# OTC 2023

## 24th Occasional Temperament Conference

DETAILED PROGRAM

# Thursday, October 5th

## Preconference Workshops

## Manoir des Sables, Orford

**10:20 - 12:00 am**

**Latent Profile Analysis in Temperament Research**

Dr Roy Martin , University of Georgia USA

The use of Latent Profile Analysis (LPA) to isolate groups of individuals with similar personality or temperament profiles is becoming a progressively more popular research technique. Unfortunately, textbooks and other materials available often do not cover the advantages and problems in applying this technique to the kinds of variables temperament researchers are interested in. The workshop will address several issues that are critical to understand when using this technique including: (a) what are the best criteria for deciding on the optimal number of clusters (groups of children with similar profile); (b) what are the advantages and disadvantages of using factor scores versus scale scores and temperament indicators; (c) how many research participants do I need; (d) how many temperament indicators are optimal for a given sample size. These questions will be addressed based on recent research by the presenter. All examples of LPA analyses will use MPlus and specific instructions for setting up the analyses will be provided. The workshop will be relevant for those who wish to explore this type of analysis for the first time and for current users.

**10:20 - 12:00 am**

**Caring for the Spirited Child**

Dr Sean McDevitt , Behavioral-Developmental Initiatives

Practitioners in primary care, early intervention, education and behavioral health frequently encounter 'spirited' children during the course of their professional activities. This preconference will discuss how awareness of temperamental individuality can improve the quality and efficacy of professional care in dealing with these youngsters. The emphasis will be on uses of of temperament in applied settings.

Topics to be covered include:

- Conceptual model of the relationship between temperament, adjustment and psychopathology.
- Indications for clinical and psychometric temperament assessment;
- Levels of patient education about temperament;
- Goals for behavioral intervention/parenting techniques;

The presentation will also demonstrate how temperament can be a resource, or a complication, in providing care to spirited children and their families.

This session is intended primarily for individuals working directly with children and families. Interested researchers and scholars are also welcome to attend.

**12:00 am—1:00 pm: Lunch on your own**

# Thursday, October 5th

## Preconference Workshops

## Manoir des Sables, Orford

**1:00 pm to 5:30 pm**

**A Preconference on New INSIGHTS**

Dr Sandee McClowry , New York University, USA

New INSIGHTS into Children's Temperament (INSIGHTS) is an evidence-based intervention with programs for young children and for elementary school educators and parents. The programs can be conducted separately or concurrently. INSIGHTS features four characters who depict typical school-age temperament profiles: Coretta the Cautious who is shy; Gregory the Grumpy who is high maintenance; Freddy the Friendly who is very social; and Hilary the Hard Worker who is industrious. Multiple large randomized clinical trials have demonstrated that INSIGHTS enhances children's behavioral development and academic skills. The intervention also increases classroom management and parenting skills. With recent funding from the US Institute of Education Sciences, the programs' materials have been updated, are technology-enhanced, and available remotely.

Both the educator and parenting programs include 6 self-paced hour-long lessons and 7 facilitated remote sessions that assist participants in applying the content to individual children. The children's program consists of 10 lessons with classroom mitten puppets depicting each of the characters, videos, e-books, workbooks, and an electronic dilemma board.

Who is this preconference intended for?

- Clinicians and researchers who are interested in learning about the New INSIGHTS programs and their outcomes;
- Clinicians who are interested in becoming certified as a *NEW INSIGHTS* To be fully certified, clinicians would need to conduct the program(s) with the developer, Sandee McClowry. Once certified, facilitators can conduct the program in their own communities or for INSIGHTS Intervention, LLC.

Please note: The *NEW INSIGHTS* programs are only available through INSIGHTS Intervention, LLC. Facilitators will be paid by the company when they conduct the programs. To learn more about *NEW INSIGHTS* and to see some of the updated materials, check out our website: insightsintervention.com or contact Sandee McClowry (sandee.mcclowry@nyu.edu)

# Thursday, October 5th

## Preconference Workshops
## Manoir des Sables, Orford

**1:00 - 3:00 pm**

**Speaking Up for the Quiet Ones: Shy Children at School**

Dr Robert J. Coplan, Carleton University, Canada

The aims of this workshop are to: (1) provide an overview of the development and implications of shyness in childhood; (2) describe some of the unique challenges that shy children in the school context; and (3) consider 'best practices' for teachers to supporting shy students. Overall, childhood shyness is associated with peer difficulties (e.g., rejection, victimization), internalizing problems (e.g., anxiety, loneliness), and school challenges (e.g., academic under-achievement, school refusal). Yet, there is considerable variation in the outcomes of shyness at school. And of course, shy children also possess many unique and positive characteristics that help to enrich the classroom. The content of this workshop is drawn from more than 30 years of my previous research exploring the etiology of childhood shyness, risk and protective factors that serve to modulate developmental trajectories of shyness, as well as teachers' beliefs and responses to shy students in the classroom.

**3:30 to 5:30 pm**

**Hippocrates Revisited: Neurochemical Biomarkers of Temperament and Psychopathology**

Dr Irina Trofimova & Dr William Sulis McMaster University, Canada

This workshop presents a condensed and comprehensive review of the neurochemical biomarkers underlying temperament traits in healthy people and symptoms of psychopathology. Participants will learn a 12-component framework (Functional Ensemble of Temperament, FET) that summarises functional specialisation within neurotransmitter systems. Examples of the FET-structured temperament profiles in patients with mental disorders will be reviewed based on clinical studies. Compatibility of the proposed framework with leading temperament models and DSM-ICD classifications of mental disorders will be discussed. Learning Objectives:

- Explain the differences between concepts of temperament, abilities, personality, and psychopathology
- Discuss the functionality of neurochemical biomarkers of 12 universal functional aspects of behaviour (Functional Ensemble of Temperament framework, FET)
- Compare the main temperament and personality models in the presented 12-component neurochemical framework FET
- Illustrate the use of a compact screening temperament test that follows the FET structure in a screening of healthy and clinical samples.

**4:00 pm—6:00 pm : Registration**

# Friday, October 6th

## Manoir des Sables, Orford

**7:30 - 8:30 am: Registration**

**8:15 am: Welcome and openings remarks**

8:30 - 10:20 am : **Symposium 1: Temperament in the school context**

Chair: Dr Kathleen Rudasill, Virginia Commonwealth University

**Observations of temperament in kindergarten**

Nicole Adams, University of Nebraska-Lincoln

Coauthors: Xun Liu, Jungwon Eum, Kathleen Moritz-Rudasill, Yuenjung Joo, Kaitlyn Kugler, Emilea Rejman, Jentry Barrett

**The Effect of INSIGHTS on Developmental Trajectories of Children's Temperamental Regulation Skills**

Kathleen Rudasill, Virginia Commonwealth University

Coauthors: Ray E. Reichenberg, Jungwon Eum, Emily Wilson, Yuenjung Joo, Martinique A. Sealy, Jentry S. Barrett

**The Contributions of Effortful control and Teacher-Student Relationships on the Achievement of Hispanic and African-American First Graders**

Samantha D. Aguilar, Texas A&M University

Coauthors: Jeffrey Liew, Kelly Pantaleon

**Association of Parent/Teacher Perception of the Academic Ability of Children: Two Statistical Points of view**

Roy P. Martin, University of Georgia

Coauthors: Michele Lease, Helena R. Slobodskaya

**Investigating the moderating role of regulatory temperament in the association between mathematics anxiety and mathematics learning avoidance**

Anjali Chaudhary, Texas A&M University

Coauthors: Zhe Wang

**The Role of Teacher Attitudes in the Association Between Shyness and Internalizing Problems Among Chinese Adolescents**

Jungsheng Liu, East China Normal University

Coauthors: Yan Sun, Xiaohua Bian, Luhao Wei, Keqin Zhang, Dan Li, Xinyin Chen

**10:20 - 10:40 am: Coffee break**

# Friday, October 6th

## Manoir des Sables, Orford

10:40 am - 12:30 pm: **Symposium 2: Adversity, vulnerability, psychopathology, and temperament**

Chairs: Dr Kirby Deater-Deckard, University of Massachussetts Amherst, and Dr Santiago Morales, University of Southern California

**Temperament and Psychopathology: The "Community" To Which You Belong Matters**

Yiyi Wang, Peking University

Coauthors: Yiyi Wang, Joe Bathelt, Charles A. Nelson, Michelle Bosquet Enlow

**The role of cross-systemic coupling in children's early temperamental vulnerability to psychopathology**

Sarah J. Peoples and Rebecca J. Brooker, Texas A&M University

**Tests of pathoplasticity models of temperament and psychopathology**

Thomas M. Olino, Temple University

Coauthors: Pascal Schlechter, Roman Kotov, Daniel N. Klein

**Early Childhood Cumulative Risk and Temperament Predict Preadolescent Appraisal and Coping and Adolescent Psychopathology**

Michele R. Smith, University of Washington

Coauthors: Liliana J. Lengua, Caitlin Stavish, Autumn Eo, Ana Funes Gonzalez, Krystal Parrish, Dannielle Whiley, Lyndsey Moran, Stephanie Thompson

**Interactions among stress, behavioral inhibition and delta-beta coupling predict adolescent anxiety during the Covid-19 pandemic**

Michelle L. Ramos, Pennsylvania State University

Coauthors: Anna M. Zhou, Marisa N. Lytle, Sarah Myruski, Koraly Pérez-Edgar, Kristin A. Buss

**Withdrawn Social Behavior in Childhood predicts Health and Family Functioning In Adulthood: A Long-term Longitudinal Study of Low-income Montreal Families**

Lisa A. Serbin, Concordia University

Coauthors: Dale M. Stack, Shaneha Patel

**12:30 - 2:00 pm : Lunch (included in registration)**

# Friday, October 6th

## Manoir des Sables, Orford

2:00 - 3:50 pm : **Symposium 3: Practical and clinical applications of temperament**

Chair: Dr Sean McDevitt, Behavioral-Developmental Initiatives

**The Easy Baby: Temperament Profiles and Anticipatory Guidance for Young Children with Prenatally Identified Sex Chromosome Trisomies**

Megan Louderman, University of Colorado

Coauthors: Nicole Tartaglia, Shanlee Davis, Rebecca Wilson, Talia Thompson, Susan Howell

**Use of a brief evaluation tool for discovering infant temperament types while measuring level of infant caregiver stress**

Janet Crow, University of California

Coauthors: Mary Sheedy Kurcinka , Greg Crow

**Temperament in the USA and Lithuania: A Comparative Analysis of Threats to Validity**

Tomas Lazdauskas, Vilnius University

Coauthor: Sean C McDevitt, Behavioral-Developmental Initiatives (will be presenting)

**Tired parents, alert children: working on sleep with temperament in mind**

Macall Gordon, Antioch University

**The association between parenting stress and infant temperament in congenital heart disease**

Barbara Medoff-Cooper, University of Pennsylvania

Coauthors: Amy Lisanti, Nadya Golfenshtein

**Patterns of temperamental individuality in infancy: Evaluating profiles of infants referred and seen under professional supervision.**

Sean C McDevitt, Behavioral-Developmental Initiatives

**3:50 - 4:00 pm: Coffee break**

# Friday, October 6th

## Manoir des Sables, Orford

4:00 - 5:30 pm : **Poster session**

**001— Temperament Predictors of Overweight in Early Childhood**

John Worobey, Rutgers; The State University of New Jersey

**002— Maternal negative affectivity and maternal trauma as risk factors for poorer infant socioemotional development in women that were pregnant during the pandemic**

Florence Bordeleau, Université du Québec à Trois-Rivières

**003— Parenting predicts cardiac autonomic balance and cardiac autonomic regulation in preschool-aged children: Relations to temperament**

Daniel Ewon Choe, University of California

**004— Differential susceptibility to early child adversity: the case of difficult temperament in the prediction of adolescent personality, substance use and mental health**

Nathalie Castellanos Ryan, Université de Montréa and CHU Ste-Justine

**005— The Continuum between Temperament and Mental Illness as Dynamical Phases and Transitions**

William Sulis, McMaster University

**006— Negative affectivity in infants of women pregnant during the COVID-19 pandemic: testing a developmental path based on the stress-sensitization model**

Gabrielle Duguay, Université du Québec à Trois-Rivières

**007—Reliability and Validity of Assessors Ratings of Infant Affect in the Moment**

Esther M. Leerkes, University of North Carolina

**008— Children's Temperament and Perceptions of an Unfamiliar Peer During an Initial Interaction**

Elaria Ebeid, University of Waterloo

**009— Preschoolers' behavioral inhibition and rise in anxiety during the pandemic: the moderating role of mothers' experience and child's gender**

Marina Moënner, Université de Sherbrooke

**010—Preschoolers' behavioral inhibition and internalizing disorders : the mediating role of parental caregiving system**

Marina Moënner, Université de Sherbrooke

**011— Shy Children's Interventions in a Naturalistic Peer Environment**

Tara Karasewich, Queen's University

**012— Indirect associations between temperament, parenting practices, and conduct problems: the moderating role of teacher-child relationship**

William Gaudreau, Université de Sherbrooke

# Friday, October 6th

## Manoir des Sables, Orford

**4:00 - 5:30 pm : Poster session**

**013— Exploring the Factorial Invariance of the Child Behavior Questionnaire in Early Childhood**

Briana Ermanni, Virginia Tech

**014— Personality Dysfunctions and Parental Experience among Mothers: The Moderating Role of Child Negative Affectivity**

Karl Larouche, Université du Québec à Trois-Rivières

**015— Emotion Regulation Strategy Articulation, its Neurophysiological Correlates, and its Association with Temperament**

Zachary Bivins, University of Massachussets

**016— Validation of a French version of the Highly Sensitive Person Scale in a sample of Quebec youth**

Anne-Laurie Bélec, Université de Montréal

**017— The Relationship Between Values and Temperament in Middle Childhood**

Tamar Machlev, The Hebrew University of Jerusalem

**018— The moderating role of temperamental vulnerabilities on the link between household income and preschooler's internalizing problems**

Rosalie Vézina, Université de Sherbrooke

**019— Reward reactivity and externalizing risk among surgent children**

Christina Hogan, University of Massachussets

**020— The role of self-conscious emotion expression on psychopathology risk among temperamentally exuberant children**

Christina Hogan, University of Massachussets

**021— Severity of Autism and Temperament Variations in Children: A Comparative Study between Autistic and Neurotypical Children**

Zeynep Ertekin, Université du Québec à Trois-Rivières

**022—The Relation between Parent Emotion Coaching, Child Negativity, and Child Effortful Control**

Nari Kang, Virginia Tech

**023— Associations of sleep and emotional reactivity in early childhood**

Justine Daigneault, Université de Montréal

**024— Associations between the maternal prenatal gut microbiome composition and infant temperament**

Nathalie Suchy, University of North Carolina at Greensboro

# Friday, October 6th

## Manoir des Sables, Orford

**4:00 - 5:30 pm : Poster session**

**025— Relations between prenatal maternal stress and 2-month-old infants' surgency and negativity**

Yu Chen, University of North Carolina at Greensboro

**026— Children Risk-Taking Behaviors: The Intergenerational Influence of the Socio-Emotional and Cognitive Control Systems**

Sophie Couture, Université de Sherbrooke

**027— Observed parent emotion coaching and child regulation moderated by child reactivity**

Kassidy Mieses, Virginia Tech

**028— Associations Between Mother's Cognitive Emotional Regulation Strategies and Infant's Temperament**

Loïc Gagnon, Université du Québec à Trois-Rivières

**029— Is there an association between temperament and sensory seeking? A correlational study**

Kylie Wijeratne, Virginia Tech

**030— Exploring the influence of prenatal and perinatal factors on the development of difficult temperament and substance use-related problems**

Jad Hamaoui, Université de Montréal

**031—Family Interactions and Externalizing problems of Low-Income Children : A Biological Susceptibility Perspective**

Emma Lemay, Université du Québec à Trois-Rivières

**032— Child Emotional Reactivity and Parenting Behaviours: Longitudinal Associations with Youth's Internalizing and Externalizing Problems**

Sasha Gunpat, Concordia University

**033— The Association between Autonomy-supportive or Controlling Parenting and Temperament's facets in Early Childhood**

Jessica Beaudoin, Université de Montréal

**034—Maternal Autonomy Support and Children's Mastery Behavior: Does Children's Anger-Proneness Moderate?**

Anne Hungerford, University of North Carolina

**035— Revisiting the Direction of The Association Between Infant Temperament and Maternal Bonding: Data from a Longitudinal Study Starting During Pregnancy**

Kim Deschênes, Université du Québec à Trois-Rivières

**036— Effects of INSIGHTS on Classroom Quality, and Moderating Role of Teacher Personality**

Yuenjung Joo, University of Nebraska-Lincoln

# Friday, October 6th

## Manoir des Sables, Orford

**4:00 - 5:30 pm : Poster session**

**037— Does infant temperament differ in offspring of women that were pregnant before and during the COVID-19 pandemic**

Jinny Poirier-Plante, Université du Québec à Trois-Rivières

**038— Child respiratory sinus arrhythmia as a mechanism between parenting stress and child effortful control: Does context matter?**

Aubrey Golden, University of California

**039— Child temperament and maternal support for the father's role as antecedents of paternal autonomy support during toddlerhood**

Emma Laflamme, Université Laval

**040— Helping French-Canadian Preschool Children Thrive in the School System through INSIGHTS intervention**

Élizabeth Harvey, Université Saint-Anne

**041— Prenatal maternal stress during the COVID-19 pandemic and infant's temperament**

Jessica Pearson, Université du Québec à Trois-Rivières

**042—The role of behavioural inhibition and intolerance of uncertainty in adherence to pandemic health measures**

Magdalena Zdebik, Université du Québec en Outaouais

**043— Exploring the Link Between Childhood Temperament, Personality Traits, and Sexist Attitudes in Early Adulthood**

Éléonore Chavignon, Université de Sherbrooke

**044— An investigation of the relationship between parent-rated temperamental emotion regulation, in-vivo parent socialization, and in-vivo child emotion regulation**

Lynnea Mayorga, University of Massachussetts

**045— Associations between temperament and sleep from infancy through childhood**

Sophie Bellemare, Université de Montréal

**046— Effects of Prenatal Exposure to Secondhand Smoke on 9-month Infant Attention Are Moderated by Behavioral Reactivity**

Mariah DeSerisy, Columbia University Irving Medical Center

**047—The evocative role of child negative emotionality on parental aggression and its implications for child externalizing problems**

Dana Katsoty, Hebrew University of Jerusalem

# Friday, October 6th

## Manoir des Sables, Orford

6:00 - 7:00 pm

**Top down self-regulation in children: Conceptualization, operationalization, and correlates**

Dr Nancy Eisenberg , Arizona State University

Top-down self-regulation is a basic skill that appears to contribute to many aspects of children's functioning. It is constructed, in part, from what Rothbart has labeled as effortful control, a core component of temperament. I will briefly consider conceptualizations of the construct (e.g., distinction from bottom-up regulation and relation to executive functioning) and how it typically is measured in children. Then I will present research (mostly from our laboratory) on how it relates to children's maladjustment, social competence, and academic functioning, and factors that mediate or moderate these relations. I will summarize findings from multiple longitudinal studies, including relatively recent research on the relation of top-down self-regulation to school liking, conduct at school, relationships with teachers/peers at school, and academic performance.

7:00 - 9:00 pm: **Jan Kristal award and Gala dinner (included in registration)**

# Saturday, October 7th

## Manoir des Sables, Orford

**7:30 - 8:30 am: Registration**

8:30 - 9:50 am : **Symposium 4: Neuroscience, biology, and temperament**

Chair: Dr Martha Ann Bell, Virginia Tech

**Perinatal ERN stability predicts infant temperament outcomes: The role of maternal depression for development**

Rebecca J. Brooker, Texas A&M University

Coauthor: Sejal Mistry-Patel

**Microstates in infancy and their relation to temperament**

Kara L. Brown, Washington State University

Coauthor: Masha A. Gartstein

**Children's Shyness and Early Stages of Emotional Face Processing**

Kristi L. Poole, Brock University

Coauthor: Teena Willoughby

**The illustration of benefits of a neurochemical framework FET using the study of shame and guilt under tryptophan depletion**

Irina Trofimova, McMaster University

Coauthor: Jonathan Kanen

**9:50 - 10:10 am: Coffee Break**

# Saturday, October 7th

## Manoir des Sables, Orford

10:10 am- 12:00pm: **Symposium 5: Culture, gender, and temperament**

Chair: Dr Samuel Putnam, Bowdoin College

**Parental ethnotheories of children's temperament in 3 cultures**

Huda Akef, University of Connecticut

Coauthors: Yanzhen Kuang, Darlis Juvino, Dan Carvalheiro, Sara Harkness, Charles Super

**Exploring the Role of Culture in the Development of Gender Differences in Temperament across Infancy and Childhood in 59 Countries**

Samuel Putnam, Bowdoin College, and members of the Global Temperament Project

**The Association between Environmental Stress and Pubertal Development in Nine Countries: The Moderating Role of Effortful Control**

Christina Bertrand and Ann Folker, University of Massachusetts Amherst

Coauthors: Kirby Deater-Deckard, Jennifer Lansford

**A Multilevel Analysis of the Relationship Between Temperament and Behavior Problems in Children of Different Cultures**

Joshua J. Underwood, Washington State University

**Shyness and Social, School, and Psychological Adjustment in Rural Chinese Children at Different Historical Times**

Dan Li, Shanghai Normal University

Coauthors: Jing Hui, Junsheng Liu, Min Wu, Xinyin Chen

**Culturally Adapting A Temperament-Based Intervention**

Sandee McClowry, INSIGHTS Intervention, LLC and New York University

Coauthors: Sandra Gagnon, Elizabeth Harvey, Angela Hinrichs

**12:00 - 1:30 pm: Lunch (included in registration)**

# Saturday, October 7th

## Manoir des Sables, Orford

1:30 - 2:30 pm : **Who are the Game Changers? Why We Need to Study Leadership in Childhood and Adolescence**

Jennifer Tackett, Northwestern University

Temperament traits that are often associated with risk for externalizing psychopathology – such as risk-taking and social dominance – are also associated with many adaptive outcomes in adulthood, including leadership. Yet, although leadership research has flourished in recent decades, empirical investigations and theoretical advances have focused almost entirely on adults. A better understanding of leadership in children and adolescents, and its psychological substrates, could impact early prevention/intervention efforts for children with high externalizing propensity while also contributing to the next generation of effective and diverse leaders. Many stakeholders (e.g., organizations, parents, policymakers) are highly invested in understanding, predicting, and enhancing leadership abilities early in life. Furthermore, focusing on developmental pathways would extend theories of leadership, especially those pertaining to antecedents of major adult leadership constructs, such as leadership emergence, group effectiveness, and satisfaction with the leader. Early temperament and child personality offer opportunities for constructing models of leadership development across the life course, with great potential for theoretical and societal implications. In this talk, I will outline a potential framework for the empirical study of youth leadership that integrates cutting -edge knowledge from the leadership literature with critical insights from developmental science and informs both theory and practice.

# Saturday, October 7th

## Manoir des Sables, Orford

2:40 - 4:30 pm: **Symposium 6: Development and measurement of temperament**

Chair: Dr Koraly Perez-Edgar, Pennsylvania State University

**Towards a better assessment of childhood traits: Evaluating joint structures and network patterns of temperament and personality**

Margot Dewitte and Dr Sarah De Pauw, Ghent University - Special Needs Education

**The Temperament Metadimensions Model: Basic dimensions underlying the richness of temperamental constructs**

Klaudia Ponikiewska, Institute of Psychology, Cardinal Stefan Wyszyński University

Coauthors: Włodzimierz Strus, Jan Cieciuch

**The Integrative Late Childhood Temperament Inventory: A New Multi-Informant Measure to Assess the Base Dimensions of Temperament in School-Aged Children**

Vivienne Biedermann, University of Innsbruck

Coauthors: Marcel Zentner

**Temperament as the Foundation of an Emerging Value System: A Disposition-to-Position Theory of Personality development**

Ariel Knafo-Noam, The Hebrew University of Jerusalem

Coauthors: Lior Abramson, Dana Katsoty, Tamar Machlev,

**What I Tend to Do and What I Am Capable of Doing: Temperament, Personality Traits, and Social, Emotional, and Behavioral Skills**

Christopher J. Soto, Colby College

Coauthors: Christopher M. Napolitano, Madison N. Sewell, Hee Jun Yoon, Brent W. Roberts,

**Is there a bidirectional association between child screen time and the development of temperamental traits?**

Caroline Fitzpatrick, Université de Sherbrooke

Coauthors: Emma Cristini, Marie-Andrée Binet, Angélique Laurent, Gabrielle Garon-Carrier, Elizabeth Harvey

**4:30 - 4:45 pm: Coffee break**

# Saturday, October 7th

## Manoir des Sables, Orford

4:45– 6:35 pm: **Symposium 7: Social relationships, parenting, and temperament**

Chair: Dr Tracy Spinrad, Arizona State University

**Temperamental Triggers and Parenting Practices: Longitudinal Associations with Early Childhood Externalizing Behaviors**

Jennifer J. Phillips, Virginia Tech

Coauthors: Briana Ermanni, Martha Ann Bell

**Twins' Temperament Differences and their Relationship Development**

Ariel Knafo-Noam, The Hebrew University of Jerusalem, and Hila Segal, The Academic College of Tel Aviv–Yaffo

**Effects of Infant Negative Emotionality on Maternal Well-Being: Moderated by Childhood Experiences**

Savannah A. Girod, The Pennsylvania State University

Coauthors: Esther M. Leerkes, Cheryl Buehler, Laurie Wideman, Lenka H. Shriver

**Reciprocal Associations between Child Temperamental Inhibitory Control and Mother-Child Dyadic Interaction as Predictors of Child Externalizing Behaviors**

Lin Tan, Virginia Tech

Coauthors: Meredith G. Atanasio, & Cynthia L. Smith

**It's not how much you say, it's how you say it: Relations between children's shyness and use of affiliative language when getting to know a new peer**

Sarah D. English, University of Waterloo

Coauthors: Linda Sosa-Hernandez, Kristie L. Poole, Heather A. Henderson

**Homeschoolers' social and emotional experiences**

Carlos Valiente, Oklahoma State University

Coauthors: Brian Ray, Tracy Spinrad, Nancy Eisenberg

**Closing remarks**

## Organizing committee

**Chair**
Jean-Pascal Lemelin, Université de Sherbrooke

**Co-Chairs**
Annie Bernier, Université de Montréal
Nicolas Berthelot, Université du Québec à Trois-Rivières
Yann Le Corff, Université de Sherbrooke

## Sponsors

## For inquiries

occtemperamentconference2023@gmail.com

# Conference abstracts

**S.1.1. Observations of temperament in kindergarten,** *Nicole Adams*, Xun Liu, Jungwon Eum, Kathleen Moritz-Rudasill, Yuenjung Joo, Kaitlyn Kugler, Emilea Rejman, Jentry Barrett*

Child temperament is associated with children's adjustment to school; for example, children with more regulated temperament exhibit more positive teacher-child relationships (Rudasill & Rimm-Kaufman, 2009). Additionally, goodness of fit (i.e., fit between child temperament and environment) in the classroom is associated with children's peer interactions, academic achievement, and developmental outcomes (McCormick et al., 2015). Researchers have explored the relationship between child temperament and child classroom behavior; however, no studies have investigated this link using a standardized observational measure of child behavior. Here, we compared reports of child temperament with observations of classroom behavior. Participants were 222 children and their parents and teachers from 44 kindergarten classrooms in rural Midwest schools. Teachers reported on child temperament using the Teacher School-Age Temperament Inventory; parents reported on child temperament using the Parent School-Age Temperament Inventory (T-SATI; Lyons-Thomas & McClowry, 2012; SATI; McClowry et al., 2003). Temperament dimensions are negative reactivity, motor activity, approach/withdrawal, and task persistence. Child classroom behaviors during instruction were videotaped for 30 minutes, observed, and coded using a validated observation measure (Sheridan et al., 2017). Child behavior codes are engaged time, off-task behavior, interference, inappropriate social behavior, and inappropriate motor movement (e.g., Saudargas, 1997). Multilevel modeling was used to predict child classroom behaviors from parent- and teacher-reported child temperament, controlling for child gender and family SES. Parent-reported child temperament did not predict child classroom behavior. Teacher-reported child motor activity predicted more classroom interference behaviors (M = 0.008; p = .005) and more inappropriate motor movement (M = .01; p = .024). Higher teacher ratings of child negative reactivity predicted more classroom interference (M = .01; p = .03). Children rated higher on task persistence by teachers had lower interference behavior (M = -0.005; p = 0.03). Overall, girls had more compliance behavior ($\beta 1 = 0.027$, $p < .05$) and less inappropriate motor movement behavior compared to boys ($\beta 1 = -.01$; $p < .05$). Findings support previous research that teacher reports of child temperament may be more helpful than parent reports for predicting child behavior in the classroom (Major et al., 2015). These results highlight the important role of temperament in the classroom for social emotional and academic development. Implications for research will be discussed. A subset of this data was presented in a poster at SRCD in March 2023.

**S1.2. The Effect of INSIGHTS on Developmental Trajectories of Children's Temperamental Regulation Skills,** *Kathleen Rudasill*, Ray E. Reichenberg, Jungwon Eum, Emily Wilson, Yuenjung Joo, Martinique A. Sealy, Jentry S. Barrett*

The development of temperamental regulation is critical for children's positive interactions with others and successful adjustment to school (Rudasill et al., 2017). Temperamental regulation refers to an individual's ability to modulate emotional and behavioral reactions, attend to stimuli, inhibit inappropriate responses, and align behavior with context-specific expectations (Rothbart & Bates, 2006). Greater temperamental regulation is advantageous in the classroom, as more regulated children have an easier time with basic behavioral expectations (Rimm-Kauman et al., 2009), and are more likely to persist with difficult tasks, work efficiently, and pay attention to instruction (Bierman et al., 2008; McClelland et al., 2007). INSIGHTS into Children's Temperament (INSIGHTS) is a temperament-based intervention that improves kindergarten and first-grade children's social-emotional and academic learning by (1) providing teachers temperament-based strategies for responding to children's needs and scaffolding children's regulation skills, and (2) introducing children to temperament-based, social-emotional problem-solving strategies. We examined the effects of INSIGHTS on children's temperamental regulation development across kindergarten and first-grade in rural schools in the Midwestern US. One hundred forty-seven students from 61 classrooms were randomly assigned to INSIGHTS or control conditions by school. Students' mean age at baseline was 5.51 years (SD = .50); 51.1% were female. Approximately 21% of students qualified for free or reduced-price lunch programs. Most students were White (93.6%), and non-Hispanic (95.7%). INSIGHTS was delivered to teachers and students for 10 weeks in the spring of kindergarten and 10 weeks in the fall of first grade. Temperamental regulation was assessed before and after kindergarten (Time 1 and Time 2) and first grade (Time 3 and Time 4) implementation. Head-Toes-Knees-Shoulders (HTKS; McClelland et al., 2014)) and the Leiter-3 (Roid & Koch, 2017) were used as measures of regulation (attention, inhibitory control, and sustained attention). Results from multiple regression models with corrections for clustering effects showed that Time 4 temperamental regulation was higher for INSIGHTS than control students. Latent growth curve modeling revealed that INSIGHTS participants experienced increased rates of linear growth of regulation compared to participants in the control group. Results from this study provide support for the value of a temperament-based approach for universal interventions. Limitations, future directions, and implications will be discussed.

# Conference abstracts

**S.1.3. The Contributions of Effortful control and Teacher-Student Relationships on the Achievement of Hispanic and African-American First Graders,** *Samantha D. Aguilar*, Jeffrey Lew, Kelly Pantaleon*

Effortful control, an aspect of temperament, is the ability to voluntarily inhibit goal-irrelevant stimuli, cognition, and behavioral responses (Robart, Ellis, Rueda, & Posner, 2003) and instead perform goal-relevant actions that lead to longer-term achievements. The goodness-of-fit model (Thomas & Chess 1977) posits that goodness-of-fit will result if the child's temperament fits well with the demands and expectations of their environment. For early education, research suggests that teacher–student relationships are shaped by teachers' perceptions of students' dispositional characteristics and behaviors, such as temperament, gender, and ethnicity (Lerner, Lerner, & Zabski, 1985; Rudasill & Rimm-Kaufman, 2009; Stuhlman & Pianta, 2002). Thus, children's salient characteristics (e.g., gender and ethnicity), individual differences in self-regulation (e.g., effortful control), and quality of teacher-student relationships may contribute to our understanding of school outcomes, particularly for minority children. In the present study, we tested whether teacher-student relationship quality moderates the relation between effortful control and academic achievement for Hispanic and African-American first graders. Expanding on the work of Liew and colleagues (2010), the present study uses a multi-assessment approach to investigate the relationship between effortful control, teacher-student relationships, and identity (i.e., gender and ethnicity) on academic achievement in 264 Hispanic and African-American 1st graders. Effortful control was assessed using behavioral indices across three tasks from a behavioral battery designed to assess effortful control (Kochanska et al., 1997), academic achievement using the age-equivalent Woodcock-Johnson □ (WJ III) Psycho-educational Battery for Reading and Math, and teachers reported on teacher-student relationship quality (TSRI; Hughes, Cavell, & Willson, 2001). Note that there were 73 children whose dominant language was Spanish, and the Spanish version of the WJ III were used in analyses. Calculation of reliabilities of all measures indicate good or acceptable reliabilities. Multiple regression analyses were performed to test the interaction between teacher-student relationship and effortful control on reading and math achievement while controlling for baselines measures for effortful control and covariates. Results indicate that math achievement was predicted by students' identity (i.e., intersection of gender and ethnicity) and effortful control; when accounting for specific identity group membership, African-American girls were the only identity group that statistically contributed to this relationship. However, teacher-student relationship and effortful control each had a unique prediction of math achievement, $F(6, 119) = 2.92$ $p < .05$, $R2 = .13$. Study results have implications for math education, particularly for African American girls.

**S.1.4. Association of Parent/Teacher Perception of the Academic Ability of Children: Two Statistical Points of view,** *Roy P. Martin*, Michele Lease, Helena R. Slobodskaya*

Parents and teachers form impressions of the academic ability of children based on a variety of indicators. These might include academic achievement test scores, quality of responses to assigned homework and projects, and quality of verbal responses to questions. However, all these indicators of ability are influenced by the emotional and social predispositions of the child. For example, socially inhibited children are less likely to seek opportunities to display their verbal ability or their understanding of concepts due to heightened fears of failure. Outgoing children have more opportunities to practice verbal skills due to their heightened social involvement. The impressions that caretakers have of academic ability (intelligence) can have meaningful consequences for the child's development. These effects can take many forms, but perhaps most clearly in the opportunities for learning new skills that are provided by caretakers if they feel that the child is 'ready' for this new opportunity. To explore questions regarding the association of caretaker perceptions of academic ability and temperament, three large samples were studied including a sample of U.S. parents (n = 1107), U.S. teachers (n = 908), and Russian parents (n = 538) in children 8 through 12 years of age. In each sample, caretakers responded to items on the Survey of Individual Differences of Children and Adolescents (a revision of the Inventory of Children's Individual Differences) which resulted in scales measuring Intelligence (conceptualized as academic ability), and six temperament scales (activity level, sociability, positive emotionality, negative emotionality, distractibility, and inhibition). Two analytic approaches were used for each sample: Stepwise linear regression and latent profile analysis. Both approaches illustrate that parental and teacher perceptions of tempermanet are substantially and meaningfully related to perceptions of academic ability. Using linear regression procedures, distractibility and activity level were shown to play a predominant role in teacher perceptions of academic ability, but played a lesser role in parental perceptions. Using latent profile analysis, profiles revealed a number of associations between perceived academic ability and temperament that would not have been observed using linear regression.

**S1.5. Investigating the moderating role of regulatory temperament in the association between mathematics anxiety and mathematics learning avoidance,** *Anjali Chaudhary*, Zhe Wang*

Background: Mathematics anxiety (MA) is negatively associated with mathematics achievement (Barroso et al., 2021), possibly as students with higher MA are more likely to avoid mathematics learning opportunities, contributing to lower mathematics skills and achievement (Hembree,1990). At the elementary and middle school levels, when mathematics is mandated, students with MA exhibit avoidance in the form of a lack of engagement in mathematics class (Quintero et al., 2021), omission of effortful learning strategies during exam preparation (Jenifer et al.,2022), and negative homework behaviors (Song et al., under review). Because these avoidance behaviors are detrimental to long-term math learning, we are interested in individual characteristics that may mitigate such avoidance behaviors among students with high MA. Regulatory dimensions of temperament, such as activation control, inhibitory control, and attention focusing, are important candidates to consider because they provide individuals with the capacity to persist on tasks and overcome distractions (Teglasi et al., 2004). Activation control is the capacity to perform an action when there is a strong tendency to avoid it (Putnam et al., 2001); inhibitory control is the capacity to suppress inappropriate actions or responses (Putnam et al., 2001); attention-focusing is the capacity to focus and shift attention when desired (Capaldi & Rothbart,1992). Therefore, individual differences in these temperament dimensions may allow for varying levels of regulation to overcome learning avoidance behaviors when experiencing MA. This study investigates whether and how individual differences in activation control, inhibitory control, and attention focusing moderate the association between MA and avoidance learning behaviors. We hypothesize that high activation control, inhibitory control, and attention focusing would weaken the association between MA and learning avoidance behaviors in mathematics. Participants comprised 207 students from Grades 4 to 6 (50% female). Students self-reported engagement in mathematics classrooms using a modified version of the Math and Science Engagement Scale (Wang et al., 2016) and MA using the Mathematics Anxiety Scale for Children (Chiu & Henry, 1990). Parents completed the Early Adolescent Temperament Questionnaire (Capaldi & Rothbart, 1992) to report their child's temperament and a modified version of the Homework Problem Checklist (Anesko et al.,1987) for their child's mathematics homework behaviors. Moderation analysis will be conducted to investigate the moderation effect of the three temperament temperament dimensions on the associations between MA and learning avoidance behaviors. Results of this study will help identify resilient factors that may mitigate the maladaptive learning patterns among highly mathematics-anxious students.

**S.1.6. The Role of Teacher Attitudes in the Association Between Shyness and Internalizing Problems Among Chinese Adolescents,** *Jungsheng Liu*, Yan Sun· Xiaohua Bian, Luhao Wei, Keqin Zhang, Dan Li, Xinyin Chen*

Shyness is a temperamental trait involving fear and wariness in challenging social situations (Rubin et al., 2009). Research showed that shyness was positively associated with social competence, psychological well-being, and school achievement in Chinese children and adolescents (Chen et al., 1992). More recent studies, however, indicated that the adaptive value of shyness in Chinese society has declined due to the rapid social change; it emerged as one of the strongest risk factors for internalizing difficulties during adolescence (Liu et al., 2019). Teachers may play an important role in shaping students' behaviors through their interpretations of values and expectations (Chang, 2003). Whether teachers display a supportive or unsupportive attitude toward shy children may affect their psychological adjustment. Particularly in Chinese schools, each classroom is assigned with a head teacher responsible for students' school activities and students and the head teachers intensively interact on daily basis, highlighting the unique role of teachers. Little is known, however, about how teachers' attitudes toward shy children may moderate relations between shyness and internalizing problems in Chinese students. The current study explored the moderating role of teacher's supportive attitudes toward shy children in the link between shyness and internalizing problems (i.e., depressive symptoms and anxiety) among Chinese children and adolescents. Participants were 1568 students (M age = 13.86 years, SD= 0.91, 40.4% girls) from 33 classes, in China. Teacher attitude data were collected from the head teachers (M age = 32.99 years, SD= 6.63, 87.9% female teachers). Students reported on their depressive symptoms and anxiety. Shyness was assessed using peer nominations. Multilevel regression analyses showed that shyness was positively associated with depression and anxiety; teachers' attitudes moderated the associations between shyness and depressive symptoms and anxiety. Simple slope tests revealed that the magnitude of the associations between shyness and depression and anxiety declined for students with teachers exhibiting high levels of supportive and empathetic attitudes to shy students. The findings highlighted the protective effect of teachers' attitudes on psychological adjustment of shy youth.

# Conference abstracts

**S.2.1. Temperament and Psychopathology: The "Community" To Which You Belong Matters**, *Wanze Xie, Joe Bathelt, Charles A. Nelson, Michelle Bosquet Enlow, Yiyi Wang**

We utilized a data-driven community detection approach to longitudinally (a) identify distinct groups of children with common temperament profiles in infancy and at 2 and 3 years of age and (b) determine whether co-occurrence of certain temperament traits may be an early predictor of the emergence of internalizing problems at 5 years of age. The data-driven clustering analysis yielded three distinct groups of children with different temperament traits. The three temperament groups were associated with significant variation in levels of internalizing symptoms and anxiety symptoms and diagnosis rate. Our findings suggest that stable temperament "communities" can be detected in early childhood using this data-driven approach and that stable We utilized a data-driven community detection approach to longitudinally (a) identify distinct groups of children with common temperament profiles in infancy and at 2 and 3 years of age and (b) determine whether co-occurrence of certain temperament traits may be an early predictor of the emergence of internalizing problems at 5 years of age. The data-driven clustering analysis yielded three distinct groups of children with different temperament traits. The three temperament groups were associated with significant variation in levels of internalizing symptoms and anxiety symptoms and diagnosis rate. Our findings suggest that stable temperament "communities" can be detected in early childhood using this data-driven approach and that stable

**S.2.2. The role of cross-systemic coupling in children's early temperamental vulnerability to psychopathology**, *Sarah J. Peoples* and Rebecca J. Brooker**

Mismatching self-regulatory efforts to contextual incentives reflects a transdiagnostic vulnerability for psychological disorder (Beauchaine & Cicchetti, 2019). Temperament-based self-regulation is observable at the level of biological function (Rothbart & Bates, 1998). For example, Respiratory Sinus Arrhythmia (RSA) is a commonly-measured marker of regulation, specifically increasing or decreasing parasympathetic activity in response to environmental challenge (Porges 2009). However, RSA reflects one of many biological systems of self-regulation and vulnerability to disorder. The error-related negativity (ERN) is also a putative biomarker of vulnerability for psychopathology. Smaller ERN in early childhood is linked to increased risk for anxiety problems (Tang et al., 2020). Though both RSA and ERN are linked to anxiety risk, we do not know whether dysregulated patterns of function couple across systems, enhancing vulnerability, or whether levels of risk in one system (e.g., smaller ERN) may be offset by patterns of typical function in another (e.g., adaptive RSA), mitigating overall vulnerability. We tested whether coupling across systems was identifiable during the preschool years, a critical developmental period for self-regulation (Kopp, 1989). We also tested whether patterns of coupling could be linked to vulnerability for disorder via associations with established facets of anxiety risk: fear and early symptoms. Preschoolers ($N$ = 121) visited the laboratory at ages 3 ($M$ = 3.59, $SD$ = 0.15) and 5 ($M$= 5.52, $SD$ = 0.12). Age 3 ERN and RSA were derived from recordings (electroencephalogram and electrocardiogram, respectively) during a Go/No-Go. Individual estimates of linear change in RSA were quantified across the task. Fear was observed during a standardized paradigm (Buss & Goldsmith, 200). Primary caregivers completed the Anxiety and Related Disorders Interview Schedule (ADIS-5; Brown & Barlow, 2014) to report children's age 5 anxiety symptoms. No coupling was visible on average. Age 3 fear moderated RSA-ERN associations ($B$ = -6.035, $p$ = .023); RSA and ERN were negatively coupled at high fear (i.e., less RSA suppression, larger ERN; $B$ = -11.884, $p$ = .004) but unrelated at low fear. Age 5 anxiety symptoms similarly moderated RSA-ERN associations ($B$ = -7.816, $p$ = .001); RSA and ERN were negatively coupled at high levels of symptoms ($B$ = -17.807, $p$ < .001) and positively coupled when symptoms were low ($B$ = 21.432, $p$ = .006). In sum, negative coupling was linked to concurrent and longitudinal markers of vulnerability for disorder, suggesting that discernable patterns of risk-related coordination across regulatory systems may be visible by preschool.

**S.2.3. Tests of pathoplasticity models of temperament and psychopathology**, *Thomas M. Olino*, Pascal Schlechter, Roman Kotov, Daniel N. Klein*

The literature on the relationship between temperament (and personality) and psychopathology is enormous. One conceptual model of the relationship between temperament and psychopathology is the pathoplasticity model. In this model, the key hypothesis is that temperament influences the manifestation of psychopathology. Most frequently, this is tested by examining how early temperamental features are associated with course of illness or longitudinal changes in symptoms. One variant of this model would predict that temperamental characteristics may influence the emergence of different symptoms at different levels of disorder severity. This conceptualization of pathoplasticity has not yet been tested, owing to the need for having at least moderately large, longitudinal samples, as well as flexible measurement modeling approaches. This presentation will report on examination of tests of pathoplasticity in two samples: the Stony Brook Temperament Study (SBTS) and the Adolescent Development of Emotions and Personality Traits (ADEPT) Study. The SBTS initially assessed temperament in youth at age three, and ADEPT began in early adolescence. Assessments of psychopathology are available in prospective assessments. The SBTS has 3-year follow-up assessments, whereas ADEPT has 9-month follow-up assessments. Focal analyses in the SBTS data will use the Big 3 factors (from the Schedule for Non-Adaptive and Adaptive Personality) assessed at age 12 and youth self-reported depression using the Child Depression Inventory at age 15. In ADEPT, focal analyses will use the Big 3 factors (comprised of composites from multiple personality inventories) assessed at age 14 and youth self-reported symptoms from the Inventory of Depression and Anxiety Symptoms, focusing on depression specific factors, at the 9-month follow-up. In both studies, follow-up analyses will examine symptoms assessed via the K-SADS. Exploratory analyses in the SBTS data will examine temperament at age 3 and age 15 depressive symptoms. Analyses will rely on moderated non-linear factor analysis to examine how temperament is prospectively associated with symptom presentation. This analytic method permits identifying how temperament alters the manifestation of syndromes, such that dimensions of temperament may influence how the psychopathology construct is associated with specific symptoms and/or whether dimensions of temperament may influence the level of specific symptoms beyond the influence of the psychopathology construct. This work will speak to the influence of temperament on the presentation of psychopathology. Given the differences in methodological details of the study, we will have preliminary understanding of the interval over which associations manifest and how differences in symptom conceptualization may influence the patterns of findings.

**S.2.4. Early Childhood Cumulative Risk and Temperament Predict Preadolescent Appraisal and Coping and Adolescent Psychopathology,** *Liliana J. Lengua, Caitlin Stavish, iMchele R. Smith*, Autumn Eo, Ana Funes Gonzalez, Krystal Parrish, Dannielle Whiley, Lyndsey Moran, Stephanie Thompson*

Experiences of childhood adversity, temperament, and their interaction are known to increase risk for child psychopathology. However, the mechanisms through which the combination of adversity and temperament manifest into psychopathology are unclear. Appraisal and coping styles are critical contributors to psychopathology and may account for the effects of temperament and adversity on later psychopathology. We tested a model in which early-childhood adversity, temperament and their interaction were expected to predict preadolescent styles of appraisal and coping that increase risk for adolescent psychopathology. This study included a sample of 306 children and their parents assessed at multiple times between the ages of 3-15 years, with families equally representing contexts of poverty, low income, middle- and upper-income to include a range of cumulative contextual risk. Temperament was assessed using combined laboratory tasks and mothers' reports between the ages of 3-5.5 years. Children reported on their appraisal (threat) and coping (active, avoidant) in preadolescence (11-12 years) and on their symptoms of internalizing and externalizing problems at 11-12 and 15-16 years. The model was tested using path analyses and FIMLE estimation making use of the full sample. Preadolescent threat appraisal was predicted by lower family income, higher early-childhood fear, and an interaction between cumulative risk and frustration. Avoidant coping was also predicted by an interaction between cumulative risk and frustration. For both, children who were higher in frustration demonstrated higher levels of threat and avoidance at lower levels of cumulative risk than children experiencing higher levels of risk and those low in frustration. Both active and avoidant coping were predicted by an interaction between cumulative risk and effortful control. Higher cumulative risk was related to higher active and avoidant coping for children low in effortful control. In turn, threat appraisal, active and avoidant coping were concurrently associated with internalizing and externalizing, but not prospectively in adolescence. Rather preadolescent psychopathology predicted higher adolescent psychopathology. Above those effects, early-childhood fear predicted higher internalizing, and frustration predicted externalizing. Such longitudinal models are critical to articulate the processes of risk for psychopathology in temperamentally vulnerable children exposed to adversity. Early childhood fear and frustration predicted later appraisal, coping and/or adjustment outcomes, and their interaction with cumulative risk highlighted the children who were more vulnerable in contexts of cumulative risk. Identifying prospective predictors of appraisal and coping styles can elucidate pathways to psychopathology for children who experience adversity in order to improve intervention efforts.

# Conference abstracts

**S.2.5. Interactions among stress, behavioral inhibition and delta-beta coupling predict adolescent anxiety during the Covid-19 pandemic,** *Michelle L. Ramos*, Anna M. Zhou, Marisa N. Lytle, Sarah Myruski, Koraly Pérez-Edgar, Kristin A. Buss*

Throughout the initial phases of COVID-19, government-implemented quarantine, social distancing, work-from-home orders, and school closures forced significant changes on the daily lives of youth. As pre-existing anxiety may contribute to heightened anxiety during stressful life events, we examined pre-COVID levels of anxiety, temperamental behavioral inhibition (BI), a developmental risk marker for anxiety, and emotion regulation (ER), which may potentiate anxiety. We examined a neurocognitive proxy for ER processes, delta-beta coupling (DBC), which captures functional coherence between cortical and subcortical regions. Higher DBC is associated with BI and anxiety, and may reflect cortical overcontrol and difficulties with ER. The current study had two goals: 1) examine pre-COVID anxiety and BI and their relation to COVID-related worry, and 2) explore the role of individual differences in pre-COVID DBC on the relation between pre-COVID BI and anxiety at two timepoints during COVID-19 (n = 86; 51% female; 90.4% white, 2.4% black, 7.2% more than one race, 4.8% Hispanic; 76.8% income>$60,000). Adolescent anxiety and COVID-related worry were assessed at two timepoints during the pandemic, with T1 (Mage=15.95, SD=1.73) aligning with the start of a new virtual learning school year and T6 (Mage=16.43, SD=1.73) approximately 6 months later. Parent-reported measures of BI (Behavioral Inhibition Questionnaire) and anxiety (Screen for Child Anxiety and Emotion Disorders) collected prior to the start of the COVID-19 pandemic serve as indicators of adolescent anxiety and worry (CoRonavIruS Health Impact Survey) experienced during the pandemic. BI moderated the relation between pre-COVID anxiety levels and COVID-related worry. Specifically, high levels of pre-COVID social anxiety predicted greater COVID worry among high BI adolescents. Given the large degree of uncertainty surrounding the initial phase of the COVID-19 pandemic, adolescents who are already averse to novel and uncertain situations may have experienced heightened levels of worry as a result. We also found support for the moderating role of pre-COVID DBC in the relation between pre-COVID BI and anxiety during the pandemic. High BI predicted anxiety levels, including social anxiety, in adolescents with stronger parietal DBC at both COVID timepoints.

**S.2.6. Withdrawn Social Behavior in Childhood predicts Health and Family Functioning In Adulthood: A Long-term Longitudinal Study of Low-income Montreal Families,** *Lisa A. Serbin*, Dale M. Stack, Shaneha Patel*

Socially withdrawn behavior in childhood may continue as a behavior pattern into adulthood, characterizing social interactions and impacting success in educational and occupational settings, as well as adult health and family functioning. The present paper will summarize recent findings from the Concordia Longitudinal Research Project a large, multigenerational longitudinal study of over 4000 lower-income Montreal children and their families. The study was begun in 1976 to identify childhood behavioral markers including peer-nominated measures of social withdrawal and aggressive behavior that might predict adult psychopathology and other psychosocial outcomes (Schwartzman et al., 1985). We are now able to trace pathways from withdrawal in childhood to adult outcomes including mental and physical health, and family formation. This presentation will give an overview and integrate some of these findings. Childhood social withdrawal, in combination with other behavioral patterns, family and neighborhood resources, predicted various mental and physical health challenges in adulthood. Data from RAMQ/medical records for participants revealed physical health problems at elevated risk, including life-style related illnesses. Depression and anxiety disorders. and risk for major adult mental health problems (psychosis spectrum, bi-polar illness, schizophrenia) also increased following childhood withdrawal. A mediated pathway linking childhood withdrawal and educational attainment was found for both women and men in the sample. Lower educational attainment was, in turn, predictive of lower occupational status, reduced family income, and father absence. In observations of parent-child dyads, repeated over time (Ns range from 90 to 220 parent-child dyads), direct effects of parents' childhood social withdrawal were found in terms of less responsive parenting, negative emotional availability and avoidant behavior towards young children, with less dyadic synchrony. Childhood withdrawal moderated the impact of other established risk variables, such as childhood aggression, low parental education and occupational status, and neighborhood disadvantage. In general, childhood withdrawal functioned to enhance the effects of other established risk factors but there were some situations in which withdrawal seemed to "mitigate" other risk factors, possibly by protecting children from exposure to harmful social or neighborhood conditions. These outcomes may represent "continuity" of withdrawn behavioral styles from childhood, and also reflect problems in adulthood linked with withdrawal such as anxiety and depression.

# Conference abstracts

**S.3.1. The Easy Baby: Temperament Profiles and Anticipatory Guidance for Young Children with Prenatally Identified Sex Chromosome Trisomies ,** *Megan Louderman*, Nicole Tartaglia, Shanlee Davis, Rebecca Wilson, Talia Thompson, Susan Howell*

This project aimed to evaluate temperament profiles in infants with prenatally identified sex chromosome trisomies (SCT) using standardized measures. Temperament of young children with SCT has yet to be described in the literature. Existing studies and anecdotal reports suggest there are unique behavioral patterns in this population. Given the complex developmental presentations of children with SCT, it is expected that temperamental differences may have diagnostic, treatment, and parenting implications. Following the establishment of a temperament profile, an anticipatory guidance program will be developed for caregivers. The eXtraordinary Babies study is a longitudinal natural history study examining developmental, medical, and psychosocial factors in children with prenatally identified SCT (XXY, XYY, or XXX). The Carey Temperament Scales (CTS) assess innate behavioral patterns in children. Data from the CTS completed at the 12-month-visit were used for this analysis. Analyses for the 24- and 36-month visits are in progress. Using the CTS, caregivers rate frequency of behaviors on a 6-point scale, yielding z-scores in 9 categories of temperament, including overall manageability of behavior. Descriptive statistics and one-sample t-tests were used to describe the sample and compare the SCT sample with the norming sample. A one-way ANOVA was used to compare SCT groups. While results of the 12-month CTS data suggest that children with SCTs have temperament qualities falling within the average range, there are statistically significant differences in many domains compared to the norming sample showing low activity level ($p<.001$), high rhythmicity ($p<.001$), low intensity of reaction ($p<.001$), low persistence ($p<.001$), and high threshold of responsiveness ($p=.006$). There were no statistically significant differences between the SCT conditions . A significant majority (82%) of parents rated their child's overall manageability as "easy" or "very easy". Results indicate that 12-month old infants with SCTs have temperamental differences when compared with the general population. The temperament profile reflects characteristics that may make these children easier to manage in the first year of life and the constellation of what is referred to as an "easy baby" in SCTs. Anticipatory guidance, informed by knowledge of neurodevelopment and goodness of fit principles, is in progress.

**S.3.2. Use of a brief evaluation tool for discovering infant temperament types while measuring level of infant caregiver stress,** *Mary Sheedy Kurcinka , Janet Crow*, Greg Crow*

Finding that an infant with fussiness, poor sleep, and difficulty feeding causes increased parent stress is not exactly earth shattering. When babies start down this path, we often say it is "colic" and that it will get better. But what if it does not get better? What if this child is hyperaware of their surroundings even beginning in utero? Availability of a brief questionnaire identifying infant temperament and parental stress done at routine wellness visits could provide help for parents to normalize the behavior of their baby and receive tools early to diminish stress for both the parents and the child. This one-year pilot study was a descriptive research study using a new tool to evaluate infant temperament while looking at levels of parent stress. It was offered to caregivers of infants coming for the 4-month and 9-month wellness check at a large academic clinic. The temperament survey has one question for each of 9 temperament traits and the Parent Stress Evaluation has 5 questions around stress in the care and behavior of their infant. Each parent was given a "tip sheet" describing each temperament type and ways to interact with their infant. The nomenclature for temperament types was modified to "low key," "spunky," and "spirited." There were 271 caregiver responses with 37 (13.7%) stating they completed the survey previously. There was high correlation between the total Infant Temperament score and the total Parent Stress score-rho=0.579 ($p<0.0001$). The highest correlation between a Parent Stress Trait and total score were Crying-rho=0.610 and Sleep-rho=0.578 (both with $p<0.0001$). The highest correlations between Infant Temperament Trait and the total temperament score were Intensity-rho=0.611, Adaptability-rho=0.566, and Persistence-rho=0.536 (all with $p<0.0001$). Caregivers of "Low key" infants were most likely to have a Low Stress Level. Most caregivers of "Spunky" infants had a Moderate Stress Level. While the number of "Spirited" infants was low in this study, few of their parents had Low Stress levels. This study suggests that a brief infant temperament evaluation could be used to identify infant temperament types and potentially find those parents with increased stress levels that correlate with increasing temperament scores. The long-term goal for this one-page instrument is to validate its ability to show persistence in identifying temperament across the first year of life and use it in standard healthcare settings early in infancy to target anticipatory guidance given to parents specific to their child's temperament.

**S.3.3. Temperament in the USA and Lithuania: A Comparative Analysis of Threats to Validity,** *Tomas Lazdauskas , Sean C. McDevitt**

Self report temperament questionnaires are subject to several sources of potential bias by the rater. While methods of detecting these problems have been utilized clinically there are no empirical investigations into the nature of these threats utilizing large group data.The main purpose of our study was to analyze the prevalence of threats to validity in adult temperament ratings between samples from the United States of America (US) and Lithuania (LT). A total of 1,324 individuals aged 13 to 80 (M = 31.48, SD = 13.18) from the United States (n = 607, 45.85%) and Lithuania (n = 717, 54.15%) participated in the study. Temperament was assessed using the Chess–Thomas Adult Temperament Questionnaire, second edition (ATQ2,2018), and its Lithuanian counterpart (ATQ2-LT); (Lazdauskas & McDevitt, 2023). These instruments measure the 9 dimensions of temperament identified by Thomas, Chess and associates in the NYLS. Threats to validity included 1) excessive missing items in the questionnaire, 2) social desirability and 3) discrepancies between perceptions of temperament as measure by general impressions scores and actual ratings of temperament on individual items. Results were analyzed according to the prevalence of these threats in the two samples as well as over the course of the adult development. Research on threats to validity of ratings of temperament is needed to better understand sources of invalidity and their impact on data collected for both research and clinical purposes.

**S.3.4. Tired parents, alert children: working on sleep with temperament in mind,** *Macall Gordon**

The most-endorsed intervention for preventing or ameliorating pediatric sleep problems is various forms of extinction. Though research has established its effectiveness for infants older than six months, popular advice routinely recommends letting infants cry before sleep as early as two- to four months. Both research and advice submit that extinction is quick (Kuhn & Weidinger, 2000), effective (Mindell et al., 2006), and without negative side effect (Honaker & Meltzer, 2014). While this is true for many children, the non-response rate across extinction studies is known to be 25- 50%. Aspects of temperament have been strongly related to higher levels of sleep problems and lower levels of success with intervention in pediatric populations. Surprisingly, temperament is rarely considered in research or mainstream parenting advice on sleep. Very little is known about whether there are differential outcomes of extinction for temperamentally intense, reactive, persistent children. No research has yet investigated whether non-responders are more likely to be children with these and other traits. In real-world contexts, parents of temperamentally challenging children struggle significantly with both sleep and sleep training. One parent survey found that temperament negatively impacted every sleep variable assessed (Gordon, 2020). Parents had also attempted a higher number of sleep training methods without success. Approximately 58% reported that extinction “did not work at all.” They also rated it as “significantly more difficult” with “much more crying” than books told them to expect. Some reported never considering extinction because of the likelihood of prolonged intense crying and lack of measurable improvement. Parents of challenging children also reported higher levels of physical and emotional exhaustion and lower levels of self-competence than parents of easier children. As a certified pediatric sleep consultant who specializes in working with these parents and their children, I have observed distinct commonalities in parents’ frustrations with existing sleep advice, as well as a lack of parenting information on temperament, especially very early indicators. This clinical presentation will address: 1) Which temperament variables impact both sleep behaviors and responsiveness to standard interventions ; 2) Are there “bright sides” of temperament that can also contribute to sleep challenges; 3) What parents need practitioners to understand about their lived experience. The case study of a 9-month-old infant with persistent and significant bedtime resistance and nightwaking that was not responsive to previous sleep training strategies will also be discussed. Research into alternative sleep strategies that consider children’s challenging traits as well as emergent strengths could contribute significantly to the wellbeing of this large group of tired parents.

**S.3.5. The association between parenting stress and infant temperament in congenital heart disease**, *Barbara Medoff-Cooper*, Amy Lisanti, Nadya Golfenshtein*

The purpose of this study was to explore the associations between early infant temperamental characteristics and parental stress in infants with congenital heart disease and their parents. This descriptive, cross-sectional study is a secondary analysis of data collected in a previously described randomized clinical trial on the REACH telehealth follow-up program (Trial Registration: NCT01941667) conducted from 2012-2017 at three free-standing children's hospitals in the United States Subjects (N=219) included parents of infants with congenital heart disease (CHD) who had undergone cardiac surgery in the first three weeks of life, were at least 37 weeks gestation, w 2500 grams at birth, and a CHD with a Risk Adjustment in Congenital Heart Surgery (RACHS-1) Category of 2 or greater. Details of the trial have been published elsewhere. Parents completed the Parent Stress Index (PSI) and the Early Infant Temperament (EITQ) at the end of the trial period. No significant differences in infant temperament or parenting stress were found between infants who underwent corrective vs. palliative surgery. Significant positive associations were found between ETIQ subscales and parenting stress domains, including total stress. For the Child Domain, higher scores on the Activity (β=9.84, P<0.001), Approach (β=5.48, P=0.021), Intensity (β=4.59, P=0.035), Mood (β=11.53, P<0.001), and Distractibility (β=7.13, P=0.009) were all significantly associated with higher parenting stress.), Approach (β=6.92, P=0.030), Adaptability (β=7.27, P=0.032 ), and Mood (β=8.45, P=0.027), were significantly associated with higher parenting stress, 0.32. Finally, for the Total Score, higher scores on the Activity (β=18.69, P=0.001), Approach (β=11.79, P=0.023), and Mood (β=17.44, P=0.008) were significantly associated with higher parenting stress. Parenting stress and the perception of difficult behavioral style or temperament characteristics appear to be associated with parents of infants with complex CHD post-neonatal cardiac surgery.

**S.3.6. Patterns of temperamental individuality in infancy: Evaluating profiles of infants referred and seen under professional supervision,** *Sean C McDevitt**

This paper will report data on 5604 infants aged 4-11 months who were rated on the Revised Infant Temperament Questionnaire by Carey and McDevitt (1978) (RITQ) as part of a prevention/intervention or clinical encounter with a professional. The original questionnaire was standardized on 200 infants in a pediatric practice who were between 4 and 8 months of age, but patterns of utilization demonstrated that many infants were in the 9-11 month age range. Analysis was done separately for two groups, 4-7 months and 8-11 months to determine the psychometric characteristics of the two groups. Results will focus on the differences between the referred samples and the original standardization sample as well as difference in patterns of temperament between the older and younger groups. The variations in temperament scores between the referred sample and the standardization sample will be highlighted. Implications for practical use of the questionnaire in light of these findings and suggestions for further work to strengthen the RITQ for clinical and research purposes will also be discussed.

# Conference abstracts

**S.4.1. Perinatal ERN stability predicts infant temperament outcomes: The role of maternal depression for development,** *Rebecca J. Brooker*, Sejal Mistry-Patel*

Temperament-based risk for infant emotion difficulties is linked to maternal prenatal depression (Madigan et al., 2018). The inter-generational transmission of risk likely occurs via programming of infant biological systems that support emotion behaviors (Sandman et al., 2011). Specifically, the presence of maternal depression shifts the baseline of highly plastic, developing biological systems in infants, increasing vulnerability for negative outcomes (Glynn et al., 2018). In this way, maternal depression serves as a powerful context for the development of infant biological systems and temperament-based emotion outcomes. Yet, pregnant mothers are also undergoing a period of biological plasticity (Hoekzema et al., 2017), suggesting that mothers' depressive symptoms also comprise a context for maternal development. The error-related negativity (ERN) denotes a biological process of self-regulation associated with symptoms of depression (Olvet & Hajcak, 2008) and predicts offspring risk for internalizing problems (Suor et al., 2022). To extend current knowledge about plasticity of the maternal brain and the nature of maternal depression as a context for the transmission of temperament-based risk from mothers to infants, we tested stability in maternal perinatal ERN and whether maternal depression moderated links between maternal ERN and infant emotion. Expectant mothers (N = 93) visited the laboratory during the second (M = 21.15 weeks; SD = 3.79) and third (M = 35.92 weeks; SD = 1.47) trimesters of pregnancy and at infant age 4 months (M = 4.27, SD = 0.62). ERN was derived from EEG was recorded during a computerized Go/No-Go in the second trimester. In the third trimester, mothers reported symptoms of depression (Edinburgh Postnatal Depression Scale; Cox et al., 1987). Infant sadness and fear were observed in the lab (Goldsmith & Rothbart, 1999). Maternal ERN was largely stable, on average. In addition, a significant interaction between second trimester ERN and third trimester depressive symptoms predicted infant sadness (beta = 0.04, SE (beta) = 0.15, $p < .05$). At low levels of prenatal depression, a larger maternal ERN predicted less infant sadness (beta = 0.34, SE(beta) = 0.14, $p < 0.05$). However, at high levels of prenatal depression, a larger maternal ERN predicted more infant sadness (beta = -0.37, SE(beta) = 0.16, $p < 0.05$). These results suggest that a larger ERN during pregnancy is associated with subsequent infant internalizing risk only in the context of high depressive symptoms in mothers. Results suggest maternal depression as an important context for links between maternal biological function and infant emotion outcomes.

**S.4.2. Microstates in infancy and their relation to temperament,** *Kara L. Brown*, Masha A. Gartstein*

Microstates have been defined as brief, stable states of global electrical activity measured with electroencephalography (EEG) and have been colloquially referred to as the "atom of thought," meaning that from these underlying resting-state microstates come basic cognition. Microstates are thought to last between 80-100ms and occur/reoccur multiple times within just one second with implications for cognition based on the microstate currently present. The present study examined microstates in relation to temperament between 6 and 10 months of age. Infants watched a 1-minute video clip to elicit an attentive, restful state while EEG activity was measured. Additionally, parents completed the Infant Behavior Questionnaire – Revised to assess dimensions of temperament. Because of the novelty of this study, there were no a priori hypotheses. Instead, this study included exploratory correlations between microstate parameters extracted from EEG data and parent-reported temperament. Four microstates were extracted from the infant baseline data with topographies thought to be associated with the default mode network (MST 2), auditory processing (MST 3), and visual processing (MST 4). Microstate 1 has a posterior activation, Microstate 2 has a symmetric occipital to prefrontal orientation, Microstate 3 has a left occipital to right frontal orientation, and Microstate 4 has a right occipital to left frontal orientation. Microstate (MST) 3 was negatively correlated with the Positive Affectivity broadband scale, while positively correlated with Negative Emotionality. The strength of the activation of MST 3 was associated with higher parent ratings of overall Negative Affect, as well as fine-grained attributes of Distress to Limitations and Sadness. At a more fine-grained examination of Positive Affect, higher frequency, duration, and coverage of MST 3 was associated with lower Smiling & Laughter, High-Intensity Pleasure, and Approach behaviors. Longer duration of MST 1 was associated with increased parent reports of Smiling & Laughter, an interesting pattern given the isolated topography of MST 1 in the posterior region, thought to correspond with activation in the visual cortex. For Regulatory Capacity/Orienting broadband, there was a negative correlation with coverage and frequency of MST 2. At the narrowband level, higher levels of Soothability were associated with lower frequency, duration, and coverage of MST 2 but longer duration of MST 3. Increased Cuddliness was associated with longer durations of MST 4. This study highlights the potential use of microstate analysis to better understand not only the neurodevelopmental underpinnings of cognition but perhaps emotion development as well.

**S.4.3. Children's Shyness and Early Stages of Emotional Face Processing ,** *Kristi L. Poole*, Teena Willoughby*

The ability to detect and recognize facial emotions emerges in childhood and is important for understanding social cues, but we know relatively little about how individual differences in temperament may influence early emotional face processing. We used a sample of 419 children (Mage = 10.57 years, SD = 1.75; 48% female; 77% White) to examine the relation between temperamental shyness and early stages of emotional face processing (assessed using the P100 and N170 event-related potentials) during different facial expressions (neutral, anger, fear, and happy). We found that higher shyness was related to greater P100 activation to faces expressing anger and fear relative to neutral faces. Further, lower shyness was related to greater N170 activation to faces expressing anger and fear relative to neutral faces. There were no relations between shyness and neural activation to happy faces relative to neutral faces for P100 or N170, suggesting specificity to faces signaling threat. We discuss findings in the context of understanding the early processing of facial emotional display of threat among shy children.

**S.4.4. Understanding the impact of cognitive control on the link between early temperament and later social maladjustment in childhood: insights from behavioral and ERP data,** *Dan Jiang*, Jie He*

Based on the fundamental inhibition and approach motivation systems, there are two specific types of temperament, namely, behavioral inhibition (BI) and exuberance. BI, originating from inhibition motivation and characterized by high negative affect and inhibition reaction to novel stimuli, predicts later internalizing problem behaviors. In contrast, exuberance, originating from approach motivation and characterized by high positive affect and approach reaction to novel stimuli, predicts later external problem behaviors. However, not all individuals with a specific type of temperament develop problem behaviors, which may be due to the potential moderating role of cognitive control. Objective: This study aims to explore the role of proactive and reactive control strategies in the correlation between early temperament and later problem behaviors. The participants included 75 children (45% girls) in China. Children's age was 2 years old at the beginning of the longitudinal study (wave 1: Mage = 2.63 years), 6 years old at wave 2 and 7 years at wave 3. At wave 1, toddlers' parents completed the Early Childhood Behavior Questionnaire (ECBQ) to evaluate early BI and exuberance. At wave 2, children completed a child-friendly AX Continuous Performance Test (AX-CPT) while their event-related potential (ERP) was recorded. This test allows for measuring behavioral performance (e.g., accuracy, sensitivity d') and ERP components related to proactive (ΔP3b) and reactive (ΔN2) control. The laboratory visit at wave 3 involved parents completing the Strengths and Difficulties Questionnaire (SDQ) to assess their children's problem behaviors (emotional problem and hyperactivity). Behavioral analysis revealed that higher BI was associated with higher accuracy in AX trial type ($r = 0.29$, $p = .023$) and higher d' ($r = 0.32$, $p = .014$), exhibiting more proactive control strategy. Higher exuberance was associated with lower d' ($r = -0.27$, $p = .039$), exhibiting less proactive control strategy. The ERP results showed that higher BI was associated with more emotional problems only among children with smaller ΔP3b which indicated less proactive strategy. Higher exuberance was associated with more hyperactivity only among children with larger ΔN2 which indicated more reactive strategy. Behavioral results demonstrated that early temperament (BI and exuberance) predicted children's proactive control strategy. Furthermore, cognitive control strategies measured by ERP moderated the link between early temperament and later problem behaviors. By understanding the influence of cognitive control, we gain insights into the mechanisms underlying the association between temperament and social maladjustment.

**S.4.5. The illustration of benefits of a neurochemical framework FET using the study of shame and guilt under tryptophan depletion,** *Irina Trofimova*, Jonathan Kanen*

This presentation highlights the benefits of using the neurochemical framework Functional Ensemble of Temperament (FET) to sort out the biomarkers of consistent behavioural patterns. The original concept of temperament refers to (neuro)chemical regulation of behaviour, but the efforts to map neurochemical biomarkers of temperament traits were confronted with extreme complexity, diversity and mutual regulation of these biomarkers. This presentation uses the example of the FET-based spectral hypothesis approach to investigate the interaction between temperament traits and context. The study used 73 healthy volunteers without a reported family history of psychiatric disorders at the time of screening: 36 in the placebo condition (17 female) and 37 in the tryptophan depletion condition (17 female). Tryptophan is a precursor of serotonin (5-HT), which is essential for serotonergic cells to complete the composition of this neurotransmitter in the brain. The experiment in our example examined the condition when a nervous system is deprived (depleted) of the 5-HT support for other neurochemical systems. Participants' temperament was analysed using the Structure of Temperament Questionnaire (STQ-77). For the behavioural context component, the study measured guilt and shame using EMOTICOM testing package. The results show a good correspondence with the FET model: the principles concerning the interaction between central serotonin and hormonal systems appear to follow the FET-structured "ensemble" dynamics, having context dependency and patterns of chemical imbalances underlying biologically-based individual differences. The study, therefore, highlights the benefits of screening for temperament using the FET-based test, combined with the FET-based spectral hypothesis for interactions between temperament traits and situational context.

S.5.1. Parental ethnotheories of children's temperament in 3 cultures, *Huda Akef*, Yanzhen Kuang, Darlis Juvino, Dan Carvalheiro, Sara Harkness, Charles Super*

Culture plays a pivotal role in shaping temperament development, informing how individuals experience, express, and regulate emotions as well as behavioral and attentional responses. While temperament may be rooted in biological and genetic factors, its development can be influenced by culturally informed socialization and social interaction. Understanding cross-cultural differences in temperament characteristics requires an examination of the specific cultural meanings associated with them. Such cultural meanings can be reflected in parents' ethnotheories and socialization goals that underlie parenting behaviors and reactions towards children's temperament displays. Parents perceive their children and raise them through their specific cultural lens. Therefore, parents' free descriptions of their children can provide important insight into their cultural values and their evaluations of temperament characteristics. This paper aims to investigate how parents from three different cultures freely describe their children, exploring how temperament characteristics are mentioned, and what cultural meanings may be associated with them. Our data are based on semi-structured parent interviews from three separate studies with participants in Brazil (24 caregivers, 92% female), China (24 mothers), and Egypt (11 mothers and 9 fathers). Childrens' ages ranged from 6 months to 5.6 years (Brazil), 1 to 17 years (China), and 1 to 15 years (Egypt). In all three studies, participants were asked to describe their children to someone who doesn't know them. Interviews were mainly conducted in Brazilian Portuguese, Chinese Mandarin, and Egyptian Arabic, respectively, and were transcribed in the original language to preserve meaning. Through examining parents' descriptions, common temperament characteristics and their associated meanings will be identified and coded using Dedoose Qualitative Analysis Software. Preliminary findings among the samples indicate caregivers/parents in Brazil most commonly used descriptors such as active, happy, and timid/shy; mothers in China used cautious, sociable, and intro/extraverted; and parents in Egypt used sociable, sensitive, and easygoing/agreeable. From the analyses we expect themes to emerge illustrating parents' culturally informed perceptions of their children's temperament characteristics.

**S.5.2. Exploring the Role of Culture in the Development of Gender Differences in Temperament across Infancy and Childhood in 59 Countries,** *Samuel Putnam* and members of the Global Temperament Proj*ect

Gender differences in temperament have been widely investigated in previous research (e.g., Else-Quest et al., 2006). Similarly, cross-cultural differences in temperament have been frequently documented (e.g., Putnam & Gartstein, 2017). Research regarding culture as a moderator of gender on temperament is more scarce and limited in scope, typically involving samples from few countries and a single age. The current study, in contrast, explores gender differences in infants, toddlers and children using the Global Temperament Project dataset comprising parent ratings from 59 nations. Temperament was measured using Very Short Form scores from the Infant Behavior Questionnaire-Revised (IBQ-R), Early Childhood Behavior Questionnaire (ECBQ), and Children's Behavior Questionnaire (CBQ). Consistent with previous studies, ANOVA main effects for gender indicated that males were rated higher in Surgency at all ages; females were rated higher in Regulatory Capacity/Effortful Control in toddlerhood and childhood; and females were higher in Negative Affectivity only during childhood. Effect sizes for gender were larger for older children than for infants and toddlers, and far more pronounced for Regulatory Capacity/Effortful Control than other dimensions during childhood. Culture * gender interactions were significant for Surgency and Regulatory Capacity/Effortful Control in infants and for all three dimensions in childhood. In infancy, a number of countries demonstrated significant differences in the commonly-obtained direction, but higher Surgency and lower Regulatory Capacity among females was apparent in one country for each dimension. For CBQ scales, the majority of countries demonstrated typical gender patterns for all three dimensions, but differed strongly in the magnitude of these differences. Relative consistency in the direction of effects across countries and age ranges may reflect common biological forces playing out in youth around the world and/or a degree of worldwide consistency in parental expectations and bias in ratings. In contrast, increases in the size of gender effects over the first several years of life, particularly for Effortful Control, may suggest environmental effects involving differential treatment of boys and girls. Furthermore, inconsistency between countries in the size of gender differences suggests the compounding power of cultural expectations as children develop over childhood, increasingly perceiving and actualizing gender roles inherent to their societies.

**S.5.3. The Association between Environmental Stress and Pubertal Development in Nine Countries: The Moderating Role of Effortful Control,** *Christina Bertrand*, Ann Folker*, Kirby Deater-Deckard, Jennifer Lansford*

Life-history theory and r/K-selection theory posit that one's environment drives individuals towards either earlier pubertal maturation/faster life history strategies (more offspring), less parental investment, and earlier mortality (r-selection strategy), or toward later pubertal maturation/slower life history strategies (fewer offspring), more parental investment, and later mortality (K-selection) (Charles & Egan, 2005). Research based in life-history theory has found that under conditions of unpredictability, immediate reward is an adaptive approach that supports faster life history strategies, including earlier pubertal timing (Ellis et al., 2012; MacDonald, 1997). Prior research has identified effortful control (EC) as a protective factor in the development of externalizing and internalizing problems under conditions of stress (Gulley et al., 2016; Lengua, 2008). However, no prior work has examined the role of EC in the association between stress and pubertal development. Thus, the present study examined the interaction between stress (i.e., environmental harshness and unpredictability) and adolescent EC in predicting pubertal timing and tempo. Participants are approximately 1,325 adolescents (50.3% female) from nine countries (China, N = 123; Colombia, N = 108; Italy, N = 213; Jordan, N = 114; Kenya, N = 100; Philippines, N = 120; Sweden, N = 129; Thailand, N = 120; United States, N = 318) from the ongoing, longitudinal Parenting Across Cultures (PAC) study. Pubertal status was measured with the Pubertal Development Scale (PDS; Petersen, 1988) at ages 10, 12, 13, 14, 15, and 16. Effortful control (EC) was assessed via the Early Adolescent Temperament Questionnaire (Revised) (EATQ-R; Capaldi & Rothbart, 1992) parent-report at age 13. Negative life events, unsafe neighborhood environment, family chaos, and family income change were used as indicators in a latent environmental harshness and unpredictability variable at age 10. We plan to utilize structural equation modeling to test the association between environmental harshness/unpredictability and pubertal timing and tempo, and whether effortful control moderates this association. We expect that 1) higher levels of environmental harshness/unpredictability will predict earlier pubertal timing and faster tempo, and 2) higher effortful control will weaken this association. We will explore whether this association differs between females and males. Theoretical and practical implications will be discussed.

**S.5.4. A Multilevel Analysis of the Relationship Between Temperament and Behavior Problems in Children of Different Cultures,** *Allegra X. Campagna, Eric D. Desmarais, Brian French, Joshua J. Underwood*, Magen Lowe, Mirjana Majdandžić, Roseriet Beijers, Carolina de Weerth, Eun Gyoung Lee, Blanca Huitron, Emine Ahmetoglu, Oana Benga, Katri Raikkonen, Kati Heinonen, Carmen Gonzalez-Salinas, Helena Slobodskaya, Elena Kozlova, Maria Beatriz Martins Linhares, felipe Lecannelier, Sara Casalin, Ibrahim Acar, Soile Tuovinen, Zhengyan Wang, Rosario Montirosso, Lorenzo Giusti, Seong-Yeon Park, Sae-Young Han, Samuel Putnam, Maria A. Gartstein*

Early temperament attributes have been linked to emerging behavior problems and significant long-term consequences; however, these relations are rarely examined cross-culturally. The present study addresses this gap, employing multilevel modeling to explain within- and between- culture variance with respect to temperament predicting a spectrum of behavior problems across 14 nations from the Joint Effort Toddler Temperament Consortium (JETTC). A total of 865 children between 17-40 months, with approximately equal age distribution across this developmental period and about equivalent representation of genders, were recruited from 14 nations. The JETTC sites recruited an average of 61 families, with samples from individual countries ranging from 49 (Chile) to 112 (the Netherlands) for a total sample of N = 865. Children were between 17 and 40 months of age (M = 26.88 months, SD = 5.65 months), with an approximately equal distribution of ages across this developmental period and about an equivalent representation of genders (52% male). All samples are considered representative of the communities in which recruitment took place; however, these are not necessarily reflective of the entire nation/culture taking part in JETTC. Overall, families in this study represent a range of occupations, primarily reflecting middle socioeconomic status (Revised Duncan Sociometric Index, RDSI) (Stevens & Featherman, 1981). Analyses were conducted in STATA® version 14. Data were analyzed using a linear multilevel modeling approach. Child age and gender were included as covariates in all models to enhance the generalizability of findings to existing cross-cultural temperament studies. Models were constructed in three phases for each CBCL behavior problem variable (i.e., three broad-band factors and five narrow dimensions) included in the present study. Greater Negative Emotionality was associated with more Internalizing problems, whereas higher Surgency and Effortful Control predicted fewer Internalizing difficulties. Additionally, higher Negative Emotionality and lower Effortful Control predicted more significant sleep problems in toddlerhood. Controlling for age and gender, temperament explained significant within- and between- culture variance in Internalizing and Externalizing Problems (at the broad-band and fine-grained level), as well as Sleep Problems. Thus, temperament accounted for variability in behavior problems among those sharing the same culture and between cultures, explaining cross-cultural differences in emerging symptoms, especially in internalizing difficulties. For internalizing difficulties, temperament accounted for more between-culture variance. Thus, temperament explained how children from different cultures varied in internalizing difficulties. In contrast, for externalizing difficulties, temperament accounted more for how individuals within the same culture differed from their same-culture counterparts.

**S.5.5. Shyness and Social, School, and Psychological Adjustment in Rural Chinese Children at Different Historical Times,** *Dan Li*, Jing Hui, Junsheng Liu, Min Wu, Xinyin Chen*

Shyness refers to vigilant, wary, and anxious reactivity in challenging social settings. As one of the major personal characteristics, shyness has pervasive implications for social, cognitive, and psychological functioning (Rubin et al., 2009). Despite its biological foundation and dispositional nature, research has shown that the development of shyness occurs in social and cultural contexts (Chen, 2019). Social and cultural beliefs and values may not only serve to constrain the display of shy behavior, but also shape its functional meaning or significance in adjustment. For example, it was found that shyness was associated with social and psychological problems, such as social isolation, victimization, academic difficulties, loneliness, and depression in North American children, but peer acceptance, leadership status, school competence and positive self-perceptions and feelings (Chen et al., 1992, 1995). Due to the rapid social change, shyness has been found to be associated with increased adjustment problems in urban regions of China since the beginning of this century (e.g., Chen et al., 2005; Liu et al., 2015). Although falling behind urban regions in social and economic development, rural regions of China have also been undergoing massive changes in recent years. The purpose of the present study was to examine relations between shyness and social, school, and psychological in rural Chinese children in two historical cohorts (2012 and 2022). Two cohorts of third grade students in rural regions in Southeast China participated in the study. The 2012 consisted of 1012 children (513 boys, *M*age = 9.50 years, *SD* = 0.72), and the 2022 cohort consisted of 710 children (408 boys, *Mage* = 9.14 years，*SD* = 1.47). The students in the representative samples were from regular public elementary schools in the regions. Shyness was assessed using a peer nomination measure. Data on peer preference, peer victimization, and prosocial behavior were also collected from peer nominations. Teachers rated the students on school competence and academic performance. In addition, children completed self-report measures of loneliness and depression. Cross-cohort differences in the relations between shyness and adjustment variables were examined through the multigroup invariance test using Mplus Version 8 (Muthén & Muthén, 1998-2012). The results concerning the cross-cohort differences and the effects of the relations in each cohort are presented in Table 1. The results indicated significant cross-cohort differences on all the adjustment variables except victimization. In general, shyness was negatively associated with social and school competence and positively associated with psychological problems more strongly in 2022 cohort than in 2012 cohort. Moreover, shyness was positively associated with prosocial behavior in 2012 cohort; the associated was not significant in 2022 cohort. The results will be discussed in terms of specific context related to social change in rural regions of China.

**S.5.6. Culturally Adapting A Temperament-Based Intervention,** *Sandee McClowry*, Sandra Gagnon, Elizabeth Harvey, Angela Hinrichs*

INSIGHTS into Children's Temperament (INSIGHTS), is an evidence-based intervention for educators, parents, and young children that has been conducted in several diverse communities. INSIGHTS was developed and its efficacy was initially tested in low-income public schools in New York City. The intervention was subsequently adapted and evaluated in Jamaica, rural Nebraska, Appalachia, and Nova Scotia. This presentation will explore the inevitable tensions that occur between maintaining fidelity to an evidence-based intervention and being responsive to cultural differences when an intervention is transported into a new community. Partnerships with the various settings in which INSIGHTS has been conducted have identified differences in caregiving attitudes and strategies related to cultural differences. For example, praising children is recommended in parenting programs that were developed for Caucasian families. Many parents in the urban school, however, objected to the term, "praise" and found it culturally insensitive. Instead, they said "praise" was reserved for God and was disrespectful when applied to the caregiving of children. Other parents in the community found the concept appropriate. Cultural experts were consulted and focus groups were conducted with community stakeholders to identify terms that everyone could agree upon. After much discussion, consensus was reached. Rather than using the word "praise," the stakeholders agreed that "acknowledgement" or "recognition" were more culturally appropriate. More complicated challenges occurred when adapting INSIGHTS for communities that speak other languages. A word-for-word translation of the program materials was regarded as woefully inadequate. Instead, program materials were carefully evaluated so that they better reflected the community. For example, inclusivity is an important caregiving value in Nova Scotia. Consequently, the names and descriptions of the puppets, graphics, and well as other curriculum materials were examined and modified to reflect this value. Other examples of cultural incongruities will be described in addition to the research strategies that were conducted to resolve the discrepancies. Then a conceptual framework with multiple iterative steps, will be offered as guidance for culturally adapting evidence-based programs while still maintaining fidelity to the intervention.

**S.6.1. Towards a better assessment of childhood traits: Evaluating joint structures and network patterns of temperament and personality,** *Margot Dewitte* and Dr Sarah De Pauw**

Trait diversity in children and adolescents is measured by a wide array of temperament or personality instruments. To date, however, very few studies empirically compare co-existing trait measures. This lack of studies hinders conceptual integration and the understanding of the basic architecture underlying childhood traits. The limited evidence on empirical links between temperament and personality traits now suggests that both systems are indeed "more alike than different" (Caspi et al., 2005, p. 454), but that they are less redundant than expected on the basis of the semantic similarities of scale labels. Also, simple narrative or hierarchical mappings fail to capture the complexity of trait relations. Other approaches are needed to identify alternative mechanisms that underlie systematic patterns of trait convergence. In this study, we explore temperament-personality relations across different developmental periods (early, middle, and late childhood) using joint principal component analyses as well as network analyses. Network analyses provides a method to understand complex psychological phenomena by analyzing individual behaviours and their connections, rather than focusing on overarching constructs. It enables researchers to uncover associations between behaviours without an a priori commitment to a particular generating model (such as Big 3, little 5- or little 6-latent variable models) and may serve to identify alternative mechanisms that lead to correlation patterns (Borsboom, 2021).We sampled children in three age groups, labeled as 'early' (1.5 to 3 years, N=344), 'middle' (4 to 7 years, N=830) and 'late'(8 to 14 years, N= 587) childhood. In each age group, parents provided ratings for their child on traits on age-adequate instruments from the psychobiological (Rothbart & Goldsmith), criterial (Buss & Plomin) and Five-factor personality traditions (HiPIC). In each age group, joint principal component analyses reveal six dimensions, with content resembling a 'little 6' configuration (Soto & John, 2015). We labeled these dimensions as Open-mindedness, Disagreeableness, Negative Affect/Emotional Volatility, Shyness/Sociability, Activity/Energy, and Conscientiousness/Effortful Control. In each age group, network analyses revealed complex yet blended structures of both temperament and personality facets, supporting the notion that temperament and personality are clearly related, complementary "languages" of trait differences. The network clusters shed light on how much unique and shared "vocabulary" these trait languages have in describing behavioral individuality across developmental age groups. Results add to a more comprehensive, nuanced taxonomy describing how the various temperament and personality traits can be integrated.

**S.6.2. The Temperament Metadimensions Model: Basic dimensions underlying the richness of temperamental constructs ,** *Klaudia Ponikiewska*, Włodzimierz Strus, Jan Cieciuch*

Contemporary temperament psychology abounds in well-established theories, which undoubtedly determines its richness. Nevertheless, this coexistence of many models—postulating various catalogs of constructs—also generates some difficulties, such as determining the number and the meaning of basic temperament dimensions. Such settlements are additionally impeded at the empirical level, as the boundary between temperament (concerning most stable, formal characteristics of behavior) and other (i.e., characterological, content-related) personality attributes is blurred in the detailed operationalization of many temperamental constructs. These in turn seem to raise a fundamental problem of knowledge integration and further development of the field. On the other hand, hope for such synthesis was recently provided by the so-called temperamental Big Two, identified both at the empirical and theoretical levels. Thus, we propose the Temperament Metadimensions Model (TMM), which was built on the basis of (1) the temperamental Big Two, as well as (2) the key assumptions of Strelau's Regulatory Theory of Temperament, and (3) the Circumplex of Personality Metatraits (CPM). As a result, the TMM comprehensively and coherently captures temperament as a formal characteristic of behavior, postulating two basic, orthogonal, and bipolar dimensions—Reactivity and Activity—which poles are constituted by two purely formal aspects (energetic and temporal) and one auto-regulatory aspect (a kind of bridge between temperamental and non-temperamental personality traits). Consequently, the TMM consists of four temperament traits (positive and negative poles of Reactivity and Activity) and a total of 12 traits–aspects (energetic, temporal, and auto-regulatory within each trait–pole). In Reactivity, these aspects are: Susceptibility vs. Resistance, Perseveration vs. Resilience and Anxiousness vs. Good-temper, while in Activity: Briskness vs. Steadiness, Lability vs. Permanence and Sensation seeking vs. Rhythmicity. Importantly, the TMM was precisely embedded in the model of overall personality structure—it constitutes the foundation on which other, more characterological traits (e.g., self-regulatory or social-emotional competencies) are formed under the influence of the environment. Such a coherent frame of personality structure addresses the problem of blurred lines between temperament and personality (or character), as well as opens a valuable perspective for new considerations on the personality development dynamics. During the talk, the TMM will be presented, along with its theoretical justification and empirical verification—supporting its: (1) internal structure, (2) relationships with the temperamental Big Two and constructs from other temperament theories, (3) location within the CPM, and (4) predictive potential. The integrative possibilities of the TMM will be discussed.

**S.6.3. The Integrative Late Childhood Temperament Inventory: A New Multi-Informant Measure to Assess the Base Dimensions of Temperament in School-Aged Children** , *Vivienne Biedermann*, Marcel Zentner*

The temperament of a child has a strong influence on outcomes later in life, like adult personality, scholastic and occupational achievement, relationships, and psychopathology. Therefore, it is important to have reliable measures that assess temperament broadly during childhood. One of these measures is the Integrative Child Temperament Inventory (ICTI). The term integrative refers to the choice of five temperament dimensions (Anger/Frustration, Behavioral Inhibition, Attention/ Persistence, Activity Level and Sensory Sensitivity) that are included in most temperament theories. So far, the ICTI is only available for children between two and eight years of age. To address this limitation, the aim of the current study was to develop a late childhood version of the ICTI. Furthermore, our aim was to investigate the interrater agreement between parents, teachers, and children as well as factors related to it. Therefore, we conducted two consecutive studies. In the first study, 525 German- or English-speaking parents rated their children (8-14 years) in an online survey on the Integrative Late Childhood Temperament Inventory (ILCTI) and other personality and behavior questionnaires. The items of the ILCTI were derived from a pilot study in advance. In addition to the previous scales, we also added items to assess the new scale Affiliation. Results of exploratory and confirmatory factor analyses supported the structure of the model. The final ILCTI consists of 24 items and the model fit indices were all in the recommended range. Furthermore, internal consistencies, retest reliability, construct, and criterion validity of all six scales were satisfying. For the second study, we collected self- and teacher ratings on the ILCTI of 111 children (9-14 years) from two schools. The parents also rated the children and provided information about behavioral and emotional problems and their parenting. The interrater agreement on the ILCTI was moderate to high. Interestingly, parenting was related to the amount of discrepancy between the parent and child ratings. Furthermore, a higher discrepancy between the parent and teacher ratings was related to behavioral and emotional problems of the child. This study is one of the first to emphasize potential reasons and consequences of discrepancies in the perception of a child's temperament. Furthermore, it demonstrated that the ILCTI is a quick and effective measure for late childhood temperament and is suitable for different raters.

S.6.4. Temperament as the Foundation of an Emerging Value System: A Disposition-to-Position Theory of Personality development, *Ariel Knafo-Noam, Lior Abramson, Dana Katsoty, Tamar Machlev*

Human values (desirable, abstract goals, guiding principles for behavior, Schwartz, 1992) are important for social and moral behaviors and decisions such as help, aggression, and risk-taking. Despite their importance, we know surprisingly little about where values come from. We propose that temperamental differences provide an important foundation for the development of later values. While personality and temperament describe behavior, values relate to the motivation behind behavior. Despite their differences, personality and temperament traits correlate systematically with values ((Bisht & Sharma, 2013, Fischer & Boer, 2015, Jones & Morris, 1956). A single pertinent study found that most (contd.) of the significant phenotypic correlations between adults' values and personality traits reflected genetic correlations (Schermer et al., 2011b). The fact that temperament differences emerge before the development of values, suggest a potential causal role of temperament in value development. According to our Disposition to Position theory of value development, the foundation for value development lies in temperamental differences, starting in infancy and early childhood, before a value system can develop. Through development, and adapting to life events and socialization factors, these early dispositions are turned from habitual behaviors into values, the motivational and moral positions that individuals have. Once formed, these values, previously formed from behavioral dispositions, become guides to future behaviors. As preliminary evidence, we sought to longitudinally predict 8-9-year-olds' self-reported values from age 3 mother-rated temperament (N=639), using a statistical learning algorithm (Ridge regression). Despite the passage of time, all 10 values described by Schwartz (1992) were significantly predicted by early temperament assessed in the Emotionality-Activity-Sociability system (Buss & Plomin, 1984). As Schwartz theorized, stimulation values were most strongly predicted by temperament, with the age-3 temperament-based predictor correlating r=.22 with the actual age 8-9 value (p<.0001). The weakest correlation was found for achievement, r=.09 (p=0.025). Importantly, temperament predicted values even while controlling for child gender, parent education, and family religiosity. To combine temperament effects on all values, we computed overall within-child profile correlations across the 10 values between the child's values and the value profile that would be predicted based on temperament. Profile correlations averaged r=.55, SD=.32, much higher than found with the values generated by the temperament of a randomly selected child (across permutations, average r=.09, SD=.35, t=24.41, p<.000001, D=1.38). Thus, results provide evidence for the Disposition to Position theory by showing that children's early temperament substantially predict their later values, as part of personality development.

# Conference abstracts

**S.6.5. What I Tend to Do and What I Am Capable of Doing: Temperament, Personality Traits, and Social, Emotional, and Behavioral Skills,** *Christopher J. Soto*, Christopher M. Napolitano, Madison N. Sewell, Hee Jun Yoon, Brent W. Roberts*

Temperament and personality have traditionally been conceptualized and measured in terms of traits, which represent how an individual tends to think, feel, and behave averaged across situations. However, there is growing interest among researchers, practitioners, and policy makers in social, emotional, and behavioral (SEB) skills, which represent how an individual is capable of thinking, feeling, and behaving when needed. In this talk, I will present research that explores similarities and differences between temperament, personality traits, and SEB skills. First, I will discuss conceptual and empirical evidence regarding these characteristics' multidimensional structure. Studies analyzing parent-reports and youths' self-reports indicate that, by middle childhood, both traits and skills can be organized in terms of five or six broad domains: Surgency/Extraversion/Social Engagement, Negative Affectivity/Neuroticism vs. Emotional Resilience, Effortful Control/Conscientiousness/Self-Management, Affiliation/Agreeableness/Cooperation, and Openness to Experience/Innovation, plus Activity Level as a sixth prominent dimension of youth temperament. Second, I will discuss evidence highlighting the importance of traits and skills for youths' outcomes. Findings from cross-sectional and longitudinal studies confirm that both traits and skills matter for consequential outcomes such as school grades, academic engagement, standardized test performance, occupational interests, peer acceptance, friendship and parental relationship quality, civic engagement, physical exercise, life satisfaction, and mental health. These studies' findings indicate that traits and skills converge strongly with each other, and can be used interchangeably to predict some outcomes. However, they also reveal that traits and skills can sometimes provide unique information and incremental validity. For instance, findings from one recent study suggest that youths with high skill levels—relative to their corresponding trait levels—can regulate their behavior when needed, leading to more positive outcomes. Third and finally, I will consider some open questions regarding the lifespan development of traits and skills. For example, do traits and skills follow similar or distinct developmental trajectories? Are skills more or less amenable than traits to interventions and volitional change? Do such changes in youths' traits and skills result in more positive life outcomes? Such questions highlight important opportunities for developmental and personality psychologists to advance our understanding of temperament, personality, and SEB skills.

**S.6.6. Is there a bidirectional association between child screen time and the development of temperamental traits?** *Caroline Fitzpatrick*, Emma Cristini, Marie-Andrée Binet, Angélique Laurent, Gabrielle Garon-Carrier, Elizabeth Harvey*

Research indicates that early childhood screen time is associated with poor developmental outcomes including emotional and behavioral dysregulation. Research also indicates that children who have more difficulty regulating negative emotions like anger and frustration, tend to be exposed to more screen media by parents. Furthermore, children with lower levels of temperamental effortful control may engage in more screen time because most screen-based programs and activities place minimal demands on sustained attention. This raises questions about the possible direction of this association. For this reason, the purpose of the proposed presentation is to examine the extent to which preschooler screen time contributes to temperamental anger/frustration and effortful control, while simultaneously considering whether anger/frustration and effortful control contribute to child screen time. Data are from a sample 296 preschoolers from Nova Scotia, Canada studied at two time points longitudinally during the Covid-19 pandemic. Study measures were collected entirely remotely in the Spring/summer of 2021 and 2022 and include parent reported child hours/day of screen time (TV/DVDs, computers, video games consoles, tablets, and smartphones) and child temperamental anger/frustration and effortful control (Children's Behavior Questionnaire-Short Form) measured at 3.5 and 4.5 years. Control variables include child sex, parent income education, stress, and satisfaction with the conjugal division of childcare, and Covid-related daycare closures. A first cross-lagged panel analysis revealed that child screen time at 3.5 significantly contributed to increased anger/frustration scores at the of age 4.5 (ß=.14) whereas anger/frustration at age 3.5 did not contribute to screen time at age 4.5. In addition, child screen time at age 3.5 forecasted lower levels of effortful control at age 4.5 (ß=-.10) whereas effortful control at age 3.5 did not predict screen time at age 4.5. Our results suggest small significant associations between child screen time and the ability to regulate negative emotions, attention and goal-directed behavior, key determinants of social and academic competence. These results further add to the literature suggesting that limiting screen time may benefit the development of children.

# Conference abstracts

**S.7.1. Temperamental Triggers and Parenting Practices: Longitudinal Associations with Early Childhood Externalizing Behaviors** *Jennifer J. Phillips*, Briana Ermanni, Martha Ann Bell*

Externalizing behaviors (EBs) arise during early childhood and can lead to maladaptive developmental outcomes (Burt et al., 2001). Research has suggested that child temperament traits and maternal parenting behaviors can either promote or protect against the development of externalizing behavior problems during childhood (Gartstein et al., 2012; Yan et al., 2019). Existing research, however, demonstrates that there are levels of specific infant temperament traits, like surgency (SUR) and negative affectivity (NA), that are adaptive in certain contexts and maladaptive in others (Mathieson & Banerjee, 2010; Tackett et al., 2013). These contexts may include the presence of positive and negative maternal behaviors (Karreman et al., 2010; White et al., 2011). Thus, the aim of our study was to examine the interactive associations between infant temperament and maternal parenting behaviors during infancy in predicting early childhood externalizing behaviors. Mother-child dyads (n = 304) visited the lab when children were 10- and 36-months old. Mothers reported on infant NA and SUR when children were 10-months-old using the Infant Behavior Questionnaire- Revised (IBQ-R; Gartstein & Rothbart, 2003). Maternal positive affect (mPA) and intrusiveness (mINT) were also assessed when children were 10-months-old via behavioral coding during dyad interaction tasks. Child EBs were collected via maternal report at 36-months using the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001). Hierarchical linear regression was used to examine how infant temperament interacted with maternal behaviors to predict EBs. In Step 1, we controlled for child sex and maternal education, in Step 2, we included SUR and NA, in Step 3, we included mINT and mPA, and in Step 4 we included interactions between the infant temperament and maternal behavior variables. Step 4 of our model was significant [$F(4,293) = 3.59$, $R2 = .12$, $\Delta R2 = .04$, $p = .007$). Specifically, NA directly predicted EBs ($B = 0.15$, $p = .010$) and SUR interacted with mPA ($B = -.015$, $p = .008$). We probed this interaction using PROCESS and demonstrated that mPA moderated the association between SUR and EBs [e.g., high SUR predicted more EBs when mPA was low ($B = 2.41$, $p = .02$) and fewer EBs when mPA was high ($B = -2.54$, $p = .02$). These results suggest that early behavioral problems have their foundations in infant temperament and that a contextual argument can be made when it comes to how surgency plays a role in the development of EBs.

**S.7.2. Twins' Temperament Differences and their Relationship Development ,** *Ariel Knafo-Noam* and Hila Segal**

As a system encompassing stable tendencies for affect and regulation, temperament is relevant to interpersonal behavior. Temperament may not only be relevant to how individuals behave, but also to how others treat them and to interpersonal relationships. Specifically, temperamental similarity may be associated with a better relationship between interacting partners. This study examines the hypothesis that temperamental (dis)similarity is associated with relationship quality in a unique setting, that of twin dyads. This notion could account for previous findings that point to the special relationship between monozygotic twins (sharing close to 100% of their genes). In a longitudinal study that followed 322 monozygotic twins and 1199 dizygotic twins (who on average, share 50% of their segregating genes) throughout childhood, mothers (N=1547) and fathers (N=536) reported on their twins' relationships on at least one of four measurement points when the twins were between 3 and 8-9 years of age. Mothers also reported on the twins' temperament. Negative associations were found between twins' closeness and their temperament difference throughout childhood, while positive associations were found between twins' conflict and their temperament difference in late childhood. Latent growth modeling for mothers' reports indicated that the initial levels of the twins' temperament differences were moderately and negatively associated with the initial levels of their closeness. This finding was repeatedly found for three of the temperament dimensions: sociability, shyness, and activity differences between the twins. In addition, while zygosity was found to be related to both to temperament differences and to the twins' closeness, the association between temperament differences and the twins' closeness was evident regardless of genetic similarity. Our findings indicated that overall differences in the twins' temperament were mostly unrelated to twin conflict. However, twins that presented higher initial differences in their sociability and negative emotionality also exhibited more conflict at an early age. Moreover, twins whose negative emotionality deviated from one another (across childhood) also displayed relationships that started and evolved as more conflictual, and vice versa. Zygosity didn't have a significant effect on the twins' conflict, suggesting that the association between sociability and negative emotionality differences and conflict, cannot be solely attributed to genetic similarity. Our findings support the hypothesis that temperament similarities can contribute to positive relationships from early childhood, and vice versa, beyond the effect of genetic similarity. As a follow up investigation, we tested whether the effect of temperament similarity extended to twins' self-reported relationship in adolescence.

**S.7.3. Effects of Infant Negative Emotionality on Maternal Well-Being: Moderated by Childhood Expériences**, *Savannah A. Girod*, Esther M. Leerkes, Cheryl Buehler, Laurie Wideman, Lenka H. Shriver*

Mothers' perceptions of infant negative emotionality are related to increased feelings of anxiety, depressive symptoms, and parenting stress across infancy (Britton, 2011; Crockenberg & Leerkes, 2003), particularly in the context of other risk factors and the absence of buffers (Crockenberg & Leerkes, 2003). Mothers who experienced warm and responsive parenting and limited adversity in childhood might be protected from negative effects of infant negative emotionality because of greater feelings of self-efficacy during challenging situations with infants. We examined if (a) perceived infant negative emotionality was concurrently associated with higher maternal depressive symptoms, anxiety, and role overload at 2 months, and (b) positive parenting in childhood and adverse childhood experiences (ACEs) moderate these associations. Participants were 299 mothers (47.5% Non-White) and their 2-month-old infants (48.8% male). During their third trimester, women reported demographics, depressive symptoms, anxiety, positive parenting in childhood, and ACEs. When infants were 2 months old, mothers reported on their infant's negative emotionality using the IBQ-R and their own depressive symptoms, anxiety, and role overload. Hierarchical regressions were run in Mplus; missing data were handled using full information maximum likelihood estimations. Maternal age, education, race, income-to-needs, prenatal depressive symptoms and trait anxiety, and infant gestational age and age at 2-month visit were covariates. Higher mother-reported infant negative emotionality was positively associated with feelings of role overload (β= .16, p =.01), and this effect was not moderated by positive parenting or ACEs. Higher remembered positive parenting in childhood was associated with lower depressive symptoms (β= -.20, p =.02) and anxiety (β= -.16, p =.048) and moderated the effect of infant negative emotionality on depressive symptoms (β= -.20, p =.01) and anxiety (β= -.18, p =.02). Infant negative emotionality was only associated with heightened maternal depressive symptoms (β= .25, p =.01) and anxiety (β = .30, p <.01) when mothers recalled lower levels of positive parenting in childhood. There were no significant main nor interactive effects of ACEs on maternal well-being. Results demonstrate different patterns of temperament effects across domains of well-being. Specifically, mothers who perceive their infants as higher in negative emotionality experience higher levels of role overload regardless of childhood experiences, consistent with the view that parenting a temperamentally reactive infant is challenging/stressful. However, this added challenge only correlated with heightened depressive symptoms and anxiety among mothers who experienced lower levels of positive parenting in their childhood underscoring the legacy of positive childhood experiences for peripartum mental health.

**S.7.4. Reciprocal Associations between Child Temperamental Inhibitory Control and Mother-Child Dyadic Interaction as Predictors of Child Externalizing Behaviors,** *Lin Tan*, Meredith G. Atanasio, & Cynthia L. Smith*

Children's temperamental inhibitory control and mother-child interactions have been widely established as predictors of child externalizing behaviors. Following from the goodness-of-fit model, mother-child dyadic interaction that is high in cooperation and low in conflict may be less evident when children have higher temperamental inhibitory control, which relate to later externalizing behaviors. We hypothesized that higher inhibitory control would predict lower mother-child dyadic conflict and higher mother-child cooperation, and reciprocally, lower conflict and higher cooperation would predict higher inhibitory control. We examined longitudinal, reciprocal associations at three time periods across early childhood as well as examining how they predicted later externalizing behaviors. Participants were 140 mother-child dyads (72 boys, mean age=2.67 years, primarily White). Mothers reported on children's inhibitory control during toddlerhood (T1), preschool (T2), and school-age (T3). At all three time points, mother-child dyadic interaction, specifically cooperation and conflict, were observed and rated globally on a 7-point scale during difficult tasks where mothers were asked to teach their children how to complete the task. Teachers reported on children's externalizing behavior at T3. A cross-lagged panel model, $\chi2(15)=27.71$, $p=0.02$, RMSEA=0.08, CFI=.91, SRMR=0.06, was used to examine longitudinal reciprocal relations among children's inhibitory control, mother-child cooperation, and mother-child conflict and how these variables were related to child externalizing behavior at T3. Higher conflict at T1 predicted lower cooperation at T2, $\beta=-0.21$, $p=0.02$, which subsequently predicted lower inhibitory control at T3, $\beta=-0.17$, $p=0.04$. Furthermore, higher inhibitory control at T1 predicted lower conflict at T2, $\beta=-0.23$, $p=0.01$. Both lower inhibitory control at T3, $\beta=-0.19$, $p=0.03$, and higher conflict at T3, $\beta=0.34$, $p<0.001$, were associated with higher externalizing behavior at T3. Findings suggest that early mother-child conflict during toddlerhood indirectly predicted children's inhibitory control during their early-school years through mother-child cooperation during the preschool years. Additionally, early inhibitory control during toddlerhood predicted mother-child conflict during the preschool years. Both mother-child conflict and inhibitory control in the school-age years were independently associated with externalizing behaviors. These findings suggest reciprocal relations between child temperament and the quality of mother-child dyadic interactions over early childhood. As predicted by goodness-of-fit, both play important roles in children's externalizing behaviors. Consequently, parents and practitioners should consider the reduction of early dyadic conflict between parents and children, especially when working as a dyad on a difficult task. More support may be needed for children with lower inhibitory control, who may be more susceptible to experiencing heightened mother-child conflict in the future.

# Conference abstracts

**S.7.5. It's not how much you say, it's how you say it: Relations between children's shyness and use of affiliative language when getting to know a new peer,** *Sarah D. English*, Linda Sosa-Hernandez, Kristie L. Poole, Heather A. Henderson*

In early adolescence, children increasingly rely on verbal communication (vs. play) to support their social interactions. Despite being quiet, not all shy children struggle to form high-quality friendships. To signal one's desire to connect, individuals use affiliative language by sharing information about themselves, seeking information about their partners, and using affirmations to show active listening (Leaper & Smith, 2004). The use of affiliative language may be particularly adaptive for shy children who are generally reticent in novel social settings. Data will be presented from 186 children (93 dyads; 106 females; Mage = 11.50, SD = 0.83) who were observed during a 5-minute unstructured interaction with an unfamiliar, age- and gender-matched peer on Zoom where they were simply asked to "get to know each other" (Usher et al., 2018). Children and their parents reported on the child's shyness using the Child Shyness Questionnaire (CSQ; Crozier, 1995) and the Early Adolescent Temperament Questionnaire-Revised (EATQ-R; Ellis & Rothbart, 2001), respectively. To assess affiliative language, children's conversations were transcribed and analyzed using dictionary-based text analysis software (Pennebaker et al., 2015). Specifically, we coded total word count and the percentages of children's (a) self-focused language (e.g., "I play…"), (b) other-focused language (e.g., "Do you like…"), and (c) affirmations (e.g., "Cool!"). These categories were combined to index total affiliative language use. Preliminary analyses based on the first 65 dyads showed that both parent- and child-reported shyness were negatively associated with total word count (p's < .001), yet positively correlated with total affiliative language use (p's < .014). Specifically, parent-reported shyness was positively associated with self-focused affiliative language (p = .039), and child-reported shyness was positively associated with affirmations (p = .022). Within dyads, children's total affiliative language use was positively correlated (p = .031). Upon completion of coding, Actor-Partner Interdependence Models will be used to examine effects at the dyadic level (Cook & Kenny, 2005). These findings demonstrate that while shy children tend to talk less than their peers, the content of their speech subtly signals their affiliative motivations during novel social interactions. Importantly, shy children may use affiliative language as a strategy to maximize the likelihood of a successful interaction. Dyadic analyses will be conducted to explore the impact of shyness on children's own, and their social partner's, use of affiliative language and the impact on the overall quality of the interaction.

**S.7.6. Homeschoolers' social and emotional expériences,** *Carlos Valiente*, Brian Ray, Tracy Spinrad, Nancy Eisenberg*

Homeschooling, parent-directed education that largely takes place in the home, became increasingly popular during COVID-19. This form of education, however, is not new. In fact, it has been fairly widespread in the USA and internationally for decades. Further, approximately 2 million children were homeschooled prior to the pandemic. The increased focus on homeschooling, its growth, and calls to largely ban homeschooling in the USA (and elsewhere) create a context in which it is particularly necessary to understand the implications of this form of education. One of the concerns most commonly expressed by critics can be summarized by the following 3 words, "What about socialization?" In particular, there is concern that homeschoolers will have difficulty learning how to appropriately experience, express, and regulate emotion given potentially limited interactions with adults and peers outside the family. The first goal of this paper is to succinctly summarize published work on this topic. The second goal is to present new data that highlights socialization opportunities experienced by many homeschoolers. A special emphasis will be placed on how homeschoolers' temperament (especially emotion and its regulation) can help to shape the homeschooling environment. Third, time will be devoted to outlining key ways to advance research on this topic.

# Poster abstracts

**001— Temperament Predictors of Overweight in Early Childhood,** *John Worobey**

Previous studies have identified numerous risk factors to be associated with early obesity, among them high birth weight and energy intake, low energy expenditure, high maternal body mass index, rapid early infant growth, short duration of sleep, and overly controlling feeding styles. Surprisingly, relatively few efforts have been made to associate temperament traits with early weight gain. The aim of the present study was to examine a variety of factors as predictors of toddler overweight. Ninety-one mothers were observed feeding their infants at 12-months, with infants weighed and measured again at 24- and 36-months. With respect to temperament, motor activity and difficultness were also assessed, along with sleep duration. Regression analysis revealed infant birth weight, weight gain from 3–6 months, and difficultness scores as positively predictive of BMI-for-age at 24-months, with sleep duration showing a negative association. Using the same variables to predict BMI-for-age at 36-months, infant birth weight, difficultness score, and sleep duration were again significant and in the same direction. However, negative associations now emerged for maternal sensitivity during feeding and infant activity counts. In sum, nearly all the factors showed some associations with higher BMI percentiles, suggesting that multiple factors are at work in promoting early excess weight gain in the early years of development.

**002— Maternal negative affectivity and maternal trauma as risk factors for poorer infant socioemotional development in women that were pregnant during the pandemic,** *Florence Bordeleau*, Karl Larouche, Julia Garon-Bissonnette, Gabrielle Duguay, Roxanne Lemieux, Nicolas Berthelot*

The COVID-19 pandemic has been associated with a surge of psychological distress in pregnant women (Berthelot & al., 2020), which has been shown to be a risk factor for poorer infant socioemotional development (Duguay & al., 2022). However, not all pregnant women and mothers of a young child reported high levels of distress during the pandemic (Pearson et al., 2023). Personal vulnerability factors, such as history of maternal trauma and predisposition to negative affectivity, might explain some inter-individual variability. The objective of the current study was to assess whether those two variables influenced offspring early socioemotional development, directly and indirectly through higher maternal psychological distress, during the COVID-19 distress, during the COVID-19 pandemic. Mothers (N = 483) were recruited online during the COVID-19 pandemic (April 2020) and followed-up at 2 months postpartum. Maternal trauma was assessed during pregnancy with the Childhood Interpersonal Trauma Checklist (Lemieux & Berthelot, 2019). At follow-up, maternal negative affectivity was assessed with the Negative Affectivity factor of the Adult Temperament Questionnaire (Derryberry & Rothbart, 1988) whereas postnatal psychological distress was assessed with the Kessler Psychological Distress Scale (Kessler & al., 2002). Infant socioemotional development was assessed with the Ages & Stages Questionnaire: Social-Emotional, 2nd edition (Squires & al., 2015). Path analysis were performed with MPlus (Muthén & Muthén, 2017) using maximum likelihood parameter estimation. A path model showed that both mothers' level of exposure to maternal trauma and predisposition to negative affectivity were associated with their postnatal psychological distress during the COVID-19 pandemic, which in turn predicted poorer infant socioemotional development. Further analyses showed (1) a significant effect of maternal trauma to psychological distress through mothers' predisposition to negative affectivity, (2) a significant effect from maternal trauma to infant socioemotional development through both mothers' predisposition to negative affectivity and psychological distress and (3) a significant effect from mothers' predisposition to negative affectivity to infant socioemotional development through mothers' postnatal psychological distress. The model suggests that the COVID-19 pandemic may have triggered psychological distress particularly in mothers' who had been previously exposed to trauma and/or a predisposition to negative affectivity. High levels of psychological distress were in turn associated with poorer infant socioemotional development.

# Poster abstracts

**003— Parenting predicts cardiac autonomic balance and cardiac autonomic regulation in preschool-aged children: Relations to temperament,** *Daniel Ewon Choe*, Aubrey B. Golden, Madeline R. Olwert*

Children's temperament is linked to their autonomic functioning and parenting experiences. Cardiac autonomic balance (CAB) reflects the relative influences of the parasympathetic (PNS) and sympathetic nervous systems (SNS) on the heart at rest, such that high CAB indicates parasympathetic dominance, whereas low CAB indicates sympathetic dominance. Cardiac autonomic regulation (CAR) reflects coactivation of the PNS and SNS at high levels and their coinhibition at low levels. High levels of CAB and CAR have been linked to optimal health and behavioral outcomes in adults, but few studies have examined CAB and CAR in preschool-aged children or their relations to temperament and parenting. CAB is believed to be shaped by early childhood experiences before stabilizing in middle childhood such that caregivers' regulatory support increases PNS reactivity while adversity increases SNS reactivity. The present study examines associations between preschool-aged children's CAB, CAR, and temperament; tests whether positive and negative parenting predict children's CAB and CAR; and explores the interplay between parenting, temperament, and cardiac autonomic functioning. Seventy children (M = 4.28 years, 51.4% male, 52.9% non-Hispanic White) and primary caregivers (M = 37.97 years, 88.6% female, 55.2% non-Hispanic White) participated in 2-hour lab visits. Fifty-five children (78.6%) provided psychophysiological data while sitting to watch a 2.5-min video and while standing in front of a book being read to them for 1 minute. CAB (α = .89) and CAR (α = .90) were calculated from resting levels of respiratory sinus arrhythmia, indicating parasympathetic control, and pre-ejection period, indicating sympathetic control. Positive (α = .71) and negative parenting (α = .80) were coded with PARCHISY from parents' observed control and affect with children across free-play, clean-up, and two Etch-a-Sketch tasks. Parents rated children's temperament using the Children's Behavior Questionnaire. CAB is negatively correlated with surgency (r = -.55, p < .001) and negative affect (r = -.30, p = .060), such that greater parasympathetic dominance at rest is associated with lower emotional reactivity. Negative parenting is negatively correlated with positive parenting (r = -.25, p = .040) and CAB (r = -.41, p = .009) but positively correlated with negative affect (r = .28, p = .024), whereas positive parenting is positively correlated with CAR (r = .42, p = .007). As expected, path models show negative parenting predicts lower CAB, or greater sympathetic dominance, whereas positive parenting predicts higher CAR, or greater coactivation of the PNS and SNS. Preliminary results suggest parenting influences cardiac autonomic functioning and emotional reactivity in early childhood.

**004— Differential susceptibility to early child adversity: the case of difficult temperament in the prediction of adolescent personality, substance use and mental health,** *Nathalie Castellanos Ryan*, Nina Pocuca, Anne-Laurie Belec, Jad Hamaoui, Charlie Rioux*

Temperament and child adversity are important predictors of adolescent substance use and mental health problems. However, less is known about how they combine to increase or decrease risk of developing these problems. This study examined whether infant difficult temperament (mother reported when child was ~5 months old) interacted with childhood adverse experiences (ACEs; as retrospectively assessed by 10 items adapted from the CDC-Kaiser Permanente adverse childhood experiences) to predict substance use (SU) and mental health problems at 17 years in 1,515 Québec youth (52% female) from the Quebec Longitudinal Study of Child Development. Mental health and SU at 17 years were assessed with the Mental Health and Social Inability Assessment for Adolescents (MIA) and the DEP-ADO self-reports. These were modelled as a bifactor model wherein all first-order symptom dimensions loaded onto a second-order general psychopathology factor (P factor) and one of three, second-order specific internalizing, externalizing, or SU factors (see Pocuca et al., 2022). Path analyses conducted in MPlus v.8, with maximum likelihood with robust standard errors estimation, showed that high ACEs was associated with higher impulsivity (β=0.14, p<.05), negative affect (β=0.23, p<.05) and anxiety sensitivity (β=0.07, p<.05) in early adolescence and higher SU (β=0.10, p<.05), internalizing (β=0.08, p<.05) and general psychpathology (P factor; β=0.15, p<.05) at 17 years, but not externalising problems that did not co-occur with other problems. While infant difficult temperament did not directly predict later personality, SU use or mental health problems, it did interact with ACEs to predict adolescent negative affect (β=0.07, p<.05), impulsivity (β=0.07, p<.05) and SU (β=0.10, p<.05). Indirect effects were tested, which identified a number of significant indirect pathways from ACEs to general psychopathology and internalising problems via early adolescent impulsivity, negative affect and anxiety sensitivity. Internalising problems was also predicted by the interaction between ACEs and difficult temperament indirectly through early adolescent negative affect. Interactions are still to be formally examined as a function of the diathesis–stress model (i.e., children with difficult temperament are more "vulnerable" to ACEs than those with an easy temperament); and the differential susceptibility model (i.e., children with difficult temperament are also more likely to benefit from positive environment or low ACEs). However, visual inspection of the interaction plots seem to provide some support for "difficult" temperament being a differential susceptibility marker in infancy, at least in the prediction of adolescent SU.

# Poster abstracts

**005— The Continuum between Temperament and Mental Illness as Dynamical Phases and Transitions,** *William Sulis**

The full range of biopsychosocial complexity is mind-boggling, spanning a vast range of spatiotemporal scales with complicated vertical, horizontal, and diagonal feedback interactions between contributing systems. It is unlikely that such complexity can be dealt with by a single model. One approach is to focus on a narrower range of phenomena which involve fewer systems but still cover the range of spatiotemporal scales. The suggestion is to focus on the relationship between temperament in healthy individuals and mental illness, which have been conjectured to lie along a continuum of neurobehavioral regulation involving neurochemical regulatory systems (e.g., monoamine and acetylcholine, opioid receptors, neuropeptides, oxytocin), and cortical regulatory systems (e.g., prefrontal, limbic). Temperament and mental illness are quintessentially dynamical phenomena, and need to be addressed in dynamical terms. Objectives: The goal is to examine an approach to biopsychosocial complexity through the study of dynamical phases, their order and control parameters, and their phase transitions. Unlike transitions in physical systems, these biopsychosocial phase transitions involve information and semiotics. The application of complex adaptive dynamical systems theory has led to a host of markers including geometrical markers (periodicity, intermittency, recurrence, chaos) and analytical markers such as fluctuation spectroscopy, scaling, entropy, recurrence time. Clinically accessible biomarkers, in particular heart rate variability and activity markers have beensuggested to distinguish these dynamical phases and to signal the presence of transitional states. A particular formal model of these dynamical phases will be presented based upon the process algebra, which has been used to model information flow in complex systems. Methods: The literature on dynamical markers in mood disorders will be reviewed, particularly those which might serve as order parameters of dynamical phases, and a formal model of dynamical phase transitions relevant to modeling the continuum between temperament and mental illness will be presented. Results: Several potential biomarkers of dynamical phases and transitions have been identified in the literature. These include various measures of complexity and chaos, entropy. Clinical biomarkers include sudden fluctuations in mood in therapy. A formal model of the continuum has been developed for the study of dynamical phases and transitions, drawing on techniques used to study phases in physics and chemistry. A proposal for a validation study for a battery of biomarkers for use in clinical studies will be presented. The use of dynamical markers in the study of mood disorders in particular shows the benefits of a dynamical approach to the study of affective disorders. A specific model of the continuum between temperament and mental illness, focusing in particular, on dynamical phases and their transitions is presented.

**006— Negative affectivity in infants of women pregnant during the COVID-19 pandemic: testing a developmental path based on the stress-sensitization model,** *Gabrielle Duguay*, Université du Québec à Trois-Rivières, Julia Garon-Bissonnette, Roxanne Lemieux, Karine Dubois-Comtois*

An increase in maternal prenatal psychological distress (PD), operationalized here as anxio-depressive symptomatology, has been observed during the COVID-19 pandemic (Berthelot et al., 2020) and been associated with infant developmental delays as early as two months old (Duguay et al., 2021). Furthermore, parents who experienced childhood trauma (CT) had reported higher stress and poorer mental health during the pandemic (Arowolo et al., 2023). Based on the stress-sensitization model (Hammen et al., 2000), suggesting that individuals previously exposed to multiple stressful experiences such as CT would be more vulnerable to psychological distress when exposed to new stressors, we hypothesize that maternal history of CT will be indirectly associated with infant negative affectivity through maternal stress response (physiological symptoms of stress, PSS) and prenatal PD during the COVID-19 pandemic. A sample of 141 pregnant women (Mage = 29.77 years, SD = 3.30, 67.6% second trimester of pregnancy) was recruited online during the COVID-19 mandatory lockdown in Quebec, Canada from April 2nd to April 13th, 2020, and was followed-up during the third trimester (T2) and at 6 months postpartum (T3). Mothers completed validated questionnaires on childhood trauma (CTQ-28; Bernstein et al., 2003) and physiological symptoms of stress (C-SOSI; Carlson and Thomas, 2007) at T1, psychological distress (K10; Kessler et al. 1994) at T2, and infant temperament (IBQ-R; Gartstein & Rothbart. 2003) at T3. Mediation analyses were performed using the PROCESS macro for SPSS. Maternal CT was indirectly linked to infant negative affectivity at 6 months through PSS at T1 and prenatal PD at T2, $b = 0.04$, CI [0.009; 0.075], explaining 8% of the variance, $R2 = 0.08$, $p < .001$. Specifically, maternal history of CT is directly associated with PSS, $b = 0.63$, $p < .001$, and prenatal PD, $b = 0.11$, $p < .05$. PSS is directly associated with prenatal PD, $b = 0.28$, $p < .001$. Finally, prenatal PD is directly associated with infant negative affectivity, $b = 0.04$, $p < .05$. This mediation model supports the stress-sensitization model and refines our understanding of the impacts of stress response and psychological symptoms distress during the perinatal period and its links with infant development. These results also argue in favor of the integration of trauma-informed interventions during the perinatal period in times of heightened stress and distress in order to mitigate the intergenerational transmission of trauma.

# Poster abstracts

**007—Reliability and Validity of Assessors Ratings of Infant Affect in the Moment,** *Esther M. Leerkes*, Lenka H. Shriver, Laurie Wideman, Cheryl Buehler*

Observationally coded infant affect is considered a gold standard indicator of infant temperament, although relying on observations from a single day and in unusual tasks has been criticized. Behavioral coding from videos is a time intensive task and might not be feasible for applied researchers or researchers with limited resources. Given the broad relevance of infant temperament to scholars who study parent, child, and familial outcomes, this is a significant limitation. Thus, we provide a preliminary examination of the extent to which quick ratings of infant affect made by assessors in the moment during data collection (1) correlate with ratings made by trained reliable coders from videos of the visits and (2) demonstrate similar patterns of correlations with other variables of interest (i.e., infant physiology, maternal sensitivity, and mother-reported temperament) as the ratings coded from videos. Data were collected from 230 mothers and their 2-month-old infants. Mothers completed subscales of the IBQ-Short Form reflecting negative affect and regulation. Mothers and infants participated in a free play episode and the Still Face Paradigm. Infant RSA was measured during the Still Face Episodes using Porges' approach. Infants were undressed, measured, and weighed in duplicate. Trained reliable coders rated infant negative affect and maternal sensitivity using a 7-point scale adapted from the NICHD ECCRN during the free play and Still Face Task; high scores reflect higher sensitivity and higher negative mood respectively. During data collection visits, project assessors rated infant affect during each task using a 4-point scale in which 1 = any positive affect; 2 = neutral affect; 3 = mild distress; and 4 = moderate or intense distress on a comment sheet. Zero-order correlations were calculated. Assessor ratings of infant affect demonstrated large positive correlations with the parallel ratings made from videos by the trained reliable coders: r = .61, .74, .80, and .86, all p < .01 for the free play task, and engagement, still face, and re-engagement episodes of the still face respectively. The in-visit ratings and video ratings demonstrated comparable correlations with observed concurrent maternal sensitivity (negative medium effects), concurrent infant RSA (significant negative medium effect during the still face re-engagement episode only), and mother-reported temperament (primarily null associations). These results support the utility of using quick assessor ratings of infant affect during clinical or research visits. Ideally, inter-rater reliability would be established. Research examining the longitudinal predictive validity of this method is needed.

**008— Children's Temperament and Perceptions of an Unfamiliar Peer During an Initial Interaction,** *Elaria Ebeid**

Temperament plays a significant role in shaping social interactions (e.g., Sterry et al., 2010) and influences how children are perceived by their familiar peers and classmates. For instance, research has found that children rated by parents as having low attentional skills, limited adaptability, heightened negative emotionality, and strong reactivity tend to be perceived more negatively by their classmates (e.g., Sterry et al., 2010; Coplan & Bullock, 2012). These negative perceptions may lead peers to be less engaged with children who exhibit these traits, potentially impacting the quality and quantity of children's friendships (Rowland, 2017). Existing studies have focused on peer perceptions within familiar contexts such as classrooms (Sterry et al., 2010; Gazelle et al., 2005), leaving unanswered questions regarding how quickly the effects of temperament influence peers' social perceptions. Investigating initial impressions following live interactions with a previously unfamiliar peer can illuminate the specific traits that impact children's first impressions of one another and ultimately the likelihood of a friendship forming. Participants were 186 children (93 dyads; 106 females; Mage = 11.50 years, SD = 0.83) who were observed during a 5-minute unstructured interaction via Zoom with an unfamiliar, age- and gender-matched peer. During the interaction, children were simply instructed to "get to know each other" (Usher et al., 2018). Parent reports of the child's temperament were collected prior to the interaction using the Early Adolescent Temperament Questionnaire-Revised (EATQ-R; Ellis & Rothbart, 2001). Following the dyadic interaction, children provided perceptions of their peer's positive (e.g., "how happy is __") and negative (e.g., "how boring is __") traits using the Perceptions and Metaperceptions Questionnaire (PMQ; Usher et al., 2018) from which composites were created to reflect negative perceptions and positive perceptions. Correlational analyses revealed significant negative associations between negative trait perceptions and parent-reported effortful control and surgency (p's < .05). Further analyses revealed that of the effortful control subdimensions, activation control and attention, were also negatively correlated with negative trait perception (p's < .05). Additionally, a positive correlation was observed between negative perceptions and depressive mood (p < .05). In contrast, positive trait perceptions were not related to temperament traits. These findings suggest that specific temperamental traits, such as those that relate to showing excitement in new situations (i.e., surgency) and being able to self regulate (i.e., effortful control) play a prominent role in shaping peers' perceptions during initial interactions. Further research should investigate specific behaviours that children high in these temperament traits express during social interaction that impact their peers' first impressions.

# Poster abstracts

**009— Preschoolers' behavioral inhibition and rise in anxiety during the pandemic: the moderating role of mothers' experience and child's gender,** *Marina Moënner*, Valérie Simard*

The COVID-19 pandemic shook up the daily lives of many families, with parents juggling remote work and taking care of their children all day long. Parental burnout rates reached unprecedented levels in several countries during the 2020 lockdown. Parents of young children following the sanitary recommendations had to be particularly vigilant about physical contact and hygiene-related behaviors. Children could thus have been particularly vulnerable to the adoption of these parental behaviors akin to parental over-control and over-protection, recognized risk factors for anxiety in children. These parental behaviors may be especially detrimental when interacting with other risk factors for anxiety such as the child's behavioral inhibition, a temperamental trait well known for its implication in the etiology of anxiety. This study's objectives were to explore a) the associations between the child's behavioral inhibition, and the parental behaviors and emotional experience of mothers and children in the pandemic context, and b) whether the child's behavioral inhibition interacted with theses contextual variables to predict a rise in anxiety of the child since the pandemic. Mothers (N = 352) of at least one preschooler (36 to 71 months) were recruited during Fall 2020 to complete online the Behavioral Inhibition Questionnaire, and questionnaires on the pandemic family context, mother's fear of COVID-19 (Fear of COVID-19 Scale), and parental behaviors (Parental Attitudes, Beliefs and Understanding of Anxiety). The child's behavioral inhibition was significantly associated to the child's rise in anxiety since the beginning of the pandemic (r = .23), the child's anxiety during the lockdown (r =.13), mothers' anxiety about future daycare closures (r =.14) and anxiety-provoking practices (r =.14). The child's behavioral inhibition was the best predictor of the observed increase in anxiety since the pandemic (β = 21, p <.001), among all parental and contextual factors. Moderation analyses revealed that the association between the child's behavioral inhibition and increase in anxiety since the pandemic was only significant at moderate to high levels of maternal stress and fear of COVID, and only among girls. This study provides a better understanding of the impact of the pandemic as an anxiety-provoking context for inhibited children.

**010—Preschoolers' behavioral inhibition and internalizing disorders : the mediating role of parental caregiving system,** *Marina Moënner*, Valérie Simard*

Over the last decade, there has been an alarming rise in internalizing disorders like anxiety and depression among preschool-aged children, although these conditions remain under-researched in early childhood. A complex interplay between endogenous (e.g., child's inhibited temperament) and exogenous (e.g., family environment) factors has been associated with the development of these disorders. One area that has received little attention is the study of how parents provide care for their child (known as the caregiving system) as a potential risk factor for internalizing disorders. This study thus aims to a) investigate the link between the child's behavioral inhibition, the dimensions of the parental caregiving system (enjoyment, heightened, helplessness and role reversal) and internalizing symptoms in young children, and b) explore the mediating effects of the caregiving system in the link between temperament and internalizing disorders. Mothers (N = 144) of at least one preschooler (36 to 71 months) completed online the Behavioral Inhibition Questionnaire, and questionnaires assessing the caregiving system (Caregiving Experiences Questionnaire [CEQ]), and the child's depressive (Preschool Feelings Checklist) and anxiety (Preschool Anxiety Scale – Revised) symptoms. Results revealed that child's behavioral inhibition was significantly associated with the enjoyment (r = -.19) and role reversal (r = .17) dimensions of caregiving, as well as with the child's anxiety (r = .70) and depression (r = .41) levels. While there was no mediation effect of the caregiving system's dimensions in the association between the child's temperament and anxiety, there was a significant mediation effect of enjoyment in caregiving in the relationship between the child's behavioral inhibition and depressive symptoms (indirect effect = .01, p < .05); the child's behavioral inhibition predicted lower parental enjoyment, which in turn predicted more depressive symptoms of the child. The direct effect of behavioral inhibition on depressive symptoms was still significant (b = .03, p <.01). The indirect effect accounted for 17% of the variance in the association between the child's behavioral inhibition and depressive symptoms. This study is the first to explore the association between the child's behavioral inhibition and the caregiving system. Parents of more inhibited children reported less enjoyment and more "role reversal" , defined in the CEQ as a parent-child relationship in which the child assumes a parent-like role as the caregiver. The parental caregiving system, especially lack of enjoyment, appear as a possible target for intervention among inhibited children with depressive symptoms, although longitudinal studies are needed to support this idea.

# Poster abstracts

**011— Shy Children's Interventions in a Naturalistic Peer Environment,** *Tara Karasewich*, Valerie A. Kuhlmeier, Nasim Tavassoli, Kristen A. Dunfield*

Shyness appears to be a major barrier to prosocial behaviour in young children, making them less likely to intervene on behalf of people in need. Yet, past research examining the interventions of shy children has been very limited: most studies are conducted in a lab, with one child being observed as they react to the needs of an adult experimenter. In this study, we tested children in a daycare setting that could more accurately reflect their everyday experiences. Specifically, children engaged in building a tower among a group of their peers, where needs could arise in a naturalistic way. For comparison, we also tested each child individually in structured tasks, where they could help, share with, and comfort an experimenter. One hundred and twenty-eight children between the ages of 3 and 6 years old participated at their daycares in Montréal. Prior to the tower building task, children's level of shyness was measured as the proportion of time they spent engaging in reticent (i.e., unoccupied or onlooking) behaviour during a free-play period with their peers. We also measured their level of engagement, as the proportion of time they spent interacting with at least one peer. Overall, the children in our sample were less likely to intervene in the naturalistic task than in the structured tasks. Shyness did not predict children's prosocial behaviour toward their peers in the naturalistic task (multi-level modelling: $t(119) = 1.41$, $p = .161$), but engagement did ($t(123) = 3.01$, $p = .003$). Similarly, shyness had no bearing on prosocial behaviour in the structured tasks (ordinal regression: Wald's $\chi2(1) = 2.23$, $p = .135$), but children who had engaged more often with their peers during free-play were more likely to intervene on the experimenter's behalf (Wald's $\chi2(1) = 5.42$, $p = .020$). Our results suggest that context plays a major role in young children's interventions, but that aspects of their temperament should be considered as well. Children who are highly engaged with their peers may intervene more often because they are better able to interpret others' mental states or because they are simply motivated to engage in any form of interaction, prosocial included. Our lack of shyness effects may indicate that children were more comfortable intervening in the familiar daycare setting, but it may also reflect limitations of the free-play period in which shyness was measured.

**012— Indirect associations between temperament, parenting practices, and conduct problems: the moderating role of teacher-child relationship,** *William Gaudreau*, Katherine Pascuzzo, Gabrielle Garon-Carrier, Michèle Déry, Jean-Pascal Lemelin*

Conduct problems (CP), characterized by aggression and noncompliance to rules, is one of the major reasons for child and adolescent referrals to school-based mental health services. CP is of particular interest among professionals given associated short- and long-term social, academic, and emotional consequences. Among contributing factors for CP, child temperamental vulnerability for psychopathology (i.e., high negative affectivity and surgency/extraversion and low effortful control) has been underscored. These temperamental characteristics are also known predictors of divers parenting behaviors. Namely, when children present difficulties in regulating their behaviors and emotions, parents are more prone to exhibit hostility, permissiveness, and lower sensitivity. These adverse parenting practices may, in turn, exacerbate child risk for later CP. In middle school, however, children's relationship with their teacher may help to mitigate this process. Indeed, given the central role of teachers in children's lives, a more positive teacher-child relationship could be expected to attenuate the association between negative parenting practices and future CP. Using a longitudinal design, the following study sought to examine if hostile, permissive, and sensitive parenting practices mediated the relationship between child temperamental characteristics and CP in early adolescence, and whether these processes varied according to the quality of the teacher-child relationship. The sample consisted of 434 children (44.70% of girls) presenting CP at T1 (M child age = 8.40; SD = 0.94). Parents reported on their child's temperamental characteristics at T1 and their parenting practices at T3 (M child age = 10.29; SD = 0.95). Teachers reported on the quality of their relationship with the child at T3. Lastly, parents reported on their children's CP at T1 and T4 (M child age = 11.29; SD = 0.94). Results from path analysis (controlling for CP at T1) revealed that greater parental hostility partly explained the association between lower child effortful control and greater CP, as well as the association between greater child negative affectivity and greater CP, but only when the teacher reported low to moderate closeness with the child. Greater parental permissiveness also partly explained the association between lower child effortful control and greater CP but only when the teacher reported high closeness with the child. Results suggest that levels of closeness between the teacher and the child can alter, either positively or negatively, the processes relating to the development of CP. Findings will be discussed in terms of protective and risk factors pertaining to future CP among vulnerable children.

# Poster abstracts

**013— Exploring the Factorial Invariance of the Child Behavior Questionnaire in Early Childhood,** *Briana Ermanni*, Martha Ann Bell*

Parent-report questionnaires are a common measure for examining temperament. To understand temperamental change over time, researchers employ various forms of person-centered approaches (e.g., growth curve modeling; Braungart-Rieker et al., 2010; Gartstein & Hancock, 2019) using these measures. However, researchers comparing the same construct over time in this way often assume the underlying measures reflect the same construct at each time point Little, 2013; Widaman et al., 2010). Consistent relations between measures and the latent ariables underlying those measures are termed factorial (measurement) invariance (Meredith, 1993). Longitudinal factorial invariance is not often evaluated in temperament research (Clark et al., 2016), despite the importance of temperamental growth in socioemotional development. Given that the Child Behavior Questionnaire (CBQ; Rothbart et al., 2001) is the most widely used temperament assessment measure (Kotelnikova et al., 2016), more fully understanding the functionality of its parent-reported factors over time is significant to the field. The current study tested the factorial invariance of the surgency factor of the CBQ at two ages. The sample includes 331 participants (51% female; 77.8% Caucasian) whose parent completed the CBQ at age 3 (M age = 37.12 months) and 4 (M age = 49.05 months). A test of factorial invariance was conducted in Mplus version 8.7 using FIML. A surgency latent factor was created at each age using factor subscales as indicator variables: activity level, approach/positive anticipation, high intensity pleasure, and impulsivity (Rothbart et al., 2001). Following Widaman et al. (2010)'s procedure, four types of invariance was tested for, with each test increasing in constraints: configural with correlated residuals (x 2 = 11.14, p = .74; RMSEA = 0.00; SRMR = .02; CFI = 1.00), weak (x 2 = 13.11, p = .78; RMSEA = 0.00; SRMR = .04; CFI =1.00), strong (x 2 = 18.25, p = 63; RMSEA = 0.00; SRMR = .04; CFI = 1.00), and strict (x 2 = 23.72, p = .54; RMSEA = 0.00; SRMR = .09; CFI = 1.00). Chi-squared difference tests between each nested model produced a non-significant p-value and no considerable changes in CFI values were detected. This suggests the additional constraints at each step did not produce a model that fit worse than the previous, and the factors are comparable across these ages. Thus, as the CBQ is intended for a broad four-year age rage, a future direction includes exploring invariance tests across additional ages, shedding light on the validity of temperamental growth models.

**014— Personality Dysfunctions and Parental Experience among Mothers: The Moderating Role of Child Negative Affectivity,** *Karl Larouche*, Julia Garon-Bissonnette, Gabrielle Duguay, Roxanne Lemieux, Claudia Savard, Dominick Gamache, Jean-Pascal Lemelin, Nicolas Berthelot*

Personality dysfunctions in mothers have been associated with a poorer experience of motherhood and a lower quality of care. This includes feeling overwhelmed as a parent and having difficult interactions with their children (Dunn et al., 2020; Steele et al., 2019), which are both risk factors for the intergenerational transmission of personality dysfunctions (Steele et al., 2019). Although teenagers' negative affectivity (NA) has been shown to worsen the experience of motherhood among women with personality dysfunctions (Eyden et al., 2016), to our knowledge, this has never been explored in infants. Mothers (n = 344) were recruited at pregnancy-related medical appointments or online and followed up between 6 and 12 months postpartum. Personality dysfunctions were assessed during pregnancy with the Self and Interpersonal Functioning Scale (Gamache et al., 2019). At the longitudinal follow-up, maternal stress was assessed with the Parenting Distress and Difficult Parent-Child Interactions subscales of the Parenting Stress Index (Abidin, 2012) whereas the Temperament factor of infant NA was assessed with the Revised Infant Behavior Questionnaire - Short Form (Gartstein & Rothbart, 2003). A structural equation model (X2 [14] = 29.30, p = .01, CFI = .97, TLI = .95, RMSEA = .06, SRMR = .05) showed that identity (b = .34, p < .001, 95% CI [.25; .42]) and empathy dysfunctions (b = .15, p = .01, 95% CI [.06; .23]) and infant NA (b = .25, p < .001, 95% CI [.17; .33]) predicted parenting distress. Identity dysfunction (b = .23, p < .001, 95% CI [.14; .31]) and infant NA (b = .21, p = .001, 95% CI [.12; .29]) also predicted difficult mother-child interactions. Only one moderating effect was observed: Empathy dysfunction more strongly predicted parenting distress at low and moderate than high levels of infant NA (b = -.11, p = .01, 95% CI [-.19; -.04]). The model suggests that identity and empathy dysfunctions in mothers and a predisposition to NA in infants both contribute to higher parental stress. High levels of personality dysfunctions in mothers and infant NA jointly trigger parental stress. In addition, the observed moderation effect of infant NA in the association between empathy dysfunction and parental distress suggest that at lower levels of infant NA, mothers' own vulnerabilities in terms of personality functioning become more associated with the quality of the experience of motherhood.

# Poster abstracts

**015— Emotion Regulation Strategy Articulation, its Neurophysiological Correlates, and its Association with Temperament,** *Zachary Bivins*, Lynnea Mayorga, Adam Grabell*

Temperament is associated with early emotion regulation, but it is unclear how temperament relates to the emergence of deliberate emotion regulation - the intentional regulation of one's emotional experience - and its neurophysiological correlates. Generating explicit regulation strategies is a key aspect of deliberation emotion regulation that is understudied in early childhood. Moreover, to examine how children are effectively implementing their articulated deliberate emotion regulation strategy, in real-time, requires multimodal measurement of neurobiological changes. We investigated how temperament relates to emotion regulation strategy articulation in early childhood and, in turn, how these strategies relate to real-time neurobiological mechanisms of frustration modulation. We categorized articulated emotion regulation strategies of 59 preschool children prior to a frustration task. Responses were coded into two groups: those who articulated an emotion regulation strategy (i.e., "strategy") and those who did not articulate a strategy (i.e., "no strategy"). Next, children had the opportunity to implement their strategies in the following frustration task. We tested whether strategy articulation ability was related to real-time deliberate emotion regulation by simultaneously measuring changes in Galvanic Skin Response (GSR) and lateral prefrontal cortex (lPFC) activation during the frustration challenge. Parents completed the Childhood Behavior Questionnaire to assess their child's temperament. Sixty-nine percent of the sample were able to articulate an emotion regulation strategy. Children who could articulate a strategy had higher effortful control than peers who could not ($t(52) = -2.03$, $p = .048$). Further, children who could articulate a strategy had lower average GSR , while they were attempting to implement their strategy during frustration, compared to peers who could not generate a strategy ($t(36) = 2.157$, $p = .038$). We did not observe group differences in PFC activation, expressive language ability, soothability, or negative affectivity ($p > .05$) or a relationship between effortful control and average GSR during frustration ($p > .05$). Our findings suggest that the ability to articulate a strategy emerges in early childhood, and this skill is more closely associated with temperament, and especially effortful control, than early language skills. The ability to articulate an emotion regulation strategy may in turn enable young children to modulate their frustration-related psychophysiology. This study significantly advances the field's understanding of preschool-aged children's deliberate emotion regulation development, and establishes a connection between the novel construct of emotion regulation strategy articulation and temperament.

**016— Validation of a French version of the Highly Sensitive Person Scale in a sample of Quebec youth ,** *Anne-Laurie Bélec*, Natalie Castellanos-Ryan, Charlie Rioux, Jean Séguin, Sophie Parent*

Sensory Processing Sensitivity (SPS) is a temperament trait describing individual differences in sensitivity to the environment. About 15-30% of the population show high levels of SPS. High-SPS individuals display a greater depth of information processing, higher emotional reactivity and a tendency for overstimulation. It is proposed that SPS is differentially associated with psychopathology as a function of environmental contexts. The Highly Sensitive Person Scale (HSPS), a 27-item self-assessment questionnaire developed by Aron and Aron (1997), measures SPS and shows strong validity across languages and populations but has yet to be validated in Quebec youth. A one-factor structure was initially proposed but follow-up research shows evidence for a three-factor structure: Ease of Excitation (EoE), Aesthetic Sensitivity (AES) and Low Sensory Threshold (LST). Using data from the first (pilot) cohort of the Québec Longitudinal Study of Child Development (N = 186; Mage =23), this study aimed to validate a Canadian French version of the HSPS using confirmatory factor analysis and to test associations with other personality traits, as measured by the UPPS, as well as mental health symptoms, as measured by the ASEBA and SDQ. Confirmatory factor analyses conducted using Mplus v.8 with maximum likelihood estimation showed that both a three correlated factor model ($\chi2(319) = 573.72$, CFI = .86, RMSEA = .07, SRMR = .06) and a bifactor model wherein all items loaded onto a general HSP factor and one of three specific factors ($\chi2(295) = 514.62$, CFI = .88, RMSEA = .06, SRMR = .06) fit the data well. However, the correlated three-factor solution was favoured over the bifactor model as 1) it is more parsimonious and fit the data equally well, and 2) loadings were all significant, while many of these were not in the bifactor solution. Statistically significant ($p<.05$) path analyses showed that EoE was associated with anxiety symptoms ($\beta=.67$) and LST was associated with negative urgency ($\beta=.52$), and conduct ($\beta=.58$) and peer ($\beta=.74$) problems. AES was associated negatively with negative urgency ($\beta=-.38$), lack of perseverance ($\beta=-.45$) and lack of premeditation ($\beta=-.38$), but positively with sensation seeking ($\beta=.39$). It also showed negative associations with emotional problems ($\beta=-.26$), conduct problems ($\beta=-.31$), hyperactivity ($\beta=-.26$) and peer problems ($\beta=-.27$), but positive association with prosocial behavior ($\beta=.41$). A validated measure of SPS could allow for further exploration of environmental sensitivity in the context of externalizing and internalizing problems, which could inform the prevention of mental health and behavioral problems.

# Poster abstracts

**017— The Relationship Between Values and Temperament in Middle Childhood,** *Tamar Machlev*, Lior Abramson, Ariel Knafo-Noam*

Values play a crucial role in shaping beliefs, attitudes, and behaviors. Across cultures, values are organized into four value orientations: Self-Transcendence (focusing on others' welfare), Self-Enhancement (achievement, power), Openness to Change (novelty and change), and Conservation (security, conformity and tradition) (Schwartz, 2012).Values are influenced by various factors, including socialization experiences (Twito-Weingarten & Knafo-Noam, 2023). Although values correlate meaningfully with adults' personality traits (Roccas et al, 2002), less is known about temperament. Examining the contribution of temperament to value development for the first time may offer valuable insights, as temperament emerges earlier than values, exhibits stability after a certain age, and has a meaningful heritable component. Based on values'underlying motivations and their relationships with personality traits, I propose specific hypotheses about the values-temperament association. For example, Conservation, involving self-restraint, is expected to correlate with Effortful Control. I also expected Self-Transcendence (other-focus) to be predicted by the interaction of Negative Affect and Effortful Control, which have been shown (Abramson et al., 2018) to predict empathy. Method: 768 twins (52% girls) aged 8-9 participated. Temperament scores on Negative Affect, Positive Affect, Effortful Control and Extraversion (Rothbart et al., 2000) were derived from LAB-TAB observed temperament tasks. Values were tested with the PBVS-C scale (Doring et al., 2010). Findings: Negative Affect is positively associated to Self-Enhancement and negatively to Self-Transcendence and Conservation. Positive Affect is positively associated with Conservation. Effortful Control is positively associated with Self-Transcendence and negatively associated with Self-Enhancement. Furthermore, Extraversion related positively to Openness to Change and negatively to Conservation. Some of the effects where gender-specific (for example, Effortful Control and Self-Transcendence- Boys (r=-.18, p0.05). Besides correlations, we analyzed the total associations between temperament and values using Multidimensional Scaling. A noteworthy interaction emerged between Negative Affect and Effortful Control in predicting Self-Transcendence. Specifically, at the lowest level of Effortful Control, a discernible negative association (r=-.18, p=0.003) was observed between Negative Affect and Self-Transcendence, comparing to the highest level of Effortful Control (r=.14, p=0.228). Conclusions: This study revealed theoretically meaningful associations between temperament and values. Additionally, the identified interaction effect underscores the significance of temperament in shaping value orientations. These findings are significant for developmental psychology, as they contribute to the understanding of the complex interplay between temperament, values, and development. The study's results highlight the need for further research on the origins of values and how they may change over time.

**018— The moderating role of temperamental vulnerabilities on the link between household income and preschooler's internalizing problems,** *Rosalie Vézina*, Katherine Pascuzzo, Marie-Josée Letarte, Jean-Pascal Lemelin*

Children with internalizing problems such as anxiety and depression are at greater risk of presenting a host of difficulties, both academically and interpersonally (Bitsko et al., 2022). Given the potential long-term consequences of these difficulties (Copeland et al., 2021), a better understanding of the protective and risk factors contributing to children's internalizing problems has garnered much attention in the literature. One of these factors pertains to the socio-economic status of children's family environment. Namely, children from more affluent families have been shown to present fewer internalizing problems compared to those with a lower socio-economic status (Letourneau et al., 2013). In addition to environmental factors, children's temperamental vulnerabilities (i.e., high negative affectivity, high surgency/extraversion, and low effortful control) have been linked to greater internalizing problems (Gartstein et al., 2012). But what is there to be said about the dynamic interplay between environmental and personal factors? Considering that temperament reflects the different ways in which children respond to stimuli in their environment (Rothbart, 2012), could temperamental characteristics lessen or increase the positive effect of a more affluent family environment on children's internalizing problems? To answer this question, longitudinal data was gathered to explore if temperamental vulnerabilities moderated the association between household income and internalizing problems in preschool children. The sample included 203 parent-child dyads with full data on the variables of interest (86% mothers; 63% boys). Household income and child temperamental characteristics were reported by parents when children were approximately 5 years of age (M = 4.77; SD = .30). Children's internalizing problems were reported by parents one year later when children were 6 years of age (M = 6.06; SD = .36). Results of hierarchical multiple linear regression analysis revealed only one significant moderation effect between household income and negative affectivity, controlling for child gender and the other two temperamental dimensions. Specifically, greater household income was associated with fewer internalizing problems, but only for children with low negative affectivity. For children with high negative affectivity, household income was unrelated to children's internalizing problems. Taken together, results suggest that the positive influence of greater household income on internalizing problems is present only for children who are less prone to negative emotions. The discussion will focus on the importance of prevention programs and family services to support adaptive emotional regulation strategies among children with negative affectivity so that they too can benefit from the positive factors (i.e., greater family income) in their environment.

# Poster abstracts

019— Reward reactivity and externalizing risk among surgent children, *Christina Hogan*, Adaeze Egwuatu, Jennifer Martin McDermott*

Surgency is associated with heightened positive emotions, hyperactivity, and seeking out rewards. Children who display high surgency are at increased risk for externalizing symptoms (Putnam & Stifter, 2005; Rydell et al., 2003). However, it's unclear whether reactivity to reward, or more importantly different kinds of rewards (social vs. non-social), influences risk for externalizing among surgent children. The fN400 and LPP are neural markers of reactivity that have been associated with approach motivation and attention bias to rewards (Bamford et al., 2015; Gable & Harmon-Jones, 2010). Therefore, the current study assessed associations between surgency and neural reactivity to social and non-social reward and associated risk for externalizing. he present data represent an expanded sample from Egwuatu & McDermott, 2019, adding specificity of reward type: interpersonal and intrapersonal rewards, beyond object-based rewards. Event-related potentials (ERPs) were collected while 78 children (male = 40; female = 38; Mage= 8.51 years) viewed social and non-social images from four categories: interpersonal social reward (positive social interactions), intrapersonal social reward (happy people with no social interactions), non-social reward reflecting object-based rewards (treats), and a neutral category. Parents completed questionnaires on children's temperament traits and externalizing symptomology. Regression analysis for the fN400 revealed an association with externalizing scores in which larger (more negative) fN400 amplitudes to neutral pictures were associated with higher externalizing scores (b = -1.04, p = .035). An interaction also emerged between surgency and Intrapersonal-Object fN400 difference scores, which negatively predicted children's externalizing (b = -2.00, p = .024). Follow up analyses showed higher surgency scores were associated with higher externalizing among children exhibiting more negative Intrapersonal-Object fN400 difference scores (b= 28.95, SE= 8.37, t= 3.46, p=.001). The regression analysis for the LPP revealed no significant interactions, however a correlation showed an association between surgency and LPP to object-based rewards controlling for neutral (r = .416, p ≤ .001). Our findings suggest that surgent children are more likely to attend to object-based rewards, however, risk for externalizing is uniquely connected to processing of intrapersonal reward among children with this temperament trait. Since intrapersonal images depicted positive, non-interactive social scenes related to achievement or fun activities, these may be more contextually meaningful and motivationally relevant to surgent children. Thus, greater allocation of attention to intrinsically salient stimuli (i.e., achievement, fun) compared to extrinsically salient stimuli (i.e., treats, prizes) may be a key marker of externalizing risk among surgent children.

**020— The role of self-conscious emotion expression on psychopathology risk among temperamentally exuberant children,** *Christina Hogan*, Chaia Flegenehimer, Heather Henderson, Kathryn Degnan, Jennifer Martin McDermott*

Exuberance is defined by lack of inhibition, heightened positive reactions to novelty, and heightened sociability (Fox et al., 2001; Putnam & Stifter, 2005). This temperament trait can increase a child's risk for externalizing and internalizing symptoms and disorders (Degnan et al., 2011; Dougherty et al., 2011; Stifter et al., 2008). Similarly, self-conscious emotions (SCEs), such as shame, pride, and embarrassment, are also associated with increased risk for externalizing and internalizing symptoms. However, limited research has examined the role of SCEs in the exuberance-psychopathology connection (Ferguson et al., 2000; Heaven et al., 2009). Of the SCEs, shame is particularly relevant to risk for psychopathology for exuberant children as some exuberant children struggle to regulate their behavior in social environments and may fail to meet social expectations. Such failures could heighten the experience of shame and thus increase accompanying risk for externalizing and/or internalizing problems. In a longitudinal study of temperament, participants were assessed for exuberance traits using a risk-taking paradigm wherein children's responses to novel situations were recorded at 24 months of age. Children returned to the lab at 5 years of age and were asked to solve easy and difficult puzzles that were manipulated for the child's failure or success, from which children's shame expressions were coded. A total of 146 children (female = 77, male = 69), completed assessments at 24 months and 5 years. Parents completed the Child Behavior Checklist (CBCL) when children were 7 years old. A moderated regression showed that shame significantly influenced the relation between exuberance and externalizing over time, such that more expressions of shame at 5 years strengthened the association between exuberance and externalizing symptoms at 7 years (b = .356, SE = .039, p ≤ .001). Shame expression also significantly influenced the relation between exuberance and internalizing over time, such that more expressions of shame at 5 years strengthened the association between exuberance and internalizing symptoms at 7 years (b = .413, SE = .053, p ≤ .001). The findings identify shame expression as a key factor in modulating risk for externalizing and internalizing symptoms and suggest regulation of SCEs, such as shame, as an area for targeted interventions for children high in exuberance. Further, the results highlight the need for more research on SCE expression among children of various temperaments, given their influence on pathways to later psychopathology.

# Poster abstracts

**021— Severity of Autism and Temperament Variations in Children: A Comparative Study between Autistic and Neurotypical Children,** *Zeynep Ertekin*, Carole-Anne Leblanc, Delphine Périard-Larivée , Karine Dubois-Comtois, Annie Stipanicic, Chantal Cyr, Mélanie Couture, Eve-Line Bussières*

Autistic children face social interaction and communication challenges associated with increased externalizing and internalizing problems. Parenting and temperament characteristic of children are both influential factors in children's behavioral adjustment and development. According to the differential susceptibility hypothesis (Pluess&Belsky,2010), individual characteristics such as temperament may modify the influence of environmental factors, including parenting, on children's development 'for better and for worse' manner. For instance, children with difficult temperaments may be more sensitive to parenting quality, experiencing better outcomes with high-quality parenting and worse outcomes with low-quality parenting. Therefore, the current paper aims to examine the role of temperament (negative affectivity and perceptual sensitivity) in the association between the quality of mother-child interaction and behavioral problems in autistic and neurotypical children. It is hypothesized that children with high negative affectivity or high perceptual sensitivity will show more behavior problems when mother-child interaction quality is low, and less behavior problems when mother-child interaction quality is high. Ninety-five mother-child dyads were recruited in Quebec, Canada, including 45 (10 females) dyads in which the child is autistic (Mage=4.71, SD=.07) and 50 dyads (28 female) from the general population (Mage=4.04, SD=1.25). Mothers filled out 1) perceptual sensitivity (PS) and negative affectivity (NA) using the five sub-scales of the CBQ and 2) Internalizing and externalizing behaviors summed from CBCL 1.5-5. Mother-child interaction quality was assessed by two independent observers, using a 10-minute recorded mother-child play session. Moss and colleagues coding system was used to assess mother-child interaction quality. Main findings showed that moderating role of NA was not found for both internalizing and externalizing scores in both groups. PS significantly moderated the association between the quality of mother-child interaction and internalizing behavior problems of autistic children (B=1.19, p=.05, 95% CI[-.02,2.40]) and neurotypical children (B=-2.02, p< 0.05, 95% CI[-3.70,-.35]). Simple slope calculation showed that autistic children with high PS had higher internalizing behavioral problems when the quality of mother-child interaction was high, and they had lower scores in lower levels of mother-child interaction quality (b=3.26, p< .05). Overall, the results indicate that PS acts as a susceptibility marker in the parenting context, although the function varies between the two groups. These findings shed light on the differential understanding of parenting sensitivity, particularly in the case of autistic children.

**022—The Relation between Parent Emotion Coaching, Child Negativity, and Child Effortful Control,** *Nari Kang*, Meredith Atanasio, Kassidy Mieses, Cindy Smith*

Children's effortful control has a temperamental basis and can be considered an index of children's emotion regulation (Eisenberg et al., 2016). Previous research on how parenting can support children's effortful control has focused primarily on more global measures of parenting behaviors, such as sensitivity and warmth. Another important parenting behavior to consider, particularly when examining how to support children's emotional control, is parent emotion coaching. Emotion coaching involves parents understanding of their own, and their children's, emotions and can serve as a foundation for parents to effectively teach children how to control emotions. Emotion coaching has been found to be related to child emotion regulation (Lunkenheimer et al., 2017). Children's temperamental negative affectivity has been related to less optimal child emotion regulation; therefore, our study examined child temperamental negative affectivity as a moderator of the association of parent emotion coaching to children's effortful control. Parents and their preschool-aged children (T1; n=156, girls=77, M age=51.99 mos, SD=9.29 mos) were observed in an emotion talk task where parents and children talked about a time when children were upset. Parental emotion coaching was scored for encouraging and discouraging children's emotions. At T2 (M age= 88.43 mos, SD=8.1 mos), parents reported on their school-aged children's negative reactivity and effortful control using the Child Behavior Questionnaire (Rothbart et al., 2001). The relation between T1 parental encouragement of child negative emotions when discussing an upsetting event to T2 child effortful control was partially moderated by T2 child temperamental negative affectivity. Parents who encouraged children to share negative emotions rated children higher in effortful control when child negative affect was low and moderate but not when child negative affect was high. The moderation model examining parent encouragement of children's positive emotions was not significant. Through emotion coaching during discussions of upsetting events, parents might be teaching their children to acknowledge their negative emotions by validating their emotional experiences. However, associations between emotion coaching and effortful control were not found when children were high in negative emotions, which may indicate that emotion coaching is less effective when children are high in temperamental negativity. Additionally, parental encouragement of positive emotion was not related to child effortful control at any level of child negative affectivity, which may indicate that emotion coaching was more effective when focused on negative emotions. More research on these complex relations will support the development of more targeted parent education programs focused on emotion coaching.

# Poster abstracts

**023— Associations of sleep and emotional reactivity in early childhood,** *Justine Daigneault*, Isabelle Roy, Imen Doukhane, Stephanie McLellan-Lamarche, Annie Bernier, Miriam H. Beauchamp*

Emotional reactivity is a temperamental trait that refers to a child's tendency to display a negative emotional reaction in difficult situations, such as those where they perceive a threat or are impeded from attaining a goal. Previous studies have shown that there is an association between the quality of a child's sleep and manifestation of temperament traits. For example, infants considered to have a ''difficult'' temperament sleep less at night and have frequent night awakenings, suggesting an association between negative-emotional reactivity and sleep quality. Yet, according to other work, there is little to no correlation between temperament and sleep. Given the lack of consensus in this area, this study aimed to explore the association between sleep duration and emotional reactivity using a quantitative measure of sleep duration and direct observational 60 (35 boys) typically developing children between 6 months and 5 years of age (M age = 33.79, SD= 21.1 months) were recruited to participate in the KOALA prospective longitudinal study. To document nighttime sleep duration, children wore an actiwatch (Phillips Respironics Actiwatch-2) on their ankle or wrist for up to five nights at home. Temperamental traits were documented using the Attractive Toy subtest from the Laboratory Temperament Assessment Battery. In this task, children first play with a small toy, which is then removed and placed in a clear box (≥36 months) or behind a plexiglass barrier (<36 months) by the examiner. The child's reaction is video recorded and then analysed and coded to document the intensity of anger, frustration or sadness. Univariate regression analysis testing the association between sleep duration and child reactions on the Attractive Toy task revealed some significant results: For older children (≥36 months) there was a significant and positive association between sleep duration and bodily anger (r=.327, p=.048) and face anger (r=.367, p=.03). Children who displayed intense facial and bodily anger had longer sleep duration. No significant associations were found in younger children or for the other variables (i.e., Facial and Bodily Sadness, Struggle, and Vocalizations). The findings are counter to the initial hypothesis and instead indicate that negative temperamental traits are correlated with longer sleep duration. It is possible that children with negative temperamental traits may require more sleep after emotional events. From a clinical and public health standpoint, it is critical to fully understand the association between sleep and temperament to optimize child well-being and development.

**024— Associations between the maternal prenatal gut microbiome composition and infant temperament,** *Nathalie Suchy*, Nicolas Murgueitio, Alison Brison, Alexander Carlson, Sarah Short, Madison Rebecca Knickmeyer, Cathi Propper*

The infant gut microbiome composition and diversity have been found to be associated with temperament, specifically negative affectivity and surgency. Moreover, prior research indicates that the maternal prenatal gut microbiome diversity and taxonomy are associated with internalizing symptoms in children. Thus, the aim of the present study was to explore associations between the maternal prenatal gut microbiome taxonomy and infant temperament at 6 months. were joined and trimmed and estimates of taxonomic composition were produced using HuMAnN2. At 6 months, mothers completed the Infant Behavior Questionnaire – Very Short Form (IBQ-VSF). A latent profile analysis was conducted using the negative affectivity (NA), orienting/regulatory capacity (ORC), and surgency subscales from the IBQ-VSF. Latent profile analysis identified three distinct profiles of infant temperament: 1) low NA, moderate surgency, and high ORC; 2) moderate of all 3 dimensions; and 3) moderate NA and ORC with high surgency. Differences in abundance of each genus as a function of temperament profile were analyzed using the MaAsLin2 RPackage. In differential abundance analyses, p-values were corrected for multiple comparisons using Benjamin-Hochberg corrections. Twenty-five genera were significantly associated with infants' temperament profile membership. However, these associations were no longer significant after correcting for multiple comparisons. These results provide preliminary evidence that the maternal prenatal gut microbiome may be associated with infant temperament. Of relevance, Actinobaculum, a genus negatively associated with psychological stress and hair cortisol concentrations during pregnancy in a prior study, was among these 25 genera. These findings suggest that the maternal prenatal gut microbiome might act as a mechanism by which prenatal stress influences infant temperament. Future directions include exploring links between infant temperament and other features of the maternal prenatal gut microbiome, such as diversity and gene function.

# Poster abstracts

**025— Relations between prenatal maternal stress and 2-month-old infants' surgency and negativity,** *Yu Chen*, Esther M. Leerkes, Cheryl BuehlerLaurie Wideman, Lenka H. Shriver*

Prenatal stress has been argued to affect the development of infant temperament via prenatal programming (Gartstein & Skinner, 2018). Generally, higher prenatal stress has conveyed risk for less adaptive temperament (i.e., lower positive, higher negative affect) (e.g., Bush et al., 2017). However, there is some evidence that prenatal stress relates to higher surgency which is characterized by high positive affect and activity level (Lin et al., 2014). Further, prior findings are primarily based on mothers' perceptions of infant temperament which may be biased as a function of ongoing stress. In the current study, we examine the extent to which maternal prenatal stress predicts both mother-reported surgency and negativity and observed positive and negative affect over and above covariates when infants are 2 months old. Expectant mothers (N = 299, Mean age = 29.7; 52.5% non-Hispanic White; 41.8% primiparous) reported demographics and stressful life events during their third trimester. When infants were 2 months old, mothers reported their perceptions of infant surgency and negativity using the IBQ-Revised Short Form. Infant positive and negative affect were coded during a free-play task and the still-face paradigm. Covariates included prenatal maternal age, household income-to-needs ratio, parity, infant age, and maternal depressive and anxiety symptoms postpartum. Regression analyses were conducted via Mplus, using Full Information Maximum Likelihood to handle missing data. Above covariates, prenatal stressful life events were significantly positively associated with perceived infant surgency ($\beta = .179$, $p = .010$) and observed positive affect ($\beta = .171$, $p = .010$) and negatively with observed negative affect ($\beta = -.263$, $p < .001$). Stressful life events were not uniquely associated with perceived negativity ($\beta = .097$, $p = .170$). The positive associations between prenatal stress and both mother-reported infant surgency and observed positive affect demonstrate convergence across methods. Lin and colleagues (2014) found similar results and noted prior evidence (DiPietro et al., 2001) that fetuses of mothers who reported more hassles and perceived stress during pregnancy tended to demonstrate more motor activity, a component of surgency. The association between prenatal stress and lower observed negative affect requires further exploration and replication. Given more negative effects of prenatal stress appear to be more common in studies that measured infant outcomes at 6 months or later (e.g., Bush et al., 2017), infant age should also be considered as a moderator of the effects of prenatal stress on subsequent infant temperament.

**026— Children Risk-Taking Behaviors: The Intergenerational Influence of the Socio-Emotional and Cognitive Control Systems,** *Sophie Couture*, Daniel Paquette, Jean-Pascal Lemelin, Chantal Cyr, Karine Dubois-Comtois, Marc Bigras, Fabien Bacro*

Risk-taking behaviors is a major burden for parents of toddlers. To better understand and prevent those risk-taking behaviors, studies have considered both child (e.g., temperament, age, gender) and parental characteristics (e.g., parental supervision and style, attachment). Building on the adolescent risk-taking literature, Jonas and Kochanska (2018) adapted the dual systems model of risk-taking (Steinberg, 2010) to children and suggested that risk-taking propensity arises from an imbalance between the child's overactivation of the socio-emotional system (sensation seeking or traits of surgency) and the lower cognitive control system (lack of self-regulation or lack of effortful control). Moreover, from an intergenerational transmission perspective, it is relevant to consider both the parents' and the child's socio-emotional and cognitive control systems influence on children's risk-taking behaviors. To better understand young children's risk-taking behaviors, the current longitudinal study examines sensation seeking and lack of self-regulation in parents and children's surgency-effortful control imbalance. Child sex was also considered in the analyses. The sample comprised 177 families (89 boys) observed at two-time points. At time 1 (child age ranges: 12–18 months), both parents provided sociodemographic information and completed self-reported questionnaires on sensation seeking and self-regulation. At time 2 (child age ranges 24–30 months), parents assessed their child's temperament (surgency and effortful control) and risk-taking behaviors. A latent difference score (LDS) approach was considered. Results showed that fathers' higher sensation-seeking ($b = 0.26$, $p = .006$, Beta = 0.16) and mothers' higher lack of self-regulation ($b = 0.33$, $p = .035$, Beta = 0.12) were associated with higher child risk-taking behaviors. Beyond these parental characteristics and child sex as a control variable, the latent score of child surgency-effortful imbalance was strongly associated with higher child risk-taking behaviors ($b = 1.50$, $p \leq 0.001$, Beta = 0.76). Results indicate that the socio-emotional system of the father (i.e., sensation seeking) and the cognitive control system of the mother (i.e., lack of self-regulation) in addition to the child's surgency-effortful imbalance predicted children risk-taking behaviors in toddlerhood. A dual system model including both parents (sensation seeking and self-regulation) and children (surgency-effortful imbalance) seems a promising avenue to more fully understand the effects of the socio-emotional and cognitive control systems in the intergenerational transmission of child risk-taking behaviors.

# Poster abstracts

**027— Observed parent emotion coaching and child regulation moderated by child reactivity,** *Kassidy Mieses*, Meredith Atanasio, Nari Kang, Cynthia L. Smith*

Children with less-optimal emotion regulation are at increased risk for anxiety and depressive symptoms and difficulties with peers (Patel, 2018; Bäker, Wilke, Eilts, & von Düring, 2023; Bowie et al., 2011). Because optimal emotion regulation is essential for children, understanding how parents can support children's emotion regulation is also essential. According to Gottman et al.'s (1996) meta-emotion philosophy, parenting behaviors can be shaped by parents' perception of their own and their children's emotions. When parents use emotion coaching, they talk to children about their feelings and encourage their children's emotions. Gottman et al. found that emotion coaching was significantly related to child physiological regulation at age 5, which predicted children's emotion regulation at age 8. Research has found complex interwoven relations between temperamental reactivity and regulation (e.g., Smith et al., 2016); therefore, how parental emotion coaching relates to child regulation likely depends on reactivity. The current study examined children's temperament reactivity, specifically anger and sadness, as moderators of the encouragement of positive and negative emotion coaching to child regulation, specifically self-comforting behaviors. Parents (n=115, M age=39.25 years, SD=4.89 years) and their school-aged children (M age=88.43 months, SD=8.10 months) were observed when children received a disappointing gift. Parental emotion coaching was coded as encouragement of positive and negative emotions. Child regulation was coded as self-comforting behaviors. Child sadness and anger were observed and coded from a task where children were asked to draw a perfect green star but were told that each star drawn was not good enough. Parent encouragement of positive emotion, but not negative emotion, significantly predicted more child self-comforting when children displayed high sadness; this relation was not significant when children displayed moderate and low levels of sadness. Child anger did not moderate the association of parent encouragement of positive emotion or negative emotion to children's self-comforting. Our findings are some of the first to examine emotion coaching during a parent-child interaction where emotion was elicited. For children high in temperamental sadness, parental encouragement of positive emotions may help children reframe their sadness, which may relate to higher in self-comforting. These relations were found in different emotion-eliciting tasks, which supports the idea that children's temperamental reactivity may elicit or need different coaching of emotions. Significant relations were not found with anger or with parental encouragement of negative emotions. Future research could further investigate a goodness-of-fit approach between children's temperamental reactivity and regulation with parental patterns of emotion coaching.

**028— Associations Between Mother's Cognitive Emotional Regulation Strategies and Infant's Temperament,** *Loïc Gagnon*, Julia Garon-Bissonnette, Elisabeth D'Arcy, Roxanne Lemieux, Nicolas Berthelot*

Studies have shown that children's temperament may be associated with environmental factors (Liu, 2022). Maternal variables, such as parental self-criticism and parenting stress, have been respectively linked to negative affectivity (Casalin et al., 2013) and regulation (Gartstein et al., 2012). Associations were also found between emotion-related parenting and temperament factors (Scott & Hakim-Larson, 2022). However, it remains unclear whether mothers' ways of handling emotions are associated with their child's temperament. This study aimed to evaluate whether specific mother's cognitive emotional regulation strategies were linked to the three factors of infant's temperament.A sample of 159 mothers (97.5% Caucasian; Mage=29.78) completed a self-report questionnaire on their cognitive emotional regulation strategies (CERQ) and a measure on their infant's temperament (IBQ) when their child was aged between 6 and 12 months. Stepwise regression analyses were conducted to determine which cognitive emotional regulation strategies best predicted each temperament factor (surgency, negative affectivity and regulation). Results showed that rumination was positively associated with scores on the surgency factor ($\beta=.19$, $p=.02$). Mother's emotional overwhelmingness ($\beta=.23$, $p<.01$) was positively associated with infant's negative affectivity. Finally, both positive reappraisal ($\beta=.25$, $p<.01$) and self-blame ($\beta=.17$, $p=.02$) scores were positively associated with infant's regulation factor. To our knowledge, this study is amongst of the first to assess relations between mother's cognitive emotional regulation strategies and infant's temperament factors. Findings from previous studies could provide possible interpretation leads for those results. Rumination tendencies are related to maternal depression (DeJong et al., 2016), which is in turn related to maternal withdrawal (Tester-Jones et al., 2015) and less responsivity to infant's emotional cues (DeJong et al., 2016). Such maternal stance is associated with infant's closeness-seeking behaviors (Gartstein & Hancock, 2019). Therefore, maternal depression could explain the association between maternal rumination tendencies and infants surgency. Results linking maternal overwhelmingness to infant's negative affectivity are consistent with previous findings, since emotional overwhelming has been associated to depressive and anxiety symptoms (Beck & Clark, 2015), these symptoms being linked in turn to negative affectivity in infants (Lahtela et al., 2023). Finally, positive reappraisal may reduce parental stress (Jarvis and Creasey, 1998), which has been associated to higher regulation in infants (Gartstein et al., 2012). However, the unintuitive association between mothers' self-blame strategy and infant's regulation would require further investigation.

# Poster abstracts

**029— Is there an association between temperament and sensory seeking? A correlational study,** *Kylie Wijeratne*, Cheyenne A. Williams, Kaitlyn C. Rasnick, Martha Ann Bell*

Sensory dysfunction appears in about 5-16.5% of the population, with prevalence being higher in individuals with neuro-developmental disorders (Miller et al., 2017). Sensory dysfunction may become more apparent in early childhood because the preschool environment is typically more complex and less controlled than home (Ben-Sasson et al., 2009). Notably, sensory processing difficulties correlate with behavioral problems, parental stress, impaired cognitive and social function, psychological distress, and family impairment (Ben-Sasson et al., 2008; Gourely, 2013; Wood et al., 2021). The short sensory profile (SSP) is a clinical measure typically utilized within populations with ASD. A subscale of the SSP, underresponsive/sensory seeking (USS), has little research focusing on neurotypical populations (Damiano-Goodwin et al., 2018). USS is characterized by the need to pursue more sensory stimuli and/or being understimulated by average sensory stimuli. Sensory seeking behaviors can be harmful to social development, as children may engage in avoiding social engagement in pursuit of stimuli or partake in unusual behaviors toward others (Passarello et al., 2022). Children who display high levels of surgency also have higher levels of impulsivity and activity. Given associations between temperament and sensory dysfunction, and the potential for later externalizing behaviors related to temperament (Gartstein et al., 2012), we examined temperament and sensory seeking in a neurotypical sample. A community sample of families (n=47) participated in our exploratory study. When children were 36 months, mothers reported on sensory processing difficulties via SSP (McIntosh et al., 1999), where lower scores reflect greater difficulties . At both 36 and 48 months, mothers reported child temperament using CBQ (Rothbart et al., 2001). Bivariate correlations were examined between temperament factors at both ages and the USS subscale of the SSP. At 36 months, USS was correlated with temperamental Effortful Control ( r=.292, p=.034) and Surgency (r=-.467, p=<.001). At 48 months USS was again correlated with Effortful Control (r=.493, p=<.001) and Surgency (r=-.384, p=.008). Children low on USS (greater dysfunction) were high on Surgency and low on Effortful Control at both ages. There was no association with Negative Affectivity. Some items on the USS subscale ("seeks all kinds of movement and this interferes with daily routines") map onto externalizing difficulties present in highly surgent children (McIntosh et al., 1999). Recognizing behaviors of children who may fit this sensory and temperament profile allows caregivers the opportunity to seek out resources to mitigate the onset or escalation of externalizing problems (Gartstein et al., 2012).

**030— Exploring the influence of prenatal and perinatal factors on the development of difficult temperament and substance use-related problems,** *Jad Hamaoui*, Cléa Simard, Jean Séguin, Sophie Parent, Natalie Castellanos-Ryan*

Temperament is related to externalizing behaviors and increased Substance Use (SU) in adolescents (Rioux et al., 2016; Zhou et al., 2022). Thus, identifying factors underlying the development of temperament could help in predicting later risky behaviors. Several studies have suggested that prenatal and perinatal factors play a role in the development of temperament. For instance, some research has identified maternal SU during pregnancy, prenatal stress due to low income, psychological factors such as maternal depression, and obstetric conditions such as low birth weight, as potential correlates of temperament traits. However, there is no consensus, as other studies have failed to replicate these associations (Takegata et al., 2021). Therefore, the objectives of this study are twofold: 1. To examine the association between several prenatal and perinatal factors and temperament. 2. To examine the indirect effects from prenatal and perinatal factors to later SU via temperament. A total of 1320 adolescents (57% females) were drawn from The Quebec Longitudinal Study of Child Development. Path analysis was conducted, in R with maximum likelihood estimation, to test the associations between pre- and perinatal factors, early temperament, and later SU-related problems. Socio-demographic, pre- and perinatal variables included: income, maternal age, maternal education, cigarette use during pregnancy, alcohol use during pregnancy, drug use during pregnancy, maternal depression during pregnancy, prematurity, birth weight, and neonatal health assessed via the Apgar test at 5 minutes after birth. Difficult temperament was mother-reported at 5 months post-birth and SU problems were evaluated at 23 years of age using the ASSIST (Khan et al., 2011). The statistical analysis revealed that only mother's education (β=0.129, p=.000) and maternal depression (β=0.120, p=.000) significantly predicted early temperament. Specifically, higher levels of maternal education and depression were associated with a more difficult temperament. No significant relationship was found between the child's temperament and SU-related problems (β=-0.025, p=.359). However, a significant difference was found according to sex (β=0.095, p=.001) and Apgar's scores (β=-0.056, p=.001). Males and children with poor neonatal health displayed SU-related problems. In summary, this study suggests that difficult temperament is not directly associated with obstetric factors or later SU problems in this sample. Rather, difficult temperament appears to be more closely linked to psychological and socio-demographic factors in early life. Future analyses will include testing the interactions between pre- and perinatal environmental factors such including maternal SU and depression in the prediction of later SU in youth.

# Poster abstracts

**031—Family Interactions and Externalizing problems of Low-Income Children : A Biological Susceptibility Perspective,** *Emma Lemay*, Marie-Pier Daunais, Chantal Cyr, Annie Bernier, Karine Dubois-Comtois*

Child development results from the complex interplay between individual characteristics and environmental factors (Larkin & Otis, 2019). While prior research has stablished the connection between parenting and externalizing problems (Seo et al., 2023), it is increasingly evident that temperament can moderate this association (Zhang et al., 2022). From an evolutionary perspective, reactive children might be more sensitive to both positive and negative environmental influences (Belsky, 2013). In other words, highly reactive children are more vulnerable to unfavorable environments, but benefit more from positive parenting. This susceptibility is particularly salient within low-income populations, because poverty exerts a pressure on families and increases parental stress and maladaptation in highly reactive children (Larkin & Otis, 2019). However, studies with low-income families are sparse and we do not know whether low-income is a sufficient factor to predict maladaptation in highly reactive children, or whether poor interaction quality in low-income families with highly reactive children is more likely to be related to maladaptation. The objective of this research is to evaluate how family interactions relate to externalizing problems, while considering temperament-based biological susceptibility, in disadvantaged populations. Participants were 64 children (3-5 years) and their parents receiving social security benefits in the province of Quebec. Family interaction quality was assessed from direct observation of a filmed mealtime (Dickstein et al., 1994) while child emotional reactivity and externalizing problems were assessed by both parents with the CBCL (Achenbach & Rescorla, 2000). Mothers' and fathers' scores were averaged to obtain scores representing both parents' perceptions. To test the moderation model, bootstrap analyses were performed using the PROCESS macro for SPSS. Child age, sex and language spoken at home were entered as covariates. Results revealed an overall significant model, $R2 = 0.61$, $F(6,47)=15.15$, $p <.01$ and the test of highest order unconditional interactions revealed a significant moderating effect, $F(1,57)=4.82$, $p=.03$. Posthoc analyses revealed that the association between family interaction quality and externalizing problems is non-significant when children are less emotionally reactive ($b=-.53$, $t=-.73$, CI=-1.96–.91). However, a significant negative association between family interaction quality and externalizing problems is found for emotionally reactive children ($b=-2.64$, $t=-3.96$, $p=.0002$, CI=-3.99–-1.31). Findings underscore the vulnerability of reactive children who are more at -risk of experiencing externalizing problems when exposed to poor-quality family interactions. Considering that overall quality of family interactions was poor in this sample, the results suggest that a diathesis-stress model may better represent the adaptation of children in low-income families.

**032— Child Emotional Reactivity and Parenting Behaviours: Longitudinal Associations with Youth's Internalizing and Externalizing Problems,** *Sasha Gunpat*, Dale M. Stack, Marie-Pier Paré-Ruel, Lisa Serbin, Paul D. Hastings*

Child temperament and parenting have been examined extensively (Eisenberg et al., 2005; Mills et al., 2011). Yet how children's temperament, specifically emotional reactivity, influences the development of internalizing (IP) and externalizing problems (EP) remains unclear. Although studies have focused on risk factors for IP and EP (Bayer et al., 2011), few have examined the moderating role of children's negative emotional reactivity in conjunction with positive parenting. Negative emotional reactivity is understood as a facet of temperament that drives how children experience and express negative emotions (Rothbart & Bates, 2006). Positive parenting practices (e.g., warmth, encouraging open discussion; Sanders, 2012) may be protective. Child emotional reactivity and parenting behaviours were examined as predictors of IP, and reactivity for EP. Data were derived from integrating three distinct Canadian samples (n=556; 51% boys) permitting the examination of complex longitudinal patterns at three time points: 3 to 5 (T1), 6 to 8 (T2), and 10 to 12 years (T3). Mothers completed questionnaires on their child's IP and EP, negative emotional reactivity, and their parenting. Multivariate linear regression and logistic regression models were tested for associations with IP (Study 1), and logistic regression coefficients and odds ratios reflecting associations of emotional reactivity with severity and versatility (engaging in multiple forms of antisocial behavior, e.g., aggression) of antisocial behavior for EP (Study 2). Positive parenting at T1 interacted with negative emotional reactivity to predict IP at Time 2 ($\beta = -.20$, $p = .005$). Simple slope analysis revealed the negative association between positive parenting at T1 and IP at T2 was stronger when negative emotional reactivity was high. Positive parenting at T2 interacted with emotional reactivity to predict IP at T3 ($\beta = .21$, $p < .001$); the positive association was stronger when reactivity was low. Finally, children with higher emotional reactivity showed more severe and versatile antisocial behaviors. Our results provide evidence that combinations of children's negative emotional reactivity and positive parenting predict IP through childhood. Positive parenting buffering against increasing IP when there was more negative emotional reactivity suggests protective effects. Emotional reactivity was also related to the most severe and versatile patterns of antisocial behaviors; both indicative of a worse prognosis later in life (worse outcomes, higher risk of incarceration). Identifying that predictions of IP and EP among children over time are dependent upon changes in levels of negative emotional reactivity in the child is a unique contribution to the developmental psychopathology literature.

# Poster abstracts

**033— The Association between Autonomy-supportive or Controlling Parenting and Temperament's facets in Early Childhood,** *Jessica Beaudoin*, Julie C. Laurin*

*Our research explores the link between autonomy-supportive or controlling parenting practices (Self-Determination Theory), with temperament facets during the early childhood. Data were collected in an observational and longitudinal design. Parent-child dyads (92.7% were mothers) were invited to two visits when the child was 24 months old (T1; N=102), as well as two additional occasions at 42 months (T2, N=85). During the visits, the dyads were given a clean-up task in which parent were required to ask their toddler to clean up toys after a free play activity (Kochanska & Aksan, 1995). At each T1 visits, parenting practices, i.e., autonomy-supportive or controlling parenting, were observed and coded (Laurin & Joussement, 2017) from the clean-up task. Parents completed the Early Child Behavior Questionnaire (ECBQ; Putnam et al., 2006) at T1 (M=24 months) and T2 (M=42 months) a questionnaire on child's temperament. Relying on standardised scores (Z scores), we conducted exploratory correlations to see the associations between our variables. In our study, our parenting variables (T1) were not significantly linked to temperament facets (T2), i.e., negative affectivity, effortful control, and surgency/extraversion, but we found some associations with some subscales' facets. Results showed that autonomy-supportive parenting (T1) is positively related to the Activity Level/ Energy (T2: r=.259, p=.027) and Positive Anticipation (T2: r=.205, p=.081, marginal) components from the Surgency/ Extraversion facet, to Fear (T2: r=.274, p=.018) and Shyness (T2: r=.331, p=.005) components from the Negative Affectivity facet, and negatively linked to Low Intensity Pleasure (r=-.232, p=.048) from the Effortful Control facet. Inversly, controlling parenting (T1) was positively related to Activity Level/Energy (T2: r=.214, p=.070, marginal) and to Motor Activation (T2: r=.352, p=.003) from the Negative Affectivity facet, and negatively related to Inhibitory Control (T2: r=-.262, p=.025) from the Effortful Control facet. My research provies supports associations between SDT parenting practices with toddlers (T1) and some preschoolers' temperament components (T2). It is possible that parents who use more autonomy support may be more attuned to their child's emotional affect, and thus report more fear and shyness, as well as more active behaviours and positive anticipation aligning with a curious exploration. Controlling parenting is linked to less inihibitory control and more active moving.*

**034—Maternal Autonomy Support and Children's Mastery Behavior: Does Children's Anger-Proneness Moderate?,** *Jessica T. Sullivan, Anne Hungerford**

Parental autonomy support includes providing choices and encouraging children's independent exploration and activity (Matte-Gagne et al., 2015; Ryan & Deci, 2000). Autonomy support is linked to young children's mastery behaviors, including task attentiveness and persistence (e.g., Kelley et al., 2000; Moorman & Pomerantz, 2008). Few studies have examined whether temperament moderates associations between maternal behavior and children's mastery behavior, but available data suggest stronger positive associations between maternal sensitivity and children's mastery behavior when children are higher rather than lower in anger proneness or "difficulty" (Chen et al., 2019; Cruz et al., 2018). Given these findings and the conceptual and empirical overlap between sensitivity and autonomy support, it was hypothesized that positive associations between maternal autonomy support and children's mastery behavior would be stronger when children were higher rather than lower in anger proneness. Sixty-nine mother-child dyads participated. Children's anger proneness was assessed at 24 months via maternal report on the Anger Proneness subscale of the TBAQ (Goldsmith, 1996). Maternal autonomy support was rated every 30 seconds during a 5-minute laboratory teaching task when children were 24 months. Children's mastery behavior was assessed at 24 and 36 months during 3-minute tasks in which toys were placed in clear boxes that children could not open independently. The total time spent on-task (i.e., attempting to open the box) was recorded. The overall model predicting 24 month mastery behavior from concurrent maternal autonomy support, temperamental anger proneness, and their interaction was not significant. However, after controlling for 24 month mastery behavior, the overall model predicting 36 month mastery behavior was significant, $F(4, 54) = 9.54$, $p < .001$, and there was a significant interaction between maternal autonomy support and children's anger proneness, $t(54) = 3.73$, $p < .001$. Simple slope analyses using the PROCESS macro (Hayes, 2018) indicated that at lower levels of anger proneness (16th percentile), maternal autonomy support was only marginally and negatively associated with children's mastery behavior, $b = -.33$, $p = .058$. At moderate levels of anger proneness (50th percentile), maternal autonomy support was not associated with children's mastery behavior, $b = -.00$, $p = .996$. However, at higher levels of anger proneness (84th percentile), maternal autonomy support was positively associated with children's mastery behavior, $b = .48$, $p = .001$. In addition to considering limitations of the study, the potential significance of parental autonomy support in fostering mastery behavior in anger-prone children will be discussed.

# Poster abstracts

**035— Revisiting the Direction of The Association Between Infant Temperament and Maternal Bonding: Data from a Longitudinal Study Starting During Pregnancy,** *Kim Deschênes*, Karl Larouche, Julia Garon-Bissonnette, Roxanne Lemieux, Jean-Pascal Lemelin, Nicolas Berthelot*

Multiple reports documented associations between infant temperament and maternal bonding. However, the direction of the association remains unclear. While some longitudinal studies showed that infant temperament influenced the quality of mother-infant bonding (Takacs et al. 2020), others observed that maternal behaviors shaped infant temperament (Kotila et al., 2014), or could not conclude on temporality given the use of cross-sectional designs (Abuhammad et al., 2020; Doyle et al., 2022; Nolvi et al., 2016; Tester-Jones et al., 2015; Tolja et al., 2020). The current study aimed to evaluate whether maternal bonding assessed before childbirth (operationalized through a measure of antenatal attachment) prospectively predicted infant temperament at 5 – to - 15 months postnatal and whether infant temperament contributed to maternal bonding over and beyond the effect of prenatal bonding. Pregnant women (N = 233, Mage = 29.32, SD = 4.51) were recruited at pregnancy-related medical appointments or prenatal classes and followed-up between 5 and 15 months postpartum (53% girls, Mage = 9.55 months, SD = 2.81). Maternal bonding was assessed with the Maternal Antenatal Attachment Scale during the third trimester of pregnancy and with the Maternal Postnatal Attachment Scale at the longitudinal follow-up. Mothers reported on child temperament using the Infant Behavior Questionnaire. A structural equation model [c2 (7) = 6.56, p = .48, CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .05] showed that maternal antenatal attachment predicted the temperament factors of surgency (b = .20, p = .001, 95% CI [.10; .30]) and effortful control (b = .19, p = .003, 95% CI [.08; .30]), whereas effortful control (b = .17, p = .01, 95% CI [.08; .27]) and negative affectivity (b = -.25, p < .001, 95% CI [-.34; -.15]) were associated with postnatal bonding over and beyond the effect of antenatal attachment (b = .31, p < .001, 95% CI [.22; .41]). The model suggests bidirectional associations between maternal bonding and infant temperament. On one hand, the finding that maternal bonding assessed during pregnancy predicted two factors of child temperament (surgency and effortful control) suggests a potential influence of maternal bonding on child temperament that cannot be explained by child-related factors. On the other hand, the finding that infant negative affectivity was not associated with prenatal bonding but was negatively associated with postnatal bonding would point toward a specific contribution of this factor to the quality of the emotional engagement of mothers toward their infant.

**036— Effects of INSIGHTS on Classroom Quality, and Moderating Role of Teacher Personality,** *Yuenjung Joo*, Xun Liu, and Kathy Rudasill, Jungwon Eum, Nicole Adams, Jentry Barrett, and Gwen Nugent, Martinique Sealy*

The quality of children's interactions with caring adults is a critical predictor of child developmental outcomes (Downer et al., 2010). One of the most prominent adults in a young child's life is their teacher (Bronfenbrenner, 1979). Some studies suggest that preschool teacher personality could predict the quality of teacher-child interactions; however, there is limited empirical evidence on the links between teacher personality and the quality of teacher-child interactions, and extant research provides mixed results (Crandall et al., 2015; Ripski et al., 2011). Therefore, we have an incomplete understanding of the role of teacher personality on the quality of teacher-child interactions. In the current study, we examined the role of teacher personality as a moderator on the effectiveness of a class-wide intervention for promoting teacher-child interaction quality. INSIGHTS into Children's Temperament (INSIGHTS; McClowry, 2014) is a social-emotional learning intervention to help teachers use temperament-based strategies to improve children's emotional and behavioral regulation by increasing teachers' and children's knowledge about individual differences in temperament (Rudasill et al., 2020). INSIGHTS has been shown to improve the quality of teacher -child interactions in a previous clinical trial (Capella et al., 2015). Research questions are: (1) Does INSIGHTS improve the quality of teacher-child interactions in kindergarten and first grade classrooms? (2) Does teacher personality moderate the effect of the INSIGHTS on the quality of teacher-child interactions? Participants include 66 teachers (35 kindergarten, 31 first grade) from 29 schools. The participants are from a rural Midwestern state in the U.S. Schools and were randomly assigned to treatment (n=31) or control condition (n=35). Treatment schools received INSIGHTS over 10 weeks in kindergarten and again in first grade. Teacher-child interaction quality was measured using the Classroom Assessment Scoring System (Pianta et al., 2008), and teacher personality was measured using the Ten-Item Personality Inventory (Gosling, et al., 2003). Using one-way repeated-measures ANOVA, we found significant differences in teacher-emotional support between treatment and control conditions in first-grade teachers, although other dimensions were not significantly different in both kindergarten and first-grade teachers (RQ1). However, we found a significant moderation effect for teacher personality (agreeableness, extraversion and openness to experiences) in the first-grade treatment condition on teacher-child interaction quality (emotional support), as well as a moderation effect for agreeableness on interaction quality (classroom organization). This study provides new evidence of how teacher personality influences social-emotional intervention effectiveness and classroom interaction quality.

# Poster abstracts

**037— Does infant temperament differ in offspring of women that were pregnant before and during the COVID-19 pandemic,** *Jinny Poirier-Plante*, Gabrielle Duguay, Julia Garon-Bissonnette, Roxanne Lemieux, Nicolas Berthelot*

The COVID-19 pandemic was associated with multiple deleterious consequences on mental health in many individuals, including pregnant women (Berthelot and al., 2020). This is alarming considering that psychological distress in pregnant women in the context of the pandemic has been linked with poorer regulatory capacity (Provenzi et al., 2021) and delays in socioemotional development (Duguay et al., 2022) in infants. However, studies comparing cohorts of infants of women that were pregnant before and during the COVID-19 pandemic are still scarce. The aim of this study was to evaluate whether infants of women that were pregnant at the onset of the pandemic showed a different temperament than offspring of women that were pregnant before the COVID-19 pandemic. Methods: Two cohorts of pregnant women (N=299) were recruited in perinatal services (from 2015 to 2018, n=92) and online during the COVID-19 pandemic (April 2020, n=207) and were followed-up once when their child was aged between 6 and 15 months old (51.8 % girls). A sociodemographic questionnaire was assessed at basepoint and at follow-up to assess maternal and infant characteristics. Infant temperament was assessed using the Infant Behavior Questionnaire (IBQ; Gartstein & Rothbart. 2003). An ANCOVA was performed using IBM SPSS Statistics 28. Results: Analyses controlling for infant age in months and maternal education showed that mothers who were pregnant during the pandemic (M=3.47, SD = .93) reported moderately lower surgency/extraversion in their infant ($\eta 2 = .26$) than mothers who were pregnant before the pandemic (M=4.55, SD = .76), $F(2,298) = 34.49$, $p < .001$. No statistical difference were observed as regards to negative affectivity and regulation (ps > .05). Conclusion: Infants of the cohort of mothers who were pregnant during the COVID-19 pandemic showed a lower propension for positive affectivity than infants of mothers who were pregnant before the pandemic. This result may reflect the large influence of the quality and frequency of interpersonal relationships over the factor of surgency (Holmboe, 2016), which may have highly modified and reduced during the pandemic. This is important considering that lower surgency is linked with later child developmental outcomes such as sleep (Camerota et al., 2019) and academic abilities (Gartstein et al., 2016). More research is needed in order to evaluate the long-term consequences of the pandemic on child temperament and social-emotional development.

**038— Child respiratory sinus arrhythmia as a mechanism between parenting stress and child effortful control: Does context matter?** *Aubrey B. Golden*, Madeline R. Olwert, Davis Daniel E. Choe*

Children in stressful contexts have been shown to have worse effortful control (EC), a temperament construct that reflects one's ability to regulate behavior and attention. Respiratory sinus arrhythmia (RSA) is a biomarker of self-regulation, with specific RSA patterns associated with worse EC in children exposed to early adversity. Given that primary caregivers shape young children's regulatory systems through dyadic co-regulation, parenting stress may be associated with differential patterns of child RSA, impacting child EC. However, it is unclear whether child RSA shows context-specific relations with parenting stress when assessed during independent laboratory tasks and during dyadic tasks with a parent. Moreover, parenting stress may show differential associations with child EC depending on parent-report and performance-based measures of EC. Such context-specificity and variation in measurement approaches may have implications for whether child RSA mediates the association between parenting stress and child EC. Thus, the present study examines (1) whether parenting stress predicts parent-report and/or lab-measured child EC, (2) whether parenting stress predicts child RSA assessed during independent and/or parent–child interaction tasks, and (3) whether child RSA mediates the association between parenting stress and child EC. Parents (N = 70, M = 37.97 years, 88.6% mothers) completed the Parenting Stress Index to assess parenting stress and the Children's Behavior Questionnaire to assess their preschool-aged child's EC. During a 2-hour lab visit, children's (N = 70, M = 51.41 months, 48.6% girls) cardiovascular autonomic activity (used to construct RSA scores) was recorded while they completed an EC task battery (e.g., day/night, gift delay) independently and while they engaged in four parent–child interaction tasks (e.g., free play, clean up). Preliminary regression analyses show parenting stress negatively predicts parent-reported child EC ($\beta = -.56$, $p < .001$), but not children's lab-measured EC ($\beta = .04$, $p = .810$). Additionally, parenting stress negatively predicts child RSA during parent–child interaction tasks ($\beta = -.27$, $p = .073$), but not child RSA during independent tasks ($\beta = -.04$, $p = .812$). Child RSA during independent tasks positively predicts lab-measured child EC ($\beta = .40$, $p = .003$), as does child RSA during parent–child interaction tasks ($\beta = .33$, $p = .019$). These findings suggest child RSA may be a biological mechanism underlying the effects of parenting stress on child EC specifically within the context of parent–child interactions. Preliminary mediation models suggest marginally significant indirect effects of parenting stress on both measures of child EC through child RSA during parent–child interaction tasks.

# Poster abstracts

**039— Child temperament and maternal support for the father's role as antecedents of paternal autonomy support during toddlerhood,** *Emma Laflamme*, Rose Bourget, Frédérique Fortin, Célia Matte-Gagné*

While several studies present compelling evidence for the important role of parental autonomy support (AS) in children's development (Soenens et al., 2017), the factors that promote or hinder the use of parental AS have seldom been explored, especially among fathers. Parental AS is defined as the degree to which parents encourage independent problem solving, choice, and participation in decisions versus externally controlling children's thoughts and behaviors (Grolnick & Ryan 1989). The present study explored the predictive role of child temperament (surgency/extraversion [S/E], effortful control, and negative emotionality) and maternal support for the father's role and gatekeeping on fathers' AS versus controlling practices during toddlerhood. In the present study, 169 biparental families were assessed when infants were 6 months (T1) and 12 months (T2). At T1, child temperament was assessed using the very short form of the Infant Behavior Questionnaire-Revised (Putnam et al., 2014), completed by fathers. Maternal support for the father's role as perceived by fathers was also assessed at T1 using a questionnaire (Bouchard & Lee, 2000). Self-reported maternal gatekeeping (i.e., beliefs and behaviors hindering fathers' participation in child rearing) was also assessed at T1 using Allen and Hawkins (1999)'s questionnaire. At T2, both paternal AS and control were rated using Whipple et al. (2011)'s coding scheme, applied to a 5-minute father-infant problem-solving sequence filmed at home (ICC >.80). Structural equation modeling (see Figure 1) revealed that child S/E was predictive of less observed paternal AS ($\beta = -.25$, $p = .036$) and more paternal control ($\beta = .28$, $p = .017$) at T2. In contrast, maternal support for the father's role as perceived by fathers at T1 was predictive of more observed paternal AS ($\beta = .24$, $p = .005$) and less paternal control ($\beta = -.31$, $p < .001$) at T2. Child effortful control and negative emotionality, as well as maternal gatekeeping, were not found to be associated with paternal AS and control. The findings of the present study suggest that maternal support for the father's role might promote paternal AS, while child S/E might hinder it. According to Agrati et al. (2015), higher activity level and tendency to approach new stimuli, reflected in child S/E, may lead to the display of more risk-taking behaviors, which may, in turn, augment controlling parenting. Hence, policies and intervention programs that want to promote paternal AS should consider maternal support for the father's role, but also child temperament.

**040— Helping French-Canadian Preschool Children Thrive in the School System through INSIGHTS intervention,** *Élizabeth Harvey*, Jean-Pascal Lemelin, Kristel Mayrand, Jonathan Bluteau*

Temperament is an important topic for the inclusive education paradigm; it's considered an invisible marker of diversity and it is related to children's capacity to manage their emotions and behaviors. To help every child find success in the school system, inclusive teachers need to create environments that provide an optimal fit for children presenting a variety of temperament profiles (Sealy et al., 2021). INSIGHTS into Children's Temperament (INSIGHTS) is an evidence-based intervention designed to support children's development and academic learning through improving teachers understanding of child's temperament, (e.g., McCormick et al., 2015). However, the program's effectiveness has so far only been tested in the United States (with one exception being Jamaica), and with samples of kindergarten children. The main goal of the current study was to examine the effectiveness of INSIGHTS (for teachers) in promoting children's adaptive behaviors in a sample of 64 French-Canadian preschoolers. Educators (N=11) from Nova Scotia were assigned into INSIGHTS (experimental) or control groups. Using the Behavior Assessment System for Children - Teacher Rating Scale (BASC–3- TRS- Preschool; Reynolds & Kamphaus, 2015), educators reported children's adaptive and problem behaviors before and after INSIGHTS (T1: March 2023; T2: June 2023). Results from the implementation process showed a high level of adherence to the program, with a participation rate of 98,2%. Moreover, all educators confirmed that they were able to apply what they had learn in the program to their work setting (enough = 11%; good = 22%, a lot = 67%). Regarding the program effectiveness, preliminary findings indicate that INSIGHTS helped promote adaptative behaviors in French preschool settings. Results from paired-samples t-tests (one sided) comparing the average scores in children between T1 and T2 revealed a significant decrease in externalizing problems ($t(50) = 2.00$, $p = .025$), internalizing problems($t(50) = 2.77$, $p = .004$), and behavioral symptoms ($t(50) = 2.18$, $p = .017$), as well as a significant increase in adaptive skills ($t(50) = -2.83$, $p = .003$). No significant differences were found for the control group. Overall, this pilot study supports the effectiveness of INSIGHTS in improving adaptative behaviors and reducing behavior problems in a French sample of preschoolers. Helping educators understand child's temperament appears to be a promising avenue to achieve inclusive education in Canada.

# Poster abstracts

**041— Prenatal maternal stress during the COVID-19 pandemic and infant's temperament,** *Jessica Pearson*, Rosalie Caron*

Studies suggest that prenatal maternal stress (PMS) increased during the pandemic (Berthelot et al., 2020). Considering that PMS has been shown to be related to child's temperament (Madigan et al., 2018), several researchers raised concerns over the negative consequences that the pandemic context could have on child development. Temperament, as defined by individual differences in reactivity and regulation, is represented in Rothbart's model by three factors: 1) Surgency/Extraversion; 2) Negative Affectivity; and 3) Orienting/Regulation (Rothbart, 2007). A few studies to date report that PMS in the context of the pandemic is associated with more negative affectivity during the first year of life (Buthmann et al., 2022; Morris & Saxbe, 2023) and more extraversion at 6 months (López-Morales et al., 2022). Studies examining this issue are scarce, however, and need to be replicated. This study aims to: 1) examine the association between PMS in the context of the COVID-19 pandemic and infant's temperament; and 2) examine the moderating effect of child's sex in this association. Participants (N = 269) completed an online questionnaire during pregnancy (T1) between January 8 and August 31, 2021 to report on PMS variables and when their child was 6 months (T2) old to collect information on infant's temperament. Measures. General stress was measured using the short version of the Psychological Stress Measure (Lemyre & Tessier, 2003). Pandemic-related stress was assessed in two ways: 1) objective exposure to COVID-19 (e.g. lockdowns, infection with COVID-19); 2) participants' subjective stress (perceived impact of the pandemic on pregnancy and overall stress level in relation to the pandemic). The Infant Behavior Questionnaire-Revised short form (Gartstein et Rothbart, 2003) was used to assess child temperament. All three regression models are significant, explaining 6% of Surgency/Extraversion, 5% of Negative Affectivity, and 5% of Orienting/Regulation. The only PMS variable that marginally predicts higher Surgency/Extraversion is objective exposure to COVID-19. Mothers' perceived impact of the pandemic on pregnancy significantly predicts higher Negative Affectivity and lower Orienting/Regulation scores. Child's sex significantly moderates the association between perceived impact of the pandemic on pregnancy and infant's Orienting/Regulation: while this relationship is not significant for girls, a higher level of PMS predicts lower regulation in boys. The relation between PMS and infant's temperament seems to be present, but low. Boys may be particularly vulnerable to PMS. Other factors, including maternal stress in the postnatal period, should be explored as predictors of infant's temperament.

**042—The role of behavioural inhibition and intolerance of uncertainty in adherence to pandemic health measures,** *Magdalena Zdebik**

Behavioral inhibition (BI), a physiological vulnerability to respond negatively and more intensely to novelty and uncertainty, is one of the most widely studied temperament profiles and has been established as a risk factor for internalizing disorders, particularly anxiety disorders. Furthermore, a link between this temperament profile and the cognitive construct of intolerance of uncertainty, a tendency to react negatively to uncertain or ambiguous situations or events and a main component of a prominent generalized anxiety disorder model, has also been demonstrated. This presentation will summarize our work in recent years on behavioral inhibition and its longitudinal links to specific internalizing mental health disorders, such as generalized anxiety, social anxiety and depression. Studies examining links between behavioral inhibition in childhood and 1) internalizing symptoms in adolescence (social anxiety, generalized anxiety, depression), as well as, 2) intolerance of uncertainty in emerging adulthood 3) and generalized anxiety disorder symptoms in adulthood will be presented. Differences between behavioral inhibition, shyness and social withdrawal and their specific links to different internalizing symptoms will also be addressed. The results highlight the importance of a better understanding of the role of early risk factors like temperament in relation to internalizing disorders. This lifespan perspective would not only provide a more comprehensive understanding of the etiology of these disorders, but also identify concrete targets in order to contribute to the development of preventative measures and early intervention programs.

# Poster abstracts

**043— Exploring the Link Between Childhood Temperament, Personality Traits, and Sexist Attitudes in Early Adulthood,** *Éléonore Chavignon*, Alexa Martin-Storey, Jean-Pascal Lemelin, Yann Le Corff, Mélanie Lapalme*

Personality traits have been suggested to account for individual differences in social dominance orientation, a construct underlying sexist attitudes. And, while previous research has examined mechanisms linking childhood temperament traits to later personality outcomes, the extent to which temperament is linked to the development characteristics of social dominance, like sexist attitudes, has been unexplored. The current project took a developmental approach to understand (1) if childhood temperament (negative affect, extraversion, effortful control) is linked with sexist attitudes (hostile sexism and benevolent sexism) in early adulthood, and (2) if this association is mediated by personality traits (neuroticism, extraversion and conscientiousness) in adolescence. Participants (N=524) in a longitudinal study on children with or without CP completed relevant measures of temperament (T1: 6 to 10 years old), personality (T2: 12 to 16) and sexist attitudes (T3: 17 to 21 years old). Results show that two temperament traits (extraversion and effortful control) were associated with benevolent sexism in boys at time 3 when controlling for CP and age. Interestingly, mediation analyses show no indirect effect of personality traits of conscientiousness and extraversion accounting for this association. A significant indirect effect showed that neuroticism mediated the association between negative affect and benevolent sexism, but this effect and the direct effect between negative affect and benevolent sexism disappear after controlling for CP. The study's implications shed light on the nuanced developmental pathways that contribute to social dominance orientation more generally and sexism more specifically, providing opportunities for an understanding of the traits that may underlie the development of these attitudes.

**044— An investigation of the relationship between parent-rated temperamental emotion regulation, in-vivo parent socialization, and in-vivo child emotion regulation,** *Lynnea Mayorga*, Kirby Deater Deckard, Adam S. Grabell*

Emotion socialization is the process of children learning about emotions, primarily through interactions with their caregivers. Emotion socialization plays an important role in developmental outcomes, such as the ability to regulate emotions. We know from past literature that difficult child temperaments shape parent interactions with their children, however, little is known about how they predict individual differences in emotion socialization. Further, most of what we know about this comes from parent self-reports of emotion socialization, as opposed to how temperament predicts specific, in-vivo socialization behaviors. The goal of the present study was to explore the relationship between parent-rated temperamental emotion regulation, observed parent socialization, and observed child emotion regulation during dyadic interaction tasks. The study consisted of 162 children between ages 32.85 months and 87.82 months (M = 57.10, SD = 15.69; 50% male), and their mothers (Mean age = 32.68 years, SD = 6.28; 75.3% white). The sample was part of a larger study on mother temperament and child behavior problems. Temperamental emotion regulation was measured using the Child Behavior Questionnaire (CBQ) Negative Affect and Effortful Control subscales. During a lab visit, the mother and child participated in three five-minute segment tasks—an Etch-a-Sketch drawing task, a puzzle, and a Duplo block building task—coded using the PARCHISY system (Deater-Deckard et al. 1997). Emotion socialization practices were captured by observers' rating of maternal negative control (e.g., use of criticism, physical control of the child) and the child's emotion regulation was captured with negative affect (e.g., frowning, harsh tone) ratings, each averaged across the three segments. Our hypotheses were as follows: children high in CBQ negative affect and low in CBQ effortful control would predict the child's in-vivo negative affect during the tasks; children high in CBQ negative affect and low in CBQ effortful control would significantly predict their mother's in-vivo negative control; and maternal negative control and child negative affect during the tasks would be positively correlated. Results showed that as child scores for CBQ negative affect increased, in-vivo child negative affect also increased (b=.119, SE=.054, p=.030). Children high in CBQ negative affect also significantly predicted high in-vivo maternal negative control (b=.161, SE=.060, p=.008). Finally, dyads high in maternal negative control were significantly correlated with high child negative affect (b=.344, SE=.087, p<.000). These findings have implications for untangling the role that child temperament plays in parent socialization.

# Poster abstracts

**045— Associations between temperament and sleep from infancy through childhood** *Sophie Bellemare*, Florence Deguire, Gabriela Lopez, Inga Knoth, Sarah Lippé*

By the end of their first year, infants will have spent more than half their lives sleeping, suggesting that sleep is not a negligible factor in their development. Indeed, sleep is associated with various aspects of infant development, including cognitive development, and can have a significant impact on parental behaviour, mental health, and well-being. However, the factors that contribute to sleeping behaviours during infancy have not yet been clearly identified. These factors include infant characteristics such as sex and temperament as well as environmental characteristics such as socioeconomic status. Studies examining temperament and various sleep outcomes during the first year have demonstrated that temperament influences sleep duration, night waking and sleep problems. The present study attempted to unify previous research on the association between infant temperament and sleep, by exploring many sleep outcomes, including parasomnias that have been vastly understudied, in a group of children within the first four years of their life. We collected data of 129 children (70 male, 59 female) that we followed from 18 months to 4 years of age. Sleep quality and parasomnias were assessed at 18, 24 and 48 months of age with the Child Behavior Checklist (CBCL) sleep items completed by parents. Temperament was examined as effortful control, negativity, and surgency with the Early Childhood Behavior Questionnaire Very Short Form at 18 months of age. Based on correlational data, we found significant and negative associations between negative affect at 18 months and sleep quality at 18 months ($p = 0.004$). Also, we found significant and negative associations between surgency at 18 months and parasomnias at 18 months ($p = 0.04$) and 24 months ($p = 0.05$). In sum, the results of the present study suggest that infant with temperaments rated as higher in negativity may have worse sleep quality and as higher in surgency may have fewer parasomnias. These influences may in turn impact the various aspects of infant development associated with sleep, and have implications for promoting healthy sleep patterns, which consequently can promote both infant and parental well-being. Researchers and clinicians can expand upon this work by further investigating the critical importance of early sleeping behaviours on later outcomes.

**046— Effects of Prenatal Exposure to Secondhand Smoke on 9-month Infant Attention Are Moderated by Behavioral Reactivity,** *Amy E. Margolis, Mariah DeSerisy*, Jacob Cohen, Julie Herbstman*

Prior findings suggest that prenatal exposure to secondhand smoke (SHS) is associated with increased attention problems in youth. In our recent work we have linked such exposure to altered self-regulation in 4-month infants. In addition, a robust literature links infant temperament with infant attention. Here we examine if the effects of prenatal SHS exposure on 9-month infant attention are moderated by infant reactivity and regulation. Mothers/infant pairs (N=73) were recruited from a longitudinal birth cohort followed at the Columbia Center for Children's Environmental Health. Prenatal SHS exposure was measured via maternal self-report of a smoker in the home during a prenatal interview conducted in the 2nd or 3rd trimester. Infant attention was assessed via Multisensory Assessment of Attention Protocol (MAAP) at age 9 months; a Tobi eyetracker recorded infant looking behavior. Measures include: latency, duration, and accuracy of looking toward synchronous versus asynchronous videos presented simultaneously on either side of the monitor. Four conditions were formed by crossing social versus non-social stimuli, and high versus low competing stimuli (central stimulus present vs. absent). Infant reactivity and regulation was measured via the Infant Behavioral Questionnaire (37-item short form) which provides measures of effortful control, negative affect, and surgency. We hypothesized that relative to non-exposed infants, those with prenatal SHS exposure and lower effortful control but higher surgency or negative affect would show worse attention (shorter latency and duration and lower accuracy). Linear regression tested the interaction term on the three attention outcomes. Across all infants, longer latency was observed for high versus low competition and for social versus non-social stimuli (p's<.01). In high competition non-social conditions, effects of prenatal SHS on duration were moderated by effortful control (Beta=-0.24, SE =0.11, t=-2.07, p = 0.04) and surgency (Beta=-0.59, SE =0.13, t=-4.61, p<0.0001), and effects on latency were moderated by surgency (Beta=3.94, SE =1.9, t=2.08, p = 0.04).

# Poster abstracts

**047—The evocative role of child negative emotionality on parental aggression and its implications for child externalizing problems**, *Dana Katsoty*, Lior Abramson, Dana Vertsberger, Ariel Knafo-Noam*

Both child negative reactivity and parental aggressive have been extensively studied as risk factors for the emergence of child externalizing problems. Despite several theories arguing for the need to examine bidirectional effects, the majority of research has overlooked the possible evocative role of child negativity on parenting and has viewed the child primarily as recipient of parental influences. We argue that this unidirectional examination overlooks the possible evocative role of child temperament on parenting. We suggest a transactional approach to explore a potential origin of parental aggression as an evoked response by child temperament. To do so, we used a multi-stage longitudinal design, and examined the interplay of child negativity and parental aggression across development, and their role in predicting child externalizing. We used a four-wave longitudinal study of families (N=400) beginning at age 9 months, and continuing to ages 18 months, 3 years, and 5 years. At stages 9 months to 3 years, we assessed child negativity with the Emotionality, Activity and Sociability scale (EAS; Buss & Plomin, 1984), and parental aggression with the Parental Acceptance-Rejection Questionnaire (PARQ; Rohner & Khaleque, 2005). Additionally, at age 5, we assessed child externalizing problems using the Strengths and Difficulties questionnaire (SDQ, Goodman, 1997). We used a cross-lagged panel model to predict externalizing problems at age 5 from child negativity and parental aggression. Both child negativity and parental aggression showed substantial longitudinal stability. Importantly, child negativity at 9 months predicted externalizing, while child negativity at subsequent stages did not have an additional significant effect on externalizing (beyond initial level of negativity). On the other hand, parental aggression at ages 9 months and 18 months did not predict child externalizing; rather, only at age 3 years, parental aggression predicted child externalizing. Notably, parental aggression at that stage (3 years) was predicted by child negativity at the previous stage (18 months). To conclude, our results indicate that both child negativity and parental aggression predicted externalizing, and that child negativity had an evocative role on parental aggression. Our findings have important implications for understanding the intricacy of the child temperament-parenting relations, and their contribution to the emergence of child behavior problems. While an effect for parental aggression in predicting child externalizing was observed, we found that parental aggression was accounted for, at least to a degree, by child negativity. This process sheds light on the evocative role of temperament on the child's environment.