

# DOPSY-symposium 2024

## - Abstracts for oral presentations

### TABLE OF CONTENTS:

#### **Aino Airikka**

Parental exposure to childhood maltreatment and neurodevelopmental disorders in children

#### **Shaghayegh Ghaffaripour**

The relationships between psychosocial safety climate (PSC) and emotional exhaustion

#### **Lijing Guo**

The Influence of Identical Objects on Visual Working Memory Capacity:  
Electrophysiological Evidence

#### **Venla Huovinen**

Child Self-Regulation and Gut Microbiota: Findings from FinnBrain Birth Cohort Study

#### **Sini Hyvämäki**

How do mothers and fathers of young children sleep?

#### **Soile Hytti**

Maternal Depressive and Anxiety Symptoms During Pregnancy are Associated with  
Placental Gene Expression with Implications for Innate Immune Response and  
Inflammation

#### **Samuel Juma**

Examining the association between cognitive profiles and online research comprehension  
of typical readers and readers with learning-related difficulties

#### **Pauliina Juntunen**

Associations between Mother-Child Interactions and the Developmental Profiles of  
Executive Functions through the First Five Years

#### **Maria Konttinen**

Early Life Stress in Pregnancy and Infancy Predicts Stress Reactivity in Late Adolescence

#### **Leo Kuutti**

Examining the Process of Change in Metacognitive Skills Training in the Context of  
Forensic Psychiatric Care – A Description of the Research Protocol

**Martin Lagerström**

Daily dynamics in romantic relationships: a network approach

**Siiri Lampela**

Treating Social Anxiety Disorder in Schools

**Aino Luotola**

Family Concordance in Engagement with Faces and Links to Mother-Child Interaction Quality

**Samuli Linnunsalo**

Why Does It Not Look at Me? Avoidant Humanoid Robotic Gaze Elicits Feelings of Social Exclusion

**Eveliina Mykkänen**

Early mother-infant relationship: Associations between emotional availability, maternal reflective functioning, and unpredictability of maternal sensory signals

**Kitta Ripatti**

Resilience among youth with severe behavioral problem and factors related to a better prognosis

**Verna Salo**

Lapsuusajan kaltoinkohtelukokemusten yhteys raskausajan steroidihormoneihin

**Tiina Seikku**

Associations between maternal antenatal depression and amniotic fluid steroid hormones

**Miranna Uitto**

Early Life Stress on Emotion Regulation in Late Adolescence: Testing the Hormesis Hypothesis

**Xichu Zhu**

Visual spatial attention and hemispheric processing of Finnish words and objects: An MEG and eye-tracking study

**Chenxiao Wu**

Comparison of working memory performance in athletes and non-athletes: a meta-analysis of behavioural studies

**Yasaman Stewart**

Relations between Narratives and Emotional Intelligence in Development: An Integrative Review

Aino Airikka

## Parental exposure to childhood maltreatment and neurodevelopmental disorders in children

### Abstract

**Objective.** Maternal exposure to childhood maltreatment associated with risk of mental health problems not only in mothers themselves but also in their children. Whether intergenerational associations extend to neurodevelopmental disorders and spousal exposure to childhood maltreatment remains unclear. We investigated whether maternal and spousal exposures to childhood maltreatment in their own childhood were associated with neurodevelopmental disorders and their symptoms, and cognitive development in their children. **Method.** Mothers (n=2259) and their spouses (n=265) of the Prediction and Prevention of Preeclampsia and Intrauterine Growth Restriction cohort reported their exposure to childhood maltreatment in their own childhood with the Childhood Trauma Questionnaire and their 7.0–12.1-year-old children's symptoms of attention-deficit hyperactivity disorder (ADHD) using the ADHD Rating Scale and symptoms of autism spectrum disorder (ASD) using the Autism Spectrum Screening Questionnaire. Children's cognitive ability at 7.1–12.0 years of age was assessed with The Wechsler Intelligence Scale for Children (WISC). We extracted neurodevelopmental disorder diagnoses for the children from birth until 12.4–16.8 years from Care Register for Health Care. **Results.** Both maternal and spousal exposure to childhood maltreatment were associated with higher hazards of neurodevelopmental disorders in children. Maternal exposure to childhood maltreatment was associated with higher risks of ADHD and ASD symptoms in children, and spousal exposure to childhood maltreatment with higher risk of ASD symptoms. Maternal and spousal exposures to childhood maltreatment were also associated with lower performance of WISC in children. **Conclusion.** Maternal and spousal exposure to childhood maltreatment is associated with neurodevelopmental disorders in children. Interventions aimed at affected parents may be an important strategy for preventing intergenerational transmission.

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Shaghayegh Ghaffaripour

## The relationships between psychosocial safety climate (PSC) and emotional exhaustion

The overall aim of this study was to investigate the relationships between psychosocial safety climate (PSC) and emotional exhaustion, and to examine the mediating roles of self-efficacy (SE) and resilience (R). Data were collected from Finnish university employees across six waves, with a final sample size of 266. Resilience was measured in five waves due to missing data in the first wave. Using a Cross-Lagged Panel Model (CLPM), we found that PSC, SE, and Resilience were significantly associated with subsequent levels of emotional exhaustion. Specifically, higher levels of PSC, SE, and Resilience predicted lower levels of emotional exhaustion over time. To further disentangle the within-person and between-person effects, we employed a Random-Intercept Cross-Lagged Panel Model (RI-CLPM). The results indicated that stable, trait-like levels of PSC, SE, and Resilience were associated with lower levels of emotional exhaustion (between-person effects). Additionally, higher than usual

levels of PSC, SE, and Resilience at a given time point were associated with lower than usual levels of emotional exhaustion at subsequent time points (within-person effects). Finally, we tested the mediation hypotheses using a Growth Latent Model (GLM). The results showed that self-efficacy mediated the relationship between PSC and emotional exhaustion at the intercept level. In contrast, resilience mediated the relationship between PSC and emotional exhaustion at both the intercept and slope levels. These findings highlight the importance of fostering a positive psychosocial safety climate and enhancing self-efficacy and resilience to reduce emotional exhaustion among university staff. Keywords: Psychosocial Safety Climate (PSC), Self-Efficacy (SE), Resilience, Emotional Exhaustion, Cross-Lagged Panel Model (CLPM), Random-Intercept Cross-Lagged Panel Model (RIcLPM), Growth Latent Model (GLM)

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## Lijing Guo

### The Influence of Identical Objects on Visual Working Memory Capacity: Electrophysiological Evidence

**Abstraktiteksti:** Identical memory items have the potential to reduce cognitive demands on visual working memory (VWM) and enhance its precision. Previous studies have investigated this question preliminarily. However, there is still some controversy surrounding this question, as we cannot confirm whether the benefits from identical items can be generalized to complex stimuli. This study aimed to explore it further. We investigated whether individuals compress the identical items within their memory range to reduce VWM capacity consumption. Participants performed a change detection task, memorizing the orientations of the memory array, which included three conditions: 1) four-same orientations, 2) two pairs of same orientations, and 3) four-different orientations. Using the contralateral delay activity (CDA), an event-related potential component that is sensitive to the number of items stored in VWM, we found that the CDA amplitude in late-time window was significantly lower for the all-same condition compared to the partial same and all-different conditions, with no significant difference between the latter two conditions. Our findings suggest that participants compress identical information, reducing VWM capacity consumption and increasing the number of items that can be remembered. However, this compression is conditional and occurs only when the strategy is most efficient, as in the all-same condition.

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## Venla Huovinen

### Child Self-Regulation and Gut Microbiota: Findings from FinnBrain Birth Cohort Study

**Abstract:**

Self-regulation, involving the regulation of cognition, behavior, and emotion, is crucial for later health and well-being. This study, part of the FinnBrain Birth Cohort, examines associations between child self-regulation and gut microbiota composition (GMC). Initial findings suggest that GMC diversity is linked to lower emotional reactivity in infants and that there are sex-specific associations between GMC and negative reactivity. The study aims to explore longitudinal associations between self-regulation components and GMC development in childhood.

## Sini Hyvämäki

### How do mothers and fathers of young children sleep?

Parental sleep problems are common, but there is only limited research on longitudinal sleep patterns in parents. The significance of sleep on human functioning and wellbeing is widely known and prolonged sleep problems or lack of sleep often have consequences to daytime functioning. Thus, it is unclear how poor parental sleep affects parenthood and parent-child interaction, particularly when sleep problems are prolonged. Sleep problems are common already in pregnancy and associated with multiple negative consequences on maternal health and well-being. After childbirth, sleep problems typically increase and for some parents these changes are more permanent. In my PhD study, I examine the maternal and paternal sleep trajectories from late pregnancy to five years after childbirth, which risk factors predispose to prolonged sleep problems and possible consequences of poor parental sleep on parenthood and child-parent

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## Soile Hytti

### Maternal Depressive and Anxiety Symptoms During Pregnancy are Associated with Placental Gene Expression with Implications for Innate Immune Response and Inflammation

#### **Abstract:**

Maternal mood disorders, including depression and anxiety, and their clinically relevant symptoms are common. They increase the child's risk of neurodevelopmental adversities later in life. Emerging evidence suggests that placental function may play a critical role in shaping the child's neurodevelopment. However, the extent to which the neurodevelopmental effects in the children are associated with placental function as reflected by a specific expression signature, remains largely unknown. In the ITU study, we investigated differential gene expression in the first-trimester chorionic villi (n=267) and birth placenta (n=493) in relation to maternal depression and anxiety during pregnancy, which we defined via past history of physician diagnoses and antidepressant and anxiolytic medication purchases derived from medical registers, and symptoms reported twice during pregnancy using the Center for Epidemiologic Studies Depression Scale and Spielberger State Anxiety Inventory. Maternal depressive and anxiety symptoms above the clinical cutoff, but not past history of mood disorders or medication purchases, were associated (pFDR<0.1) with 478 differentially expressed genes in the birth placenta. The genes were enriched for immune response and inflammation, such as leukocyte and T cell activation, defense response, and cytokine production. Nineteen of these genes were hub genes with enrichments in microglial cell activation, activation of innate immune response, regulation of lamellipodium organization, and regulation of mitochondrial membrane potential. Using expression quantitative trait loci, we constructed a polygenic score (PGS) predicting expression of these genes in the placenta. In an independent PREDO cohort (n=135–870), the PGS predicted poorer neurodevelopment in children. These findings may provide insights into mechanisms linking maternal mood disorder symptoms during pregnancy to suboptimal neurodevelopmental outcomes.

## Samuel Juma

### Examining the association between cognitive profiles and online research comprehension of typical readers and readers with learning-related difficulties

**Abstraktiteksti:** This study examines the link between students cognitive profiles and online research and comprehension (ORC) performance. Prior research shows that typical readers generally outperform those with learning difficulties (dysfluency, attention problems) in ORC tasks, although some students with difficulties perform better than typical readers. Data from 164 sixth-grade Finnish students in the eSeek Project at the University of Jyväskylä were analyzed using Latent Profile Analysis and k-means clustering. Random forest and elastic net models identified key cognitive skills (visual attention, symbol search, vocabulary, reading fluency, and comprehension) as predictors of ORC. Three distinct ORC profiles emerged, with one group showing average scores and the other two reflecting opposite extremes, especially in synthesizing and communicating information (p .001). Top-performing dysfluent readers scored higher in visual attention, animal sorting, and block design, while attention-challenged high performers excelled in pseudoword reading and reading fluency. High memory scores and at least average language scores were associated with better ORC performance in tasks requiring locating and synthesizing information. Conversely, students with learning-related difficulties often scored lower in cognitive tasks related to confirming and questioning information credibility.

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## Pauliina Juntunen

### Associations between Mother-Child Interactions and the Developmental Profiles of Executive Functions through the First Five Years

**Abstraktiteksti:** Growing scientific focus has been dedicated to identifying sources of variation in childhood executive functions (EFs). While child maltreatment and other extreme forms of early adversity are known to have detrimental effects, research is indicating that normal variation in parenting and early relational experiences may also contribute to EF development. However, there are yet few longitudinal studies from early childhood investigating the associations between parent-child interaction quality and the development of childrens EFs. In this study, we used structural equation modelling

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## Maria Konttinen

### Early Life Stress in Pregnancy and Infancy Predicts Stress Reactivity in Late Adolescence

Early life stress (ELS) is associated with altered function of the physiological stress response systems, including the hypothalamic-pituitary-adrenal (HPA) axis and autonomic nervous system (ANS). However, prior research

has been inconclusive as to whether ELS induces heightened or blunted HPA axis and ANS reactivity to acute stress, indexed by cortisol and alpha-amylase responses, respectively. The present study examines whether exposure to ELS in pregnancy and infancy, as well as across childhood, predicts adolescent cortisol and alpha-amylase responses to acute interpersonal stress. Based on previous research, it was hypothesized that exposure to ELS in pregnancy and infancy would predict heightened cortisol reactivity, while exposure to ELS across childhood would predict blunted cortisol reactivity. Due to lack of prior research, no hypotheses were made about alpha-amylase. A sample of 80 late adolescents (aged 18 to 20 years) from a longitudinal Miracles of Development study participated in a home laboratory assessment that involved a 10-minute conflict discussion with their mothers. A total of five saliva samples were collected before, immediately after, and 10, 20, 30 minutes after the end of the conflict discussion. ELS was assessed prospectively by parental reports of parenting stress, marital and mental health problems in pregnancy (T1), at 2 months (T2) and 12 months (T3) postpartum, as well as retrospectively by adolescent reports of adverse childhood experiences when 17–19 years old (T4). Linear mixed models were conducted to analyze the effect of ELS on adolescent cortisol and alpha-amylase response trajectories. The results suggest that exposure to high levels of ELS in pregnancy and infancy is associated with heightened cortisol and alpha-amylase responses to acute interpersonal stress. Retrospectively assessed ELS was not associated with cortisol or alpha-amylase responses. Post hoc analyses and possible implications will be discussed.

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Leo Kuutti

## Examining the Process of Change in Metacognitive Skills Training in the Context of Forensic Psychiatric Care – A Description of the Research Protocol

### **Abstract:**

Metacognitive skills training (MCT) aims to strengthen the social and metacognitive skills of participants through ten sessions covering themes such as jumping to conclusions bias and empathy. The sessions include exercises, discussions, and homework. Meta-analytical evidence suggests MCT is moderately effective in reducing positive symptoms of psychotic illnesses, such as delusions. This study hypothesizes that MCT reduces the tendency to jump to conclusions among forensic patients, measured with the randomized beads task. Forensic patients in the MCT condition are compared to those receiving treatment as usual and healthy controls. Participants are assessed with tasks and questionnaires measuring neurocognition, social cognition, psychiatric symptoms, and the randomized beads task. Previous studies have shown medium-sized improvements in beads task performance for those in the MCT group compared to cognitive remediation. Understanding social cognition and its rehabilitation can help reduce risky behavior and rehabilitate social difficulties in psychotic disorders.

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Martin Lagerström

## Daily dynamics in romantic relationships: a network approach

A common predictor of romantic relationship dissolution is a gradual decline in relationship quality. Often, the decline is slow enough to be hard to detect for the individual themselves. This highlights the importance of understanding the daily dynamics in well-adjusted relationships, to be able to detect deviations from a healthy pattern. By estimating multilevel contemporaneous (within-day), temporal (between-day) and between-person network models, we examined the dynamics in personal well-being

and romantic relationship quality in  $N = 83$  individuals currently in a committed romantic relationship and cohabiting with their partner. Participants completed daily surveys over a period of up to four months. Key findings were the central role of time spent with a partner in maintaining a well-functioning relationship and that any negative events during one day are not expected to carry over to the following day, as well as the harmful impact of an increase in depressive mood on both personal well-being and relationship quality. These results are indicative of the dynamics in well-adjusted romantic relationships, deviations from this pattern could be indicative of more comprehensive relationship issues.

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Siiri Lampela

### Treating Social Anxiety Disorder in Schools

**Abstract:**

This study examines the feasibility and effectiveness of Developmentally Oriented Cognitive Therapy for Social Anxiety Disorder (DOCT-SAD) among adolescents. Participants were identified from secondary schools in Tampere, Finland. The treatment was well accepted by young people, parents, and treatment providers. Significant reductions in social anxiety symptoms were observed, with 54.5% of participants in diagnostic remission post-treatment. The results suggest that DOCT-SAD is a feasible and beneficial intervention for treating adolescents with social anxiety disorder in a school setting.

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Aino Luotola

### Family Concordance in Engagement with Faces and Links to Mother-Child Interaction Quality

**Abstract:**

Individual differences in attention to faces can impact early social development. This study examines the connections between parents' and children's attention to faces and mother-child interaction quality. Using eye-tracking data from the FinnBrain cohort, the study found that increased paternal attention to children's faces was linked to higher face-viewing times in children, especially girls. Maternal attention to faces was positively associated with emotional availability in mother-daughter interactions. These findings suggest that parents' processing of children's faces may be related to girls' socioemotional development.



Samuli Linnunsalo

## Why Does It Not Look at Me? Avoidant Humanoid Robotic Gaze Elicits Feelings of Social Exclusion

### **Abstract:**

Eye gaze is a fundamental nonverbal cue in human interactions. This study investigates the psychological reactions to a humanoid robot's averted versus direct gaze. Results showed that both human and humanoid robot averted gaze increased feelings of ostracism and negative mood, and lowered basic needs satisfaction, perceived closeness, and implicit self-esteem. The negative socioemotional reactions to a humanoid robot's averted gaze were as powerful as those to a human's averted gaze, indicating that individuals respond to humanoid robots as if they are human.

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Eveliina Mykkänen

## Early mother-infant relationship: Associations between emotional availability, maternal reflective functioning, and unpredictability of maternal sensory signals

### **Abstract:**

Although early mother-infant relationship is agreed to be crucial for child development, identifying and analyzing its critical aspects is challenging. Unpredictability of maternal sensory signals is a fairly new approach analyzing the inconsistency of micro-level patterns of maternal sensory behaviors, including voice, touch and visual stimuli. Unpredictability has been found to associate with less-than-optimal child development, but its associations with different aspects of the mother-infant relationship and maternal mental health have rarely been studied. Attachment-based aspects of the mother-infant relationship include maternal reflective functioning (PRF), i.e. ability to reflect, understand, and represent both one's own and the child's inner experiences, and dyadic emotional availability (EA), i.e. the reciprocal mother-infant tuning in and responding to each other's needs. The present study analyzes how maternal PRF, dyadic EA and maternal postnatal depressive symptoms are associated with unpredictability of maternal sensory signals. The study participants were 76 mother-infant dyads from two Finnish samples. The sample 1 included 63 voluntary low-risk mothers with 6-month-old infants. The sample 2 was a selection of 13 mothers with infants under the age of 1 year, taken from a larger community-based parent-infant intervention study. The dyads participated in one laboratory visit, or one session in the beginning of their treatment, where a 12-minute free-play interaction task was recorded. The mothers also filled in an electronic questionnaire. According to preliminary results, the observed EA dimensions non-intrusiveness ( $r = -.475$ ,  $p < 0.01$ ) and non-hostility ( $r = -.374$ ,  $p < 0.01$ ) were associated with unpredictability of maternal sensory signals, meaning that less maternal intrusiveness and hostility relate to more predictable maternal sensory signals. Unpredictability was not associated with self-reported EA, PRF or maternal depressive symptoms.

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## Kitta Ripatti

### Resilience among youth with severe behavioral problem and factors related to a better prognosis

**Abstract:** BACKGROUND Youth placed in reform school (RF) and prison often have cumulative burden of problems. Although the prognosis at the group level is poor, some individuals cope well. It is reasonable to think that resilience plays a significant role in this trajectory. Prior studies indicates that resilience protects against the risks caused by difficult background and broadly promotes development. Low resilience is linked to behavioral, mental health, and substance abuse disorders. We study the resilience of youth with severe behavioral problem, its connection to other factors, and the potential for strengthening resilience. DATA & METHOD The resilience was assessed using the CD-RISC10 -instrument (Davidson, 2003). The results were compared with those in RS (N=88, age 13-17) and prison (N=149, age 18-29), and the general population (N=1860, age 15-19). In RS and prison subjects, resilience was further analyzed together with other mental well-being factors and criminal register data. FINDINGS The resilience of those placed in a RS (mean23.9, SD8.36) is at significantly lower level than those of prisoners (mean26.6, SD7.5, p.05) and the general population (mean29.7, SD6.4, p.001). High resilience is rare among youth with severe behavioral problems, while low resilience is prevalent. In the RS group, high resilience is associated with positive mental health, and the absence of loneliness, depression and experiences of violence. In prisoners, high resilience is related with less depression, shorter sentences and shorter lifetime imprisonment. In those placed in a RS, low resilience is connected to low positive mental health, pessimism, depression and anxiety. Depressed prisoners with low resilience more often have childhood experiences of violence. CONCLUSIONS Low resilience is common among young people with behavioral problem. Good resilience is related to psychological well-being and better coping. Achieving robust resilience should be a key objective in rehabilitation.

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## Verna Salo

### Lapsuusajan kaltoinkohtelukokemusten yhteys raskausajan steroidihormoneihin

**Abstract:**

Lapsuusajan kaltoinkohtelua kokee arviolta 10-30 % ihmisistä. Lapsuudenajan kaltoinkohtelulla on todettu olevan yhteyttä muun muassa mielenterveyden häiriöihin sekä hypotalamus-aivolisäke-lisämunuais -akselin (HPA-akseli) toimintaan. Nykytiedon valossa kaltoinkohtelun vaikutukset ulottuvat myös kaltoinkohtelua kokeneiden henkilöiden lapsiin: kaltoinkohtelua kokeneiden äitien lapsilla on muun muassa havaittu olevan suurempi riski mielenterveyden häiriöiden kehittymiseen. Mekanismit tämän kaltoinkohtelukokemusten vaikutusten ylisukupolvisen siirtymän takana ovat kuitenkin vielä epäselviä. Suuri osa kaltoinkohtelun ylisukupolvisiin vaikutuksiin liittyvistä tutkimuksista on keskittynyt vanhemmuuteen. Kaltoinkohtelun vaikutukset voivat kuitenkin heijastua äidin fysiologiaan raskausaikana ja vaikuttaa näin sikiöaikaiseen ohjelmoitumiseen ja lapsen myöhempään kehitykseen. Tämän tutkimuksen tarkoituksena on selvittää, miten lapsuusajan kaltoinkohtelukokemukset ovat yhteydessä steroidihormonien tasoihin raskauden aikana. Aihetta koskevissa aiemmissa tutkimuksissa on keskitytty pääasiassa muutamaan steroidihormoniin ja näissä on saatu myös ristiriitaisia tuloksia. Olemme tarkastelleet kaltoinkohtelukokemusten yhteyttä steroidihormonien muutoksiin yli raskauden sekä steroidihormonien pitoisuuksiin raskauden aikana verinäytteistä Prediction and Prevention Of Preeclampsia and Intrauterine Growth Restriction (PREDO) (n=188) -raskauskohortissa (rv 11.57-30.57). Yhteyksiä kaltoinkohtelun ja yksittäisten steroidihormonien pitoisuuksien välillä ei juurikaan havaittu, mutta kaltoinkohtelun havaittiin olevan yhteydessä steroidihormonien muutoksiin yli raskauden. Havaitut muutokset voivat heijastua sikiöaikaiseen ohjelmoitumiseen ja lapsen myöhempään kehitykseen.

## Tiina Seikku

### Associations between maternal antenatal depression and amniotic fluid steroid hormones

#### Abstract:

Maternal antenatal depression (MAD) is common, with 1 in 10 women in Finland and other high-income countries diagnosed and 1 in 5 presenting subthreshold but clinically significant symptoms. MAD significantly impacts women's health and their children, increasing the risk of preterm birth, low birth weight, and suboptimal cognitive, motor, and socio-emotional development, as well as a higher rates of mental and behavioral disorders. However, the biological mechanisms linking MAD to adverse child outcomes are not fully understood. Preclinical models have elucidated the critical role of fetal overexposure to steroid hormones, especially glucocorticoids, as a key underlying biological mechanism, but the role in humans remains unclear. In most studies, steroids have been measured in maternal blood, saliva, or hair, which only provides indirect evidence of fetal exposure to these hormones. The few studies using amniotic fluid have focused on one or two steroid hormones with varying results, but the mechanism may lie in more complex alterations of hormonal environment.

To get a more comprehensive picture of the role of steroid hormones in fetal programming, we have looked at the association between MAD and 19 steroid hormones measured in amniotic fluid, as well as combinations of these hormones. Amniotic fluid samples (n=173) were taken during amniocentesis (GW 15-22) and are part of The InTraUterine sampling in early pregnancy (ITU) pregnancy cohort. We have identified a combination of steroid hormones that is collectively associated with MAD, and we have used this component to predict birth outcomes, such as premature birth and birth weight. We have also investigated whether the component increases the explained variance when predicting birth outcomes with MAD. The results suggest that the effects of MAD are at least partly transmitted to the fetus via the endocrine system.

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## Miranna Uitto

### Early Life Stress on Emotion Regulation in Late Adolescence: Testing the Hormesis Hypothesis

#### Abstract:

Research has shown that early life stress (ELS) influences emotion regulation (ER) patterns, which are central to well-being in late adolescence. Typically, accumulated ELS, (e.g., physical and emotional abuse and neglect, parental mental health, and peer victimization) are linked to deleterious effects on ER. However, moderate (and more normative) levels of stressful experiences may not have similar linear effects on development. The novel psychological model of hormesis – building resilience through adversity – suggest that mild-to-moderate levels of stressful experiences may be optimal for development. In line with this, some empirical findings have shown quadratic (U-shape) pattern between adversity and developmental outcomes. Yet, such as quadratic effects have rarely been modeled in ER studies. The current study will examine the quadratic associations between ELS and ER patterns in late adolescence. The sample consisted of 885 Finnish families participating in a 20-year longitudinal study. ELS was measured both prospectively

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Xichu Zhu

## Visual spatial attention and hemispheric processing of Finnish words and objects: An MEG and eye-tracking study

### **Abstract:**

Language and spatial processing are cognitive functions that are asymmetrically distributed across both cerebral hemispheres. This study used magnetoencephalography (MEG) and eye-tracking measurements with a divided-visual-field paradigm to investigate the hemispheric specialization of visual-spatial attention and word/object processing in Finnish language, and their interaction. In the task, the participants were asked to decide whether the directed word or object was appropriate in the given category or not. A total of 32 Finnish adult participants took part in this study. The materials of this study are 4-letter and 6-letter words in Finnish, and objects, with 8 different categories (nature, body, human, drink, food, gadgets, animal, and housing). We analyze the MEG data from both the sensor level and the source level to investigate the alpha inhibition during the visual-spatial attention task and the hemispheric dominance for processing word and object meanings in Finnish. We hypothesize a left hemispheric specialization for 4-letter and 6-letter word processing and a right hemispheric specialization for visual-spatial attention and object processing.

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Chenxiao Wu

## Comparison of working memory performance in athletes and non-athletes: a meta-analysis of behavioural studies

The relationship between sports expertise and working memory (WM) has garnered increasing attention in experimental research. However, no meta-analysis has compared WM performance between athletes and non-athletes. This study addresses this gap by comparing WM performance between these groups and investigating potential moderators. A comprehensive literature search identified 21 studies involving 1455 participants from seven databases, including PubMed, Embase, and ProQuest. Athletes primarily engaged in basketball, football, and fencing, while non-athletes included some identified as sedentary. The risk of bias assessment indicated low risk across most domains. Publication bias, assessed through a funnel plot and statistical tests, showed no significant evidence of bias. The forest plot, using a random effects model, revealed moderate heterogeneity. The overall effect size indicated a statistically significant, albeit small, advantage for athletes over non-athletes (Hedges'  $g = 0.30$ ), persisting across sports types and performance levels. Notably, this advantage was more pronounced when athletes were contrasted with a sedentary population (Hedges'  $g = 0.63$ ), compared to the analysis where the sedentary population was excluded from the non-athlete reference group (Hedges'  $g = 0.15$ ). Our findings indicate a consistent link between sports expertise and improved WM performance, while sedentary lifestyles appear to be associated with WM disadvantages.

Yasaman Stewart

## Relations between Narratives and Emotional Intelligence in Development: An Integrative Review

Despite its relevance to emotional development, the understanding of the narrative aspect of emotional intelligence has remained vague. To bring the fragmented literature together, this article reviews the key seminal articles on narrative development. The aim is to identify the relevant overlapping scholarly discourse on the roles of narrative in the development of emotional intelligence. To review the literature, this study utilized techniques from the narrative review approach. The criteria for inclusion of the studies was their contribution to the study's theory integration and development rather than an exhaustive search. Publication considered seminal when articles were written by one of the most influential narrative researchers with a considerable number of publications in narrative research, and articles that were among the most highly cited articles according to both Web of Science and Google Scholar. Data was extracted from the discussion and conclusion section of the primary key articles. Some examples of qualitative case studies were extracted from the results section of the articles. The meta-narrative synthesis was conducted to map the key studies main arguments into the unfolding storylines of the current scientific discourse on the relation between the prominent domain of narrative development and the developmental levels of EI.