



**Universität
Zürich^{UZH}**

MAX PLANCK INSTITUTE
FOR THE STUDY OF
CRIME, SECURITY AND LAW



Programme 5th z-proso International Research Network (zIReN) Meeting

14th – 16th September 2023

Max Planck Institute for the Study of Crime, Security and Law, Freiburg i. Br.

Conference Room, Fürstenbergstrasse 19, 79102 Freiburg i. Br., Germany



**JACOBS
CENTER**



Time Schedule – 5th zIRen Research Meeting

14th – 16th September 2023

Max Planck Institute for the Study of Crime, Security and Law,
[Conference Room, Fürstenbergstrasse 19, Freiburg i. Br.](#)

Thursday, 14 th September 2023		
Max Planck Institute for the Study of Crime, Security and Law Conference Room		
Time	Presentation	Speaker
10:15 – 11:00	Arrival & Coffee	
11:00 – 11:30	<i>Welcome Address and Introduction</i>	<i>Jean-Louis van Gelder z-proso Pls</i>
11:30 – 12:30	Session 1 (60'): CONSPIRACY MENTALITY (Chair: Carlota Urruela)	
	<i>Social scarcity? Identifying developmental roots of conspiracy mentality and violent extremism</i>	<i>Hanne Duindam</i>
	<i>The contingent effects of conspiracy mentality on support for violent extremism</i>	<i>Bettina Rottweiler</i>
12:30 – 13:45	Catered Lunch	
13:45 – 15:15	Session 2 (90'): CRIME AND PHYSICAL AGGRESSION (Chair: Shaina Herman)	
	<i>Physical youth-to-parent aggression from early adolescence to young adulthood</i>	<i>Laura Bechtiger</i>
	<i>Offending specialization among z-proso participants</i>	<i>Hugo S. Gomes</i>
	<i>Can increased short-term mindsets after offending explain future involvement in crime?</i>	<i>Sebastian L. Kübel</i>
15:15 – 15:45	Coffee Break	
15:45 – 17:15	Session 3 (90'): LEGAL SOCIALIZATION (Chair: Tim Barnum)	
	<i>Social developmental factors associated with cooperation with police</i>	<i>Amy Nivette</i>
	<i>Examining how socialization processes moderate the relationship between aggression in young people and their attitudes to police legitimacy</i>	<i>Harley Williamson</i>
	<i>The interaction of the cognition, morality, emotions and aggressive behaviour from childhood to early adulthood</i>	<i>Manuel Eisner</i>
17:15 – 17:25	An introduction to DigiCAT: a digital tool to facilitate counter-factual analysis of observational data like z-proso	<i>Yi Yang</i>
19:00 – 22:00	Aperitif & Informal Dinner at the Gasthaus Zum Roten Bären	

Friday, 15 th September 2023		
Max Planck Institute for the Study of Crime, Security and Law		
Conference Room		
Time	Presentation	Speaker
09:30 – 10:00	Coffee	
10:00 – 11:30	Session 4 (90'): NEW DATA AND DATA COLLECTIONS (Chair: Denis Ribeaud)	
	<i>z-proso NextGen: Turning z-proso into a multiple-generation cohort study</i>	Lilly Shanahan
	<i>Official juvenile justice records of delinquency in adolescence – an overview of the structure and coding of the RIS-2 data in z-proso</i>	Ronja Kieft
	<i>An introduction to the full official z-proso school record data. Data structure and first insights in educational careers</i>	Lea Buzzi
	<i>Association of substance use with cognitive performance at age 24 in the z-proso cohort: An introduction to the CANTAB assessment within z-proso</i>	Boris B. Quednow
11:30 – 11:45	Short Break	
11:45 – 12:45	Session 5 (60'): SUBSTANCE USE (Chair: Annetkatrin Steinhoff)	
	<i>Simultaneous polysubstance use among young adults: Prevalence, patterns, and correlates in a large community sample</i>	Michelle Loher
	<i>Using hair data in your analyses? What to keep in mind</i>	Lydia Johnson-Ferguson
12:45 – 14:00	Catered Lunch	
14:00 – 15:30	Session 6 (90'): ADVERSITY, STRESS & STRESS RESPONSES (Chair: Dietrich Oberwittler)	
	<i>Family strain and youths' externalizing behaviors: The mediating and moderating role of perceived social support. A longitudinal perspective on risk and resilience</i>	Fabiola Silletti
	<i>Emotion regulatory brain development: Early influences and susceptibility to stress</i>	Nora Raschle Todd Hare
	<i>Altered stress response and gene expression among peer-victimized youth</i>	Jens Heumann
15:30 – 16:00	Coffee Break	
16:00 – 17:30	Session 7 (90'): ADVANCED LONGITUDINAL MODELING (Chair: Manuel Eisner)	
	<i>Trajectories of screen time across adolescence and their associations with adulthood mental health and behavioral outcomes</i>	Xinxin Zhu
	<i>Occupational future time perspective and mental health problems across adolescence: Random-intercept cross-lagged panel analyses</i>	Yi Yang
	<i>On the importance of considering concurrent effects in random-intercept cross-lagged panel modelling: Analysis of bullying and internalising problems in the longitudinal z-proso study</i>	Lydia Gabriela Speyer
17:40 – 18:30	Early Career Researchers' Meeting (Chair: Michelle Loher)	
19:00 – 22:00	Aperitif & Festive Dinner at the Heilig Geist Stübli	

Saturday, 16th September 2023

Social Event (organized by Sebastian L. Kübel):

Excursion to [Staufen](#) followed by a lunch and a walk to the castle of Staufen

Time	Social Event
09:30	Meet at Freiburg train station Departure: 09:42 from track 2; arrival in Staufen: 10:15
10:30 – 12:15	Guided tour, medieval city of Staufen
12:30 – 14:30	Lunch at Restaurant Löwen in Staufen
14:30 – 16:00	Optional walking tour to the castle of Staufen Alternatively you can also visit the medieval festival (free entrance) that will take place in the center of Staufen during the week-end.

Please note that there are [regular train services from Staufen to Freiburg](#), so you can leave the event whenever you need for your return trip.

Presentations – zIReN Research Meeting 2023

Thursday, 14th September 2023

Session 1: CONSPIRACY MENTALITY

Social scarcity? Identifying developmental roots of conspiracy mentality and violent extremism

Hanne Duindam¹, Manuel Eisner^{2,3}

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Conspiracy theories are considered a big threat to democracy, making people less likely to follow advice from experts and science, engage in social or political causes, or get vaccinated (Jolley & Douglas, 2014; Lewandowsky et al., 2013, 2017). Concerningly, conspiracy mentality has also been found to be associated with having greater violent extremist attitudes overall (e.g., Rottweiler & Gill, 2020). Research on conspiracy belief – or conspiracy-motivated violence – has mostly been conducted in adults and often focused on cognitive, personality or pathological risk factors (e.g., Jolley & Paterson, 2020; Klein et al., 2019; Rottweiler & Gill, 2020). Little is known about the developmental risk factors for conspiracy belief and conspiracy-motivated violent extremism (Hornsey et al., 2022; Klein et al., 2019). There is some research that suggests that a conspiracy mentality might be rooted in insecure child-parent bonds (e.g., Green & Douglas, 2018); weak social bonds have also been suggested to play a role in the development of violent extremism (Social Control Theory; e.g., Hirschi, 1969; Holt et al., 2018). The purpose of the current study is to examine unique and shared developmental predictors of conspiracy belief and violent extremist attitudes longitudinally. While impaired social bonds with parents, school, and society throughout childhood, might be associated with both conspiracy belief and violent extremism attitudes in adulthood (Green & Douglas, 2018; Holt et al., 2018). Unique developmental predictors for violent extremist attitudes might be related to general risk factors for delinquency, such as deviant peers and impulsivity (Merrin et al., 2019).

Current status of the paper/project: ongoing (first results can be presented)

The contingent effects of conspiracy mentality on support for violent extremism

Bettina Rottweiler¹, Amy Nivette², Paul Gill¹, Denis Ribeaud³, Lilly Shanahan³, Manuel Eisner^{3,4}

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Increasingly, we are witnessing a seeming convergence between belief in conspiracy narratives and ideological extremes. Yet, the vast majority of individuals, who hold conspiratorial beliefs do not become radicalised. By utilising models with several interacting risk and protective factors, the present analysis specifies this relationship more concretely. Based on data among a sample of adolescents and young adults in Switzerland, we examine the effects of conspiracy beliefs on violent extremist attitudes, and we test whether this relationship is contingent upon several individual differences. More specifically, we analyse if certain risk factors, such as perceived social exclusion, legal cynicism, low self-control as well as self-efficacy and moral neutralisation increase the risk effects of conspiracy beliefs. Additionally, we test whether prosocial behaviours and receiving social support when facing stressful situations may lessen and thus, buffer against the adverse effects of conspiracy beliefs upon support for violent extremism. We further analyse if there are differential effects of conspiracy beliefs among extreme political ideologies, at

either side of the political spectrum. We aim to highlight the importance of considering (a) the conditional and cumulative effects of various risk and protective factors, (b) the functional role of protective factors when risk factors are present, and (c) the effects of conspiracy beliefs upon violent extremism across different political ideologies. Collectively, the results may bring us one step closer to understand who might be more vulnerable to violent extremism. Importantly, preventing and countering violent extremism (P/CVE) programs must take account of the constellation of multiple factors that interact with (and sometimes enable or disable) one another and which can be targeted in prevention strategies.

Current status of the paper/project: ongoing (first results can be presented)

Session 2: CRIME AND PHYSICAL AGGRESSION

Physical youth-to-parent aggression from early adolescence to young adulthood

Laura Bechtiger¹, Gregor Ferolla Vasconcelos¹, Denis Ribeaud¹, Manuel Eisner^{1,2}, Lilly Shanahan¹

¹University of Zurich, Switzerland

²University of Cambridge, United Kingdom

Understanding the prevalence, consequences, and mechanisms of family violence such as physical abuse toward children has been an important research endeavor (Harold & Sellers, 2018; Miller et al., 2018; van Eldik et al., 2020). Violence and aggression in families is not always parent-initiated, however. Yet, youth-to-parent aggression is one of the most understudied forms of family violence, with a particular lack of longitudinal studies.

In z-proso, physical youth-to-parent aggression in the past 12 months was child-reported at ages 11, 13, 15, 17, 20, and 24 with two items as part of the Social Behavior Questionnaire (1. physically attacked parents, and 2. threw things at parents). For the analyses, the two items were combined (i.e., engaging in at least one behavior). In this presentation, we will first present an update on the prevalence of youth-to-parent aggression in z-proso up to age 24. We will then describe risk factors and characteristics of youth who engage in youth-to-parent aggression in adolescence and young adulthood. Preliminary results suggest that more than 1 in 8 youth were physically aggressive against their parents from ages 11 to 15; this rate drops across late adolescence to 1 in 20 at age 24. One third of young people reported youth-to-parent aggression in the past year at least once during the study period. Those who engaged in youth-to-parent aggression at age 24 were more likely to have lower SES, come from a migration background, and to have attended a lower educational track at age 13 than those who did not engage in youth-to-parent aggression. Together, these preliminary findings suggest that youth-to-parent aggression remains relatively common in young adulthood and suggest that this is particularly common in socioeconomically disadvantaged youth.

Current status of the paper/project: ongoing (first results can be presented)

Offending specialization among z-proso participants

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The question of whether offenders tend to specialize in specific types of offenses or, on the other hand, are versatile and practice multiple types of offenses throughout their life has important implications for both theory and practice. While academics need to understand specialization to test the validity of general crime theories or to adapt theoretical models to specific offending patterns, policymakers require this

knowledge to better target interventions and prevent recidivism. Despite the relevance of this topic, research on offense specialization provided somewhat inconclusive empirical evidence. More recently, researchers applied different methodologies expected to provide better evidence to understand this phenomenon and advance knowledge on this frontier. In the present study, we intend to explore this research question using data from the z-proso study by analyzing self-reports of delinquent and violent behaviors at ages 15, 17, 20, and 24 years. Using these data, we can calculate the Diversity index to explore the variety of offending and carry out Latent Class Analysis to examine the possibility of diverse groups of offenders based on offending specialization/versatility. From these analyses, we will be able to describe different classes of specialized offenders, allowing us to test whether specific characteristics and/or risk factors predict such offending patterns.

Current status of the paper/project: ongoing (first results can be presented)

Can increased short-term mindsets after offending explain future involvement in crime?

Sebastian L. Kübel^{1,2}, Jessica R. Deitzer¹, Willem E. Frankenhuis^{1,3}, Denis Ribeaud⁴, Manuel Eisner^{4,5}, Jean-Louis van Gelder^{1,2}

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Short-term mindsets consistently predict offending, but the reverse of this relationship has been given little consideration. Offenders often select into deviant groups and risky activities. In these contexts, short-term mindsets are likely to be reinforced. In turn, increased short-term mindsets are known to heighten the risk of offending and victimization. We argue that increased short-term mindsets could thus mediate the effects of earlier offending on later reoffending and victimization. We test this hypothesis in structural equation models using the z-proso data. Our findings provide insights on the effects of criminal offending on subsequent decision making. Results also highlight the role of short-term mindsets for explaining continuity in offending and the victim-offender overlap. Acknowledging the malleability of short-term mindsets helps understand the dynamics of how environment and one's own behavior shape future involvement in crime.

Current status of the paper/project: ongoing (first results can be presented)

Session 3: LEGAL SOCIALIZATION

Social developmental factors associated with cooperation with police

Amy Nivette¹, Idris Guclu¹, Denis Ribeaud², Manuel Eisner^{2,3}

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A great deal of existing research suggests that when individuals perceive the police as procedurally fair and trustworthy, they are more likely to report willingness to cooperate with police to solve crimes, give evidence, and report suspicious behavior. While there has been extensive research on the normative, instrumental, and social explanations for cooperation, fewer studies have examined how personal characteristics might influence willingness to cooperate with the police. This paper therefore aims to examine the

relationship between individual characteristics, such as self-efficacy and empathy, and willingness to cooperate with the police, and to explore to what extent perceptions of police and prosocial characteristics interact to amplify cooperation. Specifically, we use two waves of data from the Zurich Project on Social Development from Childhood to Adulthood, an ongoing longitudinal study of an ethnically diverse sample of young people from Zurich, Switzerland.

Current status of the paper/project: ongoing (first results can be presented)

Examining how socialization processes moderate the relationship between aggression in young people and their attitudes to police legitimacy

Harley Williamson¹, Amy Nivette¹, Manuel Eisner^{2,3}, Denis Ribeaud³

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Prior research shows that differences in childhood developmental trajectories are key to understanding the formation of adolescents' perceptions of authorities (Fagan & Tyler, 2005). Determining the factors that may affect such perceptions can proffer important information to promote law-abiding and prosocial attitudes and behaviors, and in turn, reduce the likelihood for future delinquency. In this study, we examine the influence of proactive and reactive aggression on adolescents' later attitudes towards police: specifically, their perceptions of police legitimacy. We also test the moderating effect of three sources of socialization from parents, peers, and teachers to determine the effect they have on shaping police legitimacy perceptions amongst adolescents with aggressive tendencies. As aggression in children is a key predictor of violent tendencies in later years (Tremblay, et al., 2004), understanding how it manifests over time and for whom could inform intervention efforts to (a) reduce the prevalence of aggression in children and (b) enhance positive police-citizen relations amongst young people.

Current status of the paper/project: ongoing (first results can be presented)

The interaction of the cognition, morality, emotions and aggressive behaviour from childhood to early adulthood

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Many approaches to modelling within-individual change in processes relevant to criminal behavior focus on selected bidirectional dynamics between behavior on the one hand and constructs such as self-control, cost-benefit perceptions, or moral beliefs on the other. In this paper we aim to advance knowledge by modelling the developmental interrelation between five individual domains implicated in aggression and violence during the critical transition from late childhood to early adulthood. The domains include low self-control, the moral neutralization of violence, thoughtful decision-making in conflict situations, perceived costs and benefits of violent action alternatives, and aggressive behavior.

The data come from the Zurich Project on Social development from Childhood to Adulthood, a longitudinal study with measures on the target outcomes at ages 11, 13, 15, 17, 20 and 24. We use random-intercept cross-lagged panel models to estimate endogenous stability of each domain, concurrent reciprocal associations, and within-individual causal interrelations between the five domains. Results suggest increasing

within-individual stability as individuals grow older, decreasing short-term reciprocal interrelations as individuals grow older, stronger effects of aggressive behaviors on subsequent beliefs and cognitions in early adolescence, and stronger effects of cognitions and moral beliefs on subsequent behavior during late adolescence and early adulthood.

Current status of the paper/project: ongoing (first results can be presented)

Presentations – zIReN Research Meeting 2023

Friday, 15th September 2023

Session 4: NEW DATA AND DATA COLLECTIONS

z-proso NextGen: Turning z-proso into a multiple-generation cohort study

Lilly Shanahan¹, Laura Bechtiger¹, Lea Buzzi¹, Manuel Eisner^{1,2}, Denis Ribeaud¹

¹University of Zurich, Switzerland

²University of Cambridge, United Kingdom

Longitudinal cohort studies are valuable scientific resources for studying development over time. Multiple-generation cohort studies take these studies a generation further by also assessing the children of the target participants in the original longitudinal cohort study -making it not only possible to follow individual development across time, but also to understand patterns of intergenerational transmission in relation to such earlier individual development. By turning z-proso into a multiple-cohort study, rigorous examinations of new, additional research questions will be possible. For example, how do childhood and adolescent experiences of z-proso participants predict their own parenting behaviors in adulthood? Or, do we see patterns of intergenerational continuity and discontinuity in the constructs of interest in z-proso, including antisocial and prosocial behavior, psychopathology, and aspects of social relationships?

To this end, we launched the z-proso NextGen study at the beginning of 2023, where those z-proso participants who are parents can participate in four online surveys after the birth of their child, and when children are 1.5, 4, and 7 years old. The survey questionnaires are closely aligned with the original z-proso questionnaires where possible to allow for intergenerational comparisons. z-proso participants also have the chance to sign up their partner or main co-parent for participation in z-proso NextGen. In this presentation, we will give an overview over the z-proso NextGen study design, survey instruments, and an update on the field work progress.

Current status of the paper/project: ongoing (first results can be presented)

Official juvenile justice records of delinquency in adolescence – an overview of the structure and coding of the RIS-2 data in z-proso

Ronja Kieft¹, Denis Ribeaud², Manuel Eisner^{2,3}, Ingrid Obsuth⁴

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Most research on delinquent behaviour is based on either of two types of indicators, namely self-report surveys, in which respondents report on their delinquent behaviour by means of standardized questionnaires, and official records retrieved from the criminal justice system. To date, research targeting adolescent delinquent behaviour in z-proso relied primarily on self-reported delinquency. At wave seven (age 17), study participants were asked for their consent for a search for their criminal records in the Canton of Zurich's Legal Information System (RIS-2) covering ages 10 to 17. 97.6 % of the wave 7 participants consented in the search, and 21 % of the consenting participants could be identified as offenders in the reference period. The data also provides a wealth of information on the type of perpetrated offences as well as on criminal justice procedures, decisions, and sanctions. This presentation will provide a concise overview of the coding and data structure of the criminal justice records, as well as a short glimpse into a planned study comparing the official records and self-reports of delinquency over the course of three z-proso waves (waves 5, 6, and 7). So far, research has shown a generally high overlap between both measurement types, but also found certain differences in the measurement of delinquency when it comes to gender, different ethnic groups and psychological variables. The aim of this study is to replicate this concordance and explore how different predictors differentiate in the measurement of delinquency when considering both self-reports and official records.

Current status of the paper/project: ongoing (first results can be presented)

An introduction to the full official z-proso school record data. Data structure and first insights in educational careers

Lea Buzzi, Laura Bechtiger, Denis Ribeaud

University of Zurich, Switzerland

The Zurich Department of Education provided official school record data for all z-proso participants who consented in W7 and/or W8 (N=1,419) to have these data used for the z-proso study. The dataset encompasses information on the type of school, subject, and qualification level of participants for each school year between 2000 and 2022. These data can be used to model educational trajectories of z-proso participants from kindergarten to completion of compulsory school and subsequently upper secondary education (besides in some cases higher education). We will provide some first insights on typical educational trajectories during the compulsory school years. In combination with the z-proso survey data, factors associated with these educational trajectories can be examined. As part of the data preparation process, a detailed missing coding system was created and, where possible, plausibility checks were performed based on the z-proso data to best document missing information. Important limitations of the Zurich Department of Education data are missing information on education outside the canton of Zurich as well as entries from universities and universities of applied sciences at the tertiary level.

Current status of the paper/project: planned

Association of substance use with cognitive performance at age 24 in the z-proso cohort: An introduction to the CANTAB assessment within z-proso

Boris B. Quednow¹, Lukas Eggenberger¹, Clarissa Janousch¹, Manuel Eisner^{1,2}, Denis Ribeaud¹, Lilly Shanahan¹

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Substance use is widespread among Swiss adolescents and young adults and may have long-term consequences for the development of intellectual performance. It is assumed that substances such as alcohol, tobacco, and cannabis can have a particularly neurotoxic effect during the highly neuroplastic and sensitive phase of brain maturation in adolescents. Several cross-sectional and a few longitudinal studies suggest that an early age of initiation and frequent use of these substances in adolescence are associated with

impaired cognitive performance and lower educational attainment later in life. However, these earlier studies had some methodological limitations that we aim to overcome in our study. In z-proso – a study with nine waves of data collection between the ages of 7 and 24 – we aim to investigate the developmental neurotoxicity of early substance use on the cognitive functioning of young adults. Self-reports on substance use (prevalence and frequency) are available from the age of 11 to 24. In addition, hair samples were also taken at the age of 20 (2018) and 24 (2022) to objectively determine substance use in recent months. At age 24, a brief neuropsychological test battery was also administered to assess four core areas of young adult cognition: Attention, Working Memory, Visual-Spatial Declarative Memory, and Executive Functions. The results of the proposed project have the potential to provide new insights into the study of the developmental neurotoxicity of adolescent substance use on cognition. We anticipate that our findings will provide important new impetus to addiction research, prevention and policy-making.

Current status of the paper/project: ongoing (first results can be presented)

Session 5: SUBSTANCE USE

Simultaneous polysubstance use among young adults: Prevalence, patterns, and correlates in a large community sample

Michelle Loher¹, Laura Bechtiger¹, Lydia Johnson-Ferguson¹, Denis Ribeaud¹, Manuel Eisner^{1,2}, Boris B. Quednow¹, Lilly Shanahan¹

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Substance use among young people is common in Western countries and polysubstance use is on the rise (e.g., Zuckermann et al., 2019). Risks associated with substance use increase substantially when multiple substances are consumed simultaneously or in short sequence (e.g., Crummy et al., 2020). These risks also strongly depend on the combination of substances being co-used (e.g., Dias da Silva et al., 2013; Tanaka, 2002).

Currently, prescription medications (e.g., opioids, benzodiazepines) are often co-consumed with other substances, and have been implicated in the recent rise of drug overdose death rates in North America (e.g., Compton et al., 2021; Peppin et al., 2020). Notably, prescription and non-medical use of opioids has also tremendously increased in Switzerland in recent years.

To date, empirical research on patterns and correlates of simultaneous polysubstance use in community samples of young people is scarce. Yet, a better understanding of who takes what substances in which combinations is crucial for preventing this risky and potentially life-threatening pattern of substance use.

This presentation will present findings from a project that aims to 1) assess the extent of simultaneous polysubstance use in a large community sample of young people (age 24), 2) describe the most commonly occurring and most dangerous patterns, and 3) examine who is most at risk for these patterns.

Data on young adults' substance use and associated factors including sociodemographics, internalizing/externalizing symptoms, perceived stress, and leisure time came from the large-scale, ongoing longitudinal z-proso study (N=1,160 at the age 24 assessment) (Ribeaud et al., 2022). The most recent assessment wave included measurements of self-reported simultaneous polysubstance use (e.g., past-year prevalence, combinations of substances consumed).

Current status of the paper/project: ongoing (first results can be presented)

Using hair data in your analyses? What to keep in mind

Lydia Johnson-Ferguson¹, Lilly Shanahan¹, Laura Bechtiger¹, Annekatrin Steinhoff², Markus Baumgartner¹, Tina Binz¹, Denis Ribeaud¹, Manuel Eisner^{1,3}, Boris B. Quednow¹

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An increasing number of research labs are using hair data to identify how individuals differ in their levels of endogenous hormones produced by the body (cortisol, cortisone and testosterone) and exogenous psychoactive substances (e.g., THC, MDMA) exposure (3 months = 3 cm), as well as exposure to medications such as contraceptives and paracetamol.

I will present current methodologies of hair analysis, and findings from our team about important covariates which are often not accounted for, such as psychoactive substances and hair colour. The latter, for example, is important to adjust for when both the predictor and outcome variables are assayed in hair.

Furthermore, I will outline the current state of the literature about the extent to which cortisol in hair reflects subjective stress, and the extent to which psychoactive substance in hair are more suitable (or just as good?) predictors of substance use and associated adverse outcomes, compared to self-reported measures.

I will present ongoing analyses and preliminary results from z-proso data to answer these questions.

Current status of the paper/project: ongoing (first results can be presented)

Session 6: ADVERSITY, STRESS & STRESS RESPONSES

Family strain and youths' externalizing behaviors: The mediating and moderating role of perceived social support. A longitudinal perspective on risk and resilience

Fabiola Silletti¹, Manuel Eisner^{2,3}, Denis Ribeaud², Lilly Shanahan², Rosalinda Cassibba¹, Pasquale Musso¹

¹University of Bari Aldo Moro, Italy

²University of Zurich, Switzerland

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There is some evidence of a link between stressful life events, including family strain, and adolescent externalizing problems, such as aggression and delinquency, and factors that might offset experiential risks and buffer against the development of psychopathology, such as social support from parents and peers (Masten et al., 2021; Oliva et al., 2009). However, studies on this mainstream are scarce, quite inconclusive, and present several limitations, such as focusing mostly on childhood, considering ethnically homogeneous samples, and seldom investigating the potential mediating role of perceived social support in the relation between stress events and externalizing problems (see Kim et al., 2003). Therefore, the current study aims at longitudinally investigating the reciprocal influences of stressful life events and particularly family strain (i.e., death, serious illness, accident, depression, conflict, or separation of primary caregivers), and externalizing problems (i.e., aggression, delinquency, and bullying) from early adolescence to middle-late adolescence and to emerging adulthood and the mediating or moderating role of perceived social support from family and peers in an ethnically diverse sample, controlling for gender differences, ethnicity, socio-economic background, and internalizing problems. Through self-reported measures of life events, externalizing problems, and social support, two main research objectives will be addressed: (1) whether there is a reciprocal link between stressful life events and externalizing behaviors; and (2) whether the

perceived social support from peers and parents, examined individually and simultaneously, were moderators or mediators of the link between stressful life events and youth's subsequent problem behaviors. Providing answers to these questions may lead to an in-depth understanding of the etiology of problem behavior and provide insights into when, for whom, and how the risk of externalizing behaviors, which are acknowledged globally as major international public health concerns, highly prevalent in adolescents, particularly boys (Costello et al., 2011), could be reduced.

Current status of the paper/project: ongoing (first results can be presented)

Emotion regulatory brain development: Early influences and susceptibility to stress

Nora Raschle¹, Todd Hare¹, Mirjam Habegger¹, Elena Federici¹, Plamina Dimanova¹, Réka Borbás¹, Sarah Salzgeber¹, Ana Cubillo², Denis Ribeaud¹, Manuel Eisner^{1,3}

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BACKGROUND: Emotion regulatory skills, our aptitude to control emotional experiences, are crucial for one's social life. Reduced regulatory skills have been linked to increased psychopathology risk. The development of emotion regulatory skills and associated brain networks are influenced by early childhood experiences, including parenting behaviors. Variations in parenting behaviors have been linked to changes in well-being and emotion regulatory brain functions and structures (e.g., within amygdala, hippocampus, and prefrontal cortex). Furthermore, emotion regulatory development and the strength of network connectivity determines our ability to regulate during stressful life circumstances.

PRESENT AIMS: We will present two papers on the development of emotion regulatory brain structures: Our first paper tests how the emotion regulatory network is impacted by different parenting styles. Our second paper is investigating how the emotion regulatory network allows us handling stressful life events as for example experienced during the Covid-19 pandemic.

METHODS: To test our aims, we will employ longitudinal reports of parenting behaviors, structural brain data from the z-Proso and KidCat study (to test effects during young adulthood or in early childhood, respectively). Secondly, we implement a task-free pseudo resting state fMRI analyses to investigate how prospective neurobiological features and life-course history of negative events mediate or moderate psychosocial functioning following Covid-19-related stressors.

RELEVANCE: Understanding the mechanisms driving or disrupting emotion regulatory behavioral and brain development may further our understanding of developmental trajectories in health and disease.

Current status of the paper/project: submitted for publication/under review

Altered stress response and gene expression among peer-victimized youth

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This study aimed to investigate a comprehensive picture of how peer victimization, as a chronic social stressor, alters psychological and physiological stress reactivity and gene expression. Data from the Zurich brain and immune gene study (ZGIG), a subset of 200 subjects aged about 22 years from the z-proso longitudinal study (running from age 10) (Ribeaud et al., 2022), were used to measure startle eyeblink response and eye tracking data, both with angry faces as target stimuli, facial emotion discrimination threshold between joy and anger, and aggression and hostility bias from the AIHQ questionnaire. Differential gene expression was measured along the conserved transcriptional response to adversity (CTRA) (Cole, 2019) gene signature, among others. We examined peer victims (PV), adjusted for perpetration and other substantial victimization, with unaffected individuals as controls. To draw causal inferences, we adjusted

for baseline differences in individual characteristics using inverse probability of treatment weighting and considered other time-varying confounders. PV exhibited altered stress reactivity, with a stronger and delayed startle response, which tends to intensify when threatened, and higher acceptance threshold for anger when evaluating neutrality in facial expressions. Lower aggression bias, and hostility bias were evident from the AIHQ questionnaire (Combs et al., 2007). Further, PV exhibited differential expression of genes in the CTRA gene signature, among others, showing upregulation of inflammatory and downregulation of antiviral genes. Low SES households primarily contributed to the victim cluster, particularly due to low educational attainment of parents. Our findings suggest that peer victimization in the past altered stress reactivity and gene expression in victims, highlighting the critical role of comprehensive interventions in detecting and intervening in cases of bullying to reduce long-term physical and mental health consequences attributed to sustained peer victimization.

Current status of the paper/project: ongoing (first results can be presented)

Session 7: ADVANCED LONGITUDINAL MODELING

Trajectories of screen time across adolescence and their associations with adulthood mental health and behavioral outcomes

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Excessive screen time among adolescents is discussed as a significant public health concern. Identifying adolescent longitudinal patterns of time spent on regularly-used media screens and understanding their young adulthood mental health and behavioral issue correlates may help inform strategies for improving these outcomes. This study aimed to characterize joint developmental patterns of time spent on videogames, surfing/chatting the Internet, and TV/DVDs during adolescence (at ages 11, 13, 15, 17) and their associations with mental health (i.e., depression, anxiety, suicidal ideation, and self-injury) and behavioral issues (i.e., substance use, delinquency, aggression) in early adulthood (at age 20). A parallel-process latent class growth analysis was used to model data from a diverse community-ascertained sample of youth in Zurich, Switzerland (N= 1,521; 51.7% males). Results suggested that a five-class model best fitted the data: (1) low-screen use, 37.6%; (2) increasing chatting/surfing, 24.0%; (3) moderate-screen use, 18.6%; (4) early-adolescence screen use, 9.9%; and (5) increasing videogame and chatting/surfing, 9.9%. After adjusting for baseline levels of outcomes (primarily at age 11), the trajectory groups differed in their associations with adulthood outcomes of mental health and behavioral problems, indicating the importance of problematic screen usage patterns in predicting these outcomes. Future research to test the directionality of these associations will be important. These findings suggest which patterns of screen use may be a marker for later mental health and behavioral issues in different domains.

Current status of the paper/project: accepted/published

Occupational future time perspective and mental health problems across adolescence: Random-intercept cross-lagged panel analyses

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Future time perspective is a general concern for, and corresponding consideration of, the future, which activates goal-seeking and self-regulation. It has been found to be negatively associated with a wide range of mental health problems cross-sectionally, indicating a potential promotive role across such problems. However, this requires corroboration from longitudinal within-person analyses, as well as in specific domains of future time perspective. Random intercept cross-lagged panel models were, therefore, fitted to data from the z-proso longitudinal study to analyse how occupational domain-specific future time perspective and mental health problems [attention deficit hyperactivity disorder (ADHD), externalising, and internalising problems] covaried across ages 13, 15, and 17. Results suggested that higher occupational future time perspective at age 15 was significantly associated with higher externalising problems at age 17.

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On the importance of considering concurrent effects in random-intercept cross-lagged panel modeling: Analysis of bullying and internalising problems in the longitudinal z-proso study

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Random intercept cross-lagged panel models (RI-CLPMs) are increasingly used to investigate longitudinal associations between multiple repeatedly measured variables. These models are particularly popular when research questions involve examining how one variable at one time point affects another variable at the subsequent time point. Due to the implied temporal sequence of events, interpretations of RI-CLPMs primarily focus on longitudinal cross-lagged paths while disregarding concurrent associations due to the assumption that variables measured at the same time-point capture only cross-sectional associations. Concurrent associations are therefore typically only modelled as residual covariances and treated as minimally informative. However, this may cause biased cross-lagged effects. This may be especially so when data collected at the same time-point refers to different reference time-frames, potentially creating a temporal sequence of events for constructs measured concurrently. To examine this issue, a brief simulation study was conducted. This was complemented by a series of real data examples from the z-proso study in which the impact of modelling or not modelling of directional within-time point associations may impact inferences drawn from RI-CLPMs was explored. Overall, the results of the simulation study and the empirical analyses highlight that not considering directional concurrent effects may lead to biased cross-lagged effects. Thus, it is essential to carefully consider potential directional concurrent effects when choosing models to analyse directional associations between variables over time. If temporal sequences of concurrent effects cannot be clearly established, testing multiple models and drawing conclusions based on the robustness of effects across all models is recommended.

Current status of the paper/project: submitted for publication/under review

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