to the lab a week later to relive all memories and rate the pain associated with each (R2). Voxel-wise activation patterns were extracted from the hippocampus for all memories at Recall 1 and 2. Representational dissimilarity matrices (RDMs) were constructed by computing pairwise dissimilarities between activation patterns at each recall using spearman rho distance (Fig.1). **Results** A linear mixed effects model analyzing the time by condition (hand-holding vs. squeeze ball) interaction (controlling for differences in the emotional intensity of memories at baseline) revealed a significant effect, $b=-0.54$, $t(2216)=-4.02$, $p<.001$, $CI=[-0.78,-0.27]$, such that handholding led to significantly greater decreases in the self-reported painfulness of social memories (Fig.2). Condition differences in spearman rho values were assessed using a paired samples t-test. Neural dissimilarity in the left hippocampus from Recall 1 to Recall 2 was greater in the handholding condition as compared to the control, $t(46)=-1.35$, $p<.05$, $CI=[0.015,0.13]$ (Fig.3). Differences by condition, behavioral and neural, did not exist prior to handholding, $b=-0.11$, $t(2216)=-1.24$, $p=1.00$, $CI=[-0.07,0.30]$; $t(46)=-0.71$, $p=.48$, $CI=[-0.39,0.18]$. **Conclusions** Subjects who held hands while recalling negative autobiographical memories experienced more significant reductions in associated social pain. Neural evidence demonstrated that left hippocampal activation patterns changed more substantially following partner handholding compared to reliving memories alone, suggesting that these memories underwent greater neural updating. Findings underscore the importance of social support in emotion regulation and suggest that memory updating processes may contribute to long-term relief. **Funding** Research supported by the US-Israel Binational Science Foundation grant 2015068.

P3-A-129 - Emotion regulation buffers against feelings of loneliness in caregivers of individuals with Alzheimer's Disease and related dementias

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BACKGROUND AND AIMS:: Spousal caregivers for individuals with Alzheimer's Disease and related dementias (AD/ADRD) report high loneliness, despite co-residing with their partners. High loneliness is linked to psychological distress, physiological dysfunction, and increased risk of morbidity and mortality. Understanding how loneliness and caregiver burden affects daily and long-term wellbeing is critical for targeted intervention. Emotion regulation is a promising, actionable target in AD/ADRD spousal caregiver health and wellbeing efforts, given its associations with mental health and physiological functioning. Therefore, this longitudinal study aims to assess how AD/ADRD caregiver health is momentarily (via ecological momentary assessment; EMA) and longitudinally (over a period of two weeks) impacted by feelings of loneliness, and how emotion regulation may play a role in buffering against these effects. **METHODS:** Participants ($n = 96$) completed questionnaires and EMA text messages (5 texts per day) of loneliness, affect, caregiver burden, anticipatory grief, depressive symptoms, and emotion regulation tendencies over a period of two weeks. Specifically, participants filled out questionnaires at baseline (V1), then completed 13 days of EMA before responding to another battery of questionnaires at a 2-week follow-up from baseline (V2). **RESULTS:** Longitudinally, higher

baseline reports of loneliness predicted increased caregiver burden, anticipatory grief, and depressive symptoms ($p < .001$ for all). In multilevel models, within-person increases in momentary loneliness predicted more depressed affect ($p < .001$). In moderation analyses, emotion regulation acted as a buffer between loneliness and depressed affect ($p < .001$ for cognitive reappraisal and expressive suppression as emotion regulation strategies). **CONCLUSIONS:** This preliminary analysis highlights the momentary and longitudinal impact of loneliness in AD/ABDR caregivers and how emotion regulation strategies may provide a promising target of intervention to mitigate risks to caregiver health and wellbeing. Immediate future directions for this study should incorporate immunological indices of health, which are currently being collected via blood samples, as well as assess these relationships again at the 6-month follow-up visit (V3). Future studies should include an emotion regulation training intervention component, as well as brain imaging techniques to determine the underlying neural mechanisms of caregiver loneliness and how emotion regulation might intervene to impact an array of caregiver experiences (e.g., affect, depression) and physiological functioning (e.g., neural, cardiovascular, immunological). **ACKNOWLEDGMENTS AND FUNDING:** This work was supported by the National Institute on Aging (NIA), National Institutes of Health, under Award Number 1RF1AG075946-01A1. We are deeply grateful to the spousal caregivers who shared their experiences and time to make this research possible. Finally, a special thanks to the BMED Laboratory and Institute for Health Resilience & Innovation (IHRI) research team.

P3-A-130 - Criticality as a dynamic biomarker of childhood anxiety during naturalistic emotional processing

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BACKGROUND: Anxiety has been associated with differences in several functional networks, including the Default Mode and Ventral Attention Networks. These networks play key roles in attentional control and emotional salience processing, and disruptions in their coordination are theorized to underlie symptoms of anxiety. In a recent fMRI study, children with higher anxiety symptoms showed more frequent and prolonged activation of these networks while watching emotionally charged movie scenes suggesting that altered dynamics of these networks in anxious youth. The "critical brain hypothesis" proposes that brain regions operate most efficiently when dynamics are poised at a critical point between two phases: subcritical and supercritical. This theory has been validated in mouse models by recording spiking neurons across cognitive states. However, there is limited work examining criticality in humans, particularly at the level of functional networks, and how deviations from this optimal dynamic balance may relate to psychiatric disorders is not well characterized. **Aim:** We aim to characterize network-level differences in distance to criticality across brain states during social processing (movie-watching). Next, we will characterize associations between distance from criticality and anxiety symptom severity in a sample enriched for psychopathology. **Hypotheses:** We hypothesize that children with more anxiety symptoms will have a greater distance to criticality across functional networks that are involved in emotional processing such as the ventral attention and default mode networks. We also hypothesize that across brain activation states, there will be greater deviations to criticality in the third brain activation state, which corresponds with emotional processing. **METHODS:** We will analyze fMRI data obtained from the Healthy Brain Network, focusing on children ages 5 to 15 who watched an emotionally charged clip from Despicable Me. Symptoms of child anxiety, ADHD, and autism were measured using psychiatric questionnaires administered to the parents and the participants. fMRI data were minimally processed using fmriprep and XCPD-D; data was corrected for spatial distortions, normalized to a common space, with participants exceeding a mean framewise displacement threshold of 0.9 excluded, and parcellated using the Gordon atlas. We applied an autoregressive model to estimate distance to criticality (d2), calculated at the parcel level then averaged within network. Conceptually, d2 quantifies how closely neural activity operates to an optimal point. **Analysis Plan:** Differences in d2 between states will be computed using an ANOVA. We will calculate associations with anxiety severity using a support vector regression model. For both analyses, age, sex, and average motion will be entered as covariates. If we observe significant associations between d2 and anxiety, we will conduct follow up analyses covarying ADHD and autistic traits for specificity. **CONCLUSION:** This study builds on past findings by investigating brain criticality and its relation and association with functional networks. This will help expand our understanding naturalistic emotional processing, offering insights into how deviations alter this processing. We hope that this could have clinical implications, offering insights on possibly creating earlier diagnosis of anxiety using the d2 metric as a dynamic biomarker.

P3-C-115 - Using neural signatures to examine psychological alignment in a social network

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BACKGROUND AND AIMS:: Idiosyncratic processing of the world around oneself, as measured by neural responses to naturalistic stimuli, is linked to both objective and subjective measures of social disconnection. Namely, having few social connections, or lower centrality in a social network, and more feelings of loneliness, respectively. During everyday experience, people continuously fluctuate between brain states that reflect underlying cognitive, affective, and social processes. However, it is unknown what psychological processes drive relationships between measures of social connectedness and neural response normativity. This study seeks to elucidate how different psychological states align across individuals, and how this alignment relates to social connectedness. Here, we use multivariate neural signatures to track these latent psychological states at each time point during video-viewing to yield fine-grained timecourses of signature expression for each participant. We apply inter-subject correlation analyses to these trajectories to quantify the degree to which individuals aligned with one another in their moment-to-moment expression of specific psychological states, and to relate this alignment to participants' levels of social connectedness. **METHODS & RESULTS:** Participants (n=70) were scanned while watching 14 different video clips that varied in content and duration. After the scan, participants provided ratings (1-5) on enjoyment and interest of the videos. Participants were undergraduate students living in one of two residential communities whose social networks had been characterized; the social network data provided an objective measure of each participant's social connectedness. Participants also completed self-report surveys, including a scale assessing loneliness, providing a subjective measure of social disconnection. The neural signatures applied to brain activity maps capture various psychological states, such as reward, negative affect, and emotion schemas from EmoNet. Given that greater neural similarity to one's peers in processing the world is related to greater social connection, we expect that greater alignment between trajectories of psychological states will also be associated with greater social connection outcomes, as measured by higher network centrality and lower feelings of loneliness. Identifying which psychological states show the most robust effects will provide insight into the psychological phenomena that underlie intersubject alignment and social connection. **ACKNOWLEDGEMENTS AND FUNDING:** This work is funded by a NSF Grant (2048212). Thanks to Elisa Baek, Ryan Hyon, Meng Du, Karina Lopez, and Mason Porter for their roles in planning and carrying out the study that generated the data analyzed here.

P3-C-131 - Examining parallels between social and spatial cognition: Creating a flexible network navigation paradigm

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BACKGROUND AND AIMS:: Studies of social and spatial cognition have highlighted the human ability to learn, maintain, and operate on knowledge of many different relationships in tandem, whether comprehending the social structure of a group or navigating large cities. These abilities are likely supported by partially shared mental underpinnings, including cognitive mapping of abstract relational structures and mechanisms for remembering individual nodes within these structures. Evidence from studies of both social and spatial cognition have also pointed to partially shared neural mechanisms supporting navigation of both domains. However, little is known about how individuals' abilities to navigate space and social knowledge relate to one another, which would be expected if these capacities rely on the same neural mechanisms. This study examines person-level differences and deficits in capacities for navigating social and spatial knowledge via a novel behavioral task. **METHODS:** Participants (undergraduates at a large public university) completed a series of counterbalanced social and spatial network cognition tasks. Tasks were framed as, socially, learning individuals and their friendships within a group and, spatially, learning bus stops and their relationships to each other within a public transit route. For each domain, participants were first introduced to individual nodes (pictures of locations or pictures of individuals) and dyadic relationships (two nodes shown with a connecting line) within the network. They then completed a navigation task, in which they were asked to select, between two options, the closest node to a target node. Finally, they were asked to reconstruct the network. Participants were presented with all nodes and prompted to draw the learned connections between friends and between locations. Participants also completed several

questionnaires, including the Social Connectedness Scale, and provided demographic information. **RESULTS:** In the social and spatial navigation tasks, there was a significant moderate positive correlation between participants' accuracy across domains. There was also significant moderate positive correlation between participants' scores across domains in the social and spatial network reconstruction tasks. Further investigations into factors contributing to variance in participants' scores—for example, how network characteristics of nodes or dyads might affect participants' responses, or how participants' self-reported social connectedness might influence their network reporting tendencies—are ongoing. **CONCLUSIONS:** Initial results suggest that mental navigational abilities are not dependent on the domain of knowledge at hand. Further analyses will continue honing this paradigm, particularly with the inclusion of control tasks assessing other constructs (e.g., working memory), with an aim to extend this paradigm to a larger age range of participants and assess individual differences in mental navigation. In addition, future work will study how individual differences in cultural exposure may influence participants' ability to remember and reason through relationships across domains. Overall, these results are a promising behavioral indication of a potential shared cognitive mechanism supporting mental navigation of social and spatial knowledge, and provide a toolkit for examining fine-grained parallels in the neurocognitive basis of social and spatial navigation.

P3-C-132 - Inoxity: A modular iOS platform for high-throughput data collection

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This submission introduces Inoxity, a modular iOS platform that enables high-throughput data collection for social, cognitive, and affective neuroscience researchers. As such, this submission describes the tool and methods for using it. **BACKGROUND AND AIMS:** Wearable technologies generate vast amounts of passively recorded biometric, telemetric, and media use data, yet access to these data remains costly and restrictive. Experience sampling methods (ESM) allow participants to actively share their current psychological state, but are often expensive to deploy, limiting scalability. Our app empowers researchers to study human dynamics at scale, uniting physiological, behavioral, and psychological data under one open-source platform. By reducing technical and financial barriers to multimodal data collection, Inoxity enhances accessibility across institutions, disciplines, and regions, expanding who can participate in, and contribute to, the study of human experience. The growing permeation of media into daily life, particularly into nighttime routines, motivates the first iteration of Inoxity to facilitate studying the relationship between sleep and media. Traditional sleep research has relied on laboratory-based polysomnography (PSG) or self-report measures, both of which present limitations in ecological validity (e.g., artificial sleep environments) and accuracy (e.g., reporting burden and bias). These barriers highlight the need for alternative approaches focusing on integrating passive sleep tracking with digital behavior. **METHODS:** Given Apple's market dominance and the Apple Watch's acceptable sleep tracking accuracy (Lee et al., 2023; Roomkham et al., 2019), Inoxity was first developed for iOS. Inoxity integrates directly with Apple HealthKit allowing the passive collection of sleep metrics, including duration, stage (i.e., deep, core, and rapid-eye-movement, or REM, sleep), and mid-sleep awakenings. Additional features include the facilitation of user-provided uploads of screen time records (via screenshots or screen-recordings) and the deployment of EMA surveys through notifications. Participant sleep and screen time data are securely stored via Supabase (i.e., a cloud-based, open-source database service), and survey data is managed through the researcher's chosen EMA platform (e.g., Qualtrics). **RESULTS:** Figure 1 showcases the current app flow and displays the participant's user interface. A proof of concept, N = 1 case study, examined one participant's sleep data. We performed two validation checks, including four manipulation nights (Figure 2) and a cross-mapping of Inoxity data to "ground truth" data (Figure 3). Additional validations will be complete in time for SANS26. **CONCLUSIONS:** Future iterations will expand Inoxity's modular design, allowing researchers to customize which data streams (e.g., sleep, step count) are passively collected to align the app's functionality with theoretical goals. By bundling passive tracking, user-facilitated uploads of screen time data, and EMA into one user-friendly application, participants are less likely to feel burdened and may increase their compliance for longitudinal research. Our app is more than just another data collection tool; it is a methodological innovation that enables open-source, low-cost future research across fields.

P3-C-133 - Neural synchrony, cognitive diversity, and team dynamics: A longitudinal study of triads

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BACKGROUND AND AIMS:: Research shows that neural synchrony predicts positive social outcomes including effective communication and friendship. However, in increasingly complex contexts with competing pressures and demands, such as teamwork, the relationship between alignment and success may be more nuanced. Teams must balance coordination, where alignment is advantageous, with innovation, where "cognitive diversity" – or differing perspectives – may be superior. These needs may also shift as teams work together over time. This study investigates how neural activity predicts team dynamics via two lenses: 1) baseline neural synchrony (measured before interaction) as a predictor of future outcomes and 2) real-time interpersonal neural coupling (measured during teamwork) as a mechanism of performance. We map these relationships across tasks (e.g., cooperation vs. creativity) and over time. **METHODS:** We conducted a longitudinal fNIRS hyperscanning study with 46 triads (N=138) across three sessions over one month. At each session, teams passively viewed videos to establish baseline neural synchrony levels before completing tasks spanning cooperation (a bomb-defusal game) and creativity (alternative uses task). Baseline synchrony was quantified using intersubject correlation (ISC) in temporoparietal junction (TPJ) and medial prefrontal cortex (mPFC) areas. To examine neural dynamics during the tasks, we used wavelet transform coherence (WTC), as well as a novel cross-recurrence quantification analysis (CRQA), which characterized the non-linear dynamical properties of neural coupling (e.g., who leads or lags, predictability, stability). **RESULTS:** Analyses revealed a critical dissociation between task types and timescales. Across sessions, higher baseline synchrony in mPFC and TPJ areas predicted better performance on cooperation tasks whereas lower baseline synchrony predicted better creativity performance. These effects strengthened over time: baseline synchrony was more predictive by Session 3 than Session 1. The relationship between baseline synchrony and self-report outcomes also evolved over time: while synchrony predicted feelings of belonging in Session 1, the benefits of cognitive diversity for relationship satisfaction and interaction quality emerged in Session 3, once teams had established rapport and a working relationship. In-task hyperscanning results reinforced these trends – coherence within teams facilitated cooperation but hindered creativity across the mPFC. Beyond moment-to-moment coherence, CRQA revealed dynamic neural coordination patterns that traditional stationary methods may miss. For example, the equality with which teammates led or lagged one another in the mPFC was positively associated with creativity (where balanced teammate contribution is advantageous) but detrimental for cooperation (which benefits from distinct leader-follower roles). **CONCLUSIONS:** These findings explore neural activity as both a stable trait and dynamic state variable that shapes team outcomes, providing evidence that while synchrony scaffolds cooperation and early cohesion, cognitive diversity benefits creativity and may support later team relationship quality. By introducing CRQA to hyperscanning, we move beyond measuring whether teams are "in sync" to investigating the dynamic quality of the coupling. This opens new possibilities for understanding the neural architecture underlying effective teamwork in naturalistic group settings.

P3-C-134 - Neural dynamics during moments of social insight reflect impression updating

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BACKGROUND AND AIMS:: Updating impressions of others is essential to social life. How does our brain encode and revise these impressions? One possibility is that impression updating occurs through moments of social insight, where new realizations are accompanied by abrupt, large-scale reorganization of neural representations. To test this hypothesis, we collected fMRI data where subjects viewed a character-driven TV episode and reported moments of insight and character impressions. **METHODS:** 36 subjects watched a temporally scrambled version of the first episode of *This Is Us* during fMRI across 10 runs. While viewing, subjects pressed an "aha" button as they experienced a subjective insight. They were then shown screenshots corresponding to their aha responses and explained each insight. Finally, subjects verbally reported their impressions of the main characters (Fig. 1a). Impression content was modeled as 512-dimensional embeddings from Universal Sentence Encoder. Neural synchrony during movie-watching was computed as the Pearson correlation between voxel-averaged time series across subject pairs.

Intersubject representational similarity analysis (IS-RSA) related neural synchrony during viewing with similarity in pre- and post-movie impressions (Fig. 2a), and causal mediation analysis tested whether neural synchrony mediates impression updating (Fig. 3a). Moment-to-moment neural pattern shifts were measured as 1-Pearson correlation between voxel patterns in consecutive TRs and related to impression updating, assessed as 1-cosine similarity between pre- and post-movie USE-embeddings (Fig. 4b). Statistical significance was assessed by comparing effects observed at insight with non-aha periods within the same scene.

RESULTS: Subjects frequently reported insight during narrative comprehension (Fig. 1b), and gradually formed character impressions over time (Fig. 1c). IS-RSA revealed that dyads with more similar pre-movie impressions showed greater neural synchrony during subsequent viewing in left dlPFC, right TPJ, angular gyrus, STS and visual cortex. Higher neural synchrony in bilateral STG, right STS and MTG during viewing predicted more similar post-movie impressions (corrected- $p < 0.05$; Fig. 2a-b). Mediation analysis shows shared pre-movie impressions predict more similar post-movie impressions (direct effect = 0.0783, $p < 0.001$), with neural synchrony in the right STS mediating this relationship (indirect effect = 0.059, $p < 0.001$). This identifies shared brain dynamics as pathway through which mental priors shape subsequent social understanding. Neural pattern shifts occur across widespread cortical regions, peaking from 2 TRs (2.4s) before to aha button press (Fig. 4a-b), indicating salient neural representational change accompanying new social understanding. Individuals with larger neural pattern shifts in regions including TPJ, STS, and mPFC showed greater changes in self-reported impressions (Fig. 4d), suggesting that transient neural dynamics at social insight signal impression updating. **CONCLUSIONS:** Our results reveal impression updating as a dynamic process supported by distributed brain networks, especially the right STS. Neural pattern shifts occur at moments of social insight and reflect self-report impression change. Together, these results suggest transient neural dynamics as a potential mechanism for impression updating in naturalistic social cognition. **ACKNOWLEDGEMENTS AND FUNDING:** NSF BCS-2043740 (MDR); APA Dissertation Award (HS)

P3-C-135 - Neural correlates of preemptive warnings against misinformation: An ISC study

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BACKGROUND AND AIMS: Misinformation increasingly circulates via long-form video on social media and news platforms, yet experimental research often relies on text-based or simplified stimuli, limiting ecological validity. Behavioural studies show that preemptive measures — prebunking, inoculation, and warnings — presented before misleading content can significantly reduce susceptibility to misinformation. However, these studies rarely examine how such warnings influence neural processing during realistic video consumption. Inter-Subject Correlation (ISC) offers a promising approach to bridge this gap, as it reliably indexes attentional engagement and shared sensory-cognitive processing across viewers during naturalistic content. In the present study, we combined pre-exposure warning text, a real political news video, and MEG-based ISC analysis. We hypothesised that participants receiving a warning would show altered ISC during the news video, reflecting modulated shared neural engagement relative to control participants. **METHODOLOGY** MEG data from 56 participants (34 women; M age = 21.73) were analysed.

Participants were randomly assigned to warned (Group 1) or non-warned (Group 2) conditions. Four videos were presented: a target BBC news video, a baseline sea video (low-engagement reference), and two narrative control videos. Before the BBC video, Group 1 received a warning stating that the upcoming video was fabricated, whereas Group 2 read a neutral description. ISC was computed using correlated components analysis (CorrCA) with leave-one-out procedure. Time-resolved ISC was assessed using cluster-based permutation testing. Behavioural measures included Interest, Motivation, Influence, and perceived Fabrication.

RESULTS: For the BBC video, all three CorrCA components showed significant group differences (Component 1: $W = 16674$, $p = .006$; Component 2: $W = 12654$, $p < .001$; Component 3: $W = 16036$, $p = .001$), with varied directions across components. Time-resolved analysis revealed six significant clusters for the BBC video — temporally longer than clusters observed in control videos. The baseline sea video showed no group differences. Behavioural analysis revealed significant Group $\times$ Video interaction for Influence ($WJ = 16.59$, $p < .01$), indicating that warnings specifically shifted perception of the BBC content. LOO-ISC correlated with Interest ($r = .525$, $p < .001$) and Motivation ($r = .457$, $p < .001$) across videos, validating ISC as an engagement index. **CONCLUSION:** Our hypothesis was partially supported: warnings modulated the pattern and temporal profile of neural synchronisation rather than producing uniform downregulation. The BBC video showed the clearest divergence between groups across all three components, indicating that preemptive warnings selectively modulate collective neural processing of potentially misleading media. These findings demonstrate that ISC methodology can capture warning-induced changes in shared brain

dynamics during naturalistic misinformation processing. **ACKNOWLEDGEMENTS AND FUNDING:** Russian Science Foundation (RSF) grant № 24-18-00432, <https://rscf.ru/project/24-18-00432/>

P3-C-136 - Is interpersonal physiological synchrony associated with functional connectivity in persons with neurodegenerative disorders

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BACKGROUND & AIMS: Persons with neurodegenerative disorders (PWNDs) experience progressive neural degeneration in regions included in frontal and temporal networks that disrupt interpersonal processes. PWNDs declines in interpersonal functioning have been associated with lower physiological linkage with conversation partners such as familial caregivers. Physiological linkage, defined as the degree to which peripheral nervous system physiology is coordinated between dyad members, is an important marker of coordinated emotions and social connection between people, with implications for PWND and caregiver health. Specifically, prior work has demonstrated associations between empathic processes and physiological linkage between conversation partners. However, it is unclear whether this association is reflected in the brain networks involved in empathic processes in PWNDs. In this study, we will examine how physiological linkage between caregivers and PWNDs is associated with PWND resting state functional connectivity across key empathic networks. **METHODS & ANALYSIS PLAN:** PWNDs and their caregivers were recruited through a memory clinic, where they underwent clinical interviews, cognitive assessments, neurological examination, and neuroimaging. Neuroimaging included a resting-state functional scan consisting of 8 minutes with the PWND's eyes closed. Following this visit, participants visited the laboratory with their caregiver and engaged in a 10-minute naturalistic conversation on a topic of disagreement between PWNDs and caregivers. During the conversation, second-by-second peripheral physiological activity was recorded from both conversation partners. Physiological linkage was computed as a composite of 6 individual physiological measures including cardiac interbeat interval (IBI), finger pulse amplitude (FPA), finger pulse transmission time (FPT), ear pulse transmission time (EPT), skin conductance level (SCL), and general somatic activity (ACT), correlated between conversation partners. We will use the CONN toolbox in SPM to calculate functional connectivity with physiological linkage as a covariate, using previously-defined affective empathy and cognitive empathy (mentalizing) networks. We expect that lower physiological linkage will be associated with lower connectivity across these networks. **IMPLICATIONS:** By examining a clinical population characterized by neural atrophy, this work can reveal the neural underpinnings of interpersonal physiological processes and identify a novel neural correlate of physiological linkage between PWNDs and their caregivers. Because physiological linkage in PWNDs is associated with caregiver health and well-being, these neural network changes may have important implications for the health of dementia caregiving dyads. **FUNDING:** R00AG073617

P3-C-137 - How social identity flexibly shapes neural synchrony: A collective identification and cognition investigation

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BACKGROUND AND AIMS: Social identities are thought to function as a form of “social glue,” aligning how individuals perceive and interpret shared experiences. While prior work suggests that shared social identities promote similarity in judgments and behavior, it remains unclear whether social identity flexibly aligns individuals at the level of neural processing during naturalistic experiences. In particular, the impact of identity on cognition depends on which identity is salient in a person's mind at a given moment, along with the degree to which an individual identifies with that group. The present pre-registered study tests whether increasing the salience of a shared collective identity enhances neural alignment among individuals when processing identity-relevant social information. **Methods** Participants (expected N ≈ 110) will complete a mixed-design laboratory study while undergoing functional near-infrared spectroscopy (fNIRS). Participants will be randomly assigned to one of two between-subject priming conditions: collective identity priming or individual identity priming. Participants will next watch videos, some of which feature identity-relevant content (e.g., related to the shared group identity) and some of which feature control content (matched

for length, viewed in counterbalanced order). Participants will also complete an individual difference measure of collective identification with the group. Neural activity will be recorded continuously from regions involved in valuation (vmPFC), mentalizing (dmPFC, TPJ), and cognitive control (dlPFC). After each video, participants will rate their enjoyment, interest, positivity, negativity, and desire to share the video. **Analytic Plan** The primary hypothesis is that identity primes and strength of collective identification will shape neural synchrony during identity-relevant videos, such that pairs primed with a shared social identity and reporting stronger group identification will exhibit greater intersubject neural synchrony than pairs primed with individual identity or with weaker collective identification. Neural synchrony will be quantified using wavelet transform coherence (WTC) computed pairwise across participants, both globally and within ROIs. Linear mixed-effects models will predict pairwise WTC during video-watchings as a function of the dyadic priming condition (both individual, mixed, or both collective), minimum collective identification within the pair, and their interactions, with crossed random intercepts for each participant in the dyad. A parallel set of mixed-effects models will examine intersubject similarity in behavioral video ratings (computed as Fisher-z-transformed Pearson correlations) using the same fixed- and random-effects structure. **Conclusions** By testing whether social identity salience and individual differences in collective identification predict neural alignment during shared experiences, this study evaluates a core assumption of social psychology: that social identity functions as a flexible mechanism for aligning perception and interpretation. Demonstrating that shared identity increases intersubject neural synchrony would provide direct neural evidence for social identity as a dynamic social glue, linking identity processes to moment-to-moment similarity in how people process the social world. **Acknowledgements and Funding** N/A

P3-C-170 - Social network position matters: Brokerage predicts naturalistic social network learning

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BACKGROUND AND AIMS: The ability to track the relationships comprising our real-world social networks is essential to our daily lives.

Past work has begun to investigate how one's position in their social network affects this process. In particular, recent studies using highly controlled behavioral paradigms suggest that brokers (people who connect otherwise disparate people in a network) are particularly attuned to the structure of their social world and, thus, learn the relationships in new networks with greater accuracy. Yet, it is unknown 1) how this learning process naturally and spontaneously unfolds in the brain while brokers observe new people and their relationships, and 2) if their sensitivity to social networks is evident in how they naturally think about people outside of highly controlled laboratory tasks. Here, we tested if brokerage capacity in one's own social network predicts the neural encoding and semantic representation of newly learned, naturalistic social network knowledge. **METHODS:** While undergoing fMRI, participants watched a TV trailer that conveyed five main characters and their relationships. Outside of the scanner, participants wrote their perceptions of each character and their relationships. They also completed an ego-network survey that allowed us to calculate their brokerage capacity and degree centrality (number of connections) within their own social network. We measured how similarly participants encoded the video by calculating the neural synchrony between all pairs of participants in each region of a whole-brain parcellation. Finally, we measured how similarly participants described each character by embedding their free-response text in a semantic space and calculating the cosine similarity between participants' descriptions. Using inter-subject representational similarity analysis, we calculated whether and how brokerage capacity predicts neural synchrony and semantic similarity. **RESULTS:** We found that people who had similar capacities for brokerage in their own social networks encoded the new social network information more similarly than those who differed in their social network positions. This suggests that brokers naturally process new social information differently than non-brokers. This difference persisted such that after watching the video, brokerage was significantly predictive of semantic similarity in their free-response character descriptions. This suggests that brokers and non-brokers described the newly-learned characters in distinct ways. Importantly, these results hold even when controlling for degree centrality. **CONCLUSIONS:** How we gather, process, and use new social network information is key to our social success and ability to form and maintain new relationships. Here, we find that a person's position in their real-world social network may shape how they first encode and communicate such knowledge. This suggests that brokers fundamentally process new social network information differently than those who hold other positions in a network. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by funding from the National Institutes of Health (5R01MH125406-05).

P3-C-171 - Attitudes and neural synchrony during encoding shape neural and semantic similarity during recall of

a story of racial discrimination

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BACKGROUND AND AIMS:: In everyday conversation, our attitudes and motivations can lead us to recall different parts of the conversation. Although neural synchrony during narratives has been shown to reflect similar understandings of narrative contents, it is not yet clear whether similar understanding of a story predicts similar recall of the story, nor to what degree attitudes might shape neural activity during recall. Here, we investigated whether neural synchrony during encoding of a story predicts neural synchrony during recall, and how intergroup and interpersonal attitudes moderate this relationship. **METHODS:** 28 black and 26 white participants watched a video in which a black woman described an experience of racial discrimination during functional neuroimaging (fMRI), afterwards fMRI was collected during verbal recall of the story events. We computed intersubject correlations of participant pairs based on activity within the dmPFC during encoding and recall. In addition, we computed the semantic similarity of recall transcripts. Two research assistants subjectively coded how much personal opinion was added in each participant's recall. Using a permuted regression model, we tested whether neural synchrony during story encoding predicted neural synchrony during story recall and whether pair's mean racial attitude and mean likeability toward the speaker moderated the relationship for black and white participants. **RESULTS:** Neural synchrony during story encoding predicted neural synchrony during story recall only among white participant pairs ($b = .642$, $p < .001$) (interaction effect: $b = .948$, $p < .001$). Among black participant pairs, mean attitude toward the storyteller significantly moderated the relationship between neural synchrony during encoding and that of recall ($b = .582$, permuted $p < .01$). That is, the more they liked the speaker on average, the more similar was encoding and recall. Among white people, mean explicit racial attitude was a significant moderator ($b = .867$, $p < .001$). Pairs with more negative racial attitudes showed more similarity between encoding and recall. Moreover, pair's semantic similarity of recalled contents was positively predicted by black pair's mean attitude toward the speaker ($b = .031$, $p < .05$) and both pairs' mean explicit racial attitudes ($b = .037$, $p < .001$). Finally, analysis of recall transcripts showed that more negative racial attitudes predicted more amount of personal opinion added during recall for both racial groups at marginally significant level ($b = .039$, $p = .055$). **CONCLUSIONS:** The present study suggests attitudes related to group identity shape how people recall a story. For white participants recalling a story of racial discrimination described by an outgroup member, attitude toward the group predicted the similarity between story encoding and recall. This may be because white participants with negative racial attitude tend to have lower motivation to control prejudice when they recall the story of racial discrimination, thereby giving a recall that is more in line with their initial perception. In contrast, among racial minorities, when recalling a story where their ingroup member is victimized, attitude toward the individual matters. The results suggest that both interpersonal and intergroup attitudes play a key role in the way people reconstruct and communicate a narrative which has implications for group polarization and intergroup conflict.

P3-C-172 - Lonely individuals idiosyncratically encode and interpret social information from novel narratives

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BACKGROUND AND AIMS:: Shared narratives about people—whether it is who should win in a love triangle or why an underdog is worth rooting for—help foster common ground and connection between people. Here, we ask if lonely individuals may form less normative interpretations of narratives about other people, and if so, when in the process may this difference arise? Prior work shows that lonely individuals exhibit idiosyncratic neural responses while encoding a series of naturalistic videos without an overarching narrative. Additionally, lonelier individuals have idiosyncratic neural representations and linguistic descriptions of well-known celebrities, including people from pop culture. This suggests they have atypical, crystallized social knowledge. Here, we asked if idiosyncrasy emerges in the learning and memory of new narratives about people, and if so, whether neural idiosyncrasy emerges during the encoding and/or consolidation of the narrative. **METHODS:** While undergoing fMRI, participants watched a short trailer for a TV show conveying a naturalistic narrative consisting of five characters and their relationships. After viewing the trailer, participants completed a resting state scan to measure memory consolidation processes. After the scan

session, participants provided free-response descriptions of all characters and their relationships. To measure semantic similarity, we embedded free-response text entries using Qwen3-8B and calculated the cosine similarity between participants' descriptions of each character and relationship. To measure neural similarity, we calculated between-participant neural synchrony while watching the trailer (i.e., encoding phase) and also compared each participant's individual functional connectivity during post-encoding rest (i.e., consolidation phase). **RESULTS:** We found that, relative to their less lonely counterparts, lonelier participants had significantly more idiosyncratic semantic descriptions for characters. Neural analyses are still ongoing, but preliminary results indicate various brain regions implicated in social cognition may show this same pattern of idiosyncrasy during encoding and rest. **CONCLUSIONS:** Whether we laugh, cry, cheer, or curse, the formation of shared social narratives help us connect with the people around us. Our findings suggest that lonely individuals learn new narratives about people differently than each other and their non-lonely peers. Furthermore, our neural results suggest that different social cognitive brain regions play distinct roles during the encoding and consolidation phases of memory development to form these unique interpretations. This work helps provide insight into when and how lonely individuals might develop idiosyncratic social knowledge by examining three distinct stages of information processing. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by funding from the National Institutes of Health (5R01MH125406-05).

P3-D-138 - Characterizing egocentric biases in spatial and social perspective-taking

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BACKGROUND: Understanding whether self-influence in social and spatial judgments relies on shared computational principles is central to perspective-taking research. A prominent candidate mechanism is anchoring-and-adjustment, whereby judgments are biased toward the self and require effortful correction. Here, we investigate whether egocentric anchoring generalizes across social and spatial domains and across egocentric and allocentric reference frames. **METHODS:** Two datasets were collected, one fully online (N=152) and one hybrid in-lab/online (N=43), each including three core tasks: anchoring social task, egocentric spatial task, and allocentric spatial task. Additionally, in the hybrid sample, participants performed an allocentric social task. The anchoring social task measures classic anchoring-and-adjustment during inference of other people's preferences. Participants read brief descriptions of two target individuals and then provided ratings about themselves and each target. The egocentric spatial task tested egocentric spatial judgments, where participants encoded the position of a ball within a naturalistic landscape relative to themselves and a landmark, and subsequently selected which option between two alternatives was closer to the original location. In the allocentric spatial task, participants encoded a four mountain landscape from a particular viewpoint and then chose the matching image across multiple angular-disparity conditions. Finally, in the allocentric social task, participants learned a stranger's preference for an activity relative to a social entity and how this preference related back to other entities. Together, these tasks were designed to test whether self-anchoring generalises across social and spatial domains and across egocentric and allocentric reference frames. Reaction times and performance were analysed using linear and logistic mixed models, incorporating social/spatial distances and angular disparities relative to the self. **RESULTS:** Overall, we observed convergent evidence of egocentric anchoring. In the social anchoring task, longer reaction times predicted greater social distance during preference inference. Participants responded slowly when a target's preferences diverged more from their own, consistent with increased adjustment demands away from an egocentric anchor. In the spatial anchoring task, both self-to-encoded-ball distance and self-to-correct-ball distance positively predicted reaction times. Larger deviations from the egocentric encoding variables were associated with slower responses, indicating anchoring effects in spatial judgments. In the allocentric task, angular differences between the encoded and the correct viewpoint strongly modulated performance and reaction times, where greater angular disparity produced lower accuracy and slower responses. Finally, in the allocentric social task, participants spontaneously relied on their own preferences, despite the fact that self-related information was not needed to perform the task. **CONCLUSIONS:** These findings show that egocentric anchoring emerges across multiple social and spatial tasks, even when judgments rely on distinct reference frames. This highlights the influence of the self as a reference point across cognitive domains and reference frames, reflecting a domain-general computational principle. **ACKNOWLEDGEMENTS AND FUNDING:** Supported by grants from the Valencian Community's Program for the Support of Talented Researchers.

P3-D-139 - Effects of oxytocin on neural responses to ingroup and outgroup members' emotional facial expressions as a function of psychopathic traits

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BACKGROUND AND AIMS:: Psychopathy is characterized by impairments in emotional processing that contribute to difficulties in social functioning. Recognizing and responding to others' emotions is crucial for adaptive social behavior and is shaped by social context, including group membership, with individuals typically showing enhanced neural responses to emotional expressions of ingroup members compared to outgroup members. Despite extensive work on emotional deficits in psychopathy, how group membership modulates emotional processing as a function of psychopathic traits remains understudied. This gap is relevant given previous studies indicating psychopathy is associated with smaller and less stable social networks, suggesting potential alterations in social affiliation and group-based emotional processing. Oxytocin (OT), a neuropeptide implicated in social bonding and prosocial behaviors, has been shown to modulate socioemotional processing in a context-dependent manner. But its effects on responses to socio-emotional cues—particularly in the amygdala—have been inconsistent. Examining functional connectivity between brain regions may therefore provide a more comprehensive understanding of OT's effects on socioemotional networks beyond regional activation. This study aims to investigate how psychopathic traits influence neural responses to intergroup emotional facial expressions, and whether OT modulates neural activation or functional connectivity patterns. **METHODS:** Sixty healthy male participants were randomly assigned in a double-blind design to receive intranasal OT (24 IU) or placebo. Psychopathic traits were assessed using the Triarchic Psychopathy Measure. Following drug administration, participants completed a minimal group paradigm, in which group assignments were used to induce ingroup and outgroup membership. During fMRI scanning, participants viewed fearful, angry, sad, happy, and neutral facial expressions of ingroup and outgroup members. Functional connectivity between the amygdala and ventromedial prefrontal cortex (vmPFC) will be examined using psychophysiological interaction (PPI) analyses with the amygdala as the seed region, given the central role of fronto-limbic circuits in socioemotional processing. Region-of-interest analyses will focus on the amygdala, anterior cingulate cortex (ACC), orbitofrontal cortex (OFC), and prefrontal cortex (PFC), regions implicated in emotional salience and social evaluation. Mixed-effects models will be used to test the effects of psychopathic traits, OT administration, group membership, and emotional expression on neural activation and functional connectivity. **PREDICTED RESULTS:** We anticipate that higher psychopathic traits will be associated with altered neural differentiation between ingroup and outgroup emotional facial expressions in amygdala, ACC, and OFC activation, and amygdala-vmPFC connectivity. OT is expected to modulate these relationships with effects varying as a function of psychopathic traits. **CONCLUSIONS:** This study aims to elucidate the neural mechanisms underlying intergroup-based emotional processing in individuals with psychopathic traits by integrating neural activation and fronto-limbic connectivity. Examining OT's effects on coordinated neural responses may provide insights into altered social affiliation in psychopathy and advance understanding of OT's context-dependent role in socioemotional functioning. **ACKNOWLEDGEMENTS AND FUNDING:** German Research Foundation (DFG, Deutsche Forschungsgemeinschaft).

P3-D-140 - Bridging body and brain: How inflammation interacts with social cognition

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BACKGROUND AND AIMS:: Chronic inflammation contributes to most leading causes of death worldwide (Pahwa, Goyal, & Jialal, 2024), and social connection plays a key role in regulating it (Eisenberger & Cole, 2012; Eisenberger, Moieni, Inagaki, Muscatell, & Irwin, 2017; Kim, Benjamin, Fowler, & Christakis, 2016; Muscatell et al., 2016). While social support is linked to lower inflammation, inflammation can, in turn, shape how we think about others—sometimes increasing withdrawal (Kelley et al., 2003) but also motivating approach to trusted others (Muscatell and Inagaki 2021; Moieni & Eisenberger, 2018). However the neural mechanisms of these changes to social cognition remain unknown. **METHODS:** In our study, we measured inflammatory cytokines (IL6, CRP) in 76 adults. We then collected ratings of connection with 15 social targets (5 close-others, 5 acquaintances, and 5 famous personalities). Participants' neural activity was measured while making trait judgments about each of the 15 targets as well as themselves. Neural activity levels as well as neural self-other overlap in the MPFC, PCC, and dMPFC were

calculated from this task. We also calculated functional connectivity between these social regions and regions related to inflammatory responses – thalamus, amygdala, hypothalamus, and subcortical brain nuclei. **RESULTS:** Higher IL6—a measure of short-term fluctuations in inflammation—was associated with greater closeness to close others as well as reduced MPFC activity for close-others and reduced neural self–close-other overlap. In contrast, higher CRP—a measure of longer-term inflammation—was linked to feeling less similar to others and greater neural self–other overlap in the MPFC, PCC, and dMPFC. Functional connectivity between MPFC and the Hippocampus as well as between dMPFC and the Amygdala was altered by increased levels of inflammation. Previous research has shown that feeling closer with a target is connected to more MPFC activity as well as more self-other neural overlap in the dMPFC (Courtney & Meyer, 2019). When we looked at how inflammation impacted this link we found that both IL6 and CRP dampened or even eliminated the tie. **CONCLUSIONS:** This work reveals that inflammation alters the neural systems supporting feelings of closeness, weakening typical links between social connection and neural representations. These insights deepen our understanding of how bodily states like inflammation can shape the social mind. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by an R01 grant from NIMH awarded to Dr. Meghan L. Meyer.

P3-D-141 - Loneliness corresponds with subjectively representing people from shared social circles as highly similar to one another

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BACKGROUND AND AIMS:: While the negative consequences of loneliness are well-documented, it is unclear how lonely individuals think about the different people in their lives. Prior neuroimaging work shows loneliness corresponds with three differences in social network representation. In lonelier individuals, social brain regions show 1) greater similarity between people in the same social category (e.g., close others are represented more similarly to one another; acquaintances are represented more similarly to one another); 2) greater blurring between social categories (e.g., close others are less well differentiated from acquaintances); and 3) greater differentiation between oneself and others. Do these neural patterns reflect lonely individuals' subjective representations of their social circles? Or is there a disconnect between lonely people's brains and subjective experience? **METHODS:** We investigated the relationship between loneliness and the way people represent their social networks along 3 dimensions (N=94). Participants nominated 5 close others and 5 acquaintances. They were also provided with 5 well-known celebrities. Then they positioned these people on a screen and arranged them in terms of their relative closeness, familiarity, and similarity, resulting in 3 distinct representational maps. Using representational similarity analysis, we tested how loneliness relates to the perceived clustering in social network representations. **RESULTS:** When arranging people in terms of similarity, closeness and familiarity, lonelier individuals showed stronger within-group clustering – consistent with prior neural findings. However, contrary to prior neural findings, lonelier individuals did not show greater separation between social groups. Furthermore, when we compared distance from the self to other people, our findings suggest that lonelier individuals were not more likely to represent themselves as particularly isolated. The only reliable self-distance effect was that lonelier participants placed celebrities farther away from themselves. **CONCLUSIONS:** Greater clustering within- social groups emerges in lonely individuals' neural and subjective representations. This suggests that lonely individuals may have conscious access to this neural effect and/or their subjective experience generates it. In contrast, loneliness did not correspond with greater between- social group clustering, nor differentiation between oneself and social groups. These neural representations may be inaccessible to conscious awareness, potentially perpetuating loneliness by obscuring its underlying causes.

P3-E-116 - Preprocessing considerations in naturalistic viewing paradigms

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Naturalistic stimuli are increasingly used in functional MRI research because they evoke rich, ecologically valid neural responses and engage a broad range of cognitive processes over extended timescales. However, most naturalistic fMRI studies continue to rely on preprocessing pipelines optimized for resting-state or task-based paradigms, which may not be well suited for long, temporally structured narratives. In this study, we systematically examined how common denoising steps influence intersubject

correlation (ISC) metrics during naturalistic viewing. Thirty-five participants watched a 45-minute episode of Friday Night Lights while undergoing fMRI. We evaluated the independent effects of despiking, motion regression (24-parameter Volterra expansion), high-pass filtering (128 s cutoff), and cerebrospinal fluid (CSF) signal regression on temporal and spatial ISC across 50 cortical regions of interest, relative to a baseline detrended model. Baseline results replicated prior findings, with higher temporal ISC in sensory cortices than in heteromodal association regions. Despiking and CSF regression generally increased temporal ISC, likely by reducing noise variance, whereas high-pass filtering substantially reduced ISC across most regions. Motion regression produced mixed effects depending on brain region. Spatial ISC analyses further revealed that detrending and high-pass filtering introduced spatiotemporal artifacts, including short-range anti-correlations and long-range correlations, with the strongest distortions observed under high-pass filtering. Motion regression mitigated some of these effects. Together, these findings demonstrate that preprocessing choices have pronounced and method-specific impacts on ISC estimates in naturalistic fMRI. We recommend including despiking and motion regression, optionally CSF regression, while avoiding high-pass filtering when analyzing naturalistic data. Future work will extend these evaluations to additional metrics such as signal-to-noise ratio, connectivity measures, and scene classification performance.

P3-E-142 - North american tbiconnect: Using video modeling intervention to improve social communication awareness and confidence for individuals with traumatic brain injury

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BACKGROUND AND AIMS:: Traumatic brain injury (TBI) results from an external force that causes impairments to social communication between loved ones (Brown et al., 2025). Individuals with TBI face difficulties with word-finding, poor turn-taking, disinhibition, and repetitiveness (Hoepner & Turkstra, 2013). TBIconnect is a 10-week manualized telerehabilitation program from Australia, shown to produce significant gains in social communication behaviors (Rietdijk et al., 2019a & b). A North American version of TBIconnect demonstrated similar outcomes (Hall et al., 2025). This study sought to examine the value of large group interactions; an element not included in the Australian version but included in the North American version. Our first aim addressed whether the delivery of the North American version of TBIconnect via Telehealth videoconferencing improves communication awareness and confidence in the large group context. Our second aim addressed whether the North American TBIconnect reduces negative communication behaviors (e.g., asking testing questions, providing inadequate information), and increases collaborative communication features (e.g., mutually supporting memory, asking open-ended questions). **METHODS:** Eleven individuals with chronic TBIs (5 males, 6 females) were recruited from brain injury groups. Participants engaged in collaborative video review within large groups, discussing reactions to pre-developed, contrasting examples of effective and ineffective conversations. Quantitative measures including self-rated pre- and post-assessments: communicative confidence, quality of life after brain injury, and social communication were evaluated for performance standard deviation of clinically notable change. Large-group portions of session videos were examined qualitatively through reflexive thematic analysis (Braun & Clarke, 2021), coding for evidence of increased awareness, increase in positive behaviors, and a reduction in problematic behaviors. **RESULTS:** All participants made gains or remained steady on pre- and post- measures of social communication, confidence, and quality of life. Five out of the eight participants less than 10 years post-onset showed clinically significant improvement in social communication, confidence, and quality of life. Even participants over 10 years post-onset showed significant improvement (20-39 years post). Qualitative analyses identified value in sharing experiences with other individuals with TBI, recognition of communication breakdowns, metacognitive discussions of repairs and preempting breakdowns, the value of peer feedback, and partners identified the value of seeing other individuals with TBI to help put their partner's behaviors into context. **CONCLUSIONS:** The North American TBIconnect program facilitated gains in social communication and quality of life during the chronic stage of recovery. On the social communication measure, gains were less significant than previous studies (Hall et al., 2025; Rietdijk et al., 2019). Qualitative findings indicated that large group interactions created a sense of shared experience, better recognition of communication breakdowns, increased repairs and self-regulation, and the value of peer feedback. Partners benefited from seeing the challenges others dealing with TBI face. **ACKNOWLEDGEMENTS AND FUNDING:** Ronald E. McNair Program and Office of Research and Sponsored Programs.

P3-E-144 - Redemptive narratives are contagious: Positivity in personal memories of hardship emerges after learning about others' redemptive life events

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BACKGROUND AND AIMS:: From reading fiction to seeking support, stories provide a structure to express our lived experiences – a potential reason why we incorporate narratives in our everyday conversations. It is well known that arousal in narratives is linked to their memorability and tends to influence people's behaviors. However, less is known about how the different emotional arcs within the narratives we consume influence our own personal memories. Here, we ask if an individual's narration of their personal memories may take on the emotional arc of someone else's narrative and if some narrative arcs are more contagious than others. **METHODS:** An online pool of participants (N=200) completed three phases of the study across two sessions. First, the participants narrated a personal memory of a time they experienced hardship. Next, they read one of three personal narratives from another person – each version presents the same story with a different emotional arc (optimistic/redemptive, tragic, or stable negative). Natural language processing was employed to ensure that all three versions of the story were highly similar, differing only in their emotional arc. The third phase was completed 24 hours later; participants recalled their original personal memory again. **RESULTS:** Self-reported affect for personal memories becomes more positive 24 hours after reading a redemptive narrative, and more negative after reading either a tragic or negative arc. We employed large language models to analyze the language use and extracted the sentimental structure of these narratives. Participants selectively adopted the narrative arc that makes their stories more positive. That is, only participants who read a redemptive story adopted a similar structure for their own stories 24 hours later, whereas this was not observed for the other narrative arcs (tragic; stable negative), suggesting we are more motivated to adopt a narrative arc from another story we consume when it makes our own memory feel more positive. **CONCLUSIONS:** Previous research has focused on exploring mechanisms by which stories, both in fiction and real life, are integrated into our memories. Our study finds that the emotional arc of a story can influence whether it reshapes our own personal memories of hardship, with redemptive narratives being more contagious, perhaps because they leave us feeling better about our past. **ACKNOWLEDGEMENTS AND FUNDING:** The funding for this study comes from NIMH's R01 grant, awarded to Dr. Meghan Meyer.

P3-E-145 - When minds fail to align: Loneliness and neural convergence in social interaction

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BACKGROUND AND AIMS:: Neural convergence during social interaction has been shown to signal shared understanding and predict social connection. Prior work also suggests that lonely individuals show neural idiosyncrasies while viewing naturalistic stimuli. However, it remains unknown how such idiosyncratic processing shapes neural convergence during real-world social interactions. The current study examines this question using a naturalistic co-viewing paradigm with functional near-infrared spectroscopy (fNIRS) hyperscanning. Pairs of participants were fitted with fNIRS and engaged in a shared media experience that mimicked everyday social interaction. Data were collected from the dorsal medial prefrontal cortex (dmPFC) and right temporo-parietal junction (rTPJ), given their central roles in integrating incoming external information with idiosyncratic internal representations, a process that underlies shared meaning-making in social interactions. We tested whether dyads neurally converge across repeated exposure to stimuli, and whether loneliness moderates these convergence patterns. **METHODS:** Data collection is ongoing; results reported here reflect pilot data from 17 dyads (N = 34). In the co-viewing session, participants sat side-by-side and watched two 5-minute video clips containing rich social and emotional content. After the first viewing of each video, dyads engaged in a prompt-guided discussion, followed by a second viewing of the same video. Neural alignment was operationalized as the correlation between dyad members' fNIRS time series within each task segment (initial viewing, discussion, and post-discussion viewing), and was calculated separately for each brain region. Dyads were categorized as lonely dyads (both members lonely) or non-lonely dyads (one or both members non-lonely) using a median split of loneliness scores from the full prescreen pool (N = 330). Mixed-effects models were used to examine neural alignment across task phases and test loneliness as a moderator, with brain region included as a random intercept. Notably, the pilot sample was unbalanced, with 11 lonely dyads, 5 mixed dyads, and 1 non-lonely dyad. **RESULTS:** Across videos, dyads exhibited lower neural alignment during the

second viewing relative to the first viewing ($b = -0.37$, $p = .03$), indicating an overall divergence following discussion. Loneliness did not significantly moderate this effect. During the discussion, however, lonely dyads showed lower neural alignment than non-lonely dyads, though this effect was marginal ($b = 0.48$, $p = .054$). This pattern suggests that loneliness may be associated with reduced neural alignment during social exchange. **CONCLUSIONS:** Contrary to prior findings suggesting that strangers neurally converge over time, the present pilot data revealed an overall pattern of neural divergence. One interpretation is that dyads may fail to develop a shared perspective through discussion, potentially undermining the formation of social connection. This pattern may be driven by the overrepresentation of lonely individuals in the pilot sample. Consistent with this possibility, non-lonely dyads showed higher neural alignment during discussion than lonely dyads, suggesting that loneliness may impede neural convergence. Data collection is ongoing. With a larger and more balanced sample, future analyses will more rigorously test how neural convergence unfolds and clarify the role of loneliness in shaping shared neural representations during real-world social engagement.

P3-E-146 - How loneliness relates to emotion perception: Divergence in mental state inferences

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BACKGROUND AND AIMS:: Loneliness has been linked with not feeling understood by others, and prior neuroimaging work suggests that lonely individuals may process the world in ways that are dissimilar to their peers. This study extends prior work examining whether loneliness relates to idiosyncratic mental state inferences in an emotion perception task, consistent with an "Anna Karenina principle" wherein non-lonely individuals converge on similar interpretations while lonely individuals each diverge uniquely. Our behavioral analyses revealed this pattern: whereas non-lonely individuals were alike in mental state inferences, each lonely individual inferred mental states in their own unique way – but only for stimuli with high group consensus ($B = .045$, $SE = .007$, $p < .001$). Consensus was operationalized as the proportion of participants selecting the same emotion label for a given stimulus; high-consensus items had $\geq 70\%$ agreement. This effect was not attributable to negativity bias, as lonely individuals did not differ in how negative or positive they thought the expressions were ($B = .007$, $SE = .014$, $p = .602$) nor rate expressions more negatively overall ($B = .031$, $SE = .122$, $p = .798$). The current pre-registration extends these behavioral findings to neural responses of the same sample. **METHODS:** Participants ($N = 78$) completed an emotion perception task while undergoing fMRI, in which they identified mental states from images of pairs of eyes by selecting one of four emotion options. After the scan, participants completed the UCLA Loneliness Scale (Russell et al., 1980). Analysis Plans: General linear models will be fit to the preprocessed fMRI data for each stimulus, with task regressors modeling individual trial onsets. For each of the 200 parcels in the Schaefer atlas, we will extract t-values for each stimulus and construct representational dissimilarity matrices (RDMs) for each participant using Euclidean distance between stimulus pairs. Separate neural RDMs will be constructed for high and low-consensus stimuli. A loneliness RDM will be derived from pairwise differences in UCLA Loneliness Scale scores. Using inter-subject representational similarity analysis, we will correlate each participant pair's neural RDMs with their loneliness RDM, assessing statistical significance via Mantel permutation tests. Analyses will be particularly focused on the default mode network, and in particular IFG, pSTS, TPJ, mPFC, as these regions have been implicated in emotion recognition and subjective interpretations of stimuli. We predict that lonely individuals will exhibit greater neural dissimilarity from both other lonely individuals and non-lonely individuals in these regions, particularly for high-consensus stimuli, mirroring our behavioral findings. **IMPLICATIONS:** Idiosyncratic social perception may reflect or contribute to the subjective experience of not being understood. If lonely individuals show both behavioral and neural idiosyncrasy in mental state inferences, this suggests a potential mechanism underlying loneliness. Identifying the socio-cognitive disruptions linked with loneliness, and specifically whether they arise at perceptual or subjective interpretative stages of processing can inform targeted interventions to enhance social connection and reduce loneliness. **ACKNOWLEDGEMENTS AND FUNDING:** No funding was received.

P3-E-147 - Mobile-based facial emotion perception training (moFEPT) influences attentional processing

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BACKGROUND AND AIMS:: Individuals with higher aggressive tendencies often show hostile attribution bias, interpreting ambiguous social cues as hostile. This hostile attribution bias has been considered a key cognitive mechanism driving aggressive

behavior. Facial expressions are critical cues for inferring others' emotions and intentions, and a tendency to interpret ambiguous expressions as anger may increase aggressive responses. Accordingly, interventions targeting facial emotion interpretation bias have been proposed. The current study examined whether facial emotion perception training can be effectively delivered in an online environment and whether such training influences attention bias toward emotional faces and behavioral measures of aggression. **METHODS:** A total of 87 healthy adults aged 21-56 years completed a five-session online intervention over one week. Participants were randomly assigned to a training or a control group and age was additionally considered by categorizing participants into younger (≤ 38 years) and older (> 38 years) age groups. The training intervention employed a feedback-based emotion perception task using morphed facial stimuli spanning a continuum from happiness to anger. In both groups, feedback was individualized based on each participant's pre-assessment responses. In the training group, feedback was adjusted to encourage happy responses to facial expressions containing slightly higher levels of anger relative to the individual balance point, whereas in the control group, feedback was matched to each participant's original balance point without inducing a perceptual shift. At pre- and post-intervention, participants completed an attention bias (AB) task and the point subtraction aggression paradigm (PSAP) to assess changes in attentional processing toward facial expressions of emotions and aggressive responding. Statistical analyses were conducted using difference scores (post minus pre) for each task. **RESULTS:** Results indicated that the online intervention effectively shifted facial emotion perception toward happiness in the training group compared to the control group. ($F=19.472$, $p<.001$). Training-dependent changes in attentional processing differed as a function of age. In the younger group, training was associated with increased orienting toward happy faces ($p=.036$), whereas in the older group it was associated with reduced disengagement from angry faces ($p=.047$). In contrast, no overall training-related reductions in aggressive behavior were observed on the PSAP. However, age-specific analyses revealed differential response patterns in the older group: the training group showed increased use of the point-earning option ($p=.029$) and reduced use of the defensive option ($p=.024$) relative to the control group. **CONCLUSIONS:** These findings suggest that (1) facial emotion perception training delivered online can bias emotion perception toward happiness over anger, (2) training has the potential to alter attentional bias toward socioemotional cues, with effects operating through different attentional pathways depending on age, and (3) training may also influence behavioral responses in provocation contexts. Further research is required to clarify the clinical significance and long-term effects of the training approach employed in this study. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by NRF-Korea-RS-2023-00218987 and NRF-Korea-RS-2024-00356560.

P3-E-148 - Personal distress as a modulator of clinical decision-making

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BACKGROUND AND AIMS: Empathy has important implications for patient outcomes and for clinician well-being (Neumann et al., 2011; Kim et al., 2004; Larson & Yao, 2005), yet how empathic processes shape clinical decision-making, and the neural mechanisms underlying this process, remain poorly understood. Two brain regions have been consistently associated with distinct empathic processes in neuroimaging studies: the anterior insula (AI) with affect sharing (Lamm et al., 2011) and the right temporoparietal junction (rTPJ) with mentalizing and the self-other distinction (Schurz et al., 2014). Whereas most work on empathy's neural mechanisms has focused on responses to others' pain, we examined how these responses shape downstream clinical decisions. Personal distress (PD), defined as heightened emotional reactivity to others' suffering, is a vulnerability factor for maladaptive emotional responses and may alter how empathic processes are translated into behaviour (Lamothe et al., 2014). We hypothesize that clinicians' trait levels of PD may link brain responses to clinical decision-making. Specifically, we tested whether trait PD moderates the relationship between activity in the rTPJ and the AI, and analgesic prescription likelihood. **Methods** Sixty-seven medical students (34 females) underwent fMRI while performing a simulated pain-management task. Participants viewed virtual encounters with 36 mock patients experiencing experimentally induced pain. Each trial included a medical vignette and a short video depicting pain behaviour, followed by ratings of perceived pain and analgesic prescribing likelihood. PD was assessed using the PD subscale of the Interpersonal Reactivity Index (IRI) (Davis, 1983). **Trial-level linear mixed-effects models** (random intercepts for clinician and patient) tested main effects of AI and rTPJ activity and PD on prescribing likelihood, and whether AI and rTPJ activity predicted prescribing as a function of PD. **Results** Increased rTPJ activity predicted higher analgesic prescribing across clinicians ($B = 0.026$, $t = 2.63$, $p = 0.008$), whereas AI activity did not. PD significantly moderated the rTPJ-prescribing relationship ($B = 0.0054$, $t = 2.18$, $p = 0.029$). Simple slope showed that for clinicians with average

and high PD (± 1 SD), higher rTPJ activity predicted greater prescribing likelihood (high PD: $B = 0.041$, $t = 3.37$, $p < 0.001$), whereas for low-PD clinicians, rTPJ activity was unrelated with prescribing ($p = 0.89$). An AI $\times$ PD interaction was also statistically significant in the full model, but follow-up simple slope analyses at low, mean, and high PD did not reveal significant associations between AI activity and prescribing likelihood when controlling for rTPJ activity. Conclusion Higher rTPJ activity predicted increased analgesic prescribing only in clinicians with higher PD. Trait PD thus appears to function as a modulator: empathic neural processes related to affect sharing (AI) and perspective-taking/self-other distinction (rTPJ) are more tightly coupled to pain-treatment decisions, with rTPJ showing the most robust direct association. PD may therefore heighten the impact of empathic neural responses on pain-treatment decisions, fostering more generous prescribing. Future research will examine AI-rTPJ functional connectivity and its relationship to emotional overwhelm, with implications for clinical training. Funding: NIH K23AI1234561K01DA045735

P3-F-149 - Learning value from others' emotions: Affective observation guides decision-making under uncertainty

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BACKGROUND AND AIMS:: Humans often rely on others' emotional reactions to navigate uncertain environments where learning the value of ambiguous stimuli is crucial. Since others' facial emotions communicate what is desirable or aversive, they may constitute a missing dimension in our understanding of social learning: one that links affective cues to the formation of evaluations and preferences outside of direct social interaction. Across four pre-registered Experiments ($N = 456$), we tested whether affective observation - merely observing others' facial emotional reactions - guides value expectations and preferences for unfamiliar objects. **METHODS:** In a value learning task, participants first observed individuals reacting happily, neutrally, or angrily to unfamiliar objects, and then used a virtual basket to collect objects for points. We recorded participants' choices and action kinematics (i.e., peak velocity, movement trajectory) while approaching the selected objects, as a measure of participants' confidence and anticipated reward. After the task, participants also rated the perceived value of those objects. **RESULTS:** Participants consistently preferred to collect objects previously associated with positive reactions, rating them as more valuable than objects associated with neutral or angry reactions, even after minimal observations ($t(37) = 8.13$, $p < .001$, $d = 1.32$). This tendency increased with greater emotional contrast (e.g., more choices for objects paired with positive over negative reactions compared to neutral over negative ones), being strongest when observed reactions were consistent, but weakened when reactions conflicted ($F(2,109) = 3.98$, $p = .02$, $\eta^2 = .07$). Participants also generalized emotional evaluations to new objects sharing perceptual features such as colour ($t(47) = 9.20$, $p < .001$, $d = 1.33$) or shape ($t(47) = 4.49$, $p < .001$, $d = .65$). Kinematic measures revealed faster and more direct movements toward positively associated objects, indicating that observed reactions impact implicit motor responses based on anticipated value. **CONCLUSIONS:** Together, these findings demonstrate that affective observation supports adaptive behaviour by translating others' emotions into perceived value signals, shaping decisions in novel contexts. The results highlight facial emotion as a low-cost, efficient channel for social value learning, extending models of observational and affective learning to ecological decision-making. **ACKNOWLEDGMENTS AND FUNDING:** The contribution of T.G. and F.C. to this research was supported by the Swiss National Science Foundation (SNSF), project no. 1001G_219898, "Becoming a member: The role of affective deontic markers in social learning".

P3-F-150 - Neural mechanisms of adolescent social decision-making: Insights from computational modelling

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BACKGROUND AND AIMS:: Recent studies (van de Groep et al., 2023; van Rijn et al., 2024) suggest that adolescents exhibit a reduced preference for delayed rewards in intertemporal choice when those rewards benefit friends or others, rather than themselves. However,

it remains unclear whether such behaviour reflects heightened impulsivity, increased selfishness, or both. The present study aims to disentangle these motivational components using a novel computational choice model that separately quantifies temporal discounting and social reward weighting, and relates these parameters to developmental changes and neural correlates of social decision-making. **METHODS:** Two existing datasets were analysed: Dataset 1 (Brian Links; BL; $n = 86$, ages 11–20, van de Groep et al., 2023) and Dataset 2 (Leiden Consortium on Individual Development; LCID; $n = 141$, ages 14–17, van Rijn et al., 2024). In both datasets, participants completed an intertemporal choice task involving smaller immediate versus larger delayed rewards for themselves or a friend; in Dataset 2, rewards could additionally benefit an unknown other. We developed a modified quasi-hyperbolic discounting model in which subjective value (SV) was computed as a function of temporal discounting (k_{self} , k_{friend} , k_{other}) and social weighting (w_{friend} , w_{other}), allowing dissociation of impulsivity and selfishness at the individual level. Parameters were estimated using a hierarchical Bayesian model implemented in RStan. Behavioural analyses examined age-related effects on model parameters, while fMRI analyses assessed associations between these parameters and decision-related neural activity. Trial-by-trial decision difficulty was included as a parametric modulator. **RESULTS:** Across both datasets, participants prioritised their own rewards with social weighting below 1. Temporal discounting differed between datasets, with steeper discounting for friends than for self in BL, but steeper discounting for self and friends than for others in LCID. In both datasets, age was negatively correlated with discounting rates, indicating reduced impulsivity with increasing age, while no significant associations were observed between age and social weighting parameters. Neuroimaging results showed that in the BL dataset, w_{friend} was associated with activity in the middle and posterior cingulate cortex during self–friend decisions. Higher discounting rates were linked to reduced decision-related activity in the left putamen and insula. Across datasets, greater decision difficulty (i.e. smaller difference between the SV of the two options) engaged regions involved in cognitive control and emotional regulation, including the cingulate cortex, insula, and amygdala. **CONCLUSIONS:** By separating impulsivity and selfishness within a unified computational framework, this study demonstrates that adolescent social decision-making reflects both differential discounting of others' rewards and a bias toward self-benefit, with impulsivity decreasing with age. Neural findings highlight the role of cingulate, insular, and limbic regions in evaluating socially and temporally competing options. These results advance our understanding of developmental changes in self–other trade-offs during adolescence.

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P3-F-151 - Social buffering of the effect of community violence exposure on risky decision-making

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BACKGROUND AND AIMS: Community violence is a pervasive social threat in the United States, and experiences of such violence alter how people process reward and threat. In particular, acute stressors exacerbate irrationality in decision-making (Tversky & Kahneman, 1981), changing how people take risks that involve monetary gains and losses (e.g., Pabst et al., 2013; Porcelli & Delgado, 2009). Exposure to community violence (ECV) may become a chronic stressor and is linked to future violence perpetration (Gorman-Smith et al., 2010), highlighting the need to understand how ECV can shape biases in risk taking and identify protective factors that can mitigate this link. The current fMRI study seeks to examine the effect of ECV on risk taking in gain and loss contexts, and the buffering role of one's social network size. **METHODS:** Participants ($n=66$, 50 female, mean age=21.3 years) underwent functional neuroimaging while performing a decision-making task (modified from Porcelli & Delgado, 2009). In the gain condition, participants were presented with two pie charts of equal expected value, one reflecting a higher probability of winning a lower amount of money (e.g., 90% of winning \$0.75; "conservative" option) and the other reflecting a lower probability of winning a higher amount (e.g., 10% of winning \$3; "risky" option). In the loss condition, participants saw the same two pie charts, but winning was instead framed as losing money. Participants also self-reported their number of close social relationships, and whether they have directly and indirectly experienced various community violence. **RESULTS:** The effect of ECV on risk taking was modulated by the context of risk and one's number of close relationships ($b=0.23$, $p=0.03$), and the effect of ECV on neural processing of reward was also modulated by the quantity of close relationships ($F(5,54)=2.71$, $p=0.03$). That is, among individuals with lower number of close relationships, greater ECV was associated with greater probability of taking risks in a loss context ($b=0.24$, $p=0.03$) but lower in a gain context ($b=-0.22$, $p=0.05$), and lower nucleus accumbens (NAcc)

activity when receiving monetary rewards (vs. losses; $b=-7.1$, $p=0.03$). However, among individuals with higher number of close relationships, greater ECV was not significantly associated with risk taking probability in both contexts (loss: $b=0.04$, $p=0.75$; gain: $b=-0.12$, $p=0.29$), nor was it associated with NAcc activity ($b=5.17$, $p=0.13$). **CONCLUSIONS:** Having a lower number of close relationships can be an additional risk factor, such that being exposed to different types of community violence while having a weaker support system can skew risk preferences and reduce the neural sensitivity to reward. In contrast, an enriched social network can be source of resiliency by buffering the negative effects ECV can have on both risk-taking behaviors and neural processing of reward. In sum, healthy social bonds can alleviate how chronic stressors worsen irrationality in decision-making, potentially protecting individuals who are at risk from making poor choices. **ACKNOWLEDGEMENTS AND FUNDING:** We greatly appreciate members of the Delgado Lab for assistance with recruitment and data collection. This research was supported by the New Jersey Gun Violence Research Center and NIH (R01DA053311).

P3-F-152 - Comparing different types of positive social feedback and their relationship to closeness

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BACKGROUND: From offering praise to affirming one's choices, positive social feedback (PSF) is common in social interactions and used to communicate a wide variety of information. PSF is generally experienced as a rewarding outcome, recruiting neural systems involved in reward processing, and encouraging individuals to seek further interactions which can reinforce social connection. An intriguing question is whether the reinforcing properties of different forms of PSF can have distinct influences on dyadic bond formation. We propose that PSF that communicates similarity between two new social partners may be particularly valuable in developing new social bonds because it provides instrumental information about how one relates to their social partner. The present research compares the neural correlates of two common types of social feedback: similarity feedback (SR) - feedback that communicates a shared belief between individuals (e.g., "we both like this TV show"); and social performance feedback (PF) - feedback about one's performance provided by others (e.g., "you are correct"). We hypothesize that neural systems involved in reward processing will be more actively engaged during SR processing, which will relate to the development of closeness. **METHODS:** Prior to entering the scanner, participants ($N = 30$; preliminary) were instructed that they would be interacting with two partners through a computerized task. On each trial, participants viewed a YouTube video thumbnail and title. On 'interest trials' participants rated their interest in the video and received feedback from one partner about whether their interests matched (SR). On 'recency trials' participants guessed how recently a video was posted and received feedback from the other partner about whether their answer was correct or not (PF). Feedback was pre-determined to ensure a distribution of 60% positive and 40% negative feedback across conditions. Participants worked with the same partner within each trial type (i.e., one on interest, one on recency), allowing for a comparison of the effect of feedback type on relationship development. Throughout the task, participants completed closeness and affect ratings to measure feelings of connectedness. **RESULTS:** Preliminary results show that participants felt closer to both partners over time, irrespective of the type of feedback they delivered ($b=.55$, $p<.0001$). Participants also reported positive social interactions with both partners during the task but enjoyed interacting with the partner providing SR significantly more ($t(29)=2.92$, $p<.01$). Univariate neuroimaging analysis revealed that positive SR elicits a stronger canonical reward response than positive PF (vmPFC; $z=5.87$, $p<.0001$). Future analysis will focus on a larger sample ($n=50$) and multivariate analyses to test if participants experience significantly different patterns of neural activity when interpreting SR compared to PF, taking into account measures of affect and closeness. **CONCLUSION:** Preliminary results highlight that overall PSF supports relationship development, but distinct components of PSF differentially engage neural reward systems. **ACKNOWLEDGEMENTS AND FUNDING:** This study was funded by the National Institutes of Health (R01DA053311).

P3-F-153 - Hunger selectively amplifies cue-triggered wanting and body sensations but not predicted liking for food:

A potential distinction between predicted and actual liking

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BACKGROUND AND AIMS: Hedonic alliesthesia suggests that people's liking and wanting ratings for food often covary with hunger and satiety during actual consumption (i.e., food tastes better and induces higher intake when one is hungry). However, prior evidence indicates that hedonic alliesthesia is stronger for foods that are actually eaten during a meal than for foods that are not eaten, raising the question whether ratings of actual liking while tasting the food might be more sensitive to physiological changes than are predicted liking. Recently, Incentive Salience Theory proposed that during anticipation, predicted liking might remain stable across hunger/satiety, as it primarily reflects affective memories associated with particular rewards. In contrast, cue-triggered wanting is dynamically modulated by physiological state. Wanting and predicted liking might be dissociable, given their different sensitivity to physiological states. **METHODS:** In the present investigation, we examined whether wanting and predicted liking covary across hunger/satiety, or whether they show divergent patterns. Five hundred ninety undergraduate students self-reported baseline hunger, and completed three ratings for a selection of palatable, neutral, and disgusting food pictures: 1) wanting (Likert scale); 2) predicted liking (Likert scale); and 3) body sensations evoked by the food picture (body sensation map). **RESULTS:** Linear mixed-effects regression analyses with random intercepts for participants and stimuli found a significant positive relationship between hunger and wanting ($\beta = 0.10$, 95% CI = [0.08, 0.13], $p < 0.001$). In contrast, predicted liking remained stable across hunger levels ($\beta = 0.01$, 95% CI = [-0.01, 0.03], $p > 0.1$). A regression model including both predicted liking and wanting found a significant Hunger $\times$ Measure interaction ($\beta = 0.09$, 95% CI = [0.07, 0.10], $p < 0.001$), indicating a robust separation between two ratings. A model including food category and hunger as predictors found that the separation between predicted liking and wanting was strongest for palatable ($\beta = 0.15$, 95% CI = [0.13, 0.17], $p < 0.001$) and neutral foods ($\beta = 0.09$, 95% CI = [0.07, 0.11], $p < 0.001$), but was absent for disgusting foods ($\beta = 0.02$, 95% CI = [0.00, 0.04], $p > 0.1$), suggesting that hunger selectively amplified wanting for motivationally relevant reward cues. Finally, pixel-wise analyses of body sensation maps provided more converging evidence that wanting and predicted liking might involve partially distinct neurophysiological systems. Partial correlation analysis and visualizations showed that wanting was uniquely associated with activation in the digestive-related regions (stomach, esophagus, and mouth), whereas predicted liking was associated with reduced activation in the arms and weaker activation in the stomach region (see figure below). **CONCLUSIONS:** Our findings highlight a potential difference between predicted liking and actual liking. Ratings of actual liking while tasting the food might be more sensitive to physiological changes than are predictions. During reward anticipation, wanting can be dynamically modulated by physiological state, and is independent from predicted liking. **ACKNOWLEDGEMENTS AND FUNDING:** Z.Z. appreciates advice from her advisor, Professor Piotr Winkielman, and Professor Kent Berridge. This research was not funded.

P3-F-154 - Cue-driven disruption of goal-directed behavior by social media habits

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The dynamic interplay between goal-directed and habitual behaviors is fundamental to adaptive decision-making and behavioral flexibility. However, the neural mechanisms governing this interaction in naturalistic contexts remain poorly characterized. To address this gap, we used a naturalistic social media paradigm to investigate neural signatures that predict switching from goal-directed to habitual behavior. Participants (N = 50, right-handed, frequent Instagram Reel users) completed an fMRI navigation task in which they freely navigated between a lecture video (16 minutes; goal-directed) and Instagram Reels (habitual) for up to 32 minutes. Participants were informed they would later complete a quiz on the lecture content to encourage goal-directed engagement with the lecture video. To probe whether cues linked to social media habits would destabilize goal-directed behavior, Instagram and control (weather) logos were embedded at pseudo-random time points during the lecture. A subsequent functional localizer task identified brain regions responsive to Instagram versus control (weather) logos. Results from the functional localizer showed that Instagram cues, compared to weather logos, elicited significantly greater activation in the nucleus accumbens (NAcc) and left motor cortex, consistent with social media cues engaging both reward-related signals and motor representations linked to swiping. During the navigation task, Instagram logos elicited substantially more switching than control logos. To test whether this effect was associated with engagement of Instagram-related neural patterns, we then correlated the Instagram localizer map with whole-brain activity during the navigation task and found that neural similarity to the Instagram localizer pattern increased following Instagram logo presentation prior to switches from the lecture to Instagram, whereas no such increase was observed for non-switchers. Together, these findings suggest that social media cues are

associated with reward- and motor-related neural patterns that increase the likelihood of switching away from goal-directed behavior in naturalistic decision-making contexts.

P3-F-155 - The insula's warning signal: Anterior insula activity and connectivity during deception detection in young and older adults

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BACKGROUND AND AIMS:: Detecting deception is very challenging and can result in fraud and exploitation with dramatic consequences on physical health and well-being. Currently, the neurocognitive mechanisms underlying deception detection are not well understood. Deception detection requires the integration of external social cues (e.g., emotions expressed, eye gaze) with internally generated signals that may reflect uncertainty, conflict, and/or suspicion; functions the anterior insula subserves. Here, we examined anterior insula functional activation and its whole-brain connectivity during deception detection during an ecologically valid deception detection paradigm (i.e., evaluation of brief high-stakes TV broadcasts of real-world crimes) in a sample of young and older adults. Based on emerging evidence that older relative to young adults experience greater difficulty in deception detection, show reduced anterior insula activity to cues of untrustworthiness coupled with weaker functional connectivity of the anterior insula with brain regions involved in salience detection (e.g., dorsal anterior cingulate cortex, amygdala) and socioemotional processing (e.g., superior temporal sulcus, temporoparietal junction), we also examined the extent to which anterior insula functional activity and connectivity varied by age. **METHODS:** In this study, 56 young (M = 21.9 yrs., SD = 3.7 yrs., Range: 18-33 yrs., 78.6% females) and 54 cognitively healthy older (M = 68.1 yrs, SD = 6.6 yrs, Range = 55-81 yrs., 72.2% females) adults completed a deception detection task based on short real-life TV broadcasts while undergoing fMRI scanning. During the task, participants viewed 16 20-second video clips in which a speaker pleaded for the safe return of a relative, and participants were tasked with evaluating whether the speaker was telling the truth or lying (i.e., veracity judgment). The task also included 8 control-condition videos, for which participants indicated the extent to which a given scenario impacted the individual depicted in the video (i.e., impact judgement). **RESULTS:** Activity in bilateral anterior insula was greater during deception detection (veracity judgment) than control (impact judgement) trials for both young and older adults; and was greater for videos participants perceived as deceptive rather than truthful, independent of the actual veracity of the videos. Bilateral anterior insula furthermore showed stronger functional connectivity with the bilateral precuneus, middle temporal gyrus, angular gyrus, supramarginal gyrus, and superior/middle frontal gyrus—regions involved in mentalizing, perspective-taking, and contextual integration of social information—during deception detection than control trials, in both young and older adults. **DISCUSSIONS & CONCLUSIONS:** These results support anterior insula's functional impact in deception detection in both young and older adults, in close interaction with brain areas recruited during salience detection and socioemotional information processing. Anterior insula may provide a "warning signal" which is associated with greater perception of deception relative to truthfulness and may provide a promising target for brain-based intervention to enhance deception detection accuracy and reduce fraud victimization across adulthood. **ACKNOWLEDGEMENTS AND FUNDING:** 1R01AG057764, R01AG072658; 22A10; CIHR 181831; FRQ 320680; SRNDNA collaboration award.

P3-F-156 - Examining the influence of reward on the precision of memory details

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BACKGROUND AND AIMS:: Reward is often reported to enhance memory, but it remains unclear whether reward improves the fidelity of remembered information or instead primarily affects whether information can be retrieved. Because many studies rely on categorical measurements like recognition tasks, they cannot dissociate memory accessibility from memory precision. This study tests whether reward differentially modulates accessibility and precision, and whether these effects change from a same-day test to a 24-hour delayed test. **METHODS:** Participants completed a three-session item-location memory task with a learning phase, a same-day test, and a next-day test (N = 69). During learning, animal and tool images appeared at locations on a circular ring and were randomly assigned to a reward or no-reward category. On each trial, participants studied the image for four seconds, reported its location, and received feedback indicating a small monetary reward or no reward. Memory was tested

without feedback on the same day and again 24 hours later; participants reported the remembered location with a cursor and drew an arc to indicate confidence. Raw recall error was analyzed using a linear mixed-effects model with reward category, test phase, and their interaction as fixed effects and a random intercept for participant. A mixture model was applied to dissociate random guesses (accessibility failures) from target-centered responses (precision when retrieval succeeded). **RESULTS:** Raw recall-position error increased from the same-day test to the next-day test, indicating reduced performance after the delay ($\beta = 0.10$, $p < .001$). There was no evidence of a main effect of reward on raw error ($\beta = 0.01$, $p = .83$) and no reward-by-test-phase interaction ($\beta = -0.01$, $p = .78$). In contrast, mixture-model estimates indicated a dissociation between precision and accessibility. Reward was associated with higher precision on successful retrievals (kappa effect estimate = 0.46, 95% Credible Interval [0.31, 0.60]) but lower accessibility (theta effect estimate = -1.83, 95% CI [-2.26, -1.43]). Precision decreased at the delayed test (kappa effect estimate = -0.37, 95% CI [-0.50, -0.24]), and the reward-related precision advantage was larger at delay (kappa interaction estimate = 0.22, 95% CI [0.01, 0.42]). **CONCLUSIONS** These results contradict our prediction that reward would promote gist-like, schema-consistent distortion after consolidation. Mixture-model estimates indicate that reward reduces accessibility but increases precision when retrieval succeeds, suggesting a more integrated representation of item-location associations in the reward context. One explanation is that the task primarily indexes the strength and fidelity of item-location bindings rather than item-specific perceptual or semantic detail, such that reward motivates participants to encode item-location associations as integrated units. Together, these findings show that reward can differentially modulate retrieval probability and the fidelity of retrieved associations, underscoring the importance of separating accessibility from precision when characterizing motivational effects on memory. **ACKNOWLEDGEMENTS AND FUNDING:** We are grateful to our participants recruited through the University of Chicago SONA system and Prolific. We also thank Abby Hedden and Bonnie Pang for their assistance with data collection. This project did not receive external grant funding.

P3-G-118 - Climate efficacy and future-oriented cognition impact pro-environmental behavior and climate change anxiety among Latinx children in California's inland empire

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BACKGROUND: Latinx children disproportionately face climate-related hazards and systemic inequities (Deivanayagam et al., 2023; Espinoza-Kulick & Cerdeña, 2022; Torres et al., 2022), highlighting the need for individual and collective commitment to pro-environmental behaviors (actions that benefit nature) and positioning children as key agents of change in these efforts. We examine how to encourage pro-environmental behaviors in Latinx children while avoiding overwhelming anxiety. We focus on two internal factors: future-oriented cognition, which may heighten perceived threat yet also foster planning and meaning-making that channel concern into action (Märtsin, 2019); and climate efficacy (children's perceived ability to make a difference), identified as a driver of engagement and a regulator of distress (Ojala, 2013). Accordingly, we tested whether climate efficacy relates to pro-environmental engagement and climate-change anxiety, and whether future-oriented cognition moderates these associations, after adjusting for general anxiety symptoms. **METHODS:** Participants were N=148 Latinx children (ages 8-14; M=10.8, SD=1.7, 71% female) from California's Inland Empire. Participants completed surveys on climate efficacy and pro-environmental engagement (Ojala, 2012), climate change anxiety (Clayton & Karazsia, 2020), and future-oriented cognition, specifically preoccupation with future events (Klineberg, 1968). Children also reported their anxiety symptoms, and parents reported their child's anxiety symptoms via the Screen for Child Anxiety Related Emotional Disorders (SCARED-C & SCARED-P; Birmaher et al., 1997). A series of hierarchical regression analyses examined the associations between climate efficacy and outcomes (pro-environmental engagement and climate change anxiety). Each model tested whether future-oriented cognition (preoccupation with future events) moderated these associations while controlling for total general anxiety symptoms (SCARED; parent and child combined). **RESULTS:** The first set of hierarchical regression analyses examined the effect of climate efficacy on climate engagement, with future-oriented cognition as a moderator and SCARED as a covariate. Climate efficacy showed a significant main effect on engagement ($p = .0060$), indicating that higher efficacy was associated with greater engagement. SCARED also exhibited a significant main effect on engagement ($p = .0071$). In models predicting climate change anxiety, climate efficacy again showed a significant main effect ($p = .0058$). SCARED was also significant ($p = .0001$). No interaction effects were observed ($p > .48$). **CONCLUSIONS:** Among Latinx children, perceived climate efficacy and general anxiety were correlated with pro-environmental engagement and climate change anxiety. This pattern suggests additive rather than interactive influences:

perceiving oneself as effective in making a difference and overall anxiety levels each relate to how children engage with climate issues and how distressed they feel. Future-oriented cognition recruits developing neural circuitry that supports goal-directed planning and emotion regulation. When paired with efficacy, this prospective cognitive skill may help children sustain engagement by linking anticipated outcomes to meaningful action rather than helplessness in Latinx youth exposed to climate-related stressors. **ACKNOWLEDGEMENTS:** We would like to acknowledge the KIND Lab team and UCR OASIS for funding.

P3-G-157 - Neural processing of social feedback in adolescents and adults: An event-related potential study

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Social feedback refers to what individuals receive from others' evaluations during social interactions, and it plays a crucial role in shaping self-concept and has long-term implications for mental health. Meanwhile, the development of self-concept is also shaped by attachment style. The present study aims to use event-related potentials (ERPs) to explore neural processing of social feedback, and its relations to attachment in adolescents and adults. Participants included 27 college students and 34 high school students performing in the Social Judgment Paradigm (SJP). The SJP involving factors of word valence (positive vs. negative), feedback type (approval vs. disapproval), and feedback congruency (congruence vs. incongruence) was used. Event-related potentials (ERPs) were recorded when participants judged whether the adjectives reflected their traits, followed by feedback from a computer. Meanwhile, feedback was classified as congruent when the computer's judgment matched the participant's response, and incongruent otherwise. The attachment style and rejection sensitivity were assessed through self-report questionnaires. Behavioral data indicated that both age groups tended to endorse positive traits and reject negative ones for self-traits. Regarding ERP data, both adolescents and adults exhibited larger P300 amplitudes (300–400 ms) to approval than disapproval. Additionally, the incongruent feedback elicited more positive late positive potentials (LPP; 500–650 ms) amplitudes than the congruent feedback. The LPP congruency effect was more salient when participants received disapproval feedback. Correlation analyses indicated that attachment avoidance was positively associated with the LPP congruency effect in the adult group. Additionally, rejection sensitivity was positively associated with the RewP (200–300 ms) congruency effect. These findings suggest that social feedback significantly influences self-related cognitive and affective processes responses. Like adults, adolescents engaged more attention on approval feedback, regardless of self-endorsement or not. They are also sensitive to the conflicts between social evaluation and self-evaluation at the late stages of the processing, particularly for individuals with high attachment avoidance.

P3-G-158 - Role of behavioral synchrony and maternal depression on mother-toddler neural synchrony

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BACKGROUND AND AIMS:: Biobehavioral synchrony between parents and children, including coordination of behavioral and physiological signals, is postulated to support child self-regulation. Near-infrared spectroscopy (NIRS) during in-vivo parent-child interactions has recently made it possible to examine real-time neural mechanisms that underlie behavioral synchrony. The present study tested how behavioral synchrony, measured as dyadic reciprocal play behavior, between mothers and their toddler-age children related to neural synchrony in socio-affective regions, including the anterior medial prefrontal cortex (amPFC), lateral prefrontal cortex (IPFC), and temporoparietal junction (TPJ), and whether maternal depressive symptoms disrupted behavioral and neural synchrony. **METHODS:** Participants were 100 mothers and their 1- to 3-year-old children (mean age = 27.31 months, SD = 9.8 months; 52% girls). At time 1, behavioral synchrony was coded using an established observational coding system during 10 minutes of mother-child floor play. Neural synchrony was measured using a continuous-wave CW6 NIRS system during 3 minutes of face-to-face play. Mothers reported on their own depressive symptoms at Time 1 and on their child's emotional and behavioral problems one year later at Time 2. **RESULTS:** Consistent with prior research, mother-child behavioral synchrony was associated with greater neural synchrony in the IPFC, amPFC, and TPJ. Maternal depression was associated with lower neural synchrony between mother left amPFC and child left TPJ during mother-toddler dyadic play, a synchrony pattern that was also associated with higher child internalizing problems longitudinally. Unexpectedly, maternal depression was also associated with greater neural synchrony between mother left IPFC and child right amPFC, a synchrony pattern also associated

with greater mother-child behavioral synchrony. **CONCLUSIONS:** Findings support a link between higher observable mother-child behavioral reciprocity and coordination of mother-child neural activity in socio-affective regions. Findings also underscore the heterogeneous nature of maternal depression and its impact on mother-child biobehavioral synchrony, with some mothers with depression potentially devoting more resources to maintain a positive synchronous interaction with their toddlers despite their depressive symptoms. **ACKNOWLEDGEMENTS AND FUNDING:** This study was funded by the National Institute of Mental Health (R01 113777, PI: Judith Morgan). We thank the research staff and participating families of the Brain Response and Infant and Toddlers Emotions (BRITE) study.

P3-G-159 - On the same wavelength: An fNIRS hyperscanning investigation of parent-child neural synchrony during collaborative problem-solving as a predictor of child executive function development

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BACKGROUND AND AIMS:: Parenting behaviors during parent-child interactions in early childhood can significantly influence children's cognitive and socioemotional outcomes. One such important cognitive outcome is the development of executive function (EF) skills, which are a set of higher-order cognitive skills including working memory, inhibitory control, and cognitive flexibility. EF development during early childhood has been shown to predict later successful academic and social adjustment. Specific parenting behaviors have been shown to either promote or undermine child EF development; namely, effective scaffolding has been shown to support child EF development, while intrusiveness tends to hinder child EF development. However, the potential neural mechanisms underlying these behavioral associations are unknown. **METHODS:** As part of a proof-of-concept pilot study, we recruited 11 parent-child dyads (Mchild age = 5.44, SDchild age = 0.33) to participate in the present longitudinal study: T1 occurred when children were in their summer before kindergarten, and T2 occurred 6 months later. Using functional near-infrared spectroscopy (fNIRS) hyperscanning, we investigated neural synchrony in the parent-child dyads in the bilateral dorsolateral prefrontal cortex (dlPFC) and temporoparietal junction (TPJ) during a collaborative problem-solving task: the pegboard task. The pegboard task consists of a white board with small holes arranged in a 10 x 10 grid, in which different colored pegs can be inserted to match predetermined templates. All parent-child dyads completed an easy version of the task (the "color game", where the colors on the template match the colors of the pegs the child should insert) and a hard version (the "symbol game", where the template includes abstract symbols that each correspond to a specific color peg). Parent and child behaviors were coded using state-space grid (SSG) methodology, and coding constructs captured parent scaffolding and intrusive behaviors (e.g., validation as a scaffolding behavior and dismissiveness as an intrusive behavior) as well as child behaviors (e.g., task-only engagement, dysregulated, etc.). Parent-child neural synchrony was calculated using wavelet transform coherence (WTC). Lastly, child EF was evaluated at both time points using a battery of behavioral tests designed to capture all three aspects of EF. **EXPECTED RESULTS AND CONCLUSIONS:** We predict that higher neural synchrony mediates the positive association between parental scaffolding and child EF, and that lower neural synchrony mediates the negative association between intrusiveness and child EF development. We plan to test these hypotheses and analyze the data using linear regression and mediation models, with neural synchrony as the mediator. If these hypotheses are supported, this would be one of the first studies to reveal a neural mechanism (namely, neural synchrony) driving the well-reported association between parenting behaviors and child EF development. This work will also provide a foundation for a broader, much larger study of parent-child dynamics, neural synchrony, and the development of EF. **ACKNOWLEDGEMENTS AND FUNDING:** I would like to thank the Nancy Kershaw Tomlinson Fund and the Clark Science Center at Smith College for their generous funding for this research.

P3-G-160 - Coupling between daily life diversity and positive affect is associated with catecholaminergic integrity across the adult life span

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BACKGROUND AND AIMS:: Varied daily life activities and experiences have been associated with well-being in both humans and non-human animals. The coupling between daily life diversity and well-being is thought to rely, in part, on catecholamine systems. Nevertheless, there have been no investigations that have measured the effects of both activity and experiential diversity within-individuals, nor has there been work examining how the coupling between daily life diversity and affect change

across the adult life span, or with the integrity of catecholaminergic systems. The current study directly tests whether within-person changes in both activity and experiential diversity are independently associated with positive affect across the adult life span and the extent to which individual differences in the coupling between daily life diversity and positive affect are associated with the integrity of the catecholaminergic nuclei. **METHODS:** Participants (N=184) ages 18-87 completed three weeks of daily life sampling that included ecological momentary assessments (EMA) of daily life activities and current affect in addition to passively sampled geolocation data. From these data, we calculated two metrics of daily life diversity: activity diversity (quantified using Shannon's entropy from the EMA data) and experiential diversity (quantified using roaming entropy from the geolocation data). In a subset of these participants (N=72), we used structural MRI to measure the integrity of the locus coeruleus (LC), the hub of the brain's norepinephrine system, and the substantia nigra (SN), a key dopaminergic nucleus. Multilevel models were used to test the hypothesis that higher person-centered levels of both activity and experiential diversity will be associated with higher levels of positive affect in daily life. Linear models were used to test for the associations between catecholamine integrity and the within-person coupling of daily life diversity and positive affect. **RESULTS:** Behavioral analyses suggest that within-person changes in both activity and experiential diversity were independently associated with positive affect in daily life. Specifically, we found that on days when participants had higher levels of activity and experiential diversity, they had higher levels of positive affect ($B_{\text{Activity}} = 0.08 [0.03, 0.12]$, $p = 0.001$; $B_{\text{Experiential}} = 0.02 [0.02, 0.03]$, $p < 0.001$). These effects were not moderated by age in either domain, $p_s > 0.121$. Interestingly, we found that the strength of the within-person coupling of between experiential diversity and positive affect was positively associated with the integrity of the locus coeruleus ($B = 0.31 [0.05, 0.58]$, $p = 0.022$); no such relationship was observed between the coupling of activity diversity and positive affect and the LC-norepinephrine system ($B = -0.02 [-0.31, 0.26]$, $p = 0.875$). In contrast, there was an association between the integrity of the SN-dopamine system and activity diversity, but this was moderated by individual differences in executive function ($B = -0.38 [-0.70, -0.05]$, $p = 0.024$); no such effect was observed for experiential diversity ($B = 0.05 [-0.26, 0.34]$, $p = 0.735$). **CONCLUSIONS:** Together, these findings suggest that catecholamine systems are important for maintaining the affective benefits of varied daily life experiences across the adult life span. **ACKNOWLEDGEMENTS:** This work was supported by the National Institutes of Health (R21-AG086729 to ASB and F32-AG085890 to JLC).

P3-G-161 - Developmental differences in contextualized socio-emotional encoding

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OBJECTIVE: Socio-emotional processing is inherently multimodal, requiring integration across sensory, semantic, and emotional information streams. Yet most developmental neuroscience research examines these processes in isolation using controlled paradigms that lack ecological validity. A critical gap remains in how the developing brain encodes emotion, semantic, and sensory features during naturalistic social-emotional processing. The current study aims to address this gap by examining emotion, visual semantics, and lower-level visual and auditory features encoding during movie-watching which captures complex, contextualized processing as a proxy for socio-emotional encoding in real world. We aim to characterize developmental trajectories of cortical selectivity in sensory, semantic, and emotional cues across in children and adolescents. **HYPOTHESIS:** We hypothesize that contextualized social-emotional processing engages feature-specific selectivity across distributed cortical networks. Older children will have more similar feature selectivity maps to each other than younger children, indicating refinement toward a shared conceptual understanding. Vertices showing emotion or semantic selectivity will show stronger age-related convergence than vertices selective for lower-level features alone. **METHODS:** This project will use movie-watching fMRI data in 640 children (ages 5-15) from the Healthy Brain Network Biobank. Videos are coded for emotional, semantic (visual/sentiment), and visual-auditory features (48 features in total). Features will be convolved with a hemodynamic response function to predicting BOLD signals. For first-level individual analysis, we will generate individual-level vertex-wise cortical selectivity maps for each feature using Elastic Net regression ($L1_ratio=0.05$, 5-fold cross-validation) predicting preprocessed fMRI timeseries. For group-level encoding mapping, we will conduct paired t-tests at each vertex comparing feature selectivity values across features and label each vertex based on the feature(s) with highest selectivity to generate group-level cognitive maps and probability maps indicating feature selectivity distribution across the sample. For developmental analyses, we will use

Support Vector Regression to predict age and pubertal status from feature selectivity maps, employing a 75/25 train-test split with 5-fold cross-validation within the training set. Follow-up analyses will include vertex-wise correlations, network-based importance testing, and network-specific SVR to examine whether developmental changes are consistent across brain networks. **IMPLICATION:** This naturalistic, multi-feature approach will reveal how sensory, semantic, and emotional encoding develop and integrate across childhood and adolescence to capture the full complexity of social-emotional encoding in real-world contexts and provide a foundation for understanding individual variation in these processes in relation to neurodevelopmental and psychiatric conditions.

P3-G-162 - A brain-based approach to developing clinical thresholds for gaming disorder within the ABCD study

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BACKGROUND AND AIMS:: Gaming Disorder (GD) was recognized by the World Health Organization in 2018 and is characterized by excessive video game play despite negative consequences. Since its recognition, multiple assessment measures have emerged with varying approaches to determining clinical thresholds, resulting in large variability in worldwide prevalence estimates (2%, CI: 0.19%-17.12%). This study uses the largest sample of adolescent neuroimaging data, the Adolescent Brain Cognitive Development (ABCD) Study, to employ a two-stage approach aimed at improving diagnostic accuracy: first, comparing cut-off scores for GD severity classification based on five different psychometric methods, and then validating these cut-offs against established behavioral outcomes of GD, specifically academic decline and family conflict. **METHODS:** We use ABCD Study data across 21 U.S. sites at the 2-year (ages 11-12; n=10,973) and 4-year (ages 13-14; n=9,739) follow-up timepoints. The Video Game Addiction Questionnaire (VGAQ) is a 6-item validated measure of problematic gaming assessing preoccupation, withdrawal, tolerance, loss of control, escapism, and conflict, rated from 1 ("Never") to 6 ("Very Often").

In Stage 1, we compare (1) a polythetic scoring approach for establishing VGAQ cut-offs; (2) a DSM-5 inspired method (meeting criteria for gaming disorder if participants score ≥ 3 on at least 4 of the VGAQ 6 items); (3) a standard deviation-based approach (categorizing participants as Typical (≤ 1 SD), At-Risk (1–2 SD), or Clinical (≥ 2 SD above the mean)); (4) an Item Response Theory (IRT) approach (estimating latent trait scores and identifying cut-offs corresponding to clinically meaningful severity levels based on expected prevalence rates); and (5) a series of three data-driven clustering techniques (k-means, linear hierarchical, and density-based spatial clustering) using psychopathological indicators from the Child Behavior Checklist and neurobiological indicators of reward processing from fMRI data during the Monetary Incentive Delay Task. In Stage 2, we examine which cut-off grouping best predicts academic decline and family conflict at follow-up using cross-lagged panel models, determining the optimal method by strongest cross-sectional and longitudinal associations with outcomes and stability of group classification over time. **PRELIMINARY RESULTS:** Three of five psychometric approaches have been completed. The polythetic approach classified 16.1% (Year 2) as meeting GD criteria. The SD-based approach identified 3.4% (Year 2) in the clinical range (≥ 2 SD). The IRT approach identified stable thresholds across timepoints, with optimal cut-off points at sum scores of 11 and 20, yielding three severity groups: Typical (≤ 11), At-Risk (12-20), and Clinical (≥ 21). At Year 2, 54.2% were classified as Typical, 33.0% as At-Risk, and 12.7% as Clinical. Results from the three new approaches (see above) and the Stage 2 validation are forthcoming.

EXPECTED OUTCOMES: We expect that the data-driven approaches will demonstrate superior predictive validity compared to traditional threshold methods, evidenced by improved prediction of academic decline and family conflict both cross-sectionally and longitudinally. Final results will provide researchers and clinicians with empirically validated cut-off scores for identifying problematic video game use in adolescents. **ACKNOWLEDGEMENTS AND FUNDING:** We thank the ABCD consortium and the many families that participate.

P3-G-163 - Social interaction perception in the infant brain

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BACKGROUND AND AIMS:: Multiple regions of the adult human brain display functional specialization for processing observed social interactions. These responses often generalize to many styles of depiction, from naturalistic videos to point light displays of human figures to abstract interactions between moving geometric shapes. It is unknown, however, how these specialized

neural responses develop or what sorts of stimuli elicit their activity in early stages of development. Here we aim to determine if the infant brain shows specialized responses to human or abstract social interactions, relative to similar independent actions, between 6 and 9 months of age. This is a relevant age range as infants in the second half of the first year are beginning to display attention to and expectations about social interactions. **METHODS:** In a preregistered fNIRS study, we are collecting data while 7- to 9-month-old infants watch videos depicting two agents either interacting (one trying to help the other with a problem) or each acting independently. We refer to these as the “interaction” and “independent” conditions, respectively. Orthogonally, some videos consist of recordings of human actors and others display animated characters (geometric shapes with eyes). fNIRS channels cover regions of interest implicated in social interaction processing in adults (right and left posterior superior temporal sulcus [pSTS], medial prefrontal cortex [MPFC], and right anterior temporal lobe [ATL]), as well as a control region (right MT). Each trial is 20 seconds in length, and we compare activation during the final 10 seconds, as this is when the majority of the social interaction occurs in the interaction condition. For each region of interest in each participant, we use some of the functional data to select one out of 3 or 4 possible fNIRS channels as the functional channel of interest, and then use mean responses in left out data from those channels to conduct group-level tests. **RESULTS:** Data collection is ongoing (current N = 25 of 40, 6m24d - 9m26d, 12 female). In the current sample, we observed higher activation to the interaction condition vs. the independent condition in only one region: MPFC ($t(24) = 3.328$, $p = .0014$). This activation pattern did not vary significantly by stimulus type (human vs. animated), and the difference was directionally larger for the animated stimuli. There was not a significant difference between conditions in the pSTS ($t(24) = 0.900$, $p = 0.19$), where selective responses to social interaction have been observed in adults (Isik et al., 2017), nor any evidence of an interaction with stimulus type. However, our analyses target the entire interaction period (seconds 10-20), which the agents spent acting together but not always oriented toward one another. In follow up analyses, we will investigate if this region responds even more selectively to images of two agents, or two humans specifically, oriented toward each other. **CONCLUSIONS:** At this interim stage, data suggest that infant MPFC already displays preferential responses to social interaction that are not restricted to visually familiar human stimuli. **ACKNOWLEDGMENTS & FUNDING:** This study is supported by start up funds provided by the University of California to Lindsey Powell. We thank Seaera Juarez, Sophie Mazor, Nico Navarro, and Katherine Liang for assistance with data collection.

P3-H-117 - Cue labeling reduces cigarette craving and associated neural activity

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BACKGROUND AND AIMS:: Cigarette craving, triggered by exposure to smoking-related cues, is a key contributor to resumption of smoking after cessation. Identifying effective strategies to regulate cue-induced craving may therefore support abstinence. The aim of this study was to investigate whether affect labeling, a cognitive technique that uses verbal labeling to regulate emotional responses, could be adapted to successfully regulate cue-induced craving. **METHODS:** Fifty adults who smoked cigarettes daily (24 women, age range 20-65 years) completed a novel Cue Labeling Task during fMRI after overnight abstinence from smoking. During the task, participants viewed cigarette-cue images under three task conditions: 1) matching each image with a cigarette-related image (“cue matching”, the cue-elicited craving condition), 2) labeling each image with a cigarette-related word (“cue labeling”, the experimental condition of interest), 3) labeling each image with a non-cigarette word (“gender labeling”, a control condition for cue labeling). In a fourth (baseline) condition, they matched neutral images with one another (“neutral matching”). In each condition, participants rated their cigarette craving. **RESULTS:** Compared to cue matching, cue labeling decreased craving ($p < 0.05$, Hedges’ $g = -0.11$) and activation in the precuneus ($Z = -4.5$, $p_{corrected} < 0.001$), a region associated with craving in prior research as well as in the present study ($b = 0.43$, $p < 0.05$). Age moderated these effects. In the older (but not younger) subsample (≥ 47 years, as determined by a Johnson-Neyman analysis), cue labeling reduced craving ($p < 0.05$, $g = -0.29$) to baseline levels. Greater age was also associated with lower activation in the precuneus during cue labeling compared to cue matching ($Z = -3.8$, $p_{corrected} < 0.001$). By contrast, gender labeling did not significantly alter craving compared to cue matching ($p > 0.05$, Hedges’ $g = -0.13$); and, although it reduced activation in the precuneus ($Z = -5.5$, $p_{corrected} < 0.001$), it led to a smaller reduction of precuneus activity than cue labeling ($Z = -3.9$, $p_{corrected} < 0.01$). **CONCLUSIONS:** These findings suggest that cue labeling, a simple and scalable self-regulation strategy, which participants can learn easily and at no cost, can reduce cigarette

craving and related neural activity, particularly among older midlife adults. **ACKNOWLEDGEMENTS AND FUNDING:** This work was supported by NIDA grant R21 DA059798 (GT); grants from the Pittsburgh Foundation Charles and Nancy Emmerling Fund, the Pittsburgh Mind Body Center, and the Pennsylvania Department of Health's Commonwealth Universal Research Enhancement Program (HAT); as well as Mind and Life Institute Varela Awards (HAT and CW); the Pittsburgh Life Sciences Greenhouse Opportunity Fund (GT and JDC), and grant UM1 TR004927 from NCRR and the National Center for Advancing Translational Sciences (UC Irvine). GT was supported by NIMH training grant T32 MH17140, and HAT was supported by NIH training grants KL2 000146, KL2 RR024154-05, and the William Anderson Spickard Jr., MD Endowed Chair in Medicine. Support was also provided by endowments from the Thomas P and Katherine K Pike Chair in Addiction Studies and the Marjorie Greene Family Trust (EDL). The views presented in this article do not necessarily represent those of the funding agencies.

P3-H-119 - Effects of comorbid depression on fear acquisition in GAD population

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BACKGROUND: Fear conditioning paradigms are central to understanding the mechanisms of acquired fear. While exaggerated acquisition is observed in clinical anxiety, comorbid depression may alter this process. Findings are inconsistent: Some suggest blunted acquisition in depression, while others report enhanced extinction learning. Despite the high comorbidity of depression and generalized anxiety disorder (GAD), few studies have examined depressive effects in fear acquisition in GAD populations. This study aims to address this gap. **Method:** Participants were 64 GAD patients (M age = 34.2, SD = 7.07; 83% female). Depressive symptoms were assessed with the Quick Inventory of Depressive Symptoms (QIDS-SR), and anxiety severity with the Beck Anxiety Inventory (BAI). During acquisition, participants completed a classical fear conditioning task (32 trials; 16 CS+, 16 CS-), with CS+ cues partially reinforced (60%) by mild electric shock. Skin conductance was measured as index of physiological arousal and learning. **RESULTS:** Multiple regression analyses showed that QIDS total score was a significant predictor for differential SCR (CS+ minus CS-) during late acquisition (second half of the trials; $p=.015$) after controlling for BAI, age, sex, and race. QIDS total score also predicted greater CS+ SCR during late acquisition at a trend level ($p=.064$). In contrast, BAI total score was not a significant predictor of overall CS+ SCR or differential SCR but showed a trend toward overall CS- SCR ($p=.060$). No significant effects emerged for sex, age, or race covariates. **DISCUSSION:** Comorbid depressive symptoms in GAD patients predicted better differential learning (CS+ minus CS-) during late acquisition phase. This was mainly due to greater response to the CS+, pointing that depression may exacerbate rather than blunt the consolidation of threat associations in the context of GAD. By contrast, anxiety severity did not predict differential learning but showed a trend toward elevated CS- reactivity. Together, these results highlight the unique contribution of depressive symptoms to altered fear acquisition processes in comorbid anxiety. **ACKNOWLEDGEMENT:** This work was supported by NIH Grant R01AT011257.

P3-H-164 - Increased neural reward reactivity after seven weeks of savoring in young adults with anhedonia: A pilot fMRI study

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BACKGROUND AND AIMS: One of the hallmark symptoms of depression is anhedonia, or loss of interest or pleasure in usual activities, and it is predictive of worse treatment outcomes and higher rates of suicide (Luca et al., 2024). Savoring is an emotion regulation technique that enhances positive emotions through intentional attention to and appreciation of positive experiences (Bryant, 1989), and interventions that teach savoring are associated with increased positive affect in individuals with anhedonia (Craske et al., 2019; Craske et al., 2023). However, the neural mechanisms underlying these changes have not been identified.

METHODS: As part of a single-arm pilot study (NCT06294145), the current study tested whether a 7-week savoring intervention increased neural reward reactivity in young adults with moderate depressive symptoms and anhedonia (N=17). Before and after the intervention, participants completed a positive pictures fMRI task (Dutcher et al., 2021). **RESULTS:** A paired t-test using FSL revealed that participants showed pre- to post-intervention increases in ventral striatum activity when instructed to savor compared to passively view positive social images ($t(15)=2.14$, $p=.032$, $d=.54$). **CONCLUSIONS:** Results indicate that savoring may strengthen reward-related brain activity among young adults with anhedonia, suggesting that positive emotion-focused

interventions can directly target a core deficit in depression. **ACKNOWLEDGEMENTS AND FUNDING:** Thank you to all the participants, research assistants, collaborators, and funders that supported this project, including the Network for Emotion Well-being Intervention Pilot Study Award, the Clinical & Translational Science Institute Core Voucher, and the National Science Foundation Graduate Research Fellowships Program Award to Robin Blades (#2022345198).

P3-H-165 - Striatal activity, reward processing, and stress in depression: A neuroimaging approach

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BACKGROUND AND AIMS: Major depressive disorder (MDD) is associated with disrupted reward processing and also impairments in valuation-driven learning. The striatum (including the nucleus accumbens, caudate, and putamen) integrates reward signals and supports adaptive decision-making. Stress is a major risk factor for depression and can alter striatal activity, but it is not well understood how stress-related changes in striatal function contribute to altered reward processing in MDD. Additionally, most neuroimaging studies rely on template-based regions of interest (ROIs), which may obscure individual-level neuroanatomical differences. This study uses manually segmented, subject-specific striatal ROIs and examines striatal activation of rewards and losses during probabilistic reversal learning under stress in participants with and without a history of MDD. We hypothesized that nucleus accumbens responses to reward would be blunted in individuals with a history of MDD relative to demographic-matched healthy controls. **METHODS:** Sixty participants were recruited, half of whom had a verified diagnosis of current or historical MDD, with the other half as demographic matched controls, verified to be without any current or historical psychiatric or psychological diagnosis. All participants underwent the Maastricht Acute Stress Test, practiced each cognitive task outside of the scanner, and then entered the scanner. Participants then completed a probabilistic reversal learning task requiring adaptation to changing reward contingencies over the span of 100 trials. Data analyses focused on manually segmented, subject-specific ROIs within the caudate, putamen, and nucleus accumbens. Segmentations were completed using 3D Slicer and ITK-SNAP following the Harvard-Oxford subcortical segmentation protocol. Beta coefficients reflecting activation for contrasts of interests were extracted from each ROI. Group-level analyses compared neural activation between participants with and without a history of MDD to assess how depression affects striatal responses to reward and punishment. **RESULTS:** Contrary to hypotheses, we found no differences between MDD and non-MDD groups in nucleus accumbens activity during reward or loss feedback. However, group differences emerged at stimulus onset on trials in which participants selected the lower expected-value ("bad") option. In these incorrect-selection trials, individuals with a history of MDD showed greater activity at stimuli onset in both left and right caudate and left putamen compared to controls. No significant group differences were observed for correct selections or other task conditions. **CONCLUSION:** These results suggest that MDD-related differences in reward learning may stem from altered evaluation and action selected processes than blunted reward responsiveness. Increased striatal activity during incorrect choices might reflect differences in how individuals with MDD represent or pursue goal-directed actions under uncertainty. Together, these results help elucidate deficits in reward learning under stress in individuals with MDD. **ACKNOWLEDGMENTS AND FUNDING:** This research was supported by the University of Arkansas Honors College and Student Undergraduate Research Fellowship.

P3-H-168 - Identifying computational phenotypes of social learning and decision-making in mental health

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BACKGROUND: The ability to learn about other people and make social decisions is critical for successfully navigating our complex social environment and the consequences of failure can be severe (e.g., loss of employment, damage to relationships, etc.). Impairment in the social processes that support this ability is a key component of dysfunction across many mental health disorders. However, there has been a lack of systematic, data-driven research on the relationship between socio-cognitive impairment and mental illness. Moreover, what research exists has been limited in the social processes it surveys, disorder-focused, and population-specific, in sharp contrast to efforts to reconstrue mental health within a multidimensional set of transdiagnostic spectra (e.g., the NIMH research domain criteria; RDoC, and the Hierarchical Taxonomy of Psychopathology; HiTOP). Computational Psychiatry has had great success using computational approaches to decompose behavioral indicators of

mental disorders into their component processes and identify computational phenotypes. However, this research has focused primarily on nonsocial learning and decision-making (LDM). A critical next step is the systematic data-driven exploration of how mental health spectra map onto social computational phenotypes. Here, we will systematically investigate the social-cognitive aspects of individual differences in mental health with the goal of identifying social computational phenotypes (SCPs) that correspond to distinct transdiagnostic mental health spectra. **METHODS:** To target a breadth of social LDM processes, participants (N=1000; 50% female) will complete tasks assessing three levels of learning: nonsocial learning (i.e., about non-social targets), trait learning (i.e., learning about individual-trait associations with no Theory-of-Mind), and Theory-of-Mind (ToM) learning, (i.e., learning about and inferring others' latent preferences under uncertainty). Given evidence that clinical populations and neural systems can be sensitive to reward type (i.e., monetary vs. social) and the presence of reward (i.e., reward-based vs information-based learning), the nonsocial and trait learning tasks will vary in feedback type (informational, monetary, social). To assess a broad range of mental health dimensions and spectra, participants will complete the HiTOP Self-Report measure (HiTOP-SR). We predict that, H1: individual variation along distinct HiTOP dimensions will be associated with distinct SCPs, and H2: A subset of SCPs associated with distinct HiTOP dimensions will distinguish between the learning level (nonsocial/trait/ToM) and/or feedback content (informational/monetary/social) of LDM. **DATA ANALYSIS:** Participant-level social LDM model parameters will serve as outcome variables in multiple regressions against spectra, subfactors, and syndromes of the HiTOP to identify specific SCPs that are associated with distinct components of the HiTOP. Identified HiTOP component scores will also be incorporated into the SNSL and ToML models as parameters with single group-level weights and Bayesian model comparison will be utilized to identify combinations of components that best explain participant responses across the tasks. **CONCLUSIONS:** These findings will improve our understanding of the relationship between social LDM and mental health, elucidate the etiology of psychopathology, help to identify novel targets for treatment, and provide a model for future research.

P3-H-166 - Stage-dependent and reward-type-specific neural mechanisms of reward processing in depression

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BACKGROUND AND AIMS:: Depression is characterized by diminished pleasure and motivation, has been extensively studied in terms of its neural correlates. However, it remains unclear whether its mechanisms vary across reward-processing stages and reward types. **METHODS:** To address this, we employed a modified Monetary Incentive Delay (MID) task with electroencephalography (EEG), investigating two reward phases—anticipation and consumption—across three reward types (food, monetary, and social). We recruited 65 adults (33 high depressive traits (HDT); 32 controls). Event-related potentials (ERPs), and time-frequency analysis (TFA) were analyzed. **RESULTS:** Results showed that, during reward anticipation, the depression group showed a reliable N200 differentiation between gain and loss cues, but showed no corresponding differentiation of reward valence in the P300 or alpha-band (8–16 Hz) activity. This pattern suggests that, despite preserved early discrimination of reward cues, HDT individuals may exhibit reduced top-down attentional engagement and attenuated sensitivity to the motivational salience of reward-related information. During consumption, the HDT group showed FRN differentiation only between food and monetary rewards, whereas controls differentiated all three reward types. Feedback P300 similarly showed no reward-type differentiation in the HDT group, but controls distinguished primary (food) from secondary (money, social) rewards. TFA further indicated stronger and more specific reward-type differentiation in controls, while the HDT group showed limited differentiation, mainly separating social rewards from the other two. **CONCLUSIONS:** Together, these findings suggest that reward deficits in depression are not uniform but follow a stage-dependent and reward-type-specific pattern, offering refined neurophysiological insights into motivational impairment and informing more targeted models of anhedonia.

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P3-H-167 - Machine learning prediction of treatment-resistant depression using self-report and reinforcement learning task measures

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BACKGROUND AND AIMS:: Major depressive disorder (MDD) is highly heterogeneous, and many individuals do not respond to first-line antidepressant treatments (SSRIs and SNRIs). Unfortunately, such treatment resistant depression (TRD) is only established through a trial-and-error process of trying multiple SSRIs. This leads to long delays, high burden, and poor outcomes. Prior work has shown that self-reported anhedonia and internalizing symptoms can help distinguish antidepressant non-responders from responders, but these approaches rely on pre-defined questionnaire scales and lack behavioral measures of motivation and learning. In prior work (Liu et al., 2024), machine learning models were trained using subscale scores derived from established questionnaires. Building on this foundation, our recent analyses moved beyond scale-level summaries by examining individual questionnaire items across many validated scales, using factor analysis to identify a smaller, more targeted set of symptom dimensions that are not constrained by original scale boundaries. **METHODS:** This study builds directly on prior work using pre-defined self-report scales (Liu et al., 2024). In that work, validated questionnaires assessing depression, anhedonia, motivation, and personality were summarized using established subscale scores and used for classification. In follow-up analyses, we pooled all individual items across these scales and conducted exploratory and hierarchical factor analyses to identify empirically derived symptom dimensions that capture shared variance across items, independent of original scale definitions. This process yielded a reduced and more targeted set of symptom factors emphasizing core affective, cognitive, and motivational features. In the current preregistered study, adults aged 18+ will be recruited online via Prolific and SONA. Participants will be pre-screened into HC, at-risk, MDD, and TRD groups based on symptom severity and treatment history. Participants will complete a refined questionnaire battery emphasizing the previously identified targeted item set, followed by a Pavlovian Go/No-Go (GEM) task assessing reward learning, punishment learning, and action-valence biases. Planned analyses include hierarchical factor validation, mixed-effects models for behavioral performance, and machine learning classifiers (e.g., random forests, logistic regression). Models will compare predictive performance using (a) targeted symptom factors alone, (b) behavioral parameters alone, and (c) combined features, with cross-validation to estimate generalizability. **RESULTS:** As a preregistration, no results are reported. Planned analyses will evaluate whether combined self-report and behavioral features improve discrimination of TRD from MDD and other groups relative to questionnaire-only models. **CONCLUSIONS:** This study will test a scalable, theory-driven approach to TRD risk identification that integrates symptom structure with motivational and learning processes. If successful, the findings may inform more efficient screening strategies and support earlier, personalized intervention in depression. **ACKNOWLEDGEMENTS AND FUNDING:** This work is supported by institutional research resources. Additional funding and acknowledgements will be updated upon study completion.

P3-H-169 - Neural and computational mechanisms underlying affective interference in depression and suicidal ideation (preregistration)

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BACKGROUND AND AIMS:: Mental health disorders account for a substantial proportion of the global disease burden, with suicide remaining a leading cause of death among young adults. Prior work suggests that depression and suicidal ideation are associated with attentional biases toward clinically relevant emotional information, yet the cognitive and neural mechanisms by which these biases interfere with decision-making remain poorly understood. This study investigates affective interference during perceptual decision-making by integrating drift diffusion modeling (DDM) with event-related potential (ERP) measures. Using an emotional Stroop task, we examine how task-irrelevant emotional content disrupts evidence accumulation in individuals with depression and suicidal ideation. We hypothesize that, relative to controls, individuals with depression will exhibit reduced drift rates for sad words, whereas individuals with suicidal ideation will show reduced drift rates for suicide-related words, reflecting selective interference from clinically salient stimuli. We further hypothesize that this interference will be associated with altered early visual processing (P1, N170) and weakened decision-related processing (P3). **Methods:** Participants

aged 18-25 completed questionnaires assessing depressive symptoms (PHQ-9) and suicidal ideation (Suicidal Ideation Scale; SIS), and were classified into control (PHQ-9 $\leq$ 4, SIS $\leq$ 16; n=49), depressed (PHQ-9 $\geq$ 10, SIS $\leq$ 16; n=46), and suicidal (PHQ-9 $\geq$ 10, SIS $>$ 16; n=48) groups. Participants completed an emotional Stroop task requiring identification of word font color while ignoring word meaning (neutral, happy, sad, or suicide-related) while 64-channel EEG was recorded. EEG data were preprocessed offline and time-locked to word onset. Trial-level ERP amplitudes (P1, N170, and P3) were computed as the mean voltage within predefined time windows and electrode sites. Trials with nonresponses or response times under 200 ms were excluded. Behavioral data (response times of correct/incorrect choices) will be analyzed using hierarchical DDM implemented in a Bayesian framework with the brms package (four chains; 1,000 warmup and 3,000 sampling iterations per chain). Drift rate and non-decision time will be modeled as a function of word category, group, and their interaction, with boundary separation varying by group and random effects for participants. To investigate neural mechanisms of affective interference, trial-level ERP amplitudes will be included as predictors of DDM parameters, testing three-way interactions between ERP amplitude, word category, and group. Symptom severity measures (PHQ-9, SIS, and anxiety) will be additionally examined as continuous predictors within the relevant groups. Effects will be considered meaningful if their 95% Bayesian credible intervals exclude zero. By linking attentional biases to specific computational parameters of decision-making and their neural correlates, this study aims to clarify how clinically relevant emotional information disrupts cognition in depression and suicidal ideation. These findings may inform mechanistic models of risk and contribute to the development of more precise intervention strategies.

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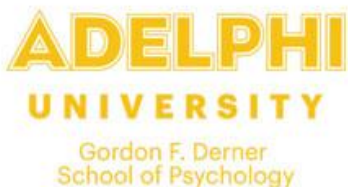


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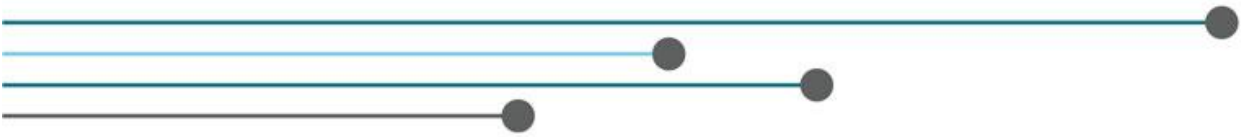
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