

Presentation and Poster Abstracts

(in alphabetical order by author)

Presentation

The associations between social network size and preschool children's visual perspective-taking and non-verbal cue understanding

Esmee Aalders, UZH (Advisor: Moritz Daum)

Children develop and communicate within socially and linguistically diverse environments, yet it remains unclear which aspects of diversity matter for communicative development. One source of variation is children's social networks: who they interact with and how frequently. Here, we examined whether social network size is related to variation in communication and perspective-taking in a large sample of 4-year-old children ($N = 128$).

We assessed visual perspective-taking and non-verbal cue understanding and examined their associations with social network size. In contrast to previous approaches, we systematically varied the contact frequency required for a person to be considered part of a child's social network, rather than using a fixed weekly contact between the child and others. The conventional weekly threshold revealed no significant associations. In contrast, a data-driven approach identified different candidate thresholds for both communicative behaviours: Visual perspective-taking was positively associated with network size when network members were defined as individuals encountered approximately monthly. Non-verbal cue understanding was negatively associated with network size when a threshold of approximately four interactions per week was applied. These findings suggest that associations between children's social environments and communicative behaviour depend partly on how social network size is operationalised. I will discuss what different contact frequencies may capture about children's social experiences and how this motivates a broader approach to environmental diversity. Ongoing work extends this question to linguistic diversity, social network characteristics, and relationship quality as potential sources of variation in children's perspective-taking.

Poster

The influences of social information in dynamic group settings: A multimodal, VR approach

Davide Ahmar, HU (Advisor: Marcel Brass)

Social information is a fundamental aspect of human cognition. Our perceptions, actions, and emotions are continuously influenced by the multiple others around us in complex and dynamic ways. Yet, laboratory investigations into these social influences have traditionally relied on static, abstracted and non-interactive paradigms, often neglecting the embodied, affective and (inter)group contexts of naturalistic social cognition.

In this doctoral research, I propose to investigate the multi-level influences of group-based social information on individuals' perception, decision-making and affective states in an ecologically valid, dynamically unfolding setting. To this end, I will combine two methodological advances: immersive virtual reality (iVR) - recreating naturalistic, multi-agent settings under strict experimental control - and mobile multimodal recordings (EEG, eye-tracking, motion tracking, and physiological measures) - simultaneously capturing participants' brain-body dynamics.

Within this framework, I will develop an ambiguous approach-avoidance task (aAAT) in which participants are faced with visually ambiguous stimuli stochastically disambiguating into either a predator (avoid, or die) or prey (approach, or starve), forcing high-stakes, time-pressured decisions. Across a series of experiments, I will progressively populate the aAAT environment with groups of virtual agents whose social cues and group memberships are systematically manipulated, thus assessing their effects on participants' perceptual sensitivity, approach-avoidance decisions, and autonomic responses to the ambiguous stimuli.

Experiment 1 will establish the effects of mere social presence, comparing an a-social baseline to a scene populated with neutral bystanders. Experiment 2 will investigate three types of social cues by manipulating agents' gaze (towards or away from the stimuli), behavior (approach or avoid), and emotional expression (positive or negative). Experiment 3 will assess whether group membership (induced via minimal group paradigms) modulates the effects of these types of social information. Together, these experiments will provide a multi-level, multimodal account of how social information differentially shapes perception, decision, and affect in dynamic multi-agent settings.

Poster

The emergence and developmental trajectory of social function in the medial prefrontal cortex across the first year of life

Olivia Allison, UVA (Advisor: Tobias Grossmann)

The medial prefrontal cortex (mPFC) plays a central role in social cognition and has been implicated in social motivation during adolescence and adulthood (Grossmann, 2013; Powers et al., 2016; Sequeira et al., 2021). However, little is known about when social function of the mPFC emerges in infancy, how it develops across the first year of life, and whether early variability in mPFC function is associated with individual differences in developing social motivation. Recent awake infant functional magnetic resonance imaging (fMRI) work suggests that the mPFC selectively responds to faces as early as 2-5 months of age (Kosakowski et al., 2024). The present proposed studies aim to replicate and extend these findings by, 1) characterizing the emergence and developmental trajectory of mPFC social function, and 2) testing its relation to early behavioral markers of social reward and later social motivation. Infants aged 2-12 months will complete a functional neuroimaging task using high-density diffuse optical tomography (HD-DOT), which provides improved spatial resolution over standard functional near-infrared spectroscopy. A target sample of 104 infants will view randomized video clips of faces, objects, bodies, and scenes adapted from Kosakowski et al. (2024). Study 1 will test whether the mPFC selectively responds to faces compared to objects, bodies, and scenes, whether this selectivity differs between age groups (2-5, 5-8, and 8-12 months), and when face-selective mPFC responses reliably emerge across the 2-12-month cross-sectional sample. Exploratory analyses will examine age-related changes in the functional organization of mPFC responses. Study 2 will test whether variability in mPFC social function from Study 1 are cross-sectionally associated with individual differences in social Smiling and Laughter during infancy (Putnam et al., 2014), which may reflect an early affective marker of social reward (Sequeira et al., 2025), and longitudinally predictive of Sociability at 18 months (Putnam et al., 2006), a behavioral marker of social motivation (Grossmann & Allison, 2024). Together, these studies will clarify when social function emerges in the mPFC, how it develops across infancy, and whether early variability in mPFC social processing contributes to individual differences in social reward and motivation within and beyond the first year of life.

Poster

Early contexts, lasting effects: Predicting young adult educational attainment from early family and neighborhood contexts

Myriam Al Bcherraoui, UM (Advisor: Pamela Davis-Kean)

Despite significant efforts to reduce socioeconomic disparities in educational equity, the association between socioeconomic status (SES) and academic achievement has strengthened since the 1990s, indicating widening educational inequality between high- and low-SES children. This may be in part due to our limited understanding of the mechanisms linking SES to academic achievement outcomes. The focus has often been on the role that family SES, including parental income and education, has played in achievement differences, but evidence suggests that neighborhoods may also play a critical role in shaping children's educational outcomes. Yet, few studies have examined their joint influence, and even fewer have considered how these early opportunity exposures interact over time to predict educational attainment during young adulthood. To address these gaps, this study will draw on large-scale, nationally representative data from the Panel Study of Income Dynamics, linked to the National Neighborhood Data Archive. By combining geocoded neighborhood data on educational opportunity with longitudinal survey data on children and families, this study will examine (1) joint trajectories of family- and neighborhood-level opportunity exposures across early childhood, middle childhood, and adolescence, and (2) whether the timing, persistence, and specific combinations of opportunity exposures across domains and developmental periods differentially predict young adult educational attainment. Results from this study will provide a greater understanding of how early neighborhood conditions interact with family processes to shape educational trajectories. These findings will help identify early mechanisms of socioeconomic educational disparities and clarify how low-income youths' educational trajectories may shape access to postsecondary education.

Poster

Do people feel and function better after personality interventions?

Rosalie Andrae, UZH (Advisor: Wiebke Bleidorn)

Personality change interventions can reduce traits such as neuroticism, but it remains unclear whether their benefits extend more broadly to how people feel and function and how such changes unfold. Using data from the CHILL study—a preregistered randomized controlled trial of a six-week smartphone-based neuroticism intervention (N = 433)—we examined the downstream effects of neuroticism reduction on 12 secondary outcomes spanning the clusters affective distress, personality dysfunction, self-regulation, self-views, and well-being. Outcomes were assessed before and after the intervention and at follow-up. Using latent change score models, we tested (1) whether each outcome changed across the intervention and follow-up periods, (2) whether its change was coupled with change in neuroticism, (3) whether changes predicted one another prospectively, and (4) whether coupling was specific to neuroticism relative to the other Big Five traits. Nearly all outcomes changed adaptively during the intervention, and these gains were maintained at follow-up. These changes were substantially coupled with the reduction in neuroticism and remained so after removing items overlapping in content with neuroticism. Prospective paths provided little robust evidence, indicating that changes unfolded concurrently rather than sequentially.

Coupling was specific to neuroticism for affective-distress outcomes, whereas well-being and self-view outcomes coupled at least as strongly with extraversion. Overall, the intervention produced broad improvements in feeling and functioning that were tightly coupled with reductions in neuroticism and emerged together rather than in sequence.

Presentation

Do questions leave a mark? Measurement reactivity in intensive longitudinal data

Laura Brückner, HMU Potsdam (Advisors: Annette Brose and David Richter)

Repeated self-report designs, including experience sampling, daily diaries, and panel studies, are central tools for studying psychological and behavioral processes over time. Yet, repeated assessment may also influence the constructs, responses, or participation patterns it aims to capture, a problem commonly discussed as measurement reactivity (Barta et al., 2012; French & Sutton, 2010). Previous research links repeated assessment to changes in target constructs, response behavior, within-person variability, participation, and associations between variables, but the interpretation of these patterns often remains ambiguous (e.g., Eisele et al., 2023; Maher et al., 2024; Shrout et al., 2018).

In this talk, I will present the conceptual starting point of my dissertation project on measurement reactivity in intensive longitudinal data. The project distinguishes observable patterns in the data, such as temporal change, initial-elevation-or-later-decline patterns, response-process changes, and changing within-person associations, from the mechanisms that may explain them. I will discuss how study design and statistical modelling can strengthen or limit conclusions about measurement reactivity and outline planned empirical re-analyses work. The overall goal is to clarify when observed patterns can be interpreted as measurement-reactivity-compatible and when alternative explanations remain equally plausible.

Poster

The development of grid-like codes, spatial and non-spatial memory in middle childhood

Lydia Brundisch, MPI for Human Development (Advisor: Markus Werkle-Bergner)

Grid cells in the entorhinal cortex provide structured scaffolds for spatial, episodic, and conceptual representations. Reports of macroscopic grid-like codes in adolescence suggest a prolonged functional maturation of the entorhinal cortex from middle childhood to young adulthood, yet children typically reach adult-like performance in spatial navigation tasks before age 12. To examine whether the emergence of entorhinal grid-like codes supports the development of spatial and non-spatial memory in middle childhood, we collected fMRI data from 6- to 8-year-old children during an object location memory task, complemented by a non-spatial memory task battery. We report preliminary findings from $n = 28$ children revealing associations between age, entorhinal grid-like codes, spatial and non-spatial memory, suggesting that functional maturation of the entorhinal cortex is already underway in middle childhood.

Poster

Bias of retrospective reporting to combat missingness in longitudinal research

Chad Davis, UVA (Advisor: Cynthia Tong)

Longitudinal studies are invaluable for understanding psychological processes over time but are often plagued by attrition, potentially compromising study results. Researchers may address this issue by supplementing their samples with new participants. Supplemental sampling refers to the addition of new participants to a study at later waves to compensate for attrition, such that they do not participate at the first time point. In doing so, researchers may ask participants to provide retrospective reports of their past experiences. Although this approach offers an intuitive solution, it is unclear whether or not this approach may introduce bias if the retrospective reporting is not accurate. Our research employs a simulation-based approach to systematically investigate how inaccuracy in retrospective reporting affects longitudinal studies. Six potentially influential factors are manipulated in the simulation study, including sample size, effect size, size of supplemental sample, missing data mechanism, proportion of attrition, and the type and level of retrospective reporting bias. Conditions are compared against a baseline with complete, non-biased data and conditions where no retrospective reporting is included. Results indicated that estimation accuracy decreases significantly with biased retrospective reporting. Alternative approaches to retrospective reporting with supplemental samples are discussed.

Poster

Teacher self-efficacy, classroom practices, and student outcomes in Montessori education

Emily Daggett, UVA (Advisor: Angeline Lillard)

Montessori education is associated with better academic and social-emotional outcomes. To promote these outcomes, Montessori programs rely on certified teachers to fully implement the approach. However, the specific classroom practices associated with child outcomes are under researched. Concurrently, the retention of Montessori teachers who can successfully enact those practices is essential for the expansion of Montessori schools. Teacher self-efficacy (TSE), a teacher's belief in their ability to enact the behaviors necessary to support child development and learning, has been associated with teacher retention in Montessori and non-Montessori contexts. Additionally, TSE has been associated with positive child outcomes in conventional education, but the link between TSE and student outcomes in Montessori contexts has not been established. Using child, teacher, and classroom data from a longitudinal randomized controlled trial, this dissertation will first explore whether specific practices in Montessori early childhood classrooms are associated with gains in self-regulation, social perspective taking, reading, vocabulary, and math across the early years (i.e., children were assessed at age three, four, and five/six). Then, a new sample of Montessori early childhood teachers will be surveyed on their classroom practices and TSE to explore whether TSE is associated with classroom practices found to be predictive of gains across the early childhood years. If teachers with higher TSE more frequently report instances of effective classroom practices, this would encourage more research into TSE, its development, and maintenance in Montessori contexts.

Poster

From audio to insight: Ecological measurement of preschoolers' multilingual speech

Agnese D'Angelo, UZH (Advisor: Moritz Daum)

Children's language development is shaped by the quantity and quality of the speech they hear and produce in daily life. Everyday communication is highly variable and unpredictable, particularly for multilingual children, and this variability is difficult to capture in task-based or experimental settings. Capturing such dynamic communication requires methods that reflect the diversity of real-world language use, and wearable recording technology now makes this possible.

In a longitudinal study, we collected one week of naturalistic audio recordings (~12 hours per child) from $N = 319$ children aged 2.9–3.3 years. We investigated how everyday communication varies across children with different language statuses (monolingual, bidialectal, bilingual, multilingual).

We built a natural language processing (NLP) pipeline that segmented transcripts into speaker utterances and words, yielding core quantitative measures (e.g., lexical diversity, mean length of utterance) for children and their interlocutors, alongside qualitative measures such as conversational balance and question behaviour. To capture multilingual dynamics, we developed a language identification system capable of detecting code-switching.

By combining week-long naturalistic recordings with automated NLP methods, this approach enables scalable extraction of children's everyday language, capturing its quantity as well as quality and multilingual dynamics.

Presentation

Manifestations of interdependence in romantic partners' facial emotional display: A comparison between interaction contexts and three age groups

Myrto Dolcetti, UZH (Advisor: Mike Martin)

Emotional interdependence is a key determinant of couples' functioning and according to emotional aging theories, is thought to increase as couples age. However, interdependence in partners' facial emotional expressions – an important nonverbal channel for communicating emotions with close others – has often been overlooked. In two studies we examined (1) if there is interdependence in interacting partners' facial emotional expressions, (2) if the manifestation of interdependence differs depending on the momentary (i.e., partners' behavior) and global (i.e., type of interaction) context it is taking place, and (3) across three age groups. We analyzed two indicators of interdependence: synchrony, i.e., the coordination of partners' facial emotional display (Study I) and coupling, i.e., the cross-partner reciprocal emotional influence (Study II). We used observational data from 119 mixed-gender couples ($M_{age} = 59.75$ years, $SD = 15.55$, range = 30-91) belonging in three age groups, who participated in one conflict and two dyadic coping interactions in the laboratory. Partners' facial emotional expressions were automatically and continuously assessed with the Noldus FaceReader 9.1 software, whereas verbal behavior was coded at 10-second intervals by human raters. Cross-correlation functions and multilevel modelling (Study I) provided evidence of synchrony in the valence of partners' facial display and significant associations with momentary stress expression behavior. Continuous time structural equation modelling (Study II) further revealed distinct patterns of smile coupling across interaction types, genders and age groups. These findings reveal novel insights into how interdependence

in nonverbally expressed affect manifests in couples across the lifespan, fostering positive relationship functioning.

Poster

Understanding language beyond words: Nonverbal cue integration across language profiles in early childhood

Larissa Erchinger, UZH (Advisor: Moritz Daum)

Particularly in ambiguous situations, bilingual children compensate for smaller vocabularies by relying more on and being more sensitive to nonverbal cues. The COMMunicative Experience (COME) Perspective (Wermelinger et al., 2024) attributes this to the communicative complexity of multilingual environments: the more complex the environment, the more adaptive children's communicative strategies. Yet this claim has mostly been tested by comparing monolingual and bilingual children alone. Therefore, we tested 245 children aged 2;9 to 3;3 with four language profiles: monolingual, bidialectal, bilingual, and multilingual. Children sat at a table, opposite their interaction partner. They had to identify the location of a hidden marble based on cues their interaction partner provided by looking or pointing. The interaction partner sat at varying distances from the marble, thus manipulating ambiguity. The successful use of the gaze cues increased linearly from monolingual to bidialectal, bilingual, and multilingual profiles. This linear effect held in the most ambiguous condition, when the interaction partner sat furthest from the marble. The trend was only observable in the first half but not in the second, suggesting that initial differences in cue sensitivity decreased as children learned the task structure. Using pointing cues did not differ across the language profiles. These findings replicate and extend prior work by showing that nonverbal cue sensitivity increases gradually across a wider range of language profiles, rather than reflecting a simple comparison between monolinguals and bilinguals. It supports the COME Perspective and offers a clearer picture of how different multilingual and multidialectal environments shape early communication.

Poster

Gender-role beliefs and acquired disability in veterans: Associations with physical and mental health

Benjamin Ertman, UVA (Advisor: Paul Perrin)

Children, as early as preschool if not before (Robbins et al., 2016), and throughout the course of their lives, are socialized to and internalize traditional gender roles: strong, emotional restricted, and dominant men (Kuo et al., 2025) and emotional, weak, and sexualized women (Smith et al., 2015). Young men (and women) who identify with traditional masculine norms are more likely to enlist in the military (Fransen, 2019) and more easily embody the warrior and protector identities rewarded during military service (Gardiner, 2012). The acquisition of a disability or chronic health condition due to military service immediately changes the veteran's relationship to their gender identity (Keeling & Sharratt, 2023), body image (Keeling et al., 2025), and warrior and military identities (Bond et al., 2022), and is associated with significant mental and physical health problems (Cypel et al., 2023). My dissertation seeks to understand the relationship between the experience of adversity experienced by veterans with an acquired disability or chronic health condition, including internalized ableism, ableist microaggressions, and experienced stigma and self-stigmatization due to veteran and service member identity, and mental and physical health outcomes and behaviors including depression,

anxiety, pain, and sleep disturbance. Using structural equation models, I will investigate potential exacerbators (e.g., identification with traditional gender role ideologies) and buffers (e.g., positive disability identity, warrior identity, social support, emotion regulation, and mindfulness) of these relationships. Identification of protective and risk factors will inform interventions to improve the physical and mental health of veterans with a disability or chronic health condition.

Presentation

Performance monitoring in school-aged children born very preterm

Jessica Fervença Ramos, UZH (Advisor: Flavia Wehrle)

Background: Despite improved survival rates following advances in neonatal care, children born very preterm (<32 weeks of gestation) remain at increased risk for long-term neurodevelopmental sequelae. These impairments span a wide range of cognitive domains, with higher-order cognitive control abilities being particularly affected. Performance monitoring underlies these higher-order cognitive skills and comprises behavioral and neuronal responses that individuals show in reaction to unexpected outcomes, such as an error. To date, very little is known about this ability in very preterm children at school age.

Objective: This study aims to investigate performance monitoring in very preterm children compared to typically developing peers.

Methods: A total of 146 very preterm children and 156 typically developing peers completed a computerized stop-signal task at school age (aged 7-12 years) as part of a comprehensive neurodevelopmental assessment. The task consisted of four blocks of 48 trials, resulting in 192 trials in total (25% stop trials). Participants also underwent an MRI scan of the brain, including structural and resting-state functional sequences. Stop-signal task performance (post-error slowing, post-error improvement in accuracy) will be compared between groups and related to executive function measures, including working memory, inhibition, and flexibility. Structural brain MRI data will be segmented with Freesurfer and used to identify potential neuronal correlates of poorer error monitoring in very preterm children.

Expected results: Very preterm children are expected to show poorer performance monitoring compared to their peers. Exploratory analyses are expected to reveal relationships between performance monitoring and executive functions as well as structural brain correlates.

Poster

The ability to recognize social agents and infer their internal mental states

Craig Gallagher, UVA (Advisor: James P. Morris)

The ability to recognize social agents and infer their internal mental states is paramount to successful social interaction and, in turn, human survival and well-being. Classic models of face perception distinguish ventral extrastriate regions involved in processing invariant features useful for identifying individuals from superior temporal regions sensitive to dynamic cues, including facial expression, eye gaze, and biological motion. These specialized perceptual systems are thought to interact with broader cortical systems supporting person knowledge and theory of mind, yet how they are organized within the brain's large-scale functional networks remains poorly understood.

In this study, we use precision functional mapping to characterize this organization within individual participants. Repeated resting-state fMRI is used to identify

individualized functional networks, and functional localizers are used to distinguish brain regions sensitive to faces, places, and biological motion. We also employ a novel face/place selective-attention n-back task in which facial identity and expression vary independently across successive trials. This design allows us to distinguish neural responses to changes in identity from changes in apparent affective state. The same manipulations occur both when participants attend to faces and when faces are task-irrelevant distractors, and so we can further test whether sensitivity to identity and expression depends on the focus of attention.

By combining individualized network mapping with complementary social perception tasks, this study aims to clarify how neural systems that extract different kinds of information about social agents are organized relative to large-scale networks supporting complex social cognition. Preliminary analyses suggest that individually localized face- and biological-motion-sensitive regions both fall within Default Network-B, a network from the DU15NET cortical parcellation that has been implicated in theory of mind.

Poster

„Hi, Alexa!“ What do children think about curious machines?

Helena Goldbaum, UVA (Advisor: Jamie Jirout)

Children's growing exposure to generative AI applications as an information source highlights the need for research to understand how their perceptions of these devices develop and shape their learning. When learning from humans, we know that children actively make inferences about their informants to decide whom to seek information from (Tong et al., 2020). Given that children are active social learners, it is theorized that human teachers can model comfort with uncertainty to promote curiosity in classrooms (Jirout et al., 2018). However, children's interactions with digital tools as a source of information and a model of curiosity remain understudied.

In this project, we aim to identify how expressions of uncertainty (i.e., wondering about unexplored topics) influence children's ratings of digital teachers (i.e., digital voice assistants designed to teach) in a learning context. We ask (1) whether expressions of uncertainty influence children's ratings of digital teachers' characteristics (knowledge, curiosity, preference, efficacy, and niceness), and children's curiosity; (2) whether this varies based on the digital teacher's information accuracy; and (3) whether these effects depend on children's individual differences (e.g., age).

To test this, we will ask 144 6-to-10-year-olds to evaluate four different digital teachers that vary in accuracy and uncertainty, and choose one to be placed in their classroom. Children will also complete various curiosity measures. Our study findings will help us better understand children's ratings of digital teachers' characteristics, which can help us uncover how expressions of uncertainty may influence curiosity and learning, and how children think about digital voice assistants.

Poster

Profiles of black youths' academic and racial contexts: Implications for academic outcomes

Abrea Greene, UVA (Advisor: Naila A. Smith)

Black youth experience social contexts that simultaneously promote and/or inhibit their academic development (Garcia-Coll et al., 1996). At home, concurrent academic (AS) and racial socialization (RS) shapes youths' academic values and understanding of race

and racism (Metzger et al., 2020), with implications for their academic beliefs and behaviors. Similarly, the school racial climate can either promote or inhibit Black youths' academic outcomes (Griffin et al., 2017). To cultivate contexts that promote Black youths' academic thriving, we need to examine variation in their academic and racial experiences across contexts. Using latent profile analysis, we explored how variation in home (parental AS and RS) and school racial (school racial climate, discrimination) contexts is related to Black youths' academic self-concept and classroom engagement. Amongst 248 Black 7th graders (Mage = 12.18, SD = 0.49, 55% female) we found three profiles: (1) Low Discrimination Schools (69.84%, n = 176); (2) Racially Inequitable Schools (21.82%; n = 55): high teacher discrimination, above average peer discrimination and inequitable school practices, and below average racial fairness, and (3) Highly Inequitable Schools with Prep for Bias (8.33%; n = 21). Profile 3 was associated with low math and English engagement compared to Profile 1.

Presentation

Assessing measurement invariance: A comparison of MNLFA and SEM trees

Leonie Hagitte, MPI for Human Development (Advisors: Martin Schultze and Andreas M. Brandmaier)

Ensuring the validity of psychological assessments requires establishing measurement invariance (MI), yet measurement parameters may vary continuously as a function of observed characteristics, leading to measurement noninvariance (MNI) (Bauer, Belzak, and Cole 2020). Moderated nonlinear factor analysis (MNLFA) provides a flexible framework for modeling such continuous parameter variation by expressing measurement parameters as functions of observed moderators (Bauer 2017). However, MNLFA requires the relevant moderators and their functional form to be specified a priori, making its performance dependent on correct model specification (Kolbe et al. 2024). Structural equation modeling (SEM) trees provide a nonparametric alternative that detects measurement noninvariance through recursive partitioning without imposing a predefined functional relationship between moderators and measurement parameters (Brandmaier et al. 2013, 2016; Arnold, Voelkle, and Brandmaier 2021). Consequently, SEM trees may offer greater robustness when the true form of moderation is unknown, although they rely on a fundamentally different inferential framework than MNLFA. The present study conducts a Monte Carlo simulation comparing three analytical approaches: linear MNLFA, quadratic MNLFA, and SEM trees. Data are generated from single-factor confirmatory factor analysis models with continuous loading and intercept moderation under linear, quadratic, sigmoid, and null moderator transformations. The simulation systematically varies the population model, moderation magnitude, and sample size to evaluate the effects of functional-form misspecification on the detection of continuous measurement noninvariance. In the primary comparison, SEM trees receive only the true moderator variable to isolate methodological differences between the competing approaches. An additional sensitivity analysis evaluates the ability of SEM trees to distinguish the true moderator from ten irrelevant candidate predictors. To complement the simulation study, the proposed simulated approaches will additionally be illustrated using empirical data from the most recent wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) (SHARE-ERIC 2024; Börsch-Supan et al. 2013), demonstrating their application to a large-scale psychological assessment dataset of the CASP-12 scale (Kneesebeck et al. 2005).

Poster

Tracking the reading mind: A systematic review of eye-movement metrics and reading ability across ages

Malikka Habib, Nanyang Technological University, Singapore

Eye-tracking captures moment-to-moment fixation, saccadic, skipping and rereading behaviour, providing a process-sensitive window into reading (Rayner, 1998; Reichle et al., 2013). However, how consistently these measures relate to independently assessed reading abilities across developmental stages and reading tasks remain unclear (Miller & O'Donnel, 2013; Radach & Kennedy, 2013). This systematic review synthesized 47 studies published between 2015 and 2025 examining associations between eye-movement behaviour during English reading and independently assessed reading abilities in typically developing readers. Temporal and fixation-based measures showed the most recurrent associations with reading ability. Greater word-reading proficiency and fluency were generally associated with shorter fixation durations and more efficient reading. Associations with comprehension were less consistent, varying across tasks and assessment formats. Regression and rereading measures were also associated with reading ability, but their interpretation depended on context: increased rereading may reflect processing difficulty or comprehension monitoring and repair. Saccadic and spatial measures showed developmental and proficiency-related differences, although findings were heterogeneous, while word skipping appeared particularly sensitive to lexical and task characteristics. Overall, relationships between eye movements and reading ability depended on the reading skill assessed and task demands. Patterns associated with stronger word reading and fluency did not consistently characterise better comprehension, and the same behaviour, particularly rereading, could have different functional interpretations. Eye-movement measures should therefore be selected and interpreted in relation to specific reading processes, developmental stages, and task demands. These findings inform targeted use of eye-tracking in developmental reading research and hypotheses for future dyslexia research.

Poster

A multi-method investigation of autism heterogeneity and its impact on clinical outcome

Noémie Hehl, UZH (Advisors: Nathalie Giroud)

Autism spectrum disorder (ASD) is characterized by substantial heterogeneity in sensory and social functioning. Sensory over-responsivity and difficulties in social situations frequently co-occur, but their severity and expression varies considerably across individuals. This variability may also contribute to differences in treatment response. Yet, the behavioral and neural mechanisms underlying symptom variability and differential intervention outcomes remain insufficiently understood. The present study investigates dimensional patterns of sensory and social symptom expression in adolescents and young adults with ASD and examines their underlying behavioral and neural correlates. It further explores whether these correlates jointly predict individual differences in response to a virtual reality (VR) intervention. Data are collected within BIMA, a prospective clinical study including 60 participants with ASD aged 15-25 years and a closely matched neurotypical reference group. Participants with ASD are randomized to an eight-week, therapist-guided VR exposure intervention involving sensory and social situations or to an active VR relaxation control condition. The VR exposure intervention allows participants to repeatedly engage with challenging real-life

situations in a controlled setting, with the aim of improving their ability to manage similar situations in everyday life. Changes in sensory and social functioning are assessed through measurements conducted before and after the intervention using self-report and close-other questionnaires, behavioral tasks, and fMRI measurements. The behavioral and neural measures used to assess changes in sensory processing particularly focus on visual and auditory processing. This multilevel design aims to contribute to a more individualized understanding of ASD and inform the development of more personalized interventions.

Presentation

Personality traits and philanthropy across time

Lina Hungerbuehler, UZH (Advisor: Wiebke Bleidorn)

Philanthropic behaviors such as volunteering and charitable giving promote both societal welfare and individual well-being. Prior research has established cross-sectional links between broad personality domains and these behaviors, but it remains unclear whether and how personality differences prospectively predict philanthropic engagement (selection effects) and whether such engagement may, in turn, shape personality development over time (socialization effects). Theory and preliminary evidence further suggest that differential links between narrower personality aspects and philanthropic behaviors may have been obscured at the domain level in prior studies. Drawing on five-wave nationally representative data from Switzerland (N = 2,085 to 4,577), we extend prior research by testing prospective selection effects of personality traits on later philanthropic engagement and examining socialization effects of engagement on personality trajectories across broad personality domains and their narrower aspects. Results indicated that people with higher extraversion, agreeableness, openness/intellect, and lower neuroticism were more likely to engage in philanthropy over time, irrespective of their prior engagement, and that people who spent more time volunteering decreased less in their extraversion compared to people who volunteered less. Within the agreeableness domain, associations with philanthropy were primarily driven by compassion rather than politeness, highlighting the incremental value of more fine-grained personality measures. We discuss these findings in the context of theories on dynamic transactions between personality and prosociality and outline limitations and avenues for future research.

Poster

Why school matters: The relationship between experiences in and beliefs about school

Natalie Hutchins, UVA (Advisor: Jamie Jirout)

"It does not matter whether I am curious, because we just need to learn whatever we are assigned to do" (Post & Walma van der Molen, 2018, p.65). This statement reveals a common issue within schools: many students come to see school not as a place to build on their curiosity or interest, but as a setting where compliance, rule following, and performance are rewarded. These beliefs matter—motivational orientations and perceptions of the classroom environment predict academic engagement and performance (Ames, 1992)—yet adaptive motivation tends to decline over schooling (e.g., Lepper et al., 2005), paralleling concerning national trends in reading, math, and science proficiency (NAEP, 2022, 2024).

This project addresses a central question in education: how can we create learning environments that foster meaningful, motivated engagement for all students, setting them up to be lifelong learners? We will examine how 6- to 10-year-olds' (Target N= 180) school experiences, particularly their experiences of autonomy, curiosity, and mastery in the classroom, relate to their beliefs about school, and how these beliefs, in turn, predict outcomes including in-school curiosity, motivation, and enjoyment of school. We also use an experimental design to better understand how children's views form and shift in response to different instructional approaches (manipulated through audio clips of teachers' instructional messaging). By linking classroom experiences to students' evolving conceptions of school, this project seeks to understand how schools can support intrinsic motivation, foster curiosity and engagement, and create learning environments where all children feel excited to learn and explore.

Poster

The affective impact of prequestioning: Reducing test anxiety across three experiments

Alyssa Indrajaya, National University of Singapore

Test anxiety is associated with poorer academic performance. Therefore, identifying strategies that simultaneously support learning and reduce test anxiety is essential. This study investigated whether a specific low-stakes implementation of prequestioning—where students attempt questions before learning—can reduce test anxiety.

We compared our low-stakes prequestioning against different controls: viewing learning objectives in Experiment 1, a typing task in Experiment 2, and both controls in Experiment 3. Participants completed a stress-induction phase, reported baseline anxiety levels, were randomly assigned to one of the learning condition, and reported post-learning anxiety levels. In Experiments 1 and 2, participants completed the passage and final test immediately after, whereas Experiment 3 included a one-day delay, measuring anxiety levels one final time before the passage and final test.

In Experiment 1, test anxiety decreased following prequestioning but was maintained in learning objectives. In Experiment 2, test anxiety decreased in both prequestioning and typing, with a larger reduction observed for prequestioning. Experiment 3 replicated these findings and further demonstrated that the anxiety reduction following prequestioning was sustained at the delay. Final test performance was higher for prequestioning than all other conditions.

These findings suggest two potential anxiety-reducing mechanisms: prequestioning normalizes errors as a part of learning and increases perceived preparedness through familiarization with test-like formats. Future research will examine the ecological validity and long-term effects through a classroom-based study. Overall, our findings suggest that prequestioning—when specifically framed as a low-stakes learning opportunity, rather than assessment—may not only enhance learning but also reduce test anxiety.

Presentation

Biological aging and potential links to psychological factors

Nadine Jait, UZH (Advisor: Flavia Wehrle)

Background: Individuals age chronologically at the same rate, but there is substantial inter-individual heterogeneity in anatomical and physiological changes that occur with aging. Biological age (BA) aims to capture this heterogeneity, offering a more individualized measure of the aging organism than chronological age alone. While indicators of physical health, (e.g., grip strength), morbidity and mortality have been associated with BA, to date, comparatively little is known about potential associations with psychological factors. This study aims to close this research gap.

Methods: The Zurich Longitudinal Studies (ZLS) comprise three cohorts: ZLS-1 included 409 healthy infants born 1954-1961, ZLS-2 enrolled 258 preterm and full-term infants born 1974-1979, and ZLS-3 comprised 295 children of ZLS-1 participants born 1973-2002. All cohorts were recruited at birth and assessed over 20 times from infancy through young adulthood. Since 2019, participants are being assessed in mid- and older adulthood. This study uses data of the first assessment-wave in adulthood (total n=458, ZLS-1, approx. 65 years: n=202, ZLS-2, approx. 45 years: n=106; ZLS-3, started in 2025 and is ongoing: n = 150). BA is estimated using a composite biomarker score based on the Klemm and Doubal method, including up to 9 indicators from a blood sample (e.g., cholesterol), a lung function test and a blood pressure assessment. Psychological factors were assessed with a comprehensive self-report questionnaire such as the Loneliness Questionnaire, the Essentialist Beliefs About Aging Scale, and the Ryff-Scale. Research Focus: We aim to understand how BA is linked to psychological factors in mid- and older adulthood.

Poster

Moralization of women's sexuality across recent U.S. history

Nazanin Kafee, UM (Advisor: Robin Edelstein)

Women's sexuality has historically been a matter of moral concern, regulation, and control. The specific norms and proscriptions imposed upon women vary over time and across cultures, often as a function of social ecology. However, large-scale investigation of the effects of socioecological events on sexual norms and moral values is limited. In the current study, we investigate how major events such as international conflicts, economic recessions, and disease outbreaks influence attitudes toward women's sexuality from the 1880s to 2020s in the United States. We will conduct computational text analysis to examine political and cultural changes in moral language using the US Congressional record and a historical women's magazine (i.e., Ladies Home Journal). Text analysis results, together with other social and behavioral indicators (e.g., abortion laws, age at first marriage), will form a theoretically grounded temporal analysis of the tightening or loosening of American sexual norms following socioecological events. These findings will shed light on sexual norms and values and their ties to environmental threats, political institutions, and intellectual ideas over 140 years.

Poster

CHOROS-II: A randomized controlled trial investigating singing-induced brain plasticity in childhood

Theodoros Koustakas, MPI for Human Development (Advisor: Ulman Lindenberger)

Singing, particularly in a choral setting, provides an ecologically valid model for investigating experience-dependent plasticity in middle childhood in the musical domain. In addition to engaging the neural systems involved in instrumental music training, singing uniquely incorporates the somatosensory experience of one's own voice. The CHOROS-II study aims to study the influence of choral vocal training on the development of musical skills in childhood, as well as the associated plastic changes and adaptations in the brain's structure and function. We recruited a random sample of girls from the city registry ($n=97$), aged 6-7 years, with no prior experience of extracurricular music or dance lessons. Following a baseline assessment that included an age-appropriate musical and cognitive task battery and two identical Magnetic Resonance Imaging (MRI) sessions, participants were randomly assigned to one of three groups. The experimental group received choral vocal training ($n = 32$), the active control group participated in a group dance training course ($n = 32$), and the remaining participants were assigned to a no-contact control group ($n = 33$) for a 6-month intervention period. At the end of the intervention, all behavioral and MRI assessments will be repeated, together with an electroencephalography (EEG) session to examine training-related effects in music processing. By comparing vocal training with dance training and passive controls, CHOROS-II seeks to characterize the effects of early choral training on development of musical skills, brain maturation, cognition and prosociality, with potential implications for music education and cognitive development.

Poster

A neuropersonalised socially-responsive digital avatar for young learners

Kean Mun Lee, Nanyang Technological University, Singapore

Neural entrainment – the synchronisation of endogenous brain oscillations to external rhythmic input – is hypothesised to influence perception by modulating temporal parsing during early sensory encoding. Prior work suggests that in adults, matching rhythmic entrainment to individual alpha frequency (IAF) can enhance perceptual learning; however, this “neuropersonalisation effect” remains undemonstrated in children. Related infant work suggests that speaker-listener interpersonal neural entrainment supports social learning, underpinning infants' selective encoding of socially relevant stimuli during language learning (Zhang et al., 2026). This study addresses the gap, assessing whether personalised (IAF-matched) neural entrainment enhances word learning in children.

A word learning task introduced Spanish words via a digital avatar to $N = 18$ children aged 30–47 months ($M=38.28$, $SD=5.37$). Words were embedded within a rhythmic carrier (background song) set to a fractional subharmonic of each child's IAF. IAF was estimated from eyes-open resting-state EEG, before assignment to the Matched (child's derived tempo) or Non-Matched ($\times 1.75$ of matched tempo) condition. Within each participant, target words were presented at the peak or trough of the entrained rhythm to assess phase effects. A control group received an arrhythmic paradigm as baseline. Learning was assessed via 2AFC and ERP measures. Word learning is hypothesised to be higher in the Matched than Non-Matched condition, and for peak- than trough-aligned words. Ongoing analyses of mismatch negativity and alpha power will clarify whether

personalised neural entrainment, rather than rhythmic structure alone, drives behavioural learning effects. Findings will inform whether neuropersonalised instruction can tailor early language interventions to individual profiles.

Poster

Understanding the development of childhood and adolescent internalizing symptoms: Delineating cognitive control, emotion regulation and reward processing
Shuping Lim, National University of Singapore

Childhood and adolescence are periods of heightened vulnerability to internalizing symptoms, the developmental mechanisms underlying the emergence of these symptoms remain poorly understood. Mental health problems are highly heterogeneous, with considerable overlap in symptoms and underlying mechanisms across traditional diagnostic categories. The Research Domain Criteria (RDoC) framework therefore emphasizes behavioural and neural transdiagnostic dimensions that cut across diagnostic boundaries and may help identify shared mechanisms underlying psychopathology, such as emotion regulation and reward processing. Executive functions develop rapidly during early childhood, with differences in cognitive control shaping later emotional and behavioural development. Using a longitudinal birth cohort in Singapore, we will examine how early cognitive control contribute to childhood and adolescent internalizing symptoms through emotion regulation and reward processes. We hypothesize that poorer cognitive control in early childhood contributes to later internalizing symptoms through both pathways. Early cognitive control may shape the development and use of emotion regulation strategies, with maladaptive responses to stressful situations increasing vulnerability to internalizing symptoms and adaptive responses reducing the risk of psychopathology. We further examine whether emotional biases in cognitive control are associated with the use of emotion regulation strategies and internalizing symptoms. Poorer early cognitive control in early childhood may impair reward-based learning and subsequent goal-directed behaviour, thereby increasing vulnerability to mental health difficulties. By integrating executive functioning, emotion regulation, and reward processing within a developmental framework, this model aims to identify cognitive pathways through which early individual differences cascade across development and contribute to heterogeneity in childhood and adolescent internalizing symptoms.

Poster

Scientific literacy influences receptivity to intellectually humble versus certain science communication
Haley Mehlman, UM (Advisors: Allison Earl and David Dunning)

The iterative nature of science introduces ambiguity and uncertainty. Experts face a dilemma: communicating with absolute certainty risks giving the impression of more certainty than may be warranted, but demonstrating intellectual humility (IH) may undermine public perception of experts' credibility. In four studies (N = 844), we found that participants higher in scientific literacy showed a stronger preference for humble scientists, but only when the norm of humility was cued when humble and certain scientists could be directly compared (Studies 1-4). However, intellectual humility did not enhance belief in the research findings; making them less persuasive (Study 3) or having no effect (Studies 1, 2, 4) relative to certain messages. Finally, an expert sample of medical practitioners and researchers evaluated humble scientists more favorably

even without comparison but expected the public to both prefer and be more swayed by certain scientists (Study 4). This work offers guideposts for when (the role of situational context on judgements) and for whom (audience features and the role of knowledge) intellectual humility rather than certainty will be more impactful. By investigating the perceived and actual tradeoffs between communicating with intellectual humility versus certainty on both evaluations of the scientist and the persuasiveness of the message the scientist communicates, this project has implications for theory around communicating uncertainty. It also has implications for the links between credibility and persuasion, and can help guide initiatives for more effective science communication.

Poster

Parenting practices and children's deception: A mapping review

Norine Elisabeth Moser, UZH (Advisor: Moritz Daum)

Deception in childhood develops as a dynamic process in which individual, cognitive, and social factors interact (Talwar & Crossman, 2011). Parents, as highly influential environmental factors, are proposed to influence children's deceptive development through their parenting practices (Talwar & Crossman, 2022). Parenting practices are ways by which parents' socialisation goals influence their child's development (Allen & Kara, 2024; Rogoff, 2003), both directly (e.g., teaching honesty) and indirectly (e.g., parenting styles; Talwar et al., 2022; Talwar & Crossman, 2022). Studies examining the relationship between parenting practices and children's pro- or antisocial deception report mixed findings. For instance, antisocial lying was related to parental punishment in some studies (e.g., Carl & Bussey, 2025) but not in others (e.g., Ma et al., 2015). Studies in this field used diverse paradigms and operationalisations of both parenting and deception, which could contribute to the inconsistent findings. Therefore, this project maps out the literature examining the relationship between parenting practices and pro- or antisocial deception during early and middle childhood (i.e., 0-12 years), also targeting children's evaluation of deception.

This mapping review examines how differing methodologies yield different relations between parenting practices and pro- or antisocial deception, identifying patterns, developmental trajectories, and gaps that need to be addressed by future research. The literature included is primary, empirical research published in English and containing quantitative data. We included journal articles, conference papers, dissertations, preprints, and book chapters containing original data. The poster will present the review's rationale, literature search process, eligibility criteria, and preliminary findings.

Poster

When punishment speaks: Motives and expectations behind communicative punishment across cultures

Sila Mutaf, UM (Advisor: Andras Molnar)

Punishment typically imposes costs, but it can also be communicative. Across three studies with Turkish and U.S. participants, we examined whether people communicate when punishing, what motivates their communication, and whether punishers expect communication to add value beyond punishment itself. We took a cross-cultural approach to test whether punishment communication, previously documented in U.S. samples, also appears in an honor-relevant context where punishment may carry reputational meaning. Study 1 tested whether prior findings replicate in a new U.S. sample and extend to Turkey. Study 2 built on this message-choice paradigm by allowing

participants to decide whether to send their own message and by measuring the motives underlying that decision. Study 3 used the same paradigm and tested whether punishers expected communication to add value beyond punishment itself.

Punishment communication was robust across both countries: 58.5% to 64.0% of participants selected an informative message in Study 1, and 44.5% to 56.0% sent a message in Studies 2 and 3, with Turkish participants communicating significantly more often than U.S. participants in both studies. Across Studies 2 and 3, the most consistent predictor of message sending was wanting the offender to understand the reason for punishment. Deterrence, suffering, getting even, and proportionality motives did not consistently predict message sending. Wanting the offender to know who punished them also predicted message sending, but more consistently in the U.S. than in Turkey. Study 3 further showed that message senders perceived greater added value in communication than non-senders. These findings suggest that punishment communication was robust across Turkish and U.S. samples and tied most strongly to explanation rather than punitive motives or honor endorsement.

Poster

Temperament in the first years of life: Associations with motor and language development

Flavia Pfister, UZH (Advisor: Moritz Daum)

Temperament is associated with various outcomes across childhood and adulthood, yet little is known about its relation to early development. Temperament emerges in early infancy and describes how a child experiences and reacts to events and their environment. Similarly, individual differences in children's motor and language development arise early in life. From a dynamic systems perspective, developing organisms are complex systems of continuously interacting elements, in which each state builds on previous ones, and every action and experience shapes future development (Thelen & Smith, 2006). As one system element, temperament may influence how infants experience and engage with opportunities for motor and language development. Consequently, small early temperamental differences may amplify into larger individual differences in developmental trajectories. To investigate this association in the first three years of life, we plan two studies using data collected with the Pebbles App (Daum et al., 2022), a digital developmental diary in which caregivers continuously document their child's development. To date, over 7,000 caregivers provided data in the Pebbles App, of which a subset meeting inclusion criteria will be included in the two studies. Study 1 examines associations between temperament and motor development. Study 2 examines associations between temperament and language development. In both studies, temperament is assessed repeatedly using the very short forms of the IBQ-R (Putnam et al., 2014) and ECBQ (Putnam et al., 2010). Development is assessed via age-of-attainment for motor and language milestones. Together, these studies will help clarify the role of temperament in early motor and language development.

Poster

The sweet spot of everyday social contacts: Diminishing returns of social interactions for well-being across age, gender, and contexts

Nele Plefka, HU (Advisor: Denis Gerstorf)

Numerous studies indicate that more social interactions are associated with greater well-being. Nevertheless, extant evidence suggests that the benefits of additional daily social interactions tend to level off after a certain frequency of social interactions have been surpassed. Furthermore, several theoretical accounts posit age and gender differences: Older (vs. younger) adults and men (vs. women) may experience stronger initial affective gains from increased daily social contact but may also experience a more rapid levelling-off of these affective gains. It remains unclear whether these patterns are consistent across different contextual factors such as sociocultural context (e.g., East vs. West) and historical circumstances (e.g., periods during which social contact poses a health threat). This research thus aims to investigate how daily social interaction frequency relates to daily well-being (positive and negative affect), and whether these associations vary by gender, age, and contextual settings. We expect that the affective gains of additional daily social interactions tend to level off, reaching a point of diminishing return. To examine this hypothesis, we draw on ecological momentary assessment data from two daily diary studies collected in Canada and Hong Kong, assessed both before and during the COVID-19 pandemic, and pre- and post-vaccination. Healthy adults aged 18-85 completed an electronic assessment survey up

to three times per day for 10 consecutive days. Our potential findings may provide more nuanced insights into the benefits and limits of daily social interactions for well-being, as well as the role that demographic (i.e., age and gender) and contextual factors play.

Poster

GAMLSS-based imputation approach under complex survey design

Wenqing Qian, UM (Advisors: Trivellore Raghunathan and Yajuan Si)

Specifying an imputation model that can accurately capture the conditional distribution of missing values is challenging when the target variable to be imputed follows a non-standard distribution and is collected under a complex sampling scheme. This work aims to address this issue by integrating complex design features into a flexible and robust imputation algorithm based on Generalized Additive Models for Location, Scale, and Shape (GAMLSS). Two strategies that employ a fully Bayesian version of the GAMLSS-based imputation are proposed. One explicitly includes functional effects of design variables, and the other conducts GAMLSS-based imputation on synthetic populations that account for design features. Focusing on a highly skewed continuous outcome, we implement the strategies in a simulation study with a two-stage sampling design and apply them to the National Health and Nutrition Examination Survey (NHANES) 2017–2018 data. We expect the proposed strategies to improve population-level inferences using imputed samples and to correctly recover shape-dependent characteristics of the outcome distribution in the population.

Poster

The influence of preterm birth on mother-infant ostensive signalling and executive function development

Vaidehi Ramanarayanan, Nanyang Technological University, Singapore

Ostensive signals are a communicative tool that characterize natural adult-child interactions and can aid in the development of emerging executive functions. Beyond capturing a child's attention, ostensive signals convey a pedagogical intent and direct the child towards a learning opportunity. On the other hand, developmental risk factors, such as premature birth, may influence early communicative dynamics and thereby impact social learning mechanisms that are mediated through ostensive signalling pathways. Accordingly, this work seeks to examine ostensive communication patterns in preterm and full-term mother-infant dyads, with a view in understanding how preterm birth may influence early social learning and cognitive development. In this study (N=65; 40 full-term, 25 preterm), preterm infants showed significantly lower rates of responding to joint attention-condition signals ($M_{diff}=0.21$, $SE=0.10$, $p=.044$) and higher mean latency of responding to vocalization signals ($M_{diff}=0.36$, $SE=0.15$, $p=.016$) compared with full-term infants. These results implicate premature birth as a risk factor for less effective ostensive communication. Further, results showed that higher latency of response was associated with poorer accuracy rate ($B=-0.25$, $p=.022$) and weaker alignment with a learn-and-adapt strategy on the A-not-B task ($B=0.44$, $p=.033$), suggesting an association between successful bidirectional ostensive communication and development of executive functions. Future analysis will investigate the physiological aspect of social learning through electrocardiography measurements to analyze heart rate variability during adult-child interactions. A subsequent study will extend the research question to teacher-child interactions during a shared book reading

task to determine the mechanisms of ostensive signals in the context of novel word learning during preschool years.

Poster

Modeling LLM pollution

Raluca Rilla, MPI for Human Development (Advisor: Iyad Rahwan)

Online behavioral research relies on survey data that is becoming easier for agentic systems to produce autonomously, threatening validity with responses that seem coherent but that carry systematic biases. To quantify this “Large Language Model Pollution,” we deployed a series of LLM agents on an online free-association study, comparing a human sample ($n = 3,242$; Prolific) against 360 agents spanning three levels of model openness: open-weight models run using an open agentic framework (“open”; $n = 120$), proprietary API models in the same open agentic framework (“mixed”; $n = 80$), and fully commercial agentic browser agents (“closed”; $n = 160$). Every agent was demographically prompted across age and gender and further instructed to act humanlike (e.g., occasional errors). Alongside the core task, listing five associations with the term “artificial intelligence,” we collected self-report datapoints, behavioral logs (e.g., copy-paste count), and open-ended text, then computed by-item standardized Euclidean distances between human and synthetic distributions for each format. Detectability depended on response format: self-report responses were easiest to replicate, behavioral traces intermediately so, and open-ended text produced by far the largest gaps between the human and synthetic samples. In embedding space, synthetic associations clustered tightly with much lower dispersion and sat mostly apart from humans, yet some agents (mostly closed ones) reached dense human regions. Demographic prompting led to a worrying type of distortion: human attitudes stayed roughly flat across age, but agents imposed a steep negative age slope on AI expertise, risk, daily use, and trust, most extreme among closed agents. LLM Pollution is therefore dynamic and format-dependent, varying with both task and model openness, and safeguarding online research demands multi-layered, multi-modal validation.

Presentation

Dynamic learning goals: Associations with strategic restudy decisions and learning outcomes in adolescents

Eileen Rüegg, UZH (Advisor: Mariëtte van Loon)

Learning goals are central to self-regulated learning, yet research has typically treated them as static rather than dynamically changing in response to learning experiences. We examine how adolescents revise learning goals following initial success and failure, whether goal-monitoring shapes revision, and how goal levels and revision influence strategic restudy decisions and subsequent learning performance. $N = 306$ adolescents ($M_{age} = 12.72$, $SD_{age} = .83$; 48.4% female) completed three sessions of a sequential concept learning task. In each, they set initial goals, studied 12 concepts and completed a self-test. They then monitored their progress and revised their goal before selecting concepts for restudy. In the retest, adolescents could improve their responses on restudied concepts. All hypotheses were analyzed using linear mixed-effects models. Adolescents systematically revised their goals in accordance with the discrepancy between their initial goal and initial performance ($\beta = .609$, $p < .001$). This effect was stronger when adolescents monitored their goal more accurately ($\beta = .098$, $p < .001$). In addition, higher revised goal levels predicted more strategic restudy decisions ($\beta =$

.171, $p < .001$), and strategic restudy ($\beta = .148$, $p < .001$) directly predicted final performance. Revised goal demonstrated no direct effect on final performance ($\beta = .017$, $p = .299$). However, the indirect effect of revised goal level on final performance through strategic restudy was significant ($\beta = .025$). These results position learning goals as dynamic components of self-regulated learning that both adapt to prior experiences and influence subsequent learning decisions and outcomes.

Poster

Formation to application: Mentalizing across task phases in children using fMRI

Dennis Saikkonen, UZH (Advisor: Nora Maria Raschle)

Mentalizing, the ability to attribute mental states such as beliefs and feelings to others and oneself, has been extensively studied in adults and children. Emerging evidence from task-based functional magnetic resonance imaging (fMRI) in adults suggests that the neurocognitive processes underlying mentalizing are separable into distinct phases. These include forming a mental model of another's mental state and subsequently applying it to navigate social situations. The temporoparietal junction (TPJ) is engaged during belief formation, whereas medial prefrontal cortex (MPFC) and pre-supplementary motor area (preSMA) are more strongly activated during the outcome phase. However, whether this phase-specific pattern of neural activation during mentalizing is present already in school-aged children, a sensitive period of functional reorganization in the brain, remains largely unexamined.

Whole-brain neural responses were examined in 141 children aged 6-14 using CAToon, a hand-drawn, child-friendly, open-source Cognitive and Affective Theory of Mind cartoon task. Each trial included a story phase followed by an outcome phase, corresponding to the mental model formation and its application in social context, respectively.

In an initial subsample ($n=35$), we identified greater story-phase activation posteriorly (bilateral lingual gyrus) and greater outcome-phase activation in right posterior TPJ and bilateral preSMA ($p < .05$, FWE-corrected).

These findings offer preliminary evidence for phase-specific mentalizing activation in school-aged children. The posterior story-phase and frontoparietal outcome-phase pattern is consistent with recent electrocorticography evidence in adults suggesting a mentalizing pathway unfolding from visual cortex via TPJ to MPFC. Planned region-of-interest analyses will test whether story-phase TPJ activation predicts MPFC activation at outcome.

Presentation

A meta-analytic review of the associations between daily events and subjective well-being in intensive longitudinal studies

Lukas Schellenberg, UZH (Advisor: Wiebke Bleidorn)

Theoretical accounts and a growing body of research indicate that daily events—frequently occurring, time-discrete experiences that can disrupt everyday life—are associated with people's momentary subjective well-being (SWB). However, the strength of these associations varies substantially across studies, potentially reflecting differences in samples, assessment methods, or event characteristics. To advance our understanding of how daily events relate to SWB, this preregistered meta-analysis synthesized within- and between-person associations between daily events and SWB from 217 intensive longitudinal studies ($N_{\text{total}} = 47,572$). Results indicated robust,

moderate positive associations between daily uplifts and SWB at both the within- ($r = .16$) and between-person ($r = .21$) levels, and robust, moderate negative associations between daily hassles and SWB at the within- ($r = -.18$) and between-person ($r = -.28$) levels. Moderator analyses showed that associations vary across daily event types, daily event operationalizations, and SWB dimensions. Moreover, prospective associations between daily events and SWB were substantially weaker than concurrent associations, suggesting limited temporal persistence of the effects of daily events on momentary SWB. Taken together, these findings support theoretical claims about the relevance of daily events for momentary SWB and refine our understanding of the conditions under which these associations are most pronounced.

Poster

Cognitive tools as protective instruments: Black and Latine STEM students' narratives of critical consciousness development

Anshita Singh, UVA (Advisor: Channing Mathews)

Black and Latine students in STEM often face unwelcoming institutional climates, structural barriers, limited representation, and a weak sense of belonging. Critical consciousness (CC) is the ability to reflect on social inequalities, feel motivated to challenge them, and act to create change. It has been linked to positive identity, civic, academic, and career outcomes for marginalized youth. How students make meaning of their experiences shapes their CC development, and cognitive tools support this meaning-making process. However, little is known about how cognitive tools help students interpret their experiences and, in turn, develop CC. Drawing on sociocultural perspectives on cognition, this study asked how Black and Latine STEM students draw on cognitive tools to make meaning of their CC development, and how this meaning-making relates to their persistence in STEM. We conducted semi-structured interviews with 19 Black and Latine STEM majors at two predominantly white institutions. Interviews were analyzed through consensus coding with a deductive codebook, using directed content analysis and thematic analysis. Preliminary findings suggest that critical reflection alone was not enough to sustain persistence. When critical reflection was paired with emotion regulation or perspective-taking, students' structural understanding of inequality supported their critical motivation and persistence in STEM, which functioned as a form of critical action. Students developed these tools through conversations with family, peers, and community. These findings point to cognitive tools as protective instruments and suggest that STEM institutions can support students through mentoring, peer dialogue, and affinity spaces that build on community knowledge.

Poster

Early theta-band dynamics track functional compensation across the adult lifespan

Wei Khang Jeremy Sim, Nanyang Technological University, Singapore

Neural compensation is central to explanations of preserved cognition in ageing, yet its neural signature remains unclear. Most evidence has relied on haemodynamic activation, which localises age-related reorganisation but lacks the temporal resolution to observe the fast neural dynamics that support behaviour. Here, we tested whether functional compensation across the adult lifespan is more clearly expressed in neural oscillatory dynamics than in sustained haemodynamic activation. Sixty-two healthy adults aged 21–85 years completed matched verbal working-memory tasks during MEG

and fMRI, with structural MRI covariates. Functional compensation was defined as age-dependent neural modulation positively coupled with task performance. Early theta-band modulation showed the clearest compensatory pattern, with positive theta-performance coupling at older ages and weaker or negative coupling at younger ages. Alpha- and beta-band effects were later and less consistent, whereas fMRI revealed reorganisation without behavioural benefit in older age. These findings identify early theta dynamics as a candidate temporally specific signature of functional compensation in cognitive ageing.

Presentation

Air pollution moderates genetic influences on psychotic experiences: Evidence from a community sample of twins

Anja Stanojlovic, MPI for Human Development (Advisor: Simone Kühn)

Background: Psychotic experiences, such as paranoia and hallucinations, represent the subclinical end of the psychosis continuum and provide a valuable phenotype for studying the aetiology of psychosis. Traffic-related air pollution has been associated with psychotic experiences. However, both residential choice and psychotic experiences are partly heritable, complicating the interpretation of the observed association. We therefore used a genetically informed twin design to investigate the interplay between genetic and environmental influences underlying this association. Methods: Data were analysed from 1,230 twins from the German Twin Registry. Residential exposure to traffic-related air pollution was estimated from geocoded residential addresses. Associations with psychotic experiences were first examined using multilevel linear mixed-effects models. Moderated bivariate twin models were then used to investigate gene-environment interactions while accounting for gene-environment correlations. Results: Moderated bivariate twin models provided evidence that genetic variance in psychotic experiences increased with higher exposure to traffic-related air pollution, and this pattern remained after accounting for gene-environment correlation. Conclusions: These findings suggest that genetic susceptibility to psychotic experiences depends, in part, on the environment in which individuals live. If replicated, they provide further evidence that reducing exposure to traffic-related air pollution could contribute to promoting mental health, particularly among genetically vulnerable individuals.

Presentation

Realistic virtual sound environments for assessing functional hearing and spatial localization

Zino Wellauer, UZH (Advisor: Martin Meyer)

Objective. Standard audiometry rarely explains the everyday listening difficulties reported in chronic subjective tinnitus. We combined 3D sound localization, adaptive speech-in-noise testing and a suprathreshold functional hearing battery inside an immersive ambisonic loudspeaker dome, to test whether ecologically valid conditions expose deficits that standard measures miss.

Methods. A sample of 17 tinnitus subject and 15 controls matched on age, sex, 4-frequency PTA and tinnitus pitch. Testing used a 37-loudspeaker dome with subwoofer: ambisonic decoding of recorded indoor and outdoor scenes, combined with object-based point sources positioned in azimuth, elevation and distance for the speech target

and parametric maskers, all level-calibrated to a 65 dB SPL reference. Speech reception used adaptive matrix sentences (SRT50, per-word scoring) across six maskers, from co-located pink noise to a 12-channel spatialized babble ring and ambisonic scenes in- and outdoor. Localization used 480 trials across a horizontal and an elevation round ($\pm 26.6^\circ$), in silence and spatialized noise, scored as great-circle error. The functional battery (gap detection, AM/FM detection, intensity difference limen, masking curves, ITD/ILD) ran at 500 Hz and at each pair's tinnitus pitch. Within-pair Wilcoxon tests.

Results. Cases were worse at speech in noise in every masker condition: mean +1.4 dB SNR (10/12 pairs, $d_z = 0.91$, $p = .019$), rising to +2.6 dB in diffuse noise ($d_z = 1.08$, $p = .010$). Yet spatial release from masking was unchanged ($d_z = -0.07$), the cost of spatialized noise on localization was zero, and cases localized better when elevation was involved (-5.6° , 8/11, $p = .042$). Away from the percept, at 500 Hz, cases equalled or exceeded their controls (FM detection $d_z = -0.66$, $p = .032$; AM, intensity discrimination and tuning in the same direction). At the tinnitus pitch this reversed in all measures (mean $d_z -0.46 \rightarrow +0.19$, $p = .031$). Hyperacusis was markedly elevated (11/12 pairs, $d_z = 1.68$, $p = .002$) and self-reported speech ability reduced (11/12, $d_z = -1.29$, $p = .005$).

Conclusion. In age, sex and audiometrically matched pairs, tinnitus is accompanied by heightened auditory awareness — hyperacusis, intact-to-superior localization, and better suprathreshold sensitivity remote from the percept — alongside a specific, non-spatial impairment of speech reception in noise. The frequency-specific reversal at the tinnitus pitch and the absent spatial component fit altered central gain rather than a binaural or peripheral encoding deficit.

Outlook. The next phase replaces sentence thresholds with continuous speech-in-noise tracking in natural conversations convolved into real adverse environments recorded in and around Zurich with an Eigenmike spherical array — trams, the Hauptbahnhof concourse, restaurants and visits at the museum — rendered over the dome, with EEG and pupillometry indexing listening effort in the situations patients actually report failing in.

Poster

Early life care experience shapes the long-term function of social reward-associated brain networks

Becky Elizabeth Waugh, UVA (Advisors: Jess Connelly and Per Sederberg)

Social experiences in very early life alter the “pace of aging”. Evolutionary psychologists theorize that humans have evolved the ability to speed up or slow down their developmental life pacing in response to conditions experienced in early life. The landmark longitudinal Dunedin project following a large cohort of New Zealand youth found that girls who experienced conflict in family environments reached menarche at younger ages. Family environment was also a factor in predicting the age of sexual initiation and age when becoming a parent. These findings support the idea that it is evolutionarily advantageous to speed up reproductive activities when the childhood environment is poor. However, the mechanisms by which these processes are initiated, and it is unknown whether the changes are sustained throughout the lifespan. To test these questions, this project investigates the effect of early life parental care on changes in brain function. We assessed the quantity of care provided by prairie vole parents to their pups in the first three days post-birth. The pups were then allowed to age without interference until designated data collection timepoints: weaning, 24 days post-birth, younger adulthood, 65 days post-birth and older adulthood, 365 days post-birth. Data

collection included in vivo structural and functional MRI scanning, followed by tissue collection. While analyses are ongoing, our initial results show that functional brain networks associated with the social reward system become generally less connected with age. In contrast, when looking at the association between parenting and network connectivity, we found a lasting change in social reward network function based on parenting quantity, such that lower care animals had increased connectivity in social reward-associated brain networks even one year later. This finding provides evidence that social reward systems are exquisitely tuned to the early life environment and that these impacts last into old age. There was no interaction between age and the impact of early life parenting, suggesting that the changes in social reward network function may not be directly related to differences in the pace of aging.

Presentation

A salivary epigenetic index of cortisol stress reactivity in children and adolescents

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Background: Individual differences in hypothalamic-pituitary-adrenal (HPA) axis functioning, which regulates cortisol secretion, are thought to mediate the relationship between early-life adversity and psychiatric health. However, existing evidence linking adversity, cortisol levels, and mental health remains mixed. This ambiguity may stem from traditional cortisol markers, which capture highly dynamic, point-in-time measures rather than stable traits -like individual differences. By contrast, DNA methylation (DNAm)-based epigenetic indices may offer a more stable tracking of physiological stress functioning. Here, we hypothesize that an epigenetic index of cortisol stress reactivity will demonstrate stronger, more reliable associations with both early-life adversity and mental health than conventional, point-in-time cortisol measures.

Methods: To test this, we leverage the Texas Twin Project dataset ($n \approx 500$, aged 8–20) to generate a saliva-customized epigenetic index of cortisol reactivity in response to the Trier Social Stress Test (TSST). This specific approach allows us to capture the epigenetic correlates of a concrete, acute stress response, rather than an aggregate mixture of everyday environmental and genetic factors typical of diurnal and hair cortisol measures. First, we conducted an epigenome-wide association study to identify genomic sites linked to cortisol reactivity, benchmarking our models against prior findings. Next, we utilized elastic net and ridge regression approaches to construct a composite epigenetic index of cortisol reactivity, validating it in an independent sample with available DNAm and TSST cortisol data. Finally, we leveraged the Future of Families and Child Wellbeing Study (FFCWS) dataset to examine associations between this new index and early-life socioeconomic disadvantage, maltreatment, established epigenetic indices of systemic inflammation, epigenetic clocks, and stress-related mental health. This composite index was directly compared against conventional point-in-time cortisol measures to determine its comparative predictive utility.

Results & Conclusion: Preliminary findings will be presented. Ultimately, this work aims to establish whether an epigenetic index of cortisol reactivity can serve as a reliable surrogate marker for how early-life stress alters stress-system functioning and stress-related mental health.

Poster

Do achievement emotions matter for metacognitive control? Evidence from adolescent learners

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Metacognition, the ability to assess one's own state of knowledge (e.g., confidence judgments) and control learning accordingly (e.g., restudy decisions), is central to self-regulated learning and strongly predicts academic achievement. Achievement emotions have likewise been linked to self-regulated learning and performance. Despite theoretical accounts suggesting dynamic links between achievement emotions and metacognitive processes, little is known about how achievement emotions are linked to how learners use monitoring to guide restudy decisions (i.e., monitoring-based restudy). Addressing this gap, the present study examines whether achievement emotions experienced before learning are associated with adolescents' metacognitive control during a learning task and subsequent task performance, and whether metacognitive control and performance, in turn, predict post-task achievement emotions. A sample of 364 adolescents ($M_{age} = 13.67$, $SD_{age} = 0.74$) completed a learning task at three sessions within two weeks. They studied Japanese kanji, made confidence judgments, and decided which ones to restudy. Before and after each session, participants reported their achievement emotions and rated their intensity. Overall, participants reported a range of positive and negative achievement emotions before the learning task, with positive emotions being more frequently reported than negative emotions. Multilevel analyses will examine associations among achievement emotions, monitoring-based restudy, task performance, and post-task achievement emotions. By linking achievement emotions to metacognitive control during learning, this study provides insight into how affective experiences shape the processes through which adolescents control their learning and achieve successful learning outcomes.