LIFE Fall Academy
Zurich 2023

Program LIFE Fall Academy 2023

14th – 17th November 2023

Jacobs Center of Productive Youth Development, University of Zurich

Kirchgemeindehaus Paulus Zurich, Milchbuckstrasse 57, 8057, Zurich

Time Schedule – LIFE Fall Academy 2023

14th – 17th November 2023

Jacobs Center of Productive Youth Development, University of Zurich

Grosser Saal [Big Hall] 2nd floor, [Kirchgemeindehaus Paulus, Milchbuckstrasse 57, 8057, Zurich](#)

Tuesday, 14th November 2023 Kirchgemeindehaus Paulus, Zurich Grosser Saal, 2nd floor		
Time	**Presentation**	**Speaker**
1:00 – 1:15	Begin Academy	
	Welcome address and introduction	*Moritz Daum & Alexandra Freund*
1:15-1:30	*Short introduction of new LIFE fellows*	
1:30 – 2:15	**Lecture 1** When Bigger Looks Better: CLASS Results in Public Montessori Classrooms Introduction: *Meghan Costello* *Faculty Discussant: Tara Hofkens*	*Angeline Lillard*
2:15-2:45	*Talk 1* Student-Teacher Relationship Quality in Montessori and non-Montessori Preschool *Session Chair/Faculty Discussant: Tara Hofkens*	*Lee Leboeuf*
2:45-3:15	*Talk 2* How Do Teachers Teach Heterogeneous Classrooms? Multivariate Analyses Using Large Scale Assessment Primary School Data. *Session Chair/Faculty Discussant: Tara Hofkens*	*Svenja Hascher*
3:15 – 3:45	Coffee Break	
3:45-4:15	*Talk 3* Do Teachers Respond Fairly to Norm Violations? Mobile Eye Tracking and Differential Attention in Classrooms *Session Chair/Faculty Discussant: Jacob Resch*	*Blake Ebright*
4:14-4:45	*Talk 4* Context Matters: A IPD Meta-Analysis on How Students' Socioeconomic Background Is Associated with Academic Motivation *Session Chair/Faculty Discussant: Jacob Resch*	*Sarah Grünthal*
4:45-5:15	*Talk 5* Educational Expansion and Beliefs in the Importance of Education for Earnings *Session Chair/Faculty Discussant: Jacob Resch*	*Kevin Schönholzer*
7:00-10:00 6:30-10:00	Steering Committee Dinner at [Linde Oberstrass](#) Fellows Dinner at [Les Halles](#)	

Wednesday, 15th November 2023		
Kirchgemeindehaus Paulus, Zurich		
Grosser Saal, 2nd floor		
Time	**Presentation**	**Speaker**
09:00 – 09:45	**Lecture 2** Mapping the Aging Lexicon and its Role in Cognitive Aging Introduction: *Dilara Zorbek* *Faculty Discussant: Patricia Reuter-Lorenz*	*Dirk Wulff*
09:45-10:15	*Talk 6* Speech Processing in the Brain at Risk for Cognitive Impairment *Session Chair/Faculty Discussant: Patricia Reuter-Lorenz*	*Elena Bolt*
10:15-10:45	*Talk 7* Beyond Auditory-cognitive Trainings: Using Stereoscopic Virtual Reality to Improve Speech Comprehension in Older Individuals with Hearing Loss *Session Chair/Faculty Discussant: Patricia Reuter-Lorenz*	*Vanessa Frei*
10:45 – 11:15	Break & Individual meetings	
11:15 – 12:45	**Poster Session I** Kenn Dela Cruz, Myrto Dolcetti, Deniz Främke, Jens Heumann, Michelle Loher, Miriam Löffler, Analia Marzoratti, Tydings McClary, Francesca Mele, Sandro Stutz, Allison Ward-Seidel	
12:45 – 1:45	Catered Lunch	
1:45 – 2:30	**Lecture 3** An Introduction to the Zurich Project on the Social Development from Childhood to Adulthood (z-proso) Introduction: *Michelle Loher* *Faculty Discussant: Nora Raschle*	*Denis Ribeaud*
2:30-3:00	*Talk 8* Vulnerable Self-Disclosure Co-Develops in Adolescent Friendships: Developmental Foundations of Emotional Intimacy *Session Chair/Faculty Discussant: Nora Raschle*	*Meghan Costello*
3:00-3:30	*Talk 9* Moral Compensation via Prosocial Behavior *Session Chair/Faculty Discussant: Nora Raschle*	*Jasmin Weber*
3:30 – 4:00	Coffee Break	
4:00-4:30	*Talk 10* Concept of SENTI-NET: Emotion Classification Using Free-text Descriptions *Session Chair/Faculty Discussant: Markus Werkle-Bergner*	*Hannes Diemerling*
4:30-5:00	*Talk 11* Task-dependent Representational Dynamics in Visual Working Memory reflected in Human Gaze Patterns? *Session Chair/Faculty Discussant: Markus Werkle-Bergner*	*Dilara Zorbek*
5:00-5:30	*Talk 12* Dynamic Network Loadings and Measurement Invariance *Session Chair/Faculty Discussant: Markus Werkle-Bergner*	*Laura Jamison*
6:00 7:00 –10:00	Walk to restaurant through the old town of Zurich Faculty and Fellows Dinner at Commercio	

Time	Presentation	Speaker
Thursday, 16th November 2023 **Kirchgemeindehaus Paulus Zurich** **Grosser Saal, 2nd floor**		
9:00 – 9:45	**Lecture 4** Brain Energy Metabolism and Neuropil Maintenance: Age and Sex Differences Observed via 31P MRS Introduction: *Kevin Schönholzer* *Faculty Discussant: Clemens Tesch-Römer*	*Naftali Raz*
9:45-10:15	*Talk 13* Prevalence and Predictors of Health-Relevant Information Concealment in the United States and Europe *Session Chair/Faculty Discussant: Clemens Tesch-Römer*	*Wilson Merrell*
10:15-10:45	*Talk 14* Moral Judgments of Disease Concealment *Session Chair/Faculty Discussant: Clemens Tesch-Römer*	*Savannah Adams*
10:45 – 1:15	Break & Individual meetings	
11:15-11.45	*Talk 15 (via Zoom)* Associations of Racialized Inequities with Saliva DNA-methylation Measures of Biological Aging and Mental Health Across Childhood and Adolescence *Session Chair/Faculty Discussant: Nathalie Giroud*	*Muna Aikins*
11:45-12:15	*Talk 16* Dissociating Perceptual and Value-based Generalization in Anxiety and Intolerance of Uncertainty *Session Chair/Faculty Discussant: Nathalie Giroud*	*Luianta Verra*
12:45 – 1:15	Catered Lunch & group photo	
1:15 – 2:00	**Lecture 5** Why We Should Abandon Tests with Reduced Dimensionality, Even if They are Bayesian Introduction: *Deniz Främke* *Faculty Discussant: Charles Driver*	*Timo von Oertzen*
2:00 – 3:30	**Poster Session II** Elena Isenberg, Minah Kim, Isabelle Moore, Julian Ockelmann, Jahla Osborne, Agata Patyczek, Raffael Schmitt, Beatrice Tărăpoancă, Emma Toner, Kathy Xie, Linda Kerbl	
3:30 – 4.00	Coffee Break	
4:00 – 4.45	**Round Tables** Table 1: Career Planning in Academia (Chair: Alexandra M. Freund, Laurel Raffington, Ginny Vitiello) Table 2: Interdisciplinarity in Research - "Broaden the Perspective" (Chair: David Richter, Jim Soland, Gert G. Wagner) Table 3: International Research Collaborations and Networking (Chair: Angeline Lillard, Patricia Reuter-Lorenz, Markus Werkle-Bergner) Table 4: Longitudinal Methods (Chair: Toni Antonucci, Steven Boker, Naftali Raz) Table 5: Researcher Identity and Transparency: Navigating Bias and Background (Chair: Ioulia Kovelman, Channing Mathews, Jacob Resch)	

4:45-5:15	Farewell	*Moritz Daum &* *Alexandra Freund*
5:15-6:00	Fellow wrap-up session	
6:30-10:00	Commencement Dinner at Kirchgemeindehaus Paulus Zurich	

Friday, 17th November 2023

Social Event organised by the Jacobs Foundation and Jacobs Center

Main Building, University of Zurich

Lecture room KOL-G-217

(Rämistrasse 71, 8006 Zurich)

Time	Social Event
9:00	Jacobs Foundation and Jacobs Center Symposium "Insights on the manyfold impacts of children's context on their development" https://www.jacobscenter.uzh.ch/en/events/workshops/2023/symposium_jf_jc.html
6:00-10:00	Klaus J. Jacobs Research Prize https://2023kjjresearchprize.jacobsfoundation.org

Contact and Address information

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STEERING COMMITTEE DINNER Linde Oberstrass Universitätsstrasse 19, 8006 Zürich	FACULTY & FELLOW DINNER Ristorante Commercio Mühlebachstrasse 2 8008 Zürich

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Fellow Talks

- Talks are expected to be 15 minutes in length, followed by 15 minutes of discussion.

- The Session Chair/Faculty discussant of fellow presentations is responsible for briefly introducing the presenting fellow and monitoring the time for the presentation as well as the discussion

- Faculty Discussants leads the discussion from a lifespan perspective, assisting with taking commentary/summarizing the main points of the suggestions advanced.

Fellow Poster Session I & II

- Posters on display throughout the day

Faculty Lecture

- Lectures are expected to be 35 minutes in length, to allow for 10 minutes of discussion.
- Fellows introduce the faculty lecture with a brief bio (including affiliation/talk title) – max 1 minute

Session Chairs/Faculty Discussant

- Session chairs/faculty discussant are responsible for following the program organization: Monitoring the time for each presentation and discussion and introducing each event before its occurrence.

Wi-Fi: connect your browser via: **KK6-Paulus-Gaeste**

Password: **RKZ-8057**

Fellow Poster Teaser Tweets Session I

Kenn Dela Cruz (UVA): How does emotion interact with cognition? My dissertation will explore this question using methodology on the neural, physiological, behavioral, and contextual levels to understand the interplay of emotion regulation and executive function in early childhood.

Deniz Främke (Berlin): Preliminary results on whether genome-wide correlates of cognitive abilities and educational attainment (Polygenic Indices and DNA-Methylation Profile Scores) are 1) uniquely associated with variation in cognitive abilities and academic attainments and (2) predict longitudinal cognitive development across two German and one US cohort covering the lifespan.

Jens Heumann (UZH): Delving further into the lasting impact of peer victimization on stress reactivity, our updated research employs refined analytical methods and broadens the investigative lens. Engage to critique and discuss the unveiled pathways and analyses, aiding in shaping the forthcoming paper. #PeerVictimization #StressReactivity #BioMarkers #SocialStressor

Michelle Loher (UZH): New study uncovers critical insights into simultaneous polysubstance use among adolescents and young adults. 🚨📢 Join me at my poster to explore the prevalence rates and risk correlates of drug combinations that could lead to fatal overdose. 🔍💊📊

Miriam Löffler (UZH): Children born prematurely often show a less regulated temperament than their peers. Our study examines perinatal risk and protective factors associated with the temperament of 3-month to 2-year-old premature infants and compares these factors with those of children born full-term.

Analia Marzoratti (UVA): Does effective language processing look the same in all kids' brains? Language = left hemisphere??? Not always! Come see how we can study that.

Tydings McClary (Berlin): Children have the capacity to generalize from very early on in life, even days after birth. However, not all generalization is the same. If you're eager to learn about different generalization abilities in childhood, and if they relate to each other, visit my poster on Wednesday!

Francesca Mele (UZH): How does individual agency shape adolescents' educational opportunities in a tracked education system? We show that both aspiring ambitiously and trying hard are important to embark on an academic path. However, they appear to differently benefit youth from different social origins. Come see my poster to know more!

Sandro Stutz (UZH): Can a mobile diary app transform parenting or even affect children's development?! That's what we want to know! The presented study will look into this by following 600 app users & their kids for over 18 months. Join me during the most important weeks of conceptualization!

Allison Ward-Seidel (UVA): Middle schools, teachers, and peers play a crucial role in fostering development of cultural respect, empathy and compassion with adolescents. Which do you think is more important–having a caring teacher or feeling a sense of belonging and community at school? Come and find OUT!

Fellow Poster Teaser Tweets Session II

Elena Isenberg (Berlin): How do our perceptions of different environments change ontologically? What theories predict this change, and how can we test them? I will attempt to tackle these questions in my poster, and I'm just starting out so I'm hoping you'll ask tough questions and give honest feedback!

Minah Kim (UVA): Epigenetic age assesses our biological age through DNA methylation patterns. If it exceeds our actual age, it suggests accelerated aging and health issues. Older adults who perceived increases in social support during the span of ~3 years had a lower epigenetic age.

Isabelle Moore (UVA): Using scalp EEG, we show that the temporal dynamics of encoding and retrieval brain states differ across the lifespan, with potential implications for the ability to maintain versus flexibly shift between memory states.

Julian Ockelmann (UZH): Understanding speech in background noise becomes an increasingly difficult task as we age, even if our ears' sensory ability is considered "normal". App-based auditory-cognitive trainings are a promising way to mitigate this issue, by training our cognition to assist our ears.

Jahla Osborne (UMich): Confirming an ADHD diagnosis usually involves administering the Structured Clinical Interview for DSM-5 (SCID-5), which can be extremely time consuming. What if we could streamline this process by creating and validating an automated survey version of the SCID-5 to save time and funding resources in research settings?

Agata Patyczek (Berlin): 🔍 Investigating brainstem structural changes and arousal in older adults! 🫠 How do these changes influence heart function and cognitive performance? Join me at the poster session for insights into cognitive performance in the golden years! #ArousalRegulation #AgingBrain"

Raffael Schmitt (UZH): During the processing of speech, low-frequency oscillatory brain activity and temporal modulations of the speech signal are known to synchronize. In this project, we explored whether a similar mechanism exists for visual speech information.

Beatrice Tărăpoancă (UZH): 🥴 Feeling drained at LIFE Academy? Our research poster proposes an exciting experiment: Can changing your beliefs about exhaustion determine when you give up? #ExhaustionExperiment 💡🏃‍♀️💡

Emma Toner (UVA): We all know what it feels like to be lonely, but we don't have a great understanding of specifically how loneliness develops and becomes chronic over time. I'm working to mathematically define the social and cognitive mechanisms that drive loneliness to inform better clinical interventions.

Kathy Xie (UMich): Can retrieving information within seconds of learning it benefit memory a day later compared to simply seeing the information again? According to my preliminary evidence, the answer is yes! Check out my poster for more details.

Linda Kerbl (Berlin): Imagine a child with two routes to kindergarten. One is more likely to have them meet their friend, but today their buddy was not in sight. What will they do tomorrow? Change routes or try again? Find out how children learn from unexpected outcomes, good and bad, in our longitudinal study of reinforcement learning in early childhood.

Faculty Talk Abstract (in chronological order)

Talk 1: When Bigger Looks Better: CLASS Results in Public Montessori Classrooms

Angeline S. Lillard, Elena Martynova, Lee LeBoeuf, Corey Borgman, Ann-Maria Faria, & Karen Manship

In most of the United States, Quality Rating and Improvement Systems (QRIS) are implemented to assess, improve, and communicate the quality of early childhood programs; states define their own systems, and higher public funding is allocated for higher QRIS scores. Twenty-one states use as an important component of their QRIS an instrument devised in LIFE faculty member Robert Pianta's laboratory: the CLASS. For example, in the state of Virginia, 700 out of 800 possible QRIS points stem from scores on the CLASS-PreK instrument. The instrument has been validated in thousands of classrooms that use typical pedagogical approaches. To our knowledge no research has addressed how the instrument functions in classrooms using alternative instructional approaches like Montessori. This is important because the CLASS focuses on teacher-child interactions, based on the theory that that is where most learning and development takes place. Yet in Montessori, learning and development is thought to primarily occur through the child's interaction with the physical and peer environment; the teacher's primary task is to facilitate and guides those connections. Thus, Montessori practitioners have expressed concern that the CLASS might systematically underrate Montessori classrooms' quality, limiting funding and therefore access to this alternative type of education. This is particularly concerning given that two recent meta-analyses showed significantly higher outcomes for Montessori over traditional education.

We examined the extent to which the CLASS, and by extension state-level QRIS, capture quality in Montessori classrooms using data from the first national study of public Montessori preschool. Fifty-three public Montessori preschool classrooms were rated using the CLASS, as were 19 control classrooms attended by children waitlisted but not admitted to the Montessori schools. Montessori classrooms had 50% more children on average, and significantly higher child:adult ratios (9 vs. 6). Even with these much larger sizes and ratios, CLASS domain scores did not differ significantly across pedagogy. Counterintuitively, but consistent with Montessori theory, larger class sizes (up to 26) and higher child:adult ratios (up to 13:1) predicted higher CLASS scores in the Montessori classrooms, a pattern that was significant for the Instructional Support domain—the CLASS domain that most often predicts positive developmental outcomes. Children in Montessori classrooms also spent more time in freely chosen activities and less time in whole group activities than children in control classrooms, and children were more frequently observed engaging in math and art content in Montessori classrooms than control classrooms. These findings have important implications for the widespread application of standard ratio and class size recommendations, and for potential cost savings. What we do not yet know is whether higher CLASS scores predict child outcomes in Montessori; they do so to a limited degree in traditional classrooms. Further data collection will inform on this point.

Talk 2: Mapping the Aging Lexicon and its Role in Cognitive Aging

Dirk Wulff

Cognitive science invokes semantic representations, also called mental lexica, to explain diverse phenomena, from memory retrieval to creativity. These representations are often assumed to be invariant between individuals, neglecting that people undergo many idiosyncratic experiences throughout their lives that should render their semantic representations distinct. In light of semantic representations' foundational role in cognitive theories, individual differences could have important implications for our understanding of behavior and performance, particularly in the context of aging research. Current accounts of cognitive aging typically focus on processes such as attention or encoding; however, some cognitive changes across the lifespan could be driven by changes in semantic representations. Consistent with this possibility, empirical studies recruiting behavioral paradigms, such as verbal fluency, relatedness judgments, and free associations, have demonstrated significant differences in the size and structure of semantic representations between younger and older adults, with older adults' representations presenting as less dense, less structured, and less efficient. However, whether these differences have explanatory power for cognitive aging has yet to be convincingly shown. In this presentation, I will review the evidence concerning the structure of semantic representations across the lifespan, discuss key limitations, and present how we hope to elucidate the role of semantic representations in cognitive aging in ongoing work.

Keywords: mental lexicon, network analysis, cognitive aging

Talk 3: An Introduction to the Zurich Project on the Social Development from Childhood to Adulthood (z-proso)

Denis Ribeaud

The Zurich Project on the Social Development from Childhood to Adulthood (z-proso) combines a cluster-RCT with a long-term panel study. It began in 2004 in response to the need for a better evidence base to support optimal child social development and prevent crime and violence. Since then, the study has tracked the development of a culturally diverse urban sample of young persons (N = 1,675 in the target sample; ~50% female) from age 7 (n = 1,360) to age 24 (n = 1,160), with main data collection waves at ages 7, 8, 9, 11, 13, 15, 17, 20, and 24. The study and its partner projects use a multi-method, multi-informant design that combines teacher, young person, and parent surveys with official records, observational and behavioral measures, biosampling, functional imaging, and ecological momentary assessment. Analyses of the data have contributed important evidence to a diversity of topics in life development, illuminating the developmental roots of crime and aggression, the impacts of exposure to different forms and combinations of victimization, and trajectories of mental health, among others.

In this lecture, we will provide an introduction to the design, sample and data collections of the z-proso study, and present selected findings from different areas of research to illustrate the scope of the topics studied.

Keywords: panel study, cluster RCT, life-course development, externalising and internalising problem behaviour, educationa career

Talk 4: Brain Energy Metabolism and Neuropil Maintenance: Age and Sex Differences Observed via 31P MRS

Naftali Raz & Jeffrey Stanley

The brain consumes the share of the body's energy supply that exceeds its relative size by an order of magnitude. That energy is expanded mainly on neurotransmission and to a lesser, though significant degree, on maintenance of cellular membranes in the neuropil. Phosphorus Magnetic Resonance Spectroscopy (^{31}P MRS) affords a noninvasive method of evaluating the main energy metabolite – Adenosine Triphosphate (ATP) and its major precursor, phosphocreatine (PCr) as well as the metabolites associated with the maintenance and breakdown of the cellular membranes – phosphoethanolamine and phosphocholine or phosphomonoesters (PME's) and glycerophosphoethanolamine and glycerophosphocholine or phosphodiesters (PDE's). Here, we present findings from a descriptive cross-sectional 31P MRS study on children, adolescents, and middle aged and older adults. In a sample of 129 participants, we observed reliable age differences in 11 brain regions: inferior and middle PFC, inferior parietal and visual cortex, hippocampus, anterior and posterior cingulate gyri, neostriatum, thalamus, as well as the deep white matter areas – forceps major and minor. The amplitude of the metabolites were residualized on the total spectrum amplitude. We found evidence of robust age-related differences suggesting greater breakdown and reduced maintenance of the neuropil in the older children and more so in the adults. Brain energy stores were lower in adults and older children and there was an age-related shift in acid-base balance of the brain. We discuss the promises and limitations of the method and the prospects of the longitudinal studies.

Keywords*: Magnetic Resonance Spectroscopy, ATP, phospholipid membranes, brain acid-base homeostasis*

Talk 5: Why We Should Abandon Tests with Reduced Dimensionality, Even if They are Bayesian

Timo von Oertzen

The field of psychology leaves Null Hypotheses Significance Testing (NHST) behind, and that is a good development. However, Bayesian methods can be used to test Null Hypotheses as well. Some modern statistic courses describe Bayesian methods that way. Null Hypothesis Bayesian Testing (NHBT) is in fact very tempting, since it seems to keep the apparent advantage of not having to specify what a 'small' effect is, while it still comes with the 'Bayesian' label. In this lecture, we will define some criteria that we want inference methods to satisfy, and we will see on some examples that NHBT is not better, but even worse than NHST. We will see that there are better ways to conduct tests, and that in the end of the day, they may even be easier than NHST.

Keywords: Bayesian Methods, Null Hypothesis Testing, Modern Inference Testing

Talk 1: Student-Teacher Relationship Quality in Montessori and Non-Montessori Preschool

Lee LeBoeuf

According to the Contextual Systems Model (Pianta, 1999), individual characteristics of students and teachers, along with the characteristics of the classroom and school contexts in which they are embedded, influence student-teacher relationship (STR) quality. Having a high-quality relationship with one's teacher, characterized by a high degree of closeness and a low degree of conflict, in the early years of schooling predicts numerous positive outcomes for children throughout schooling and development. Identifying features of a classroom and school context that promote the development of positive STR is an important goal for researchers to inform practitioners on how to best cultivate these contexts. Montessori classrooms feature many characteristics that have previously been associated with higher quality STR, so Montessori classrooms offer a helpful point of comparison for understanding how context and individual characteristics of students and teachers contribute to STR quality. This study represents the first investigation of Montessori STR quality. I use data from the first-ever national evaluation of Montessori preschool in the United States. Results will reveal specific classroom characteristics that help facilitate high-quality STR for all children, regardless of their identities or abilities.

Keywords: Student-Teacher Relationships, Montessori, Preschool

Talk 2: How do Teachers Teach Heterogeneous Classrooms? Multivariate Analyses Using Large Scale Assessment Primary School Data

Svenja Hascher & Camilla Rjosk

Primary school classrooms are heterogeneous in many intersecting dimensions, such as achievement, ethnic and socio-economic backgrounds. There are varying theories about how this classroom heterogeneity affects learning: while some suggest that heterogeneity can positively influence student outcomes and equity (diversity enriching hypothesis, Lazear 1998), others propose potential negative impacts on teacher stress levels and teaching quality (e.g., Maestri et al., 2007, referencing the theory of provision of public goods in Alesina and La Ferrara, 2005). These negative impacts could potentially undermine the positive effects of heterogeneity on learning or even lead to detrimental outcomes. However, with appropriate strategies and teaching methods, teachers can amplify the positive impacts of diverse classrooms (Cohen & Lothan, 1977).

The aim of this study is to evaluate the influence of heterogeneity on primary school teachers and their teaching. We defined heterogeneity using a multidimensional measure, encompassing the dimensions of achievement, ethnic and socio-economic heterogeneity. Through regression analyses of large-scale assessment data from 528 German primary school classrooms (IQB trends in student achievement 2016: Stanat et al., 2019; Schipolowski et al., 2019), we discovered that heterogeneity slightly negatively impacts teaching quality and increases teacher stress, while significantly positively affecting the diversity of teaching methods.

Further, we examined classrooms with high levels of heterogeneity. Utilizing cluster analyses, we observed that here most teachers experienced stress, with classroom management appearing to play a significant role in the interplay between stress and teaching. Teachers who reported the least stress were those who employed cognitively stimulating teaching methods and utilized the greatest number and variety of teaching methods.

Keywords: Classroom heterogeneity, Teachers, Instruction

Talk 3: Do Teachers Respond Fairly to Norm Violations? Mobile Eye Tracking and Differential Attention in Classrooms

Blake D. Ebright

There is a lot of evidence suggesting that student demographics are a factor in everyday classroom interactions. However, the claims are often conflicting. For example, some assume that girls get less attention which means their contributions as well as individual needs are more often overlooked. Others claim that boys tend to misbehave because teachers focus more on high-achieving girls. Some researchers claim that students of color are more scrutinized by teachers and hence their misbehavior is more likely to be noticed and reprimanded. With mobile eye tracking, we recorded in 46 classrooms how often teachers focused on each student during a regular classroom period. We matched data with video footage identifying student behaviors that violated classroom norms. We found different profiles of behavior by student gender and race and differences in teacher responses based on the type of norm violation and teacher expertise. Teachers did not focus on one gender more than another, but they looked at Black students more often than at White students. Teachers observe Black students violating norms more often than White students, but only for infractions that indicate active participation. This corroborates Black students' perception that teachers scrutinize their behavior more. While this could indicate a sensitivity to pedagogical needs, we interpret it as teacher bias with potentially drastic downstream effects.

Keywords: Mobile eye tracking, student norm violations, classroom management, teacher bias, loglinear modeling

Talk 4: Context Matters: A IPD Meta-Analysis on How Students' Socioeconomic Background Is Associated With Academic Motivation

Sarah Grünthal, Martin Brunner, & Hanna Dumont

Since the PISA shock in 2000, educational research focused on the relation between students' SES and their academic achievement. It is well known, that educational opportunities are distributed unequally and affect students' academic achievement based on their SES. Past research on students' academic motivation acknowledged effects on students' educational success. However, and in stark contrast to research on students' academic achievement, there is little knowledge on the relation between students' SES and their academic motivation. To address this gap, we specifically focus on research questions tackling "the What" on how students' SES relates to students' academic motivation taking international and developmental perspectives.

Based on Eccles and colleagues model of parents' socialization of motivation we assume that the family SES not only influences economically what experiences parents can afford to provide for their children. It may also be interpreted as a proxy for parents' general attitudes towards education in form of cultural practices and the effort they invest to provide their children inspiring opportunities. For this reason, we conclude that analyzing just the economic aspects of SES may overlook other important mechanisms and substantiates the analysis of different SES indicators.

Using integrative data analysis, we will meta-analytically integrate the results from multiple international educational large-scale assessments, such as PISA, TIMSS, and PIRLS. In doing so, we will study how students' academic motivation is related to different SES indicators. We will also examine how the results vary by country, domain, students' age, outcome and SES indicator.

Our first results confirm that there are domain specific differences (correlations for reading related scales are stronger than for math related scales), indicator specific differences (book variable describes the strongest relation with the analyzed scales while years of parents' education shows the lowest) and outcome specific differences (strongest correlations for enjoyment in reading) in how students' SES is associated with academic motivation.

Keywords: IPD Meta-Analysis, SES, academic motivation

Talk 5: Educational Expansion and Beliefs in the Importance of Education for Earnings

Kevin Schoenholzer & Kaspar Burger

Educational expansion over the last decades has increased the average educational attainment and narrowed its distribution across most societies. Studies have shown that beliefs in the importance of education influences educational decisions and outcomes of individuals. The potential impact educational expansion could have on how people think about the relationship between education and earnings has not been adequately explored. This research investigates whether the increase in educational attainment that resulted from educational expansion, is related to changes in how important people think education should be for earnings. Moreover, we determine whether there is a significant difference between individuals with higher and lower levels of education. This study combines nationally representative individual-level data assessing beliefs related to inequality taken from the International Social Survey Program (ISSP) modules from 1992, 1999, 2009 and 2019, with country-level educational attainment data. The final sample post imputation, contains 109'094 individual-level observations, totaling 79 country-years across 31 unique countries. We find that across countries, an absolute increase in educational attainment was significantly and positively associated with stronger beliefs in the importance of education for earnings. Additionally, individuals with higher educational attainment showed significantly higher beliefs compared to fellow citizens with lesser educational attainment. Educational expansion seems to have raised overall beliefs in the importance of education for earnings, especially for individuals with above average educational attainment. Overall, our study contributes to the small but growing body of literature on the relationship between education and beliefs in the importance of education for earnings, highlighting the changes that have occurred across countries in the last three decades of educational expansion.

Keywords: Education, expansion, beliefs, earnings

Talk 6: Speech Processing in the Brain at Risk for Cognitive Impairment

Elena Bolt & Nathalie Giroud

The close relationship between cognition and hearing in old age suggests that neurophysiological data from older adults may shed light on how deficits in speech processing along the auditory pathway characterize the aging brain at risk for cognitive impairment. In the auditory pathway, signals pass through subcortical relay stations before being integrated into cortical areas. A recent study suggests that the pathophysiology of mild cognitive impairment (defined by a Montreal Cognitive Assessment (MoCA) score < 26) extends to auditory encoding in the brainstem, reflected by slower and weaker encoding at subcortical levels, whereas processing in the cortex is enhanced, and that neural responses to auditory input at both levels have predictive potential for a low MoCA score. In our study, we aimed to replicate these previous findings and extend them to responses to natural running speech. We performed audiometric and cognitive tests with N = 44 participants (26 women, 70.0 ± 5.9 years). According to their MoCA scores, participants were divided into a low MoCA group (MoCA score < 26, n = 19) and a control group (MoCA score = 26, n = 25). Using a novel electroencephalography (EEG) paradigm that allows simultaneous measurement of subcortical and cortical responses to naturally occurring speech, we recorded EEG while participants listened to audiobook segments.

At the LIFE-IMPRS Fall Academy in Zurich, we would like to present the results of the study and preview the next PhD project in my dissertation, which will take an in-depth look at linguistic neural speech processing in older adults with and without risk for cognitive impairment. Our research has the potential to contribute to the understanding of the neurophysiological mechanisms underlying cognitive impairment, which could help identify individuals at risk for dementia at an earlier stage.

Keywords: neural speech processing, cognitive impairment, auditory cognitive neuroscience, aging

Talk 7: Beyond Auditory-Cognitive Trainings: Using Stereoscopic Virtual Reality to Improve Speech Comprehension in Older Individuals with Hearing Loss

Vanessa Frei & Nathalie Giroud

Auditory-cognitive Trainings (ACTs) and audio-visual speech presentation represent promising approaches to improve speech comprehension and promote neural processing of speech despite hearing-loss (HL), while generalizability and transfer effects of ACTs still pose a major challenge. The study aims to clarify whether an enriched training environment facilitates speech comprehension and neural speech processing compared to purely audio-cognitive training in a laboratory environment. Participants (with varying degrees of cognitive capacity and peripheral HL) answer questions about spoken content in a three-dimensional immersive (stereoscopic virtual reality) conversation and a purely auditory set-up. Neural speech tracking is measured by electroencephalography simultaneously. Speech comprehension is measured on a behavioral level and concurrently cortical speech processing as a function of cognitive capacity, sensory auditory performance and varying cognitive demand is assessed. Additionally, speech-in-noise performance is assessed before and after each training session.

We predict improved speech comprehension using immersive ACT and simultaneously gain a deeper understanding of associated speech tracking and its role regarding speech comprehension, particularly with varying cognitive demands. We intend to model these effects as a function of cognitive capacity and HL, thereby gaining a more comprehensive understanding of the underlying relationships between these constructs (data collection has finished on 1st of September). The study further allows both a within- and a between-person perspective, whereby individual prerequisites, environmental and motivational factors can be considered. Finally, it allows for valuable considerations for future training, particularly regarding transferability and generalizability, while enabling increased engagement of individuals.

Keywords: Auditory-cognitive Training, neural speech tracking, speech comprehension, age-related hearing loss

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Talk 8: Vulnerable Self-Disclosure Co-Develops in Adolescent Friendships: Developmental Foundations of Emotional Intimacy

Meghan Costello & Joseph P. Allen

Friendships become a central source of support, intimacy, and information about norms for discussing emotionally vulnerable topics; a high-stakes and high-reward process for building connections with close others. In order to better understand the process by which vulnerability is learned, the current study examines the development of vulnerability when help-seeking from ages 13 to 29. A diverse community sample (N = 184; 86 boys 98 girls; 58% white, 29% black, 13% other identity groups) participated in annual observed interactions with close friends and romantic partners. Random intercept cross-lagged panel models (RICLPMs) were used to parse markers of within-individual change in vulnerable self-disclosure across ages 13 to 18. A follow-up regression model also investigated cascading associations from self-disclosure in adolescent friendships to self-disclosure in adult romantic relationships. Results indicate that adolescents with best friends high in vulnerable disclosure tend to disclose appropriately more in the future when seeking support and disclose appropriately less when providing support. These adolescents also tend to continue to express more vulnerability within future romantic relationships, potentially facilitating future interpersonal regulation opportunities. Results indicate that the best friendship, a key source of emotional support, serves as a foundational context for learning important intimacy-building skills, such as vulnerable self-disclosure, which persist across time and relationships.

Keywords: adolescence, peer relationships, emotional support, self-disclosure

Talk 9: Moral Compensation via Prosocial Behavior

Jasmin Weber & Alexandra M. Freund

Much of the research on moral behavior focuses on the role of developmental, dispositional, and situational factors, while neglecting patterns of moral behaviors over time. Assuming that morality is a disposition, one would expect moral behaviors to be relatively stable over time. However, research on sequential moral behaviors indicates that people sometimes balance between moral and immoral behavior, for instance when moral transgressions promote prosocial behavior as a compensatory response. Previous research has primarily attributed the phenomenon of compensatory prosocial behavior to the attempt to restore a positive moral self-image and counteract feelings of guilt. However, immoral behavior often also negatively affects a person's reputation and social relationships, which can be addressed by subsequent prosocial behavior due to its positive reputational and relational consequences as well. My dissertation will investigate the mechanisms underlying moral compensation. In addition, I want to explore whether moral compensation extends beyond an individual level to the group level: Do moral transgressions committed by a group that is part of one's social identity also promote compensatory prosocial behavior by its individual members? In this talk, I will present the theoretical assumptions of prosociality as a compensatory response to immoral behavior as well as a series of studies to test them.

Keywords: Prosocial behavior, moral compensation, sequential moral behavior

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Talk 10: Concept of SENTI-NET: Emotion Classification Using Free-text Descriptions

Hannes Diemerling & Timo von Oertzen

Emotion recognition is a central challenge in both technical and psychological domains. One possible approach to better understand this complexity is to consider free-text descriptions labeled by volunteers based on real psychotherapeutic sessions. Rather than relying solely on predetermined emotion categories, these descriptive emotional narratives may offer more detailed insight into human emotions.

The proposed research design aims to collect these textual descriptions to provide an enriched dataset suitable for emotion classification. The complexity of individual emotion expression suggests that these free-text descriptions may need to be transformed into semantic vectors, with the primary goal being to convert the narrative richness into data that can be processed using machine learning techniques. Subsequently, Deep Neural Networks (DNN) will be used to predict these semantic vectors. Here, a multilabel design as well as the use of extended loss functions, such as cosine similarity, is envisioned.

This research design, while exploratory in nature, is intended to provide a new perspective in emotion recognition. The realization of such an approach is expected to make a constructive contribution to ongoing discussions in both technological and therapeutic circles by offering a perspective through which human emotions could be interpreted and understood.

Keywords: Emotion Recognition, Machine Learning, Word Embedding

Talk 11: Task-dependent Representational Dynamics in Visual Working Memory Reflected in Human Gaze Patterns?

Dilara Zorbek & Bernhard Spitzer

A long-standing question in the working memory (WM) literature is the extent to which WM maintains retrospective representations of past sensory inputs and/or future-oriented representations of prospective actions. More recently, it has been proposed that WM might instead maintain representations intermediate to sensation and action, in terms of contingencies that define how future behaviors will depend on upcoming events. Whether and how human visual WM transforms perceptual inputs into a contingency representation yet remains to be shown.

To address this question, we record eye-movements while participants are asked to map memorized stimulus information onto different response spaces, depending on task condition. Building on previous findings from our lab, we expect the memorized stimulus information to be reflected in characteristic gaze patterns during WM processing. Specifically, we ask to which extent these patterns reflect the transformation into a task-related contingency map, and if so, when in time such transformation occurs. The work is anticipated to yield first insights into the temporal dynamics of potential WM-transformations into a contingency space, and to lay the foundation for subsequent studies into potential format changes on the neural level, using, e.g., functional magnetic resonance imaging (fMRI).

Keywords: Working Memory, Representations, Eye-Tracking, Contingency

Talk 12: Dynamic Network Loadings and Measurement Invariance

Laura Jamison, Hudson Golino, & Alex Christensen

Establishing measurement invariance (MI) is vital when using any psychological measurement to ensure applicability and comparability across groups cross-sectionally and longitudinally. As the field of network psychometrics continues to expand, it is crucial for invariance testing methods to be available. Prior research conducted by Hallquist et al., 2021, has allowed for the computation of network loadings, which are analogous to factor loadings from the factor analytic framework (Christensen & Golino, 2021). This opened the door for further advancement in assessing cross-sectional metric invariance in the Exploratory Graph Analysis framework using permutation testing. However, to date, there is not a method available for the computation of dynamic network loadings with intensive longitudinal data. As such, we first present a method for computing dynamic network loadings with output from Dynamic Exploratory Graph Analysis (DynEGA). Then, we will present a new method for testing dynamic configural and metric invariance using DynEGA and dynamic network loadings. Results from initial simulation studies will be presented as well as a demonstration of the practical application of these methodologies.

Keywords: Psychometrics, Invariance, Networks, DynEGA

Talk 13: Prevalence and Predictors of Health-Relevant Information Concealment in the United States and Europe

Wilson Merrell, Walter Bierbauer, & Urte Scholz

Concealing information about one's health can lead to harmful individual physical and psychological outcomes – it could make an illness worse, cause you to miss out on key social support, and foster feelings of isolation. But relatively less is known about the factors that influence whether someone decides to conceal these different pieces of health-relevant information or not. Pulling from established literatures on concealable stigmatized identities, secret-keeping, and infectious disease concealment, we aim to identify the prevalence and predictors of concealment decisions across different health-relevant categories. In this registered report, we will be testing concealment behavior (1) across different health information categories (infectious illness, smoking), (2) from different audiences (family, friends, strangers), and (3) in different cultural contexts (United States, German-speaking European countries). We plan to examine how variation across these three factors (e.g., harmfulness to others, welfare tradeoff ratios, sick leave policies, social norms) differentially predicts concealment behaviors. As this is a registered report, I will not have any data to present but will instead be looking for feedback on our methods, hypotheses, and data analytic plan.

Keywords: Health, concealment, infectious disease

Talk 14: Moral Judgments of Disease Concealment

Savannah Adams, Kaelyn Sabree, Madhulika Shastry, & Joshua Ackerman

Current concealment literature focuses on how people may conceal identity-relevant features (e.g., sexual orientation) to avoid moral judgments and stigma, but recent research demonstrates people also conceal non-identity-relevant features, such as contagious illness. We propose there may be a moral stigma attached to illness concealment similar to other forms of concealment, but that unlike other concealment these judgments arise from the harm this type of concealment may pose to others. Across three studies, we had participants read scenarios describing targets as concealing mild (less harm) or severe (more harm) symptoms of a contagious illness in a variety of situations. Participants were then asked to evaluate the targets' moral character and the perceived harm and risk of illness spread within each situation. Overall, higher harm and risk perceptions correlated with harsher moral judgments, particularly when the motive for concealment was seen as less justified. This research expands on current literature to show that moral consequences of concealment may also apply to non-identity-relevant forms of concealment, and this may be due to the perceived harm of that concealment by others.

Keywords: Morality, concealment, disease

Talk 15: Associations of Racialized Inequities With Saliva DNA-methylation Measures of Biological Aging and Mental Health Across Childhood and Adolescence

Muna Aikins, Yayouk Willems, Colter Mitchell, Bridget Goosby, & Laurel Raffington

Racialized disparities in aging-related health may partially be driven by epigenetic processes related to accelerated biological aging. Adversity in childhood, such as racial marginalization and low socioeconomic status has been associated with a faster pace of biological aging measured in children's DNA-methylation (DNAm). The aim of this study is to explore racialized inequities in longitudinally assessed saliva DNAm measures of biological aging and mental health across childhood and adolescence. Participants include n=2,020 children from the birth cohort Future Families and Child Well-being Study (FFCWS) with DNAm data collected at 9 years and repeated at 15 years of age. We will examine associations between individual's race/ethnicity, neighborhood contexts (i.e., family-level and neighborhood-level racial/ethnic identities, SES, police interactions), saliva DNAm quantification of biological aging (i.e., DunedinPACE, GrimAge, PhenoAge), and mental health (i.e., parent-reported internalizing and externalizing behaviors from age 3 to 15; child-reported depression and anxiety). Following preregistered analyses, we will employ latent growth curve models and cross-lagged panel models to assess multivariate longitudinal dynamics. Analyses are ongoing and preliminary results will be presented.

Keywords: Epigenetics; adolescence; mental health; aging; gene-environment interplay

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Talk 16: Dissociating Perceptual and Value-based Generalisation in Anxiety and Intolerance of Uncertainty

Luianta Verra, Bernhard Spitzer, Nico Schuck, & Ondrej Zika

A characteristic marker across anxiety disorders is inflated affective responses to stimuli that are in fact safe. Such generalisation of affective responses can arise from two sources: the failure to discriminate between stimuli (i.e. perceptual mechanisms) and the active process of transferring learned values to similar, but discriminable stimuli (i.e., value-based mechanisms). We ask how these mechanisms differentially shape threat generalisation and how they are impacted by individual differences in anxiety (STICSA) and intolerance of uncertainty (IUS).

In a Pavlovian aversive learning paradigm participants first learned to probabilistically associate flower-like shapes with aversive screams. Next, affective ratings to stimuli varying in similarity to the original shapes were collected as a measure of generalisation. We systematically varied perceptual and outcome uncertainty to test the respective contributions of perceptual and value-based components to generalisation.

Perceptual uncertainty was manipulated using personalised stimuli at different discrimination difficulties and outcome uncertainty by varying reinforcement rates during threat acquisition. We next related these individual processes to trait anxiety and intolerance of uncertainty variations in a healthy population sample (n=50).

We found an effect of both perceptual uncertainty and value on threat generalisation, that varied depending on the distance from the conditioned stimulus. We further found that trait anxiety and intolerance of uncertainty affect generalisation differently. While anxiety strengthened threat beliefs across all stimuli, intolerance of uncertainty was associated with elevated generalisation further from the conditioned stimulus.

Next, we plan to use computational models to infer strength of conditioning and generalisation for each participant and condition. This will allow us to analyse the contributions of perceptual and value-driven mechanisms in threat generalisation and additionally to relate individual differences in generalisation to trait anxiety and intolerance of uncertainty.

Keywords: fear generalisation, anxiety, uncertainty

Associations of Polygenic and Methylation Profile Scores With Cognitive Development

Deniz Fraemke, Paulus, L., Walter, J-H., Mönkediek, B., Czamara, D., Schowe, A. M., deSteiguer, A., Tanksley, P., Okbay, A., Instinske, J., Kuznetsov, D., Nöthen, M. M., Pahnke, C. K. L., Forstner, A. J., Binder, E., Spinath, F. M., Harden, K. P., Malanchini, M., Kandler, C., Tucker-Drob, E.M., & Laurel Raffington

Individual differences in children's cognitive and academic performance arise through transactional gene-environment interplay, predict future educational attainments, income, and aging-related cognitive health. Recent genomic studies have quantified DNA-based correlates of performance on cognitive tasks and educational attainment based on genome-wide association studies that can be used to compute polygenic indices (PGIs) in separate target samples. Similarly, results from epigenetic studies have quantified DNA-methylation based correlates of performance on cognitive tasks that can be used to compute methylation profile scores in separate target samples. We present preregistered analyses to examine whether polygenic and methylation scores developed to predict adult cognitive function are 1) uniquely associated with variation in cognition and academic attainments and (2) predict longitudinal cognitive development. This will allow us to evaluate whether the molecular markers of cognitive performance originally identified in adults arise through developmental changes in cognitive performance and academic achievement that onset early in the life course. We leverage longitudinal, genomic, and twin designs to test these aims in three cohorts covering the life span: in n=1,830 8-18-year-olds from the US Texas Twin Project, n = 5,432 3-77-year-olds from the German Twin Family Panel Study (TwinLife), and n=2,262 0-72-year-olds from the German SOEP-G[ene] cohort.

Keywords: cognition; epigenetics; DNA-methylation; polygenic; gene-environment interplay; socioeconomic inequality; education

Research Update: Altered Stress Response and Gene Expression Among Peer Victimized Youth

Jens Heumann & Mike Shanahan

Building upon our prior talk, this poster serves as a comprehensive research update on the enduring impact of peer victimization on psychological, physiological, and biological stress reactivity. Previously, utilizing the Zurich Brain and Immune Gene Study (ZGIG) data, a subset from the z-proso longitudinal study, we found that peer victimization (PV) is associated with altered stress reactivity and differential gene expression, particularly in the conserved transcriptional response to adversity (CTRA) gene signature. Using inverse probability of treatment weighting (IPW), we aim to identify causal effects.

In this updated research, we introduce refined analytical methods aligned with existing literature and incorporate additional outcomes. These new dimensions include hair samples for cortisol, cortisone, and testosterone levels to assess long-term stress, cytokine analysis to measure immune response, pupil dilation during the Dot Probe task for a physical measure of anxiety/arousal, and heart rate variability as a measure of autonomic nervous system function. We also bring in supplementary surveys, including the State-Trait Anxiety Inventory (STAI) for anxiety levels, and the Ambiguous Intentions Hostility Questionnaire (AIHQ) to assess hostile attribution and aggression bias.

The poster systematically categorizes all outcomes and presents comparative analyses of effect sizes. Our intent is to facilitate robust discussions about the broader significance and implications of these multi-layered findings. The objective remains: to gain a more detailed understanding of the complex impacts of PV and to underscore the critical need for comprehensive interventions aimed at alleviating the far-reaching physical and mental health consequences attributed to peer victimization.

Keywords: peer victimization, stress reactivity, gene expression, social stressor

Simultaneous Polysubstance Use in Adolescents and Young Adults: Prevalence, Patterns, and Correlates

Michelle Loher, Denis Ribeaud, Lydia Johnson-Ferguson, Laura Bechtiger, Manuel Eisner, Boris B. Quednow, & Lilly Shanahan

Background: Mortality due to overdoses of prescription drugs and illegal substances has surged among young people, especially in the US. Simultaneous polysubstance use is, in part, responsible; however, its prevalence and correlates are poorly understood. This study addresses these gaps and investigates correlates of substance combinations that could result in potentially fatal side effects, such as respiratory depression, serotonin syndrome, or sympathomimetic toxidrome. **Methods:** Data came from two large community-based studies of three age-groups of adolescents and young adults (n = 2,379 at age 15; n = 841 at age 18; n = 1,159 at age 24). Simultaneous polysubstance use and its risk correlates, including sociodemographic factors, poor mental health and wellbeing, adverse social experiences, risky behaviors, and attitudes toward illegal substance use, were self-reported. **Results:** The past-year prevalence of simultaneous polysubstance use was 13.5%, 31.0%, and 28.8% among 15-, 18-, and 24-year-olds, respectively. Young adults reported 58 different substance combinations as their most frequently used. 9.1% combined drugs that could cause respiratory depression, and another 10.4% those that could cause serotonin syndrome or sympathomimetic toxidrome. The risk of respiratory depression-inducing combinations was specifically increased among young adults with poorer mental and physical well-being and adverse social experiences. Contrarily, serotonin syndrome/sympathomimetic toxidrome risk was increased for young adults with risk-seeking tendencies. **Conclusions:** To best understand substance use among young people, researchers should assess simultaneous polysubstance use. Public health efforts must educate young people about the potential toxicity of consuming certain prescription drugs and illegal substances simultaneously. The identified correlates could be a first step for moving toward targeted preventions and interventions.

Perinatal Risk and Protective Factors for the Social-Emotional Development of Children Born Preterm

Miriam Löffler, Moritz Daum, Giancarlo Natalucci, & Lisa Wagner

Children born preterm (PT) are at risk to encounter social-emotional difficulties. Risk and protective factors, such as caregiver characteristics and environmental influences, are related to the social-emotional development of children born PT. Understanding these factors help to identify children at risk and offer targeted interventions. The study aims to explore medical and psychological risk and protective factors for the social-emotional development of children born PT, by focusing on the temperament dimensions positive affectivity / surgency, negative emotionality, and orienting / regulatory capacity. Furthermore, the study aims to compare these factors between children born PT and full term (FT) and examine general differences in temperament between the groups. Participations will be caregivers of 242 to 484 children born PT and FT at the University Hospital Zurich (USZ). The children will be between 3 months and 2 years old. Data will be collected longitudinally via the kleineWeltentdecker app and the medical records of the participants will be screened for further risk and protective factors.

Individual Differences in Hemispheric Lateralization of Language-related Neural Processing Among Elementary-aged Children

Analia Marzoratti, Anna Youngkin, Ian Lyons, Michael Ullman, & Tanya Evans

Developing language processing skills is a major task of early cognitive development undergirded by complex neural mechanisms. However, there has been little study regarding subclinical individual differences in typical neural mechanisms for language learning, or their potential implications for cognitive outcomes.

We analyzed magnetic resonance imaging (MRI) data from age-7 children (N=159) as they judged the accuracy of auditory sentences with varied semantic (task S) or grammatical (task G) errors. We quantified mean left and right hemisphere blood oxygen-level dependent (BOLD) signal (I.e., activation) and estimated multilevel models with random intercepts predicting activation in either hemisphere based on task. Intraclass correlation coefficients (ICCs) quantified the added value of accounting for within-subject nesting of task-level values (I.e., individual differences). We estimated models predicting accuracy based on task or hemispheric BOLD signal.

We found a significantly higher right hemisphere activation for task G compared to task S (B= 0.08, SE= 0.02, p<.001). ICCs for the right (0.34) and left hemisphere (0.41) models suggest that 34% and 41% of neural variability was explained by subject-level trends. Left hemisphere activation was negatively related with accuracy (B=-21.78, SE=9.91, p=.029) and performance was lower for task G versus task S (B=-7.79, SE= 2.63, p=.003).

Language processing is left lateralized, an effect which increases with content mastery. Children often develop skills with language semantics prior to syntax or grammar. Our findings somewhat support these models, as children showed both lower accuracy and greater right hemisphere activity during the ostensibly more difficult task G. However, the negative association of left hemisphere BOLD signal with accuracy aligns more with models positing decreased neural activity with language expertise.

These results show that same-age children may rely on markedly different neurocognitive mechanisms to process the same content, illustrating the added value of accounting for individual differences in studies of neurodevelopment.

Keywords: individual differences, language learning, MRI, neurodevelopment

Age Differences in Memory Generalization Across Childhood

Tydings McClary

Memory allows us to make generalizations based on the regularities across related experiences. Neuro-computationalmodels of memory suggest that the hippocampus contributes to memory generalization in addition to remembering specific details of our past. However, the extent to which generalization relies on memories of individual experiences during childhood is poorly understood. Additionally, despite generalization being studied using various behavioral paradigms and targeting different developmental windows, our knowledge of how individual variations in different behavioral assessments relate to one another remains limited. In four paradigms (statistical learning, associative inference, transitive inference and category learning), we therefore investigated (i) how generalization differed by age, (ii) how it related to memory for individual instances, and (iii) the associations between tasks from age 4 to 8. We found that 4-year-olds performed worse than older children in all tasks and 8-year-olds outperformed younger children in the associative and transitive inference. Interestingly, inferential accuracy is more tightly coupled with memories of individual instances in older compared to younger children, suggesting this coupling is stronger with age. Surprisingly, despite conceptualized as generalization tasks, the inter-task correlations were far from consistent. Together, these findings underscore the importance of employing amulti-task design to capture the different aspects of generalization development.

Keywords: memory generalization, statistical learning, inferential reasoning, development

Making it to the Academic Path in a Tracked Education System: The Interplay of Individual Agency and Social Origin in Early Educational Transitions

Francesca Mele, Marlis Buchmann, & Kaspar Burger

Little is known about the role of agency in transitions in tracked education systems or whether it varies by socioeconomic background. This study addressed this gap by estimating structural equation models based on longitudinal data that are representative of the German- and French-speaking parts of Switzerland (N=1273 individuals, surveyed from age 6 to 18, mean age at wave 1: M age=6.54, SD age=0.50, female=49%). The findings reveal that agency (captured by study effort and occupational aspirations) and socioeconomic background (measured by parental education and family income) significantly predicted students' transitions to academically demanding tracks in lower- and upper-secondary education. In the transition to upper-secondary education, students with fewer socioeconomic resources benefitted less than their more advantaged peers from ambitious aspirations, but they benefitted more from exerting effort. These findings suggest that both an optimistic forward-looking orientation and the exertion of effort are required to make it to an academic track. Effort may serve as a "substitutive" resource for less socioeconomically advantaged students, whereas ambitious aspirations may enhance the positive effect of family socioeconomic resources on academic educational trajectories. Overall, the evidence from this study calls for greater attention to investigating not only how agency shapes adolescents' educational trajectories and opportunities but also how its role differs across social groups.

Keywords: Individual agency, Social origin, Educational transitions, Tracking, Longitudinal

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Cairn of Care: Does the Pebbles App Rock Parenting and Development?

Sandro E. Stutz, Stephanie Wermelinger, Ulf Zoelitz, & Moritz M. Daum

Introduction: Mobile phone interventions for parenting are rapidly gaining relevance, and studies have shown the positive effects of such applications on caregivers and their children. In the current project, we aim to investigate whether using a mobile developmental diary app for caregivers of children between 0 to 6 years of age (Pebbles App) is associated with changes in caregivers' knowledge, awareness of developmental status, parenting, and parental self-efficacy. Furthermore, we explore the possible effects of the Pebbles App on children's cognitive, social-emotional, and temperamental development. **Methods:** We will track 600 caregivers and their children over a period of 18 months, beginning when the children are 12 months old. Three groups of 200 dyads each will be observed: one group will start using the Pebbles App when the children are 12 months old (intervention 1), another group will start at 18 months of age (intervention 2), and a third group will not use the app at all (control). All caregivers will complete online surveys when their children are 12, 18, 24 and 30 months old, assessing their developmental knowledge, awareness of the developmental status of one's child, parenting behavior, mindful parenting, parental self-efficacy, and children's temperament. Additionally, data from the Pebbles App will be used to measure children's development. **Outlook:** This study's findings may elucidate Pebbles App's potential as an intervention tool, extending beyond its primary function as a developmental diary app. Furthermore, it could offer insights into the creation of analogous applications and illuminate the underlying mechanisms relevant to child development.

Keywords: Parenting, mobile application, intervention, developmental diary, experience sampling

How Do Teacher-Caring and Sense of Community Influence Adolescent Development of Cultural Respect Over Middle School Years

Allison Rae Ward-Seidel, Anna Wilkerson, Sara Rimm-Kaufman, & Lia Sandilos

Adolescence is a crucial time of identity and character skill development (National Academies of Sciences, Engineering, and Medicine, 2019). In this developmentally sensitive period, adolescents are primed to explore their own identities and understand who they are in relation to peers and their environment (Branje et al., 2021). School contexts can be supportive environments for students to develop crucial prosocial skills, such as respecting people from different cultures, identities, or backgrounds, when the school climate promotes positive social interactions and relationships (Rudasill et al., 2018). This exploratory study aims to answer the research question: To what extent is adolescent development of cultural respect related to their experience of (a) teacher caring and (b) sense of community over two years in middle school? This investigation is part of a larger quasi-experimental study, which sought to evaluate the Expeditionary Learning (EL) Education model for middle school, particularly students' ethical character development. Student participants were from nine schools in four US cities (n = 241; Mage = 11 years; range = 6-45, M = 24 students in each school). We conducted a longitudinal multilevel regression analysis to investigate adolescents' development of cultural respect over time and the school contexts that support adolescents' cultural respect. Results indicate that students' self-reported cultural respect was influenced by their perceptions of teacher caring, however their development of cultural respect over time was not necessarily influenced by either (a) teacher caring nor (b) sense of belonging in the school community in this sample. Implications for promoting school conditions that support students' development of cultural respect are discussed.

Keywords: adolescence, cultural respect, classroom environment

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Fellow Poster Session II Abstract

Biophilia Across the Lifespan

Elena Isenberg & Simone Kühn

A goal of environmental neuroscience is to research the mechanisms behind the positive effects of natural environments in order to leverage them to optimize well-being. Research has shown that presenting pictures or sounds from different environments yields similar results to an immersive, multi-sensory experience in a real environment, namely reductions in stress, rumination, and general improvements for well-being. In my previous research I used an established paradigm (Haga et al., 2016; Koivisto et al., 2022) in order to isolate not just sensory modality, but also to disentangle the top-down effects of the environment that result from the beliefs and knowledge of participants from the bottom-up effects that are purely stimulus-driven. In this paradigm, participants heard a mixture of pink and white noise, which the experimenter attributed either to a nature or an industrial environment. The sensory, bottom-up input is identical in both conditions. Results showed that trait mindfulness could moderate the degree of rumination depending on the attribution condition. This research supports the Conditioned Restoration Theory, which attributes the positive effects of nature to conditioning and associative learning, and challenges the evolutionary account. My PhD research project aims to disentangle these influences by studying infants' and young children's discrimination between, preference for, and behavior under different environments.

Exploring The Relationship Between Social Support and Accelerated Epigenetic Aging in Aging Adults

Minah Kim, Morgan E. Lynch, Jessica J. Connelly, & James P. Morris

The impact of social relationships on reducing mortality risk is akin to that of quitting smoking (Holt-Lunstad, Smith, & Layton, 2010). Nevertheless, maintaining social relationships becomes challenging for older adults, as they often experience declines in their ability to provide support (Shaw, Krause, Liang, & Bennett, 2007). It is worth noting that there is significant variability among individuals in terms of the support they offer. In older adults, providing higher levels of support is linked to reduced feelings of loneliness (Fokkema, Gierveld & Dykstra, 2011). This suggests that individuals who offer more support to others are likely to experience lower levels of loneliness and benefit from greater social protection against stress and health deterioration. To investigate this hypothesis, our study aims to explore whether increased support provided by healthy aging adults (n = 89, M_{age} = 68.57, SD_{age} = 5.79) is associated with a decrease in epigenetic age (DNAmGrimAge), a metric that is predictive of health outcomes. We will control for sex, race, education level and chronological age. Additionally, we will investigate the relationship between epigenetic age and resting-state functional connectivity to examine the brain networks implicated in epigenetic age acceleration (e.g., the level in which someone is epigenetically aging faster than their chronological age). Exploratory analyses will be conducted on other metrics of social relationships, such as support enacted, support perceived and social embeddedness.

Keywords: epigenetic aging, functional connectivity, social relationships, aging adults

Age Effects on the Encoding and Retrieval of Overlapping Events

Isabelle L. Moore & Nicole M. Long

Healthy older adults typically show impaired episodic memory, memory for when and where an event occurred, but intact semantic memory, knowledge for general information and facts. We hypothesize that these effects can be explained by an increased tendency to enter into and remain in a 'retrieval state,' a brain state in which attention is focused internally in an attempt to access prior knowledge. Engaging in a retrieval state can lead to impairments in subsequent memory, potentially because the retrieval state trades off with an 'encoding state,' a brain state in which attention is focused externally. To test our hypothesis, we conducted multivariate pattern analyses of scalp electroencephalographic (EEG) data while participants were explicitly directed to encode or retrieve object images. We find that both young and older adults can flexibly engage in memory brain states as directed. However, whereas young adults' memory state engagement gradually increases throughout the stimulus interval, older adults' memory state engagement plateaus early in the stimulus interval. These findings suggest that the temporal dynamics of encoding and retrieval states differ across the lifespan, with possible implications for the ability to maintain versus flexibly shift between memory states.

Keywords: aging, episodic memory, electroencephalography

Neurofunctional Effects of Adaptive Computer-based Auditory Cognitive Training In Hearing-impaired Older Adults

Julian Ockelmann, Maren Stropahl, Sigrid Scherpiet, & Nathalie Giroud

Speech perception in background noise poses a difficult task for older adults, even for those with hearing aids or normal pure-tone thresholds. Thus, factors beyond just peripheral hearing integrity seem to contribute to these speech-in-noise (SiN) understanding difficulties in older adults. Due to impacting hearing-relevant cognitive skills, age-related cognitive decline is thought to be one such factor. Auditory cognitive training (ACT) has been shown to successfully tackle these cognitive deficiencies. However, only little work has been done on ACT-induced changes in neural speech processing with most reports being based on small sample sizes and no active control groups. Accordingly, our experimental framework investigates short- and longterm effects of ACT regarding behavioural, cortical, and subcortical components of speech processing in a large sample of older adults with sensorineural hearing loss (= 65 years; N=80). We employ a 4-week training, 2-month follow-up, and pre-post four-group design with two active control groups. Groups categorically differ in the use/non-use of hearing aids. Neural data is acquired using electroencephalography during a SiN understanding- and a syllable detection paradigm. Neural measures include the N1-P2 complex, parietal alpha power, auditory brainstem responses, and afferent connectivity from midbrain to cortex. We expect improved behavioural performance, increased parietal alpha power as listening effort decreases, alongside decreases in both N1-P2 magnitudes and wave V latency. Ultimately, our study is set to provide ample and novel insight on neural and behavioural effects of ACT for older adults with hearing loss. Presentation of preliminary data is intended.

Keywords: EEG, Hearing Loss, Auditory Cognitive Training, Older Adults

The Structured Clinical Interview for ADHD Research: Automation and Validation

Madelyn Quirk, Jahla Osborne, & John Jonides

The Structured Clinical Interview for the DSM-5 (SCID) is a commonly utilized tool for clinicians to deliver clinical diagnoses of psychiatric disorders based on the relative DSM-5 criteria. The attention-deficit/hyperactivity disorder (ADHD) module of the SCID involves a trained practitioner asking a subject a series of questions about their experiences with ADHD symptoms and subsequent diagnostic criteria. From the anecdotal evidence provided, the practitioner determines whether each symptom or diagnostic criterion qualifies as being above threshold or not. When conducting research using adult participants with ADHD, researchers often administer the SCID to validate participant self-reports of having a formal diagnosis of ADHD. However, administering the SCID is a time-consuming process, especially when sample size goals include hundreds of participants. Thus, we developed an automated SCID survey in Qualtrics, allowing participants to complete the SCID on their own time and have the survey deliver a classification of "ADHD" or not to determine eligibility for a given research project. This paper will explore the use and validation of this automated version of the ADHD module of the SCID compared to practitioner-led SCIDs.

Keywords: ADHD, Survey Automation, Research Assessment

The Influence of Locus Coeruleus and Basal Forebrain Degeneration on Arousal Regulation

Agata Patyczek, Elias Reinwarth, Michael Gaebler, Arno Villringer

Arousal regulation is vital for human behavior, aligning cognitive processes and peripheral functions with situational demands. The interplay between neuromodulatory systems, regulated by the locus coeruleus (LC) and basal forebrain nuclei (BF), plays a crucial role in balancing brain arousal. However, aging can lead to structural changes in these brain regions, potentially altering arousal regulation. Therefore, the primary objective of this study is to explore how age-associated structural changes in the LC and BF may drive inter-individual differences in arousal regulation during rest. Additionally, we aim to assess the potential correlation between inter-individual differences in arousal regulation and peripheral measures of arousal such as heart-rate variability. We will use a subset of the population-based LIFE-Adult cohort (N = ~1700, aged 60-80) who underwent a 20-minute resting state electroencephalography (EEG), 3T magnetic resonance imaging (MRI), and a 10-second electrocardiogram (ECG). The VIGALL 2.1 add-on for Brain Vision Analyzer will measure EEG-vigilance, and three outcome variables—mean vigilance, stability score, and slope index—will estimate average arousal level and dynamics. We hypothesize that structural degeneration in the LC and BF will result in imbalances in neuromodulatory systems, leading to impaired arousal regulation. This impairment may manifest as lower mean vigilance, reduced stability, and potentially altered slope index, indicating difficulties in maintaining wakefulness and flexibility. Moreover, we expect a correlation between inter-individual differences in arousal regulation and peripheral measures such as heart-rate variability. Understanding age-related structural changes and their impact on arousal regulation contributes to knowledge about the arousal system, with implications for researchers studying cognitive aging and interventions to mitigate cognitive decline in older individuals.

Neural Dynamics of Lip Contour Tracking in Older Adults

Raffael Schmitt, Stefan Elmer, & Nathalie Giroud

A typical aspect of age-related hearing loss are problems in understanding speech, especially in noisy conditions. However, in many conversational settings listeners can draw on visual cues from the interlocutor's face to compensate for the degraded unimodal percept (i.e., auditory) to form a complete multimodal percept (i.e., audiovisual) and thus achieve successful comprehension. Numerous studies suggest the synchronization be-tween cortical oscillations and temporal modulations of the acoustic speech signal (i.e., the amplitude envelope) to be a key step in the speech processing hierarchy—a process that has also been extensively studied in audiovisual speech perception. In this study, we in-vestigate how cortical activity tracks information provided by a speaker's lip movements (i.e., the lip contour). For this purpose, a sample of 25 older adults (67–80 years) with varying degrees of hearing loss (6–51.6 dB HL) watched videos of a female speaker that were either presented in quiet or in the presence of background noise. Since the temporal envelope and lip movements overlap, we measured the alignment between participants' brain activity and the lip contour while partializing out the stimulus acoustics. Our results revealed that participants processed the lip contour more thoroughly when speech was presented in background noise. However, this effect was restricted to activity in□□□(0.5–4 Hz) and not modulated by participants' hearing thresholds. This suggests that, when per-ception is equalized (i.e., speech comprehension did not differ as a function of hearing loss), hearing-impaired listeners do not seem to be more susceptible to information pro-vided by lip movements.

Keywords: Speech perception; Hearing loss; Aging; Lip-reading

The Role of Beliefs About Exhaustion for Persistence in Goal Pursuit: The Sample Case of Physical Exercise

Beatrice Tărăpoancă & Alexandra Freund

Beliefs play an important role for how people experience events, including their own actions. A plethora of motivational research has investigated the role of beliefs about one's abilities for performance and persistence in the face of negative feedback (e.g., Dweck and Yeager, 2019). In contrast, surprisingly little is known about the role of beliefs about exhaustion and their effects on motivation and behavior. We mainly differentiate between the belief that exhaustion is a signal of impending growth when continuing with a given activity ("push-through beliefs") and the belief that exhaustion indicates depleted resources that need to be recovered by disengaging from the activity ("depletion beliefs").

Building on the motivational model of exhaustion and recovery emphasizing the impact of beliefs for the exprience of exhaustion and subsequent behavior (Schüttengruber & Freund, 2023), we hypothesize that, in contrast to depletion beliefs that should lead to a sooner disengagement, "push-through beliefs" lead to (i) experiencing less exhaustion, and (ii) a longer persistence in the activity.

I propose to test these hypotheses in an experiment manipulating beliefs about exhaustion through a meta-cognitive intervention suggesting that exhaustion can be both a sign of resource depletion or a signal impending growth. The experiment will use the sample case of physical exercise; participants will engage in an strenuous physical training, allowing to test if the induced beliefs affect subsequent exhaustion experience and persistence in further exercise. The same design could also be used with a cognitive task, allowing to test the generalizability.

Keywords: Exhaustion, Beliefs, Persistence, Disengagement

Building a Computational Model of Loneliness: Research Plan and Preliminary Findings

Emma R. Toner, Donald J. Robinaugh, & Bethany A. Teachman

Loneliness is an urgent public health crisis. Research in cognitive, clinical, and social psychology, sociology, and network science has provided valuable insights into the mechanisms underlying loneliness. However, these fields typically conduct research in isolation and have historically used methods that are unlikely to adequately capture the complex biopsychosocial nature of loneliness. Computational modeling can be used to integrate hypotheses generated by different disciplines and rigorously test these theoretical predictions by formalizing them (i.e., representing them in the language of mathematics and/or computer code as opposed to words). For instance, predictions about the development of chronic loneliness can be expressed as computer code that represents people as interacting agents that exhibit dynamic changes in cognition as they interact and assess their social relationships in comparison to others'. Such a model can then be used to simulate data that mirrors real-world systems (e.g., a social network comprised of individual people). The model outcomes can be compared to available empirical findings to determine how well theoriesof loneliness can explain real-world observations, thereby allowing for the identification and correction of gaps in knowledge and theory. The aim of this project is to use computational modeling to formalize an integrated psychosocial theory of loneliness. We present preliminary work incorporating loneliness into a well-established generative network model, demonstrating that features of social networks associated with loneliness can be modeled computationally. We will also discuss plans to extend and improve upon this work by leveraging tools from agent-based modeling and differential equation modeling to construct a computational model that can account for how social threat perception and social network structure together produce chronic loneliness.

Keywords: loneliness; threat perception; social networks; computational modeling

The Longer-term Impacts of Working Memory Testing

Kathy Xie & Patricia Reuter-Lorenz

Previous research from our lab has demonstrated that an opportunity for retrieval practice during a working memory (WM) recognition test can benefit associative episodic memory (EM) minutes later compared to mere WM re-exposure (Xie & Reuter-Lorenz, under revision). These results suggest that a testing effect can emerge for tests administered within the canonical capacity and temporal parameters of WM. However, in these studies EM was tested following a retention interval of 1-5 minutes (i.e., after completion of the initial study–test procedure). This interval was quite short compared to other studies of the testing effect, where memory is tested hours and days after the initial study episode (Karpicke, 2017). In addition, larger testing benefits arise for final tests administered after one day (Rowland, 2014). The current study assesses whether the observed WM testing advantage can lead to associative EM benefits after a 24-hour delay. Young adult participants will study word-pairs that will either be tested or restudied during the WM phase of our task. Then, associative EM for half of all learned pairs will be measured after a short retention interval of 1-5 minutes and associative EM for the remaining word-pairs will be measured after a long retention interval of 24 hours. We will present preliminary results comparing associative EM at short and long retention intervals between pairs re-studied or retrieved during WM. If results indicate a WM-testing benefit after longer delays, this provides further support that cognitive processes are shared between WM and EM and possibly highlights WM retrieval practice as a useful strategy for improving associative EM.

Keywords: working memory, associative episodic memory, retrieval practice, testing effect

A Longitudinal Analysis of Reinforcement Learning in Early Childhood

Linda Kerbl, Simon Ciranka, Christin Schulze, & Anna Thoma

As children navigate their environment, they learn about the likelihood of different outcomes from action and feedback: they press the button on two elevators and learn that the left one tends to open faster; they pull their pets' tails and learn that the cat is more likely to scratch than their Golden Retriever. Most often these action-outcome contingencies are probabilistic and, therefore, demand continuous integration of new experiences to update predictions and adapt future behavior accordingly. Reinforcement learning— formalizing the computational processes underlying value-based learning—characterizes a seminal class of learning and decision-making models in both psychology and neuroscience. In recent years, these models have played a critical role in informing developmental research, casting new light on the cognitive processes enabling adaptive learning and decision-making in childhood. Previous developmental work has focused on school-aged children and used cross-sectional comparisons as a proxy for intra-individual development. However, there is no empirical evidence on the longitudinal trajectory of reinforcement learning in early age. How does outcome valence affect young children's choice behavior? How do they integrate information about chosen and unchosen options? We addressed these questions in the first longitudinal study on reinforcement learning in children aged 3.5 to 6.5 years, assessed at three measurement timepoints (N = 74 at T1). Using hierarchical Bayesian modeling techniques, we provide new evidence for age-related changes in value-based learning and illuminate the computational mechanisms underlying choice behavior in early childhood.

Keywords: Reinforcement learning, cognitive development, early childhood