

OTC 21 Abstracts

Neurobiological Basis of Temperament

Biopsychosocial perspective on infant and child temperament Martha Ann Bell, Virginia Tech

A biopsychosocial conceptualization of temperament considers child neurobiological functioning in the context of the parenting environment. Findings from a diverse longitudinal sample of children from infancy through early childhood will focus on the interplay of child neurophysiology and maternal behaviors, as well as maternal report and laboratory observations of child temperament with corresponding neurophysiological recordings. Links with maternal temperament will also be discussed.

Social withdrawal and self-regulation: Developmental and neurobiological mechanisms Heather Henderson, University of Waterloo

The development of self-regulation depends on the interplay of reactive and effortful processes. The focus of this talk will be on the unique regulatory needs of children who are high in temperamental withdrawal. Behavioral and physiological (EEG/ERP) data will be used to demonstrate that high levels of self-control, while beneficial for children high in temperamental approach, can negatively impact children high in temperamental withdrawal. Discussion will focus on the ways in which early withdrawal tendencies shape neurobiology, and in turn, the ability to flexibly implement regulatory strategies in middle childhood.

Childhood adversity and neural substrates of emotion regulation among young adults: Epigenetic and temperamental correlates

Wojciech Łukasz Dragan, University of Warsaw

Childhood adversity is one of the key elements of early environment that may shape the development of emotion regulation processes. Emotional dysregulation may lead consequently to the symptoms of psychopathology. The possible mechanisms, which are involved in the impact of childhood adversity on brain function and behavior, may be epigenetic in nature. In this context, it cannot be ruled out the importance of temperamental factors. Data will be presented from the study of 90 young adults (aged between 18 and 22) selected on the basis of extreme scores on the Early Life Stress Questionnaire. During fMRI the participants perform emotion regulation tasks, which refer to reappraisal and suppression strategies. The presentation will be supplemented by the data on epigenetic characteristics of genes involved in stress response and participants' temperament profiles identified by means of Formal Characteristics of Behavior- Temperament Inventory.

Temperament and psychophysiology in adult women

Kirby Deater-Deckard, University of Massachusetts at Amherst

There are gaps in our understanding of how psychophysiological and behavioral indicators of temperament develop from early to middle adulthood in women. Findings will be presented from a diverse community sample of 20 to 50 yr old mothers of young children, with emphasis on covariation between EEG/ECG variables, and self-reported and observed temperament. Connections with children's temperament also will be examined.

Neurophysiological Systems Underlying Temperament:

Structure of temperament and psychochemical systems underlying temperament traits Irina Trofimova, Cllab, Psychiatry Department, McMaster University, Hamilton, ON

Temperament is viewed here as biologically based individual differences with main links to endocrinal-limbic regulation and to the morphology of the nervous system. This presentation reviews findings in neurochemistry that link temperament traits to the relationships between neurotransmitter systems. Specialization between neurotransmitter systems underlying temperament traits and mental illness is analyzed here from a functional

perspective, which considers the development of the structure of adult temperament as the result of certain functional properties of the tasks and activities of adults. The roles of monoamine neurotransmitters and opioid receptor systems in behavioral regulation are briefly reviewed. The proposed model, "Functional Ensemble of Temperament", organizes 12 temperament traits in terms of: energetic, dynamical and orientational aspects of activities and also, activity-specific aspects (physical vs. verbal-social vs. mental aspects of the task). Emotionality is presented in this model as an amplifier of the dynamical aspects, i.e. of sensitivity, energetic and lability characteristics.

The Neural Basis of Sensory Processing Sensitivity Bianca P. Acevedo, Semel Institute for Neuroscience and Human Behavior, University of California, Los Angeles

Sensory processing sensitivity (SPS) is a trait associated with greater sensitivity and responsiveness to the environment and to social stimuli. It is found in approximately 20% of humans and a similar minority in over 100 other species. As such, high (vs. low) SPS individuals report being more affected by others' moods, subtleties in the environment, and negative and positive stimuli. It is thought that these traits are a result of greater depth of processing. Recent neuroimaging studies with high (vs. low) SPS individuals confirm these characteristics. For example, fMRI studies have also shown that greater SPS is associated with visual areas and making fine visual distinctions, and stronger neural responses to novel positive and negative stimuli. In a fMRI study of 18 individuals (scanned twice over the first year of marriage), my colleagues and I found that individuals with greater SPS (measured by the standard Highly Sensitive Person Scale) showed stronger activation in brain regions implicated in attention, awareness, integration of sensory information, empathy, and action. These neuroimaging results show how the brain mediates complex SPS processes associated with greater awareness to subtleties, including perceiving and "feeling" what others are feeling, and being more responsive to both negative and positive social and environmental stimuli.

Between temperament and mood disorders: towards a common framework. William Sulis, Cllab, Psychiatry Department, McMaster University, ON, Canada

Temperament traits were linked to specific patterns in the relationships between neurotransmitters and activation of certain brain structures. Similar links were found between mental illnesses and neurotransmitter systems. This presentation discusses links between mood disorders and temperament traits based on the studies of depression and anxiety conducted in Canada. These studies utilized the STQ-77, a temperament test that is based on the Functional Ensemble of Temperament (FET) model and used four age adult groups (17-24, 25-45, 46-65 and 66-85). Age, sex and temperament differences are analyzed in the framework of the 12 components of the FET model. FET differentiates between endurance, integration and orientation traits, and this highlights age-related differences. Differentiation between physical, social-verbal and mental aspects of activity suggested by the FET highlights sex differences and also differences between depression and anxiety. Overall the results of these study suggest the benefits of differentiating between emotionality and non-emotionality-related traits and point to the utility of using a functional approach to both taxonomy of temperament and classification of mental disorders.

Does the match between preschoolers and their mothers vary differentially based on family income? Stephanie F. Thompson, Liliana J. Lengua, & Cara Kiff University of Washington

The current study examines how the combination of child temperament (fear, frustration, positive affect, effortful control) and parenting behaviors (warmth, negativity, limit setting, scaffolding, responsiveness) predict preschool-age children's adjustment problems and social competence. Further, we examine if those interactions vary as a function of income. Using a community sample of preschool-aged children (N = 306) and their mothers, path analyses were run to examine the main effects of income, child temperament, and parenting on subsequent child adjustment. Two-way interactions of temperament by parenting were entered into the models one-by-one and examined for support for differential susceptibility versus vulnerability. To address whether there is evidence for income differences in the relations of child temperament, parenting behaviors, and their interaction to adjustment outcomes, a cross-group path model in which all parameters were free to differ across income was compared to a model in which all paths and covariances were constrained to be equal across income. Results are discussed to emphasize what predicts child adjustment: the child, the parenting, the context, or a combination of the three.

Temperament and Parenting in At-risk Contexts:

Variations in Parent by Temperament Interactions across Income: Liliana J. Lengua & Cara Kiff

Understanding Externalizing Behavior across Early Childhood from Maternal Behavior in Different Contexts and Child Effortful Control Cynthia L. Smith and Lin Tan, Virginia Tech

The current study examined trajectories of child externalizing behavior across early childhood as predicted by maternal behavior in different contexts (clean up and do not touch tasks) and child effortful control. At the first assessment (T1), 140 mothers and toddlers participated, and two follow-up assessments were completed during preschool and school-age. Mothers reported child externalizing behavior at each assessment. Maternal assertive control behavior in both do not touch (DNT) and clean up (CU) tasks were observed at T1. Child effortful control was reported by mothers at T1. Generally, child externalizing behavior decreased over time. Hierarchical linear modeling analyses were conducted to examine if maternal assertive control, child effortful control, and the interaction of maternal assertive control and child effortful control predicted the trajectory of child externalizing behavior. Differences in how maternal behavior in each task related to child effortful control in the prediction of both the slope and intercept of child externalizing behaviors were found and will be discussed.

Direct observations of behavioral individuality as part of video-guidance for parents in child protective services: Can manualized short-term video-guidance for parents in child protective services change aspects of children's behavioral characteristics? Kåre S. Olafsen, Filip Drozd, Centre for Child and Adolescent Mental Health, Eastern and Southern Norway, Oslo, Norway; Dag Nordanger, Regional Centre for Child and Youth Mental Health and Child Welfare, Western Norway, Bergen, Norway; & Ming Wai Wan, Institute of Brain, Behaviour and Mental Health, University of Manchester, United Kingdom

This investigation aims to study the effectiveness of video-guidance for parents in child protective services (CPT). Primary outcomes are behavioral and cognitive characteristics of children aged 4 to 8 years, as well as parent-child relational quality. Video-guidance is widely used to sensitize parents and to foster adjustments in parenting style, but there are no controlled studies within Norwegian CPS. Ultimately, increased parental sensitivity and attuned responsiveness to children's needs and individuality, such as displays of affect, activity level, and task persistence, may be achieved through intervention. However, due to the adaptations the child may make to the adverse caregiving situation, and which may change as a function of improvements in caregiving quality, one may ask to what degree such behavioral characteristics really can be considered stable traits. The study-protocol is presented, pinpointing challenges for a RCT in the context of CPS, as well as raising a discussion about how to conceptualize and measure temperament in groups of children with histories of maltreatment.

Early callous-unemotional behaviors such as lack of empathy and guilt identify children at risk for serious antisocial behavior. This study examined whether heritable temperament dimensions of fearlessness and low affiliative behavior are associated with early callous-unemotional behaviors. We also examined whether parenting moderated these associations. Using an adoption sample (N=561), we examined pathways from biological mother self-reported fearlessness and affiliative behavior to young children's callous-unemotional behaviors via observed child fearlessness and affiliative behavior, and whether adoptive parent observed positive parenting moderated these pathways. Biological mother fearlessness predicted child callous-unemotional behaviors at 27 months via earlier child fearlessness at 18 months. In addition, biological mother low affiliative behavior predicted child callous-unemotional behaviors, although not via child affiliative behaviors. High levels of adoptive mother positive parenting attenuated the fearlessness to callous-unemotional behavior pathway. These findings suggest that heritable fearlessness and low interpersonal affiliation traits contribute to the development of callous-unemotional behaviors. Furthermore, positive parenting can buffer these risky pathways, which provides further support for the importance of early prevention and intervention to promote positive parenting.

Temperament traits and early callous-unemotional behavior in an adoption sample: The moderating role of positive parenting Christopher J. Trentacosta, Wayne State University; Rebecca Waller, University of Michigan; Daniel S. Shaw, University of Pittsburgh; Jenae M. Neiderhiser, The Pennsylvania State University; Jody M. Ganiban, George Washington University; David Reiss, Yale University; Leslie D. Leve, University of Oregon; Luke W. Hyde, University of Michigan

Temperament in the School Context Anjolie Diaz, Sarah VanSchyndel, Kathleen Rudasill, Hedwig Teglassi

Discrepancies and convergences in the measurement of young children's temperament in the home and school contexts. Hedwig Teglassi

Low agreement across parent and teacher informants is the rule rather than the exception across all psychology subfields. We examined differences in parent and teacher rated temperament (on the CBQ-Short form and CBQ-Teacher short form) in preschool and kindergarten children and, as expected, informant agreement is low but patterns are informative, consistent with expectations drawn from models of person-perception. A multi-group confirmatory factor analysis with parent and teacher scales revealed similar but not equivalent factor structures. Temperament scales (15) were substantially related to social competence but, with a couple of exceptions, relations reached significance only when the same informant rated both. Such within-informant patterns have implications for understanding contextual influences on child temperament expression and informant judgment as well as on relations of temperament with external correlates. Temperament scales were also related to performance measures of attention-executive functions (NEPSY) but patterns varied for parent and teacher informants. Frameworks for interpreting scores for parent and teacher informants are needed.

Temperament and Teacher-Child Conflict in Preschool: The Moderating Roles of Classroom Instructional and Emotional Support Kathleen Moritz Rudasill, Leslie Hawley, Victoria J. Molfese, Xiaoqing Tu, Amanda Prokasky and Kate Sirota

This study is an examination of links between preschool children's temperament (effortful control, shyness, and anger) and teacher-child conflict, and classroom instructional and emotional support as moderators of associations between temperament and teacher-child conflict. Children (N = 104) were enrolled in 23 classrooms in 9 preschools in a Midwestern city. Teachers provided ratings of children's temperament and parents reported demographic information in the fall of the school year, classrooms were observed in the winter to assess instructional and emotional support, and teachers rated conflict with children in the spring. Multilevel models were estimated, and three main findings emerged. First, children's effortful control was negatively associated with their level of conflict with teachers. Second, children's effortful control was negatively related to teacher-child conflict in classrooms with low emotional support, but unrelated to conflict in classrooms with high emotional support. Third, children's effortful control was negatively related to conflict in classrooms with high instructional support, but unrelated to conflict in classrooms with low instructional support. Shyness and anger were unrelated to teacher-child conflict. Findings highlight the importance of considering the interplay of children's effortful control and preschool classroom instructional and emotional support in the development of early teacher-child conflict.

Relating Parent-Rated Effortful Control to Teacher-Rated Self-Regulation in Preschool Alicia J. Miao, Jennifer Finders and Megan M. McClelland

Self-regulation provides the foundation for a wide array of competencies in early childhood, including school readiness and academic achievement (e.g. Blair & Diamond, 2008; Blair & Razza, 2007; McClelland et al., 2007). Self-regulation is a broad and multidimensional construct consisting of cognitive and affective processes. From a temperament perspective, self-regulation is closely tied to effortful control, which is the voluntary control or withdrawal behavioral tendencies via attentional and inhibitory control mechanisms (Lengua, Bush, Long, Kovacs, & Trancik, 2008).

This study examines the relation between parent-ratings of effortful control (EC) and teacher-ratings of self-regulation in preschool. There is ample evidence to suggest that parent characteristics influence behavioral ratings of children (De Los Reyes & Kazdin, 2005), but less is known about how teacher characteristics may relate to their ratings of children's behaviors. This study investigates whether teacher education level and teacher experience differentially impacts associations between teacher-ratings of self-regulation and parent-ratings of EC. We had two research questions: (1) Is parent-reported EC related to teacher-reported self-regulation in preschool? and, (2) Do teacher experience and education level moderate the association between parent-reported EC and teacher-rated self-regulation in preschool?

The sample included 259 children (51% boys) enrolled in Head Start classrooms. Child age ranged from 3.17 to 5.51 years old ($M = 4.31$, $SD = 0.55$) and 68% of children were from minority backgrounds. Average parent education was 11.16 years ($SD = 2.64$). Thirty-three percent of children were English Language Learners (ELLs), and were assessed in Spanish. In the fall of preschool, teachers reported on children's self-regulation in the classroom using the Child Behavior Rating Scale questionnaire (CBRS), parents reported on children's EC using the Child Behavior Questionnaire – Short Form (CBQ-SF), and children were administered a direct self-regulation assessment (the Dimension Change Card Sort Task; DCCS). Teachers averaged 11.63 total years of teaching experience ($SD = 10.46$). Approximately 42% of teachers had a Master's degree, and the remaining 58% of teachers had a Bachelor's degree.

Children were nested within 14 classrooms, with 15% of the variance in CBRS scores at the classroom level. Results of multilevel modeling showed that child gender ($z = 2.96$), ELL status ($z = 2.03$), and age ($z = 4.52$) significantly predicted CBRS scores. Teachers rated ELLs, females, and older children as having stronger self-regulation at the start of preschool. Teacher experience was not significantly related to children's CBRS scores, however, teacher education ($z = 1.81$) showed a trend-level association with child CBRS scores at the $p = .10$ level. The interaction between teacher education and child EC was significant ($z = -2.00$).

Findings suggest children's ELL status, gender, and age are positively related to teacher-rated self-regulation. Additionally, results suggest that the association between parent-reported child EC and teacher ratings of self-regulation varied as a function of teacher education. Teachers with a Bachelor's degree rated children with higher parent-reported EC as having higher self-regulation, and children with lower parent-reported EC as having lower self-regulation. For teachers with a Master's degree, however, teacher reports of child self-regulation were not positively associated with parent-reports of child EC. In other words, teacher ratings of self-regulation and parent ratings of EC were more strongly related for teachers who obtained a Bachelor's degree, but not a Master's degree.

Teacher ratings of self-regulation and parent ratings of EC may be less related for teachers with a Master's degree because these teachers may also be rating additional dimensions of self-regulation and classroom behavior, other than those that are shared between EC and self-regulation. Conversely, less educated teachers might be less likely to discriminate children's behavior in classrooms. These results can inform researchers, educators, and policy makers who utilize teacher reports to make decisions about interventions or classroom practices.

Temperament in Clinical Settings

Some perspectives on 60 years of modern temperament research and its prospects. William B. Carey

Background- Progress to date Early modern beginnings- Pavlov, Gesell, Diamond, others Primary, major modern stimulus- Chess & Thomas- NYLS -starting 1956 (Only 8-10 people in temperament research anywhere in world at that time.) First published clinical temperament scale- 1970. Numerous and varied other scales since then - Plomin, Bates, Rothbart, Strelau, etc. Two research factions- clinical and academic- have major differences- a) data collection- clinical- observation and report of clinically significant traits vs. academic-factor analytic approach for traits useful in making personality predictions; b) goals- clinical- interventions to help child and parents vs. academic- theory building about personality. Outcome- Considerable progress. Some success for both factions but little communication and cooperation between them, which is stunting the field. (Role of OTC?) Full clinical value of temperament not realized in these 60 years (or my 48 years). Ultimate social value of research is what it does to improve the human condition. Identified problems presently delaying progress. Need for clarified definition of temperament Definition of temperament has undergone some conceptual drift and lessened clarity- from the original early-appearing (early months but not newborns), largely innate "primary reactive patterns" observed in various settings and somewhat stable over time. Expanded definition has also included some later-appearing, largely acquired secondary adjustment behaviors, e.g. self-regulation, coping skills. Important but are they temperament? Loss of adaptability via factor analysis an unfortunate error. Also issue of researcher's assumption of knowing the child's feelings rather than just rating observed behavior, as Chess and Thomas did. For example, simple reluctance in acceptance of novelty probably often misidentified as fear or distress. And question of validity of external estimates of mood? The computer is a useful calculator but not a reliable observer of behavior. It is not a better judge of significant behavior than human observation. Rebirth of NYLS traits After initial recognition of the 9 NYLS dimensions, a period of neglect by many but now a gradual rediscovery and

renaming of them, often as single trait theories (or even a “triple package”) which place heavy or exclusive emphasis on just one or more traits. However, all of the 9 Thomas & Chess traits have been reborn: 1) hyperactivity, sluggish cognitive tempo (activity), 2) dysregulation (rhythmicity), 3) inhibition (initial approach/withdrawal), 4) resilience (adaptability), 5) irritability (mood), 6) explosiveness (intensity), 7) grit (persistence/ attention span), 8) ADD (distractibility), 9) sensory processing disorder, stimulus seeking, callus unemotional traits (sensitivity variations). These rediscovered traits offered sometimes as pathology in themselves and usually not recognized as existing normal temperament variables. (See our list of some of these areas of confusion.) Confusion by journalists and politicians. Have we a responsibility to clarify? Need for better assessment and classification system of normal range of behavioral content or adjustment. Absence of any generally accepted, comprehensive outline and definition of the range of normal behavior adjustment outcome and how it shades off from normal to abnormality. A failure of both medicine and psychology. Limited range of DSM (just pathology, not developmental, contextual, or adaptational), same for ICD, Big Five (not clinical; no social competence, task performance, self-relations, coping, body function). PERMA and “positive psychology” approach helpful but incomplete (no self- relations, coping, body functions). These limitations have led to extensive over-diagnosis of normal and atypical normal as pathology, e.g. much of ADHD is medicalizing of normal variations. Need for something better. Could be replaced by a scheme such as the comprehensive BASICS view: Behavior in social competence, Achievements, Self-relations, Internal status, Coping, and Symptoms of body function. (See CBAM-2 for details.) Need to clarify differences between temperament and adjustment Clear distinction of these two classes of behavior style and content is essential because confounding confuses choice of management: caregiver accommodation for aversive temperament vs. clinical intervention in interactions for secondary adjustment concerns, in which the temperament may or may not participate. There is a big difference. Are not self-regulation, effortful control, and executive functions secondary outcomes rather than early-appearing primary reactive patterns? Concept of difficult temperament should not be abandoned- Not a standard score from a questionnaire but those traits individual parents report are hard for them to tolerate and manage when asked on questionnaire or interview. Better to consider the variably aversive individual traits rather than rigid clusters. Neglect of clinical research even by clinicians. Perhaps distraction by current prominence of “neurobabble” and popular rumors of chemical imbalances? Numerous inadequately explored topics: social adjustment, school function, ADHD over-diagnosis, self-relations, internal status, coping, physical functions like recurrent pains. Prenatal influences. Also impact of temperament on physical status, development, cognitive function, social crisis reactions. Need for greater inclusion of temperament in professional training- medical, psychological, social work, other. Too often ignored in training, texts, journals. Summary- To move forward we need to sharpen our tools and work together. William B. Carey, M.D. Rev: 10-18-16

Temperament characteristics mistaken for psychopathology. Sean C. McDevitt & William B. Carey

- Temperament is a normal phenomenon.
- On the extremes it may create conflict between the person and environment.
- Some psychiatric symptoms and conditions may be confused with normal temperament variations
- Distinction between the two, temperament and psychopathology is based on qualitative differences in the behavior and impact on adjustment.
- Difficult temperament may create complications in the treatment of individuals for psychiatric conditions.

Temperament-based Intervention

Environmental Sensitivity in Children: Concept and Measurement Michael Pluess

Humans differ substantially in their sensitivity to environmental influences with some being generally more and some generally less affected by experiences they make. One psychological marker of environmental sensitivity is Sensory-Processing Sensitivity, a common personality trait characterized by greater awareness of sensory stimulation, behavioural inhibition, deeper cognitive processing of environmental stimuli, and higher emotional and physiological reactivity. Sensory-Processing Sensitivity is proposed to be a stable, genetically based personality trait that can be measured in adults with the Highly Sensitive Person Scale. Recently, the adult scale has been adapted for the use with children as young as 10 years. The Highly Sensitive Child scale includes 12 items and features a similar factor structure as the adult version of the questionnaire. After theoretical considerations for individual differences in environmental sensitivity I will provide information on the development of the Highly Sensitive Child (HSC) scale, report associations between this new self-report measure of child environmental

sensitivity and established measures of child temperament before presenting findings demonstrating that Sensory-Processing Sensitivity in children predicts the response to environmental exposures, including psychological intervention.

The efficacy of the Preventure personality-targeted intervention model on youth substance misuse, internalising and externalising problems Maeve O’Leary-Barrett

Four personality traits (hopelessness, anxiety sensitivity, impulsivity and sensation seeking) have been associated with early-onset risk for addiction in youth. Each personality profile is associated with distinct motivational pathways to substance use and risk for specific mental disorders. These four personality profiles are targeted in the Preventure program, a school-based, selective intervention. Preventure has been evaluated in five separate randomised clinical trials in high schools in the U.K., Canada, the Netherlands, and Australia. The efficacy of Preventure over a 2-year period as delivered both by trained psychologists and school-based facilitators will be presented. Results demonstrate that this brief program results in delays and reductions in rates and growth of alcohol consumption, binge drinking, and severity of alcohol-related problems in selected high-risk youth, as reduced odds of taking up marijuana and cocaine use relative to their control counterparts. Intervention participants also report reduced depressive, anxiety and conduct symptoms relative to their control group counterparts over 2 years.

What happened when the INSIGHTS cousins moved to Jamaica? Sandee McClowry

Evidence-based interventions are typically developed for one specific sociodemographic community. If so, can their results be applied to other settings? How do developers satisfy the competing demands for adaptation to a new cultural group and still maintain the integrity of the intervention. These issues (and others) will be explored in a presentation that explains what happened when INSIGHTS was culturally adapted for Jamaica. To obtain stakeholders perspectives regarding an adaptation, 32 Jamaican educators attended a two-day INSIGHTS workshop conducted by the developer of the intervention. At the conclusion, the educators were asked to evaluate whether INSIGHTS resonates with Jamaican cultural values and beliefs. A thematic analysis of their verbal and written comments supported that the core components of the intervention resonates well with Jamaican culture. Additional comments provided suggestions on how to make the intervention more accessible and appealing for Jamaican audiences.

INSIGHTS in rural Appalachia Sandy Glover Gagnon and Hannah Van Doren

This presentation describes a pilot study examining the cultural and developmental appropriateness of INSIGHTS Into Children’s Temperaments with a sample of kindergarten and prekindergarten teachers in a low-income, rural school district in western North Carolina. Despite the fact that rural children, particularly those living in poverty, may be at risk for educational difficulties, rural intervention research is virtually nonexistent. This pilot study is a first step in our examination of INSIGHTS’ efficacy with preschool and kindergarten children and teachers in a rural school district. We will describe the process of implementing INSIGHTS in a rural community, from initial contact with the school district to follow-up assessment of teacher satisfaction, the numerous challenges we faced throughout the process and subsequent modifications to the program, results of a teacher satisfaction survey, and preliminary findings from a small sample of students and teachers. There were no statistical differences in the teacher satisfaction between the teachers in New York City and rural North Carolina. At this point, our experiences suggest that a modified version of INSIGHTS is culturally appropriate for use with preschool children in rural schools.

Culture and Diversity in Temperament:

This symposium will involve presentation and interpretation of emerging findings from the Joint Effort Toddler Temperament Consortium Investigation (JETTICI). Analyses of data gathered regarding 18- to 36-month-old children in 13 geographically and culturally diverse nations (Brazil, South Korea, Spain, Mexico, Russia, Italy, Belgium, Finland, the Netherlands, Romania, China, Turkey, and the U.S) will concern cross-cultural differences in parenting, temperament, and behavior problems, as well as relations among these variables.

Cross-cultural differences in Temperament and Behavior Problems Gonzales-Salinas, C., Putnam, S. P., Linhares, B., Majdandzic, M., Lecannelier, F., Allabdullatef, N., Montiroso, R., Heinonen, K., Putnam, S. P., Kozlova, E., Wang, Z., Casalin, S., Ahmetoglu, E., Benga, O., Beijers, R., Gartstein, M. A., Han, S-Y., & Garcia, V.

Analyses of cross-cultural differences in maternal reports on the Early Childhood Behavior Questionnaire (ECBQ) revealed significant effects of culture for all three factors and 17 of 18 subscales. Toddlers from Finland, Belgium and Spain were shown to be high in Surgency (SUR), with low SUR demonstrated in Turkish children. Chinese, Korean, Brazilian and Turkish toddlers were high in Negative Affectivity (NA), with low NA evident in children from Mexico, Russia, Finland, the Netherlands and the U.S. Effortful Control (EC) was highest in Korean, Spanish and Mexican toddlers, and lowest in children from China and Turkey. Substantial cross-cultural differences were also apparent in behavior problems, assessed via the Child Behavior Checklist (CBCL). Scores for both internalizing and externalizing were high for toddlers from Brazil, Russia and Mexico; and low for children from Korea, the Netherlands and the U.S. Toddlers from Turkey and Brazil were high on internalizing only, and youth from Belgium and Finland were high on externalizing only. Across the entire sample, behavior problems were associated with high NA and low EC. Externalizing, but not internalizing, was linked to high SUR as well. These associations were moderated by culture, with links between temperament and behavior problems most pronounced for Brazil and Belgium, and less strong for the Netherlands and Turkey. The results of these analyses hold implications for understanding the limits of generalization regarding the role of temperament in the development of psychopathology, and regarding dissimilar interpretations of behavior by parents in different cultures.

Cross-cultural differences in Toddlers' Daily Activities and their relation to Temperament Benga, O., Huitron, B., Garcia-Olguin, V., Gonzales-Salinas, C., Putnam, S. P., Linhares, B., Majdandzic, M., Montiroso, R., Tuovinen, S., Putnam, S. P., Slobodskaya, H., Wang, Z., Casalin, S., Acar, I., Beijers, R., Gartstein, M. A., & Han, S-Y.

This study reports differences found in daily activities reported by parents of children with respect to four themes: Stimulation of Development (SD), Social Intelligence (SI), Sleep / Rest (SR) and Moral Development (MD). One-way ANOVAs found that for SD, American and Spanish scored highest, and Koreans lowest, on Rapid Learning and High Intensity Toy Play; Romanian scored highest, and Belgians lowest, on Purposeful Play For SI, Romanian scored highest, and Koreans lowest, on Social Contact; American and Spanish scored highest, and Chinese lowest, on Take Child out of Home. Regarding SR, Romanian scored highest and Italians and Turkish lowest, in High Activity; American scored highest, and Korean and Chinese lowest, in Low Activity; Brazilians were highest, and Belgians lowest, on Physical Proximity. For MD, Brazilians scored highest, and Americans lowest, on Inductive Discipline; Brazilians scored highest, and Finnish lowest, in Power Assertion.

Correlations with Effortful Control (EC), Negative Affectivity (NA) and Surgency (SUR) factors revealed associations between daily activities and child temperament. Associations were found for each theme: Regarding SD, high EC was linked to high Rapid Learning and Purposeful Play, high SUR was associated with High Intensity Toy Play, and high NA with Play to Entertain. For SI, Taking Child out of Home was connected to high EC, high SUR, and low NA; and Social Contact with high EC and SUR. For SR, High Activity Strategies were linked to high NA and SUR; Low Activity Strategies with high EC and low NA, and Physical Proximity with high NA. For MD, Inductive Discipline was associated primarily with high EC, while Power Assertion was tied to high NE, high SUR, and low EC. These cultural differences in patterns of activities of everyday life of children help us understand how different rearing environments around the world are structured, and the implications of these environments for the development of temperament.

Cross-cultural Differences in Parents Reactions to Temperament Displays Acar, I., Prokasky, A., Han, S-Y., & Huitron, B. Gonzales-Salinas, C., Putnam, S. P., Linhares, B., Majdandzic, M., Montiroso, R., Heinonen, K., Putnam, S. P., Kozlova, E., Wang, Z., Casalin, S., Ahmetoglu, E., Benga, O., Beijers, R., & Gartstein, M. A.

The current study examined how parental responses to their children's temperament displays and their relations to temperament differ across cultures. Results from one-way Analysis of variance (ANOVA) suggested that there are significant differences between countries on promoting surgency, promoting negative affectivity, praising effortful control, and punishing low effortful control. Specifically, Italian parents scored lowest on promoting surgency, while Finnish parents scored highest. Spanish parents scored highest on promoting negative affectivity

while Brazilian parents scored lowest. Parents from Belgium and the Netherlands scored highest on praising effortful control and parents from Romania, Mexico and Italy scored lowest. Brazilian and Chinese parents scored highest on punishing low effortful control and Romanian, Turkish and American parents scored lowest.

Differences were also found across countries when examining the relationship between parental responses and children's temperament. For the full sample, promoting negative affectivity was associated with effortful control ($r = .11$); praising effortful control was associated with surgency ($r = .08$) and effortful control ($r = .11$); punishing low effortful control was associated with negative affectivity ($r = .20$) and effortful control ($r = -.09$). Although correlations were low overall in the full sample, correlations between temperament and parental responses to temperament displays in individual countries were moderate, ranging from .26 to .42. These results suggest there are cultural differences in parents' responses to their children's temperament displays, and highlight the importance that culture plays in the shaping of parental views about their children's temperament. In addition, results may help us to understand how parental responses to temperament may affect expression of children's temperamental characteristics.

Discussion, Charlie Super

Temperamental Exuberance and Pathways to Maladaptive Outcomes:

Temperamental exuberance, parenting, and mechanisms of risk for maladaptive childhood outcomes Kathryn Degnan, Jennifer McDermott, Amie Hane, Andrea Chronis-Tuscano, Heather Henderson and Nathan Fox

Exuberant children are characterized by heightened positive affect and approach behavior, and as a result this temperament trait also requires development of appropriate regulation skills to minimize risk of externalizing problems (Calkins, Fox, & Marshall, 1996; Putnam & Stifter, 2005; Stifter et al., 2008). However, much remains to be learned about the factors that can promote regulation in exuberant children. In a longitudinal study tracking exuberant children through early childhood, parenting and executive function were assessed as key factors in relation to child outcomes. Examining results across the preschool range, as well as tracking patterns of development from the preschool through early childhood time period, significant roles emerged for early maternal discipline and inhibitory control in predicting later socioemotional outcomes for exuberant children. Thus, over time, the early presence or absence of appropriate regulation skills may modulate risk for socioemotional problems among temperamentally exuberant children.

Biopsychosocial processes for adaptive and maladaptive outcomes in temperamentally exuberant children

Kristin A. Buss, Santiago Morales, Meghan McDoniel and Alyssa Palmer

Temperamental exuberance, the predisposition to behave in novel situations with high approach, boldness and positive affects, has been associated with both adaptive and maladaptive outcomes for children. In concert with our studies of fearful temperament, we have examined temperamental exuberance in the context of novelty and peer play, as well as examining associations with self-regulation, attention, and biomarkers. In this talk, we will present data from our laboratory in early childhood that demonstrate how exuberance in combination with attention, regulation, and parenting impacts socioemotional outcomes. We (Morales et al., 2016) found that attention bias to reward was associated with both temperamental exuberance (not previously found) and externalizing problems. Moreover, exuberance predicted attention bias through lower effortful control. Effortful control has been consistently shown to influence how exuberance is associated with outcomes, both in the literature and in our work. For instance, we have shown that exuberance is associated with lower effortful control and social competence (e.g., peer acceptance). However, exuberant children with high effortful control are rated highly on peer acceptance (Palmer et al., 2016). Finally, we have examined the role of parenting in predicting outcomes for exuberant children. In one study, we demonstrate that parental responsiveness moderated the prediction from early temperament to teacher reported classroom behavior problems, such that for greater exuberance and less responsiveness parenting interacted to predict externalizing problems in the classroom (McDoniel & Buss, 2016).

Interest in temperamental exuberance has grown and existing research suggests that exuberance is associated with both risk and well-being (Stifter & Dollar, 2016). One explanation for the divergent developmental pathways for exuberant children is their bias towards behavioral approach and sensitivity to reward (Polak-Toste & Gunnar, 2006). Neurobiological models (Carver & Harmon-Jones, 2009; Depue & Collins, 1999; Gray, 1987) propose that reward-sensitive individuals experience intense positive affect (PA) and anger in response to reward, such that they experience PA given the potential of receiving a reward, yet experience anger when the reward is blocked. Given that increased reward sensitivity, and thereby the experience of PA and anger, is associated with adolescent risk-taking (Gilbert, 2012), an important area of inquiry is to identify the developmental links between children's early experience of PA and anger and later risk-taking. We hypothesize that there is a group of children, likely a subtype of exuberant children, who experience both intense PA and anger in early development and these children are more likely to engage in later risk-taking. The current study aimed to identify latent profiles of PA and anger in toddlerhood and to examine differences in adolescent risk-taking across the identified profiles.

Surgency as a Person-Level Interactive Risk Marker for Externalizing Problems Michelle M. Martel

Surgency has been historically been viewed as a positive trait, but it also predicts externalizing problems in young children (Martel, 2016). The current presentation will evaluate two possible explanations for the contradictory role of surgency in developmental psychopathology: (1) surgency increases risk for externalizing problems in the context of low levels of effortful control, or low agreeableness and (2) it increases risk only in a subgroup of children. Participants were 109 children ages 3-6 (59% male), over-recruited for Oppositional-Defiant Disorder (ODD) and Attention-Deficit/Hyperactivity Disorder (ADHD), and their primary caregivers. ODD and ADHD symptoms and impairment were measured using parent report on the clinician-administered Kiddie-Disruptive Behavior Disorder Schedule and teacher report on the Disruptive Behavior Disorder Rating Scale. Temperament traits were measured using parent report on the Child Behavior Questionnaire and the Laboratory Temperament Assessment Battery, and personality traits were measured using examiner report on the California Child Q-Sort. Hierarchical regression analyses indicated that surgency interacted with agreeableness to predict ODD-related impairment ($\beta = .253, p < .05$; see figure). Surgency interacted with effortful control to predict increased teacher-rated hyperactivity-impulsivity ($\beta = -2.29, p < .05$; see figure). Based on latent profile analysis, young children with ODD and ADHD could be divided into low control, high surgency, and high negative affect subgroups (BIC=2522.82). The low control and high surgency groups exhibited increased parent- and teacher-rated hyperactive-impulsive and ODD symptoms ($F[6,36]=3.85, p = .005$), as well as increasing levels of hyperactivity-impulsivity and ODD symptoms over one year ($F[4,28]=4.08, p = .01$). Overall, the study found some support for the idea that high surgency increases risk for externalizing problems in a subgroup of young children and may particularly do so in the context of low effortful control for ADHD and secondary to low agreeableness for ODD.

Developmental Perspectives on Temperament and Psychopathology:

Temperament change during adolescence: Normative growth trajectories and associations with adolescent psychopathology Nicholas B. Allen, University of Oregon

There is a strong folk psychology suggesting that developmental processes can result in personality (or temperament) change during adolescence. I will report findings from a longitudinal study of adolescence in order to describe normative changes and individual heterogeneity in developmental trajectories of temperament, and associated risk for psychopathology. A community sample of 245 adolescents participated in the longitudinal assessment of four temperament traits (Affiliation, Effortful Control, Negative Emotionality, Surgency), using the Early Adolescent Temperament Questionnaire, across five time points from early adolescence (mean age 11.62 years) to late adolescence (mean age 18.88 years). Adolescent psychopathology was assessed with questionnaire measures of anxiety, depression and externalizing symptoms, and with clinical interviews. Analyses of normative trajectories revealed non-linear changes for Affiliation, Negative Emotionality and Surgency, reflecting both increases and decreases in temperamental maturity during adolescence, while the normative trajectory for Effortful Control showed linear decreases. Pattern of temperament change across adolescence predicted an individual's level of risk for psychopathology, in addition to risk from baseline levels of traits. Increased risk for psychopathology was associated with lower baseline Effortful Control and Surgency, and higher Negative Emotionality, as well as decreases in Affiliation, greater decreases in Effortful Control relative to same age and

gender peers, and slower decreases in Negative Emotionality. These findings suggest that adolescence as a developmental period when normative temperament changes are not necessarily associated with overall increases in maturity, and that changes in temperament influence an individual's level of risk for adolescent psychopathology, although research is needed to clarify whether temperament changes confer vulnerability to poor outcomes in general, or specific diagnoses.

Development of Effortful Control as a Moderator of the Longitudinal Relations of Negative Reactivity and Symptoms in Preschool Lyndsey R. Moran and Liliana J. Lengua, University of Washington

Tested effortful control as a moderator of both fear and frustration on children's internalizing and externalizing symptoms to allow for differential effects of components of reactivity on symptom type. Additionally, longitudinal data was used to examine how the development of effortful control moderates relations between reactivity and growth in symptoms over time. A community based sample of 306 children and their female primary caregivers were assessed across four waves of data when the children were 3 to 5 years old. Multiple assessment methods were implemented, including physiological and observed measures, neuropsychological assessment, and mother-report questionnaire data. The results suggest a complex pattern of interactions between temperament dimensions predicting trajectories of symptom growth. Specifically, frustration reactivity and initial effortful control predicted growth in internalizing and externalizing symptoms, whereas, fear reactivity interacted with both initial levels and growth in effortful control to predict externalizing symptoms only. Overall, these findings point to potentially different pathways to risk for internalizing and externalizing symptoms and highlight potential targets for treatment based on temperamental vulnerability.

Growth of Temperament in Infancy: Implications for Development of Behavior Problems Maria A. Gartstein, Washington State University; Greg R. Hancock, University of Maryland

Evaluated temperament via parent-report (N=147) at 4, 6, 8, 10, and 12 months of age, examining linear and non-linear growth trajectories for overarching factors and fine-grained indicators. After infant sex and age were considered as covariates, parameter estimates were evaluated as predictors of internalizing and externalizing behavior problems measured at 24 months of age. Results indicated linear and non-linear trajectories fit different temperament domains. Importantly, the model of best fit associated with the over-arching temperament factors was generally not representative of the underlying fine-grained dimensions. Intercept and slope estimates associated with multiple temperament attributes were linked with early manifestations of both behavior problem outcomes.

Poster Presentations:

Children's Exposure to Kindergarten and Self-Regulation Skills Jessica Alonso, Guadalupe Diaz, Hillary Lewis and Megan McClelland, Oregon State University

Previous research has found positive associations between full day kindergarten (FDK) and higher academic achievement (Cooper et al., 2010) and between self-regulation and academic achievement (McClelland & Cameron, 2012). Less research, however, has examined the links between full day kindergarten (FDK) vs. half day kindergarten (HDK), self-regulation, and academic achievement. Our study examines two questions: (1) Is the amount of time children spend in their kindergarten program (either FDK or HDK) significantly related to higher levels of self-regulation at the end of kindergarten? and (2) Is the amount of time children spend in their kindergarten program (either FDK or HDK) significantly related to higher academic outcomes at the end of kindergarten?

The sample included 150 children (47% boys) enrolled in both FDK and HDK programs. The mean child age was 6.15 years (SD = 0.30), with 39% being enrolled in FDK and 61% being enrolled in HDK. The average maternal education was 14.38 years (SD = 4.21). Sixteen percent of the children were identified by their teachers as primary Spanish-speaking English Language Learners and were assessed in Spanish. Self-regulation was assessed in the spring of kindergarten using the Head-Toes-Knees-Shoulders (HTKS)- Extended version task (Ponitz et al., 2009). Children's math, literacy, and vocabulary were assessed using the Woodcock-Johnson III Tests of Achievement (Woodcock & Mather, 2000) or the Bateria III Woodcock-Muñoz (Muñoz-Sandoval, Woodcock, McGrew, & Mather, 2005). The time each child spent in kindergarten in the spring of 2014 was reported by school districts.

After controlling for maternal education, gender, age, and ELL status, findings indicated that children in FDK scored significantly higher on self-regulation at the end of kindergarten ($\beta = 0.17$, $p = .04$) compared to children in HDK. Results also indicated that time in kindergarten was significantly related to higher early literacy ($\beta = 0.26$, $p = .003$) and vocabulary ($\beta = 0.16$, $p = .03$) for children, but it was only significantly related to higher math scores at a trend level ($\beta = 0.14$, $p = .08$) compared to children in HDK. Overall, these results indicate that FDK is significantly related to increased self-regulation, literacy, and vocabulary skills.

These results suggest that children benefit from more time in kindergarten in terms of their self-regulation, literacy, and vocabulary scores and can be used to inform policy and practice about children's kindergarten programs. Specifically, results can be used to support the argument for additional implementation of FDK programs in states that do not currently have FDK programs. Future research should continue to explore the influence of FDK programs on children's achievement and self-regulation for children with diverse educational needs.

Temperamental characteristics associated with autism spectrum disorder: Preliminary results from a meta-analysis Eve-Line Bussières, Université du Québec à Trois-Rivières; Jean-Pascal Lemelin, Université de Sherbrooke, Québec, Canada; Melanie Couture, Chercheure régulière au Centre de recherche du Centre hospitalier universitaire de l'Université de Sherbrooke

Autism spectrum disorders (ASD) is a developmental disorder defined by persistent deficits in social communication and social interaction across multiple contexts, as well as a pattern of restricted and repetitive behaviors, interests, or activities (APA, 2013). With a prevalence of 1%, ASD is no longer considered a rare condition (Baio, 2012). However, challenges remain in the diagnosis due to an important clinical heterogeneity in the phenotype. Some authors have recently suggested that temperament may be a useful construct in understanding early developmental differences in infants at risk for ASD and contribute to early diagnosis (Clifford, Hudry, Elsabbagh, Charman, Johnson, & The BASIS Team, 2012 ; Zwaigenbaum, Bryson, Rogers, Roberts, Brian & Szatmari, 2005).

The present meta-analysis aimed at synthesizing the available literature on temperamental characteristics of ASD children and at identifying the temperamental dimensions that distinguish the most between ASD and neurotypical children.

Methods. A systematic review of the literature published between 1970 and 2016 was conducted using five databases: PsycInfo, Medline, CINHALL, Embase, Google Scholar. Unpublished doctoral thesis were also searched using Proquest. Studies were included if they compared the temperamental characteristics of a sample of ASD children aged between 2-16 years old with a normative sample.

Results. Twenty-two studies were included in this meta-analysis. The present, preliminary report is based solely on Rothbart's measures of temperament (ECBQ, CBQ, EATQ), that were used in the majority of studies, and consequently is based on 13 studies including 126 effect sizes. Significant negative associations were found between ASD and two temperamental factors: negative affectivity ($d = -.43$; $k = 32$; $CI = -.65$ to $-.21$) and effortful control ($d = -.98$; $k = 42$; $CI = -1.19$ to $-.78$). These strong associations indicate that ASD children have important issues with effortful control regulation and attention skills, as well as negative affectivity. On average, ASD children perform $-.43$ standard deviation lower than neuro-typical children on the negative affectivity factor, while they perform $-.98$ standard deviation lower on effortful control measures, indicating significantly weaker effortful regulatory capacities. The association between ASD and the surgency factor was not significant ($d = -.11$; $k = 28$; $CI = -.30$ to $.09$).

At the dimension level, strong and significant associations were found for every effortful control dimensions: attention focusing ($d = -1.19$; $k = 7$; $CI = -1.45$ to $-.93$); inhibitory control ($d = -1.31$; $k = 11$; $CI = -1.33$ to $-.16$); low intensity pleasure ($d = -1.59$; $k = 7$; $CI = -2.75$ to $-.42$) and perceptual sensitivity ($d = -1.59$; $k = 5$; $CI = -2.75$ to $-.42$). Two dimensions from the negative affectivity factor were moderately and significantly associated with ASD: Anger/frustration ($d = -.60$; $k = 5$; $CI = -.99$ to $-.20$) and soothability ($d = -.81$; $k = 7$; $CI = -1.24$ to $-.39$).

Discussion. Results first highlight the pertinence of the construct of temperament in the ASD field. The strength of the associations between ASD and effortful control dimensions confirms that autistic children present important

issues related to the regulation of attention and behavior in comparison to neurotypical children. These aspects, as well as some negative affectivity components, could help discriminate, at an early stage, children at risk for ASD.

A Latent Profile Analysis of Preschool-Age Children's "Hot" and "Cold" Effortful Control Daniel Ewon Choe, University of California, Davis; Sheryl L. Olson, University of Michigan

Behavioral paradigms assessing facets of preschool-age children's effortful control have demonstrated individual differences in self-regulation associated with concurrent and prospective measures of externalizing behavior problems (Olson et al., 2005), theory-of-mind (Carlson & Moses, 2001), early academic skills (Blair & Razza, 2007), and IQ (Choe et al., 2013). Researchers have illustrated a multidimensional structure to effortful control (EC), such as self-regulatory skills assessed with delay tasks that evoke "hot" emotional arousal and impulse control and skills assessed with conflict tasks that tap "cool" cognitive and executive functions of inhibitory control and working memory (Carlson et al., 2002; Metcalfe & Mischel, 1999). These "hot" and "cold" dimensions of EC have differentially predicted children's developmental outcomes (Kim et al., 2013). Yet few studies have identified discrete profiles of children varying in dimensions of EC using behavioral tasks and a person-centered analytic approach.

This study of 230 preschool-age children ($M = 41.40$ months, $SD = 2.10$, 46.5% girls) approximated qualitatively distinct profiles of EC with standardized scores of six tasks from Kochanska et al.'s (1996) toddler-age behavioral battery: Turtle/Rabbit, Tower, Snack Delay, Whisper, Tongue, and Lab Gift, administered in that order during preschool laboratory visits. Tasks were designed to tap Rothbart's (1989) general construct of EC (i.e., suppressing a dominant response and initiating a subdominant response according to task demands). A series of latent profile analyses (similar to latent class analysis but with continuous-scaled variables) provided evidence that a 3-profile solution yielded the best balance between model fit and parsimony ($BIC = 3615.67$, Entropy = .99, significant LMR-LRT and BLRT, $ps < .01$).

The first profile included 15 children (6.5% sample, 80% boys) who performed significantly worse than average on Turtle/Rabbit and Tongue, $ps < .001$, indicating these children performed poorly when slowing down motor activity and delaying gratification, respectively. The second profile included 188 children (81.7% sample, 49.5% boys) who performed significantly better than average on Snack Delay, $p = .037$, and Tongue, $p < .001$, indicating these children demonstrated better delay inhibition as a whole. The third profile included 27 children (11.7% sample, 66.7% boys) who performed significantly worse than average on the final two tasks, suggesting possible fatigue effects: Tongue, $p < .001$, and Lab Gift, $p < .016$ (both tasks examined delay inhibition). Membership to latent EC profiles was associated with child gender, $\chi^2(2) = 7.34$, $p = .025$, and age, $F(2, 227) = 5.01$, $p = .007$, such that boys were more likely than girls to be in profiles with suboptimal delay inhibition. Children who were members of the first profile with suboptimal motor and delay inhibition were about two months younger than children in the other two groups. Results will be discussed in regards to the multidimensionality of EC as demonstrated by our latent profiles, as well as their preschool-age associations with sociodemographic and child characteristics and their consequences for the development of self-regulation and socioemotional adjustment.

Internalizing Symptoms and Personality Traits Color Parental Reports of Child Temperament D. Angus Clark, Texas A&M University; C. Emily Durbin, Michigan State University; M. Brent Donnellan, Texas A&M University; Tricia K. Neppl, Iowa State University

Parent-report is the most popular approach to assessing temperament in childhood. The parent report method has often been criticized however on the grounds that parents might be biased informants of child behavior. Indeed, there is evidence that depressed mothers have distorted views of the personalities and behaviors of their children (e.g., they over-report negative behaviors). Although useful, this work is limited by a narrow focus on maternal informants, and depressive symptomatology. The current study thus sought to extend this literature by investigating the degree to which internalizing symptoms (i.e., depression and anxiety) and personality traits predict both mothers' and fathers' reports of their child's temperament.

Data come from the parents of 222 European American children (aged 3-5 years) drawn from the ongoing Family Transitions Project (Neppl et al., 2010). Information on child temperament was collected via the Child Behavior Questionnaire (Rothbart et al., 2001). Parents' reports of the three superordinate dimensions of Effortful Control,

Negative Affectivity, and Surgency were the main focus here. Information on parent internalizing symptomatology (generalized distress, anxious arousal, anhedonic depression) was collected via the Mini-Mood and Anxiety Symptom Questionnaire (Casillas & Clark, 2000). Information on parent personality (Negative Emotionality, Positive Emotionality, Constraint) was collected via the Multidimensional Personality Questionnaire – Brief Form (Patrick, Curtin, & Tellegen, 2002).

Data were primarily analyzed via the application of the trifactor model (Bauer et al., 2013). The trifactor model is a latent variable model that efficiently isolates rater specific biases by partitioning informant-unique and informant-general covariation into distinct latent factors. The informant-unique (unique perspective) factors capture perceptions of temperamental traits that are unique to a given informant (i.e., mothers or fathers), and thus represent informant disagreement. The informant-general (consensus) factors capture perceptions of temperamental traits that are shared across informants, and thus represent informant agreement. These unique perspective and consensus factors can be regressed onto external variables (e.g., depressive symptomatology) in order to evaluate potential predictors of informant consensus and disagreement. Separate trifactor models were run for each major dimension of temperament.

Anxiety and Depression in First-Semester Freshmen: The Role of Temperament and Social Support Anjolie Diaz, Richard T. Ward and Alivia I. Benbow, Ball State University

The transition into college is associated with change and potential challenges including being away from home (perhaps for the first time) and adapting to new academic and social demands (Doane et al., 2014). According to a recent survey conducted by the American College Health Association (2013) more than half of college students reported “overwhelming anxiety” and 32% reported feeling so depressed “that it was difficult to function.” Temperament may serve as a diathesis in a diathesis-stress model making individuals differentially sensitive to environmental stressors (Belsky, et al., 2007; Finch & Graziano, 2011). Specifically, negative affect (NA) and effortful control (EC) are thought to be key factors in theoretical models of anxiety and stress development as well as depressive disorders (Eisenberg et al., 2010; Nigg, 2006). In addition, environmental factors such as perceived social support may play an important role in healthy physical and mental health (Thoits, 2011). Given that as much as 33% of freshmen dropout of college (NCES, 2010), the purpose of this study is to elucidate potential factors related to first-semester students’ depression, anxiety, and stress.

As part of an ongoing study, 61 (80% females; 82% Caucasian) first-semester freshmen (Mage=18.31) from a Midwestern university participated in the study. Temperament was assessed using the Adult Temperament Questionnaire (Rothbart et al., 2000), social support was measured using the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) and freshmen outcomes with the Depression Anxiety Stress Scales-21 (Lovibond & Lovibond, 1995).

NA was positively related to depression, anxiety, and stress ($r's > .43$) and negatively to EC ($r = -.32$). EC was negatively correlated with stress and depression ($r's > -.26$). Social support was negatively associated with all three outcomes ($r's > -.28$). Outcomes were positively correlated with one another ($r's > .54$). Regression suggest that social support, NA, and EC predicted depression ($R^2 = 0.37$, $F(3, 56) = 10.85$, $p < 0.001$) even after accounting for sex in first-semester freshmen. NA predicted and perceived support approached significantly predicting anxiety ($R^2 = 0.26$, $F(3, 56) = 6.35$, $p < 0.01$). Lastly, both NA and social support predicted students stress levels ($R^2 = 0.44$, $F(3, 56) = 14.46$, $p < .001$).

More college students than ever are reporting stress, anxiety, and feeling depressed (Mahmoud et al., 2012) which translates to an increased demand for mental health and counseling services at college campuses across the country. These preliminary findings provide some evidence that certain temperament traits such as greater NA as well as environmental factors such as lower perceived support may make students more susceptible to depression and higher rates of stress and anxiety. However, poorer EC was only a significant predictor of depression. There is mixed evidence for the relation between EC and anxiety with studies suggesting no direct association and others suggesting both negative and positive associations (Eisenberg et al., 2004; Gulley et al., 2002). Follow up research with a larger sample size will examine additional aspects of temperament as well as the potential moderating role of EC. Further research will aid in the understanding of the role of temperament in first-semester freshmen mental health and may also aid clinical practice.

Adult temperament moderates associations between child temperament and parent stress across toddlerhood

Amy Encinger, Amanda Prokasky, Victoria Molfese and Kathleen Rudasill, University of Nebraska

Parenting stress can lead to negative outcomes for parents and children, including less effective parenting and increased child behavior problems which can impact the mother-child relationship (e.g. Crnic & Booth, 1991)). In addition, child temperament contributes to the complexity of parent-child interactions (Thomas & Chess, 1977), and may be an overlooked source of parenting stress. Studies examining the interactions between child temperament and parenting behaviors have primarily examined their relations to child level outcomes, such as social development, academic outcomes, and adjustment (see: Bates et al., 2012). Fewer studies have looked at how parent and child temperament may interact with each other to predict outcomes. In this study, we examine the moderating role of adult temperament in the relations between child temperament and parent stress—in particular, parent’s effortful control (EC). This study expands on previous research identifying associations between child temperament and the frequency and intensity of parent stress (e.g. Encinger et al., 2016) by examining how parent temperament may moderate these associations across time.

Participants were 121 toddler children (69 females) and their mothers. Data were collected across three time points, when toddlers were 30, 36 and 42 months.

At each age, mothers rated children’s temperament on 15 dimensions of the Children’s Behavior Questionnaire (CBQ; Rothbart et al., 2001) consisting of 3 factors: Negative Affectivity (NA), EC, and Surgency/Extraversion. Mothers rated the frequency and intensity of minor stressors on the Parenting Daily Hassles Questionnaire (PDH; Crnic & Greenberg, 1990). The PDH consists of 20 experiences that may be considered a “hassle” to parents, such as continually cleaning up messes of toys or food and kids not following directions without being nagged.

Mothers reported their temperament using the Adult Temperament Questionnaire (Evans & Rothbart, 2007), which consists of 74 items, loading onto four temperament factors: NA, EC, Extraversion, and Orienting Sensitivity.

Adult EC moderated associations between child temperament and parent stress at all three ages. Specifically, at 30 months, adult EC moderated associations between child EC and the intensity of parent daily stress ($b = 6.11$, $t = 1.99$, $p = .05$), such that at low and average levels of adult EC, low child EC was related to more intense parent stress. At 36 months, adult EC moderated associations between child EC and frequency of parent stress ($b = -10.04$, $t = -2.73$, $p = .01$), such that when parents are high in EC, higher levels of child EC is related to lower frequency of parent stress. Finally, at 42 months, adult EC moderated associations between child NA and intensity of parent stress ($b = -8.95$, $t = -2.27$, $p = .03$) such that at low and average levels of parent EC, high levels of child NA are related to more intense parent stress.

These results highlight the important moderating role that adult EC plays in the relation between child temperament and parent stress. Combining low child EC with low parent EC appears to be particularly detrimental to parenting stress.

Behavioral Profiles of Negative Emotionality and Effortful Control in Middle Childhood Max Halvorson, Liliana Lengua, Kevin King and Brian Flaherty, University of Washington

Negative emotionality (NE) – a tendency toward strong negative emotions – and effortful control (EC) – the ability to inhibit dominant responses in order to perform another response – are facets of child temperament which have been linked to broad psychopathology, including both internalizing and externalizing problems. Higher NE is associated with greater psychopathology risk, whereas higher EC is associated with less psychopathology risk. Moreover, some research suggests a buffering role of EC between NE and psychopathology, such that NE has a weaker association with psychopathology at higher levels of EC (Moran, Lengua, & Zalewski, 2013). However, little work has examined the extent to which these attributes co-occur in children and the implications of particular patterns of co-occurrence for concurrent and future psychopathology. Using a person-centered latent profile analysis (LPA) approach, we aimed to characterize patterns of co-occurrence of NE and EC and to understand relations between temperament profiles and psychopathology.

Two measures of negative emotionality (fear and frustration) and three measures of effortful control (a Stroop word-color naming task, a Simon Says task, and a delay of gratification task) were collected via behavioral observation during experimental tasks, and were coded systematically by trained observers according to a coding system developed by the authors (Lengua, 2008; King, Lengua, & Monahan, 2013). These data were collected from a socioeconomically diverse sample of 214 children in 3rd-5th grade, and families were assessed in their own homes.

In preliminary analyses, the best-fitting LPA model (evaluated using the Bayesian Information Criterion) identified five profiles, with 10%-27% of the sample classified into each group. Group 1 was characterized primarily by high fear; Group 2 was characterized by poor effortful control and low fear, along with high frustration; Group 3 was characterized by low fear and frustration, along with strong effortful control; Group 4 was characterized by high frustration, along with strong effortful control; Group 5 was similar to Group 4, but displayed near-average performance on the Stroop color-word test.

The pattern of profiles points toward the importance of distinguishing fear and frustration in children, as only one profile had similar levels of fear and frustration. Moreover, high effortful control appeared in profiles with low fear and low frustration, and also in profiles with high frustration. This pattern suggests that measures of NE are able to provide separate information from measures of EC.

Subsequent analyses will examine the concurrent and predictive associations between profiles and internalizing and externalizing psychopathology measures. In particular, we hypothesize that groups with the highest levels of fear and/or frustration, coupled with poor effortful control, will have the poorest outcomes. We also hypothesize that children in groups with high levels of fear and/or frustration, coupled with strong effortful control, will not experience psychopathology at a high rate. Our analyses supplement variable-centered regression approaches to understanding relations amongst facets of temperament by characterizing the extent to which they co-occur, and by identifying particular patterns of temperament most and least strongly associated with child problems and future psychopathology.

The Relationship of Temperament and Sensory Processing to Social Participation in Children with

Developmental Delays Chana Hiranaka, Rocky Mountain University of Health Professions; Jane Sweeney, Rocky Mountain University of Health Professions; Diane Parham, University of New Mexico; Pam Mullens, Private Practice Seattle, WA

OBJECTIVE. To examine the temperament and sensory processing factors related to the social participation of 3 year olds with developmental delays.

METHOD. This is a cross-sectional, descriptive study. Parent responses on questionnaires (n = 69) for temperament and sensory processing were correlated with measures of social participation. Predictors for social participation were explored.

RESULTS. The temperament factor of Effortful Control was found to be moderately related ($r = -.508$) to social participation. The total sensory score was significantly and strongly related ($r = .60$) to social participation. The sensory scale score of Body Awareness had a correlation of .535 and Planning and Ideas .593 with social participation. The total sensory score was the strongest predictor of social participation.

CONCLUSION. Young children with developmental delays have temperament and sensory processing vulnerabilities that place them at high risk for difficulties in social skill development and their social participation at home, school, and community. Pediatric therapists can provide interventions to support the foundations of social participation to include sensory integration therapy, cognitive approaches to learning social skills, and parental behavioral management to modify difficult temperament responses.

Specificity of temperament and parent affect predicts the onset of psychopathology in adolescents Elizabeth J. Ivie, University of Oregon; Michelle L. Byrne, University of Oregon; Orli Schwartz, University of Melbourne; Julian G. Simmons, University of Melbourne; Sarah Whittle, University of Melbourne; Nicholas B. Allen, University of Oregon

Adolescence marks a period of development associated with increased incidence of mental disorders that often lead to poor outcomes throughout adulthood. Research has consistently demonstrated a relationship between temperament and risk for psychopathology, which highlights the importance of this field for specifying risk and protective factors relevant to early detection and prevention of risk trajectories.

In this study, we investigated the relationship between temperamental traits at age 12 and the development of psychopathology by age 18. We predicted that different factors of temperament would differentially predict the onset of distinct categories of mental disorder. Given the strength of the relationship between temperament and psychopathology, we also tested whether family environments moderate this relationship.

We collected data from 238 adolescents who participated in the Adolescent Development Study (ADS) in Melbourne, Australia (wave one age, $M=12.47$, $SD=.44$). Adolescents completed two waves of temperament assessment with the Early Adolescent Temperament Questionnaire-Revised (EATQ-R) at across a one-year period (approx. ages 11-12). EATQ-R responses averaged across these two assessments were grouped into Rothbart's four- factors: effortful control, surgency, affiliation, and negative affect. In addition, each adolescent participated in a problem-solving and event-planning task with a parent that was coded with the Living in Family Environments (LIFE) coding system (Hops, Davis, & Longoria, 1995). Diagnostic outcomes were assessed via 4 waves of diagnostic interviewing conducted between 12-18 years old and were grouped according to the a 3-factor model: anxious- misery; depressive disorder and generalized anxiety disorder (GAD) ($n=55$), anxious-fear; anxiety disorders minus GAD ($n=43$), externalizing disorders; all ($n=37$), no diagnosis ($n=103$) derived from the work of Kreuger (1999).

Logistic regressions tested the relationship between temperament, parent affect and psychopathology. Adolescents who scored higher on negative emotionality were more likely to develop any psychopathology, ($\chi^2=39.43$, $p<.001$, $df=6$). Adolescents who were low on surgency were more likely to develop an anxious-fear disorder, ($\chi^2=17.03$, $p=.001$, $df=3$), while adolescents who were high in affiliation were more likely to develop an anxious- misery disorder, ($\chi^2=29.22$, $p<.001$, $df=3$) and adolescents who were low on effortful control were more likely to develop externalizing disorders, ($\chi^2=9.035$, $p=.029$, $df=3$). Observations of parental affect during the interaction tasks significantly moderated the relationship between affiliation and anxious-misery disorders ($\chi^2=10.37$, $p=.016$, $df=3$), surgency and anxious-fear disorders ($\chi^2=15.14$, $p=.002$, $df=3$), however, the relationship between effortful control and externalizing disorders was not significantly moderated by parent affect ($\chi^2=2.38$, $p>.05$, $df=3$).

Early adolescent temperament is a strong predictor of the development of psychopathology later in life. We found evidence that there is specificity in which aspects of temperament are more predictive of certain types of psychopathology. Furthermore, the duration of parent positive, aversive and dysphoric affect moderated these relationships, suggesting an interaction between environmental and temperamental factors in determining risk for psychopathology. Furthermore, the influence of parent behavior on this relationship marks a potential point of intervention, as parenting behavior is potentially modifiable, and specific forms of parenting behavior appear to interact with specific temperamental risk factors, suggesting a path towards personalizing early intervention and prevention programs.

Temperamental Surgency Predicts Later Adjustment Problems in the Preschool Period Melanie Klein and Liliana Lengua, University of Washington

Temperament has been shown to predict adjustment in children (e.g., Rothbart & Bates, 2006). Two temperament factors, negative emotionality and effortful control, have been studied extensively, while less is known about the third factor, surgency. Surgency is typically comprised of positive emotionality, reward sensitivity, sociability, and impulsivity. In some studies, surgency has been found to predict later hyperactivity and aggression (Berdan, Keane, & Calkins, 2008; Rothbart, Ahadi, Hershey, & Fisher, 2001). Conversely, one component of surgency, positive emotionality, has been related to fewer adjustment problems and increases in social competence (Lengua, 2003). The wide range of behaviors included in the surgency factor may be the source of inconsistent results. The first goal of this study was to create a surgency factor and examine the associations between surgency and later adjustment problems. The second goal was to assess whether each individual surgency indicator accounted for unique variance above the surgency factor, elucidating some of the inconsistent findings.

The study included a community sample of 306 mother-child pairs, and is unique in that it oversamples low-income families, such that there is equal representation across income levels. This study is part of a larger longitudinal study including four laboratory visits (ages 36, 45, 54, and 63 months). The current study used a questionnaire reported by the parent, Child Behavior Questionnaire (CBQ; Rothbart, et al., 2001), when the child was 36 months old. The surgency variable was created using six scales on the CBQ: approach, high intensity pleasure, smiling and laughter, activity level, impulsivity, and shyness. The scale scores of these dimensions were set as indicators of a broad factor of surgency using confirmatory factor analysis (Rothbart, Ahadi, & Hershey, 1994). Teachers reported on children's adjustment problems at 63 months using the Social Skills Rating Questionnaire (Gresham & Elliot, 1990).

First, a confirmatory factor analysis was performed. Each factor loading was statistically significant. Next, a regression analysis was conducted to see if the surgency factor predicted child adjustment. Surgency at 36 months significantly predicted child adjustment problems at 63 months ($B = 1.97$; $p < .01$). Finally, adjustment was regressed on the error or unique variance of each factor indicator to examine whether a unique pattern of prediction emerged above the common variance represented in the Surgency factor. None of the unique variances significantly predicted adjustment problems above the factor ($ps > .05$). Positive anticipation/ approach approached significance in predicting later adjustment problems above the effects of the latent factor ($B = -3.90$, $p = .06$).

As expected, the surgency factor predicted later adjustment problems, indicating surgency is useful in identifying children at-risk in early childhood. Unexpectedly, no individual scale accounted for additional effects of the adjustment outcomes above the surgency factor. This may mean that the scales that create the surgency factor do operate in sync throughout development. It could also mean that unique measurement methods should be taken into account in addition to mother report. We plan to replicate these analyses in a population with older children.

Structural invariance of the Early Adolescent Temperament Questionnaire (revised) across adolescence: A longitudinal within-participants study Melissa D. Latham, Paul Dudgeon, Nicholas B. Allen

The revised Early Adolescent Temperament Questionnaire (Ellis & Rothbart, 2001) is a widely used measure, and one of the only temperament questionnaires specific to the critical developmental period between childhood and adulthood. However, the validity and reliability of the questionnaire are issues that still require further empirical research. Specifically, no one to our knowledge has assessed whether the factor structure of the questionnaire demonstrates invariance across ages. This is especially important given that the EATQ is meant to validly measure temperament across the majority of the adolescence phase using the same factor structure. We propose to test the measurement invariance of this scale using two time points from a longitudinal study of adolescent development. Two hundred and forty five participants completed the EATQ-R at 12 years of age, and a subset of those participants was reevaluated at 16 years old ($N = 181$). We will first test the fit of several existing models (i.e., Ellis & Rothbart's (2001) model, Snyder et al.'s (2015) model, as well as an unpublished model from our lab) to this unique dataset to determine which model best fits the longitudinal data in this sample of adolescents. We will then systematically constrain factor structure, factor loadings, mean scores, and item residual variances to equal across the two samples (analyses based on Gregorich, 2006). In this way, we will determine the level of measurement invariance that exists for this scale from early to mid-adolescence. These analyses will have implications for the scoring of the EATQ-R as well as its use over this specific age range.

A Re-Examination of the Construct Validity and Reliability of the School-Age Temperament Inventory in a Low-Income Urban Population Jiawei Li and Sandee McClowry

The purpose of this study was to examine whether the School-Age Temperament Inventory (SATI) and the Teacher School-Age Temperament Inventory (T-SATI) continued to demonstrate construct validity and reliability in a sample of kindergarten children from under-resourced urban schools. Previous studies identified four factors on the parent and teacher versions of the tool: negative reactivity, task persistence, withdrawal, and motor activity. In this study, a confirmatory factor analysis using principal components with varimax rotation was conducted on data collected from 278 parents and from their children's teachers. While the results of the analysis supported the same four temperament dimensions on the parent report, only negative reactivity, task persistence, withdrawal were found on the teacher version. The lack of a motor activity dimension on the T-SATI suggests that teachers

may have a different perception of that construct. Activity loaded with those of negative reactivity. Cronbach's alphas if the dimensions ranged from .70 to .95, a wider range than found in other samples.

Keywords: temperament, construct validity, reliability, parent and teacher reports

Adolescent Temperament is Associated with Systemic Inflammation: Implications for Health and Disease

Benjamin Nelson, Michelle Byrne and Nick Allen, University of Oregon

Research is continuing to delineate the connection between temperament and mental health (Fox & Pine, 2012; Nigg, 2006), however less research has addressed the association between temperamental differences and the development of physical disease processes. Effortful control is one aspect of temperament that may be particularly relevant to physical disease processes as this characteristic is related to self-regulation, resilience, and adjustment (Eisenberg et al., 2004; Rothbart, Ellis, Rueda, & Posner, 2003), which have well known connections to physical health outcomes (DeSteno, Gross, & Kubzansky, 2013). The goal of this study was to test the association between temperament and systemic inflammation in adolescents ($n = 53$; mean age = 15.03, $SD = .43$). At Time 1 and Time 2 (approximately 2.5 years later; mean time = 2.56, $SD = .25$), adolescents filled out the Early Adolescent Temperament Questionnaire (EAT-Q-R). We created four trait superfactors of temperament (i.e., surgency, affiliation, negative affectivity, and effortful control) and then averaged those scores over time to create a stable temperament score for each factor. Approximately 7 months after Time 2, adolescents provided a saliva sample that was assayed for C-Reactive Protein (CRP), a marker of systemic inflammation that has associations with mental health and physical disease. We conducted a linear regression in which higher scores on Effortful Control emerged as a significant predictor of decreased systemic inflammation ($b = -.603$, $CI = -1.133, -.073$, $p = .027$), which explained 26% of the variance in inflammation after controlling for age, sex, body mass index, socioeconomic status, family history of cardiovascular disease, and pubertal development. The discussion will examine implications for health and disease, and highlight the value of considering adolescents' effortful control (i.e., regulatory ability) in models of vulnerability to physical disease.

The Impact of "Knowing Your Baby Matters," A Temperament-Based Intervention, on Parent-Child Interactions

Alyssa Neumann, Sydney Iverson, Shannon Kelly and Maria A. Gartstein, Washington State University

Based on the interaction between temperament and the environment, temperament-based interventions have been suggested as a strategy for assisting caregivers with understanding how their child's temperament influences their behavior, using this information to create a "goodness-of-fit" between the child and their environment, supporting positive adjustment and development (McClowry & Collins, 2012). The present study utilizes the psychobiological model of temperament (Rothbart, 2011) to deliver temperament-based information and guidance to parents, differing from previous temperament-based interventions which have utilized the "difficult temperament" model (Thomas and Chess, 1968). Using the Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003), individualized feedback was provided to parents regarding their infant's unique temperament profile. The temperament-based psychoeducational program was delivered in three conditions: (1) in-person feedback; (2) written form; (3) control – written general temperament information only. This randomized controlled trial with mothers of 3-12 month old infants is a pilot study, being conducted primarily to examine feasibility/acceptability of the intervention, as well as to identify potential improvements in goodness-of-fit in mother-child interactions. Mother-child interaction data was collected in two home visit tasks: a semi-structured free-play task and a teaching task. For the purpose of the present poster, preliminary analyses evaluating the impact of the intervention on parent-child interactions will be presented, utilizing a previously validated coding scheme (Gartstein, Crawford, & Robertson, 2008). Mother-child interactions were recorded pre and post intervention across groups, and coded for sensitivity/responsiveness, reciprocity/synchrony, tempo, intensity, parent vs. child directedness, and emotional tone by trained, reliable coders. Repeated measures ANOVAs will be used to evaluate for changes in these parent-child interaction domains across time.

Temperament as a moderator of the association of cumulative risk with pre-adolescent appraisal and coping

Krystal H. Parrish, Liliana J. Lengua and Stephanie F. Thompson, University of Washington

Aims: Individual differences in temperament, particularly emotionality and self-regulation, have been found to predict internalizing and externalizing problems during children's transition to adolescence. Temperament has also been linked both concurrently and longitudinally to appraisal and coping processes, which in turn have been

found to mediate the effect of cumulative risk on internalizing and externalizing problems in children of the same age. While prior research has begun to document how cumulative risk shapes the development of appraisal and coping processes over time, there remains a dearth of longitudinal research, particularly in representative samples, on the factors that may exacerbate or mitigate the effect of cumulative risk on appraisal and coping in pre-adolescents. Thus, given previous literature on the relations among temperament, cumulative risk, and appraisal and coping processes, the goal of the present study is to clarify how individual differences in temperament moderate the effect of cumulative risk on coping and appraisal processes.

Method: The present research examined various domains of temperament as moderators of the longitudinal effects of cumulative risk on appraisal and coping styles using a community sample (N=316) of preadolescent children (M age =9.5 at T1) studied across 1 year.

Findings: Preliminary analyses demonstrate that negative emotionality exacerbates the relations between cumulative risk with avoidant coping one year later. Additionally, an interaction effect of negative emotionality emerged where direct effects of cumulative risk with active coping did not. Negative emotionality did not appear to alter the relation of cumulative risk with threat or positive appraisal. Self-regulation appeared to have no moderating effect on the relation of cumulative risk with appraisal or coping.

Conclusions: These findings suggest temperament, particularly negative emotionality, exacerbates the effect of cumulative risk on avoidant coping, active coping, but may not penetrate the mechanisms which govern the development of appraisal. They also suggest that self-regulation, though implicated as a protective factor in prior research, does not buffer the effects of cumulative risk in the development of appraisal and coping over time. Overall, findings highlight how individual differences in temperament may make the development of certain coping and appraisal styles more susceptible to the effect of cumulative risk.

Infant Emotion Regulation Patterns and Electroencephalography (EEG) Asymmetry in Response to Still Face

Procedure Natalia V. Potapova, Eric E. Desmarais, Alyssa A. Neumann, Elizabeth Youatt, Miguel Sotelo and Maria A. Gartstein, Washington State University

Early emotion regulation has been demonstrated to be critical for later childhood and adult emotional wellbeing. Sustained patterns of early emotion regulation and its effects have been commonly evaluated and described by the regulation/orienting factor of infant temperament, as defined by Gartstein & Rothbart (2003). The Still Face laboratory procedure (Tronick, et al., 1978) has also been used to assess infant's induced emotional reactivity elicited by caregiver's "still face" (i.e., flat and emotionless facial expression in absence of verbal contact). While several physiological measures have assessed development of emotion regulation, to our knowledge, no previous study has examined the neurobiological aspects of early emotion regulation elicited by the Still Face paradigm. In this study, we utilize the electroencephalography (EEG) frontal asymmetry method to measure infant emotion regulation. The frontal EEG asymmetry patterns have been shown to represent individual dispositional differences, with greater right hemisphere activation linked to withdrawal behaviors/emotions and greater left asymmetry associated with approach. However, few child EEG asymmetry studies focused on child emotion reactivity/regulation.

The present study aims to identify unique contributions of the infant regulation/orienting factor in explaining frontal asymmetry expected to occur in the context of a social stressor, accounting for the resting baseline asymmetry and other temperament factors (Extraversion/ Surgency and Negative Affectivity). It is hypothesized that infants scoring higher on the regulation/orienting factor will display greater left frontal activity in response to Still Face, with baseline resting asymmetry and other temperament factors considered as covariates. Conversely, it is anticipated that infants scoring lower on the regulation/orienting factor will display greater right frontal asymmetry in response to the Still Face manipulation, with the same baseline and temperament factor covariates in the equation.

Mothers with infants 6-12 months of age will be recruited via social media (Facebook) and local community announcements in Pullman, WA/Moscow, ID and Clarkston, WA/Lewiston, ID communities. Interested families will be sent several forms, including the Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003), a parent-report measure of infant temperament. Mothers with infants will then be invited to 1-hour

laboratory visit during which the EEG cap will be placed on infant's head. Baseline EEG data (viewing 1 minute video-clip of Baby Einstein, Baby Mozart) and the Still Face procedure will be recorded.

EEG readings will be processed and analyzed according to standard procedures (Bell & Cuevas, 2012). EEG artifacts will be removed manually and software-assisted via the Independent Component Analysis. Frontal asymmetry scores will be computed by subtracting the natural log (ln) power at left frontal (F3) from ln power at right frontal (F4) to assess the differences in the 6-9 Hz alpha band. A negative frontal EEG asymmetry score reflects greater right frontal activation.

Data collection is ongoing, with projected sample size of $n > 15$. Basic descriptive statistics and correlational analyses will be conducted upon collection/processing of EEG asymmetry and IBQ-R data. Hierarchical multiple regression analyses will be performed to assess the variance contributed by regulatory capacity/orienting factor to evoked frontal asymmetry, controlling for other temperament factors, infant sex, and age.

Effortful Control, Parents' Involvement, and Learning-Related Behaviors Relate to Children's School Functioning

Noelia Sánchez-Pérez, University of Murcia; Luis J. Fuentes, University of Murcia; Nancy Eisenberg, Arizona State University; Carmen González-Salinas, University of Murcia

The goal of this study was to identify diverse personal and home environment factors associated with appropriate school functioning in a sample of 142 children aged 6-12 years living in Spain. Children's Effortful Control (EC) was measured using parents' report; parental involvement, children's learning-related behaviors (LRBs), and children's social behaviors at school were informed by teachers; children's social competence was assessed through classmates' nominations. Children's achievement was measured through standard tests and grades. Using structural equation models, we found that parents' involvement in their children's education was positively associated with children's EC and that both were related to more efficient LRBs. Moreover, higher EC was indirectly associated with better academic achievement and directly associated with social functioning, while more efficient LRBs were related to more successful school outcomes. The positive association between parental involvement and academic performance was mediated by children's EC and LRBs. The possible role of other personal (gender, IQ, language-minority status and age) and contextual (SES) factors was also taken into account. The results highlight the potential relevance of parents' supervision and children's effortful self-regulation for learning strategies and positive adjustment in primary school.

Temperament and Emotion Regulation in Early Childhood: Moderating Effect of Parenting Stress Eunkyung Shin, Lin Tan, Cynthia L. Smith

Attention focusing, a temperamental mechanism of self-regulation, helps children to manage emotions as needed according to the social situation. Attentional strategies, like distraction, have been considered key strategies for regulating emotion because distraction, in particular, can help to reduce negative emotions by shifting in attention away from distressing situations. However, according to Foa and Kozak (1986), distraction can interfere with fear reduction in that improperly encoded memory and representations related to a lack of attentional focus can cause excessive fear. Drawing attention to fear inducing stimuli can allow for possible responses to deal with the fear to be detected (Ohman, 2000). In this study, we examined how early attentional skills, specifically attention focusing in toddlerhood, were related to an observed emotion regulation strategy in preschool, specifically distraction observed during a mask task. Given that early interactions with mothers are likely to relate to how children learn to regulate attention, we also examined the role of parenting stress in the continuity of early attention skills to later observed distraction. In particular, we examined mothers' perceptions of dysfunctional interactions with their children that may create a less than optimal family context for the development of emotion regulation. It was hypothesized that how early attention focusing is related to later distraction may vary as a function of the level of parenting stress reported by mothers. It may be that children with optimal attention focusing in toddlerhood would use distraction more adaptively in preschool, regardless of the level of maternal parenting stress reported; however, children may not develop optimal attentional skills in situations where parenting stress is high. Therefore, early attention focusing may not be related to later distraction for children with mothers who report high levels of stress.

At T1, 140 mothers of toddler (74 boys, mean age=2.67 years, SD=.16) completed the Early CBQ and the parent-child dysfunctional interaction subscale from PSI. At T2, 116 preschool-aged children (62 boys, mean age=4.91

years, $SD=.30$) completed a mask task where an experimenter entered the room wearing a wolf mask and tried to interact with the children. Distraction was coded in 5-second episodes as present if children were focused for 2 seconds or more on an object other than the experimenter wearing the mask.

Although attention focusing from the CBQ and parenting stress from the PSI at T1 did not significantly predict children's distraction at T2, there was a significant interaction effect between attention focusing and parenting stress ($B=.22$, $t=2.38$, $p<.05$). Attention focusing was positively related to distraction in the mask episode for children who had mothers with high levels parenting stress related to dysfunctional interactions whereas attention focusing was negatively related to distraction from fear for children who had mothers with low levels of parenting stress dysfunctional interaction. Thus, how early attention skills related to later use of distraction depended upon the level of parenting stress experienced by mothers. How early attention focusing skills relate to later use of distraction will be discussed.

Reports of Child Temperamental Emotionality: Different Sources of Information from Children, Mothers, and Teachers Lin Tan and Cynthia Smith, Virginia Tech

Temperament is defined as biologically based individual differences in affect, activity, and attention (Rothbart & Bates, 2006). When using reported measures of temperament, researchers have found discrepancies among different informants' reports of child temperament (Gartstein & Marmion, 2008; Gill & Link, 2000). Different informants may observe temperamentally-based behaviors in different contexts (Stone, Speltz, Colleett, & Werler, 2013) and thus have different perceptions of those behaviors based on what the context elicits. However, temperament is often thought to be a consistent, sometimes trait-like quality, which would support convergence among reporters. In the current study, we examined different reports of children's negative emotionality (anger and sadness from children, mothers, and teachers) to see the convergence and discrepancies among these informants.

Participants included 109 mothers, 98 teachers, and 95 school age children, who each completed the anger/frustration and sadness subscales of the Temperament in Middle Childhood Questionnaire (Simonds & Rothbart, 2004). Maternal report of child anger was significantly correlated with teacher report, $r(96)=.25$, $p=.02$, and child report, $r(96)=.28$, $p=.01$. Teacher report of anger was significantly correlated with child report, $r(84)=.20$, $p=.07$, at the trend level. In addition, maternal report of child sadness was significantly correlated with teacher report, $r(96)=.24$, $p=.02$, but not significantly correlated with child report, $r(93)=.13$, $p=.21$. Teacher report of child sadness was significantly correlated with child report, $r(84) =.40$, $p<.001$. Paired-samples t-tests showed that there was a significant difference in the scores for maternal report of child anger, $M=2.88$, $SD=.77$, compared to teacher report, $M=2.03$, $SD=.87$, $t(96)=-8.31$, $p<.001$, and a significant difference in scores for maternal report of child anger, $M=2.84$, $SD=.75$, and child report, $M=2.36$, $SD=.77$, $t(93)=-5.05$, $p<.001$. In addition, paired-samples t-tests showed that there was a significant difference in the scores for maternal report of child sadness, $M=2.51$, $SD=.62$, compared to teacher report $M= 2.12$, $SD=.81$, $t(96)= -4.21$, $p<.001$, and a significant difference in scores for maternal report of child sadness, $M=2.43$, $SD=.60$, and child report, $M=1.96$, $SD=.59$; $t(93)=-5.91$, $p<.001$. The findings of the current study suggest that ratings of child anger were only modestly correlated among mothers, teachers, and children themselves. Child report of sadness had a moderate correlation with teacher report but had no significant correlation with maternal report. Mothers and teachers reports of sadness were also related. Even though temperament is often thought to be consistent, it might not be expressed in a similar way across all contexts and across all negative emotions because anger was more consistent across reporters than sadness. It is also interesting that child and teacher reports of sadness were correlated instead of mothers' and children's reports. Moreover, mothers on average rated children's sadness and anger significantly higher than teachers and children did. Such discrepancies might be because when mothers rated their children's negative emotionality, they also reflected on their own characteristics, including their own negative affect (Kagan, 1998). Future research should continue to examine the factors relating to these discrepancies among different informants as it relates to our understanding of children's temperament.

The Role of Temperament and Adaptive Metacognitive Strategies in Internalizing Symptomology Richard Ward, Alex Mull, Alivia Benbow and Anjolie Diaz, Ball State University

A high prevalence of college undergraduates experience anxiety, depression (Hunt & Eisenberg, 2010) and stress (D'Zurilla & Sheedy, 1991), creating the need to elucidate factors that may play a role in their development.

Temperament may be an important factor to consider in the development of these disorders (Dua, 1993, Eisenberg et al., 2010, Muris et al., 2007; Nigg, 2006), creating possible vulnerabilities for stress, anxiety, and depression. Although temperament scales, such as sadness, have been associated with internalizing disorders (Eisenberg et al., 2001), factors such as effortful control have produced mixed evidence (Eisenberg et al., 2010; Nigg, 2006, Muris et al., 2007; Murray & Kochanska, 2002), generating the need to investigate temperament further.

Metacognitive strategies involve understanding an individual's self-cognitive processes, such as preservative thoughts. Individuals with high confidence in extinguishing perseverative thoughts may experience fewer mental health problems, due to a reduced need to monitor intrusive and/or arousing thoughts (Beer & Moneta, 2010). A lack of metacognitive adaptive strategies may also play a role in the development of anxiety (Irak & Tosun, 2008; Spada et al., 2010), and other internalizing disorders (e.g. Hermans et al., 2003; Roussis & Wells, 2006), however this relationship has not been fully investigated. Additionally, the degree of one's self-efficacy, specifically the ability to exercise control over potential threats, may also play a role in negative arousal (Bandura, 1988). There is currently a lack of research investigating the role of both temperament and self-awareness in the development of internalizing disorders. The current study sought to investigate the role of effortful control, sadness, self-efficacy, and the ability to block perseverative thoughts in the development of anxiety, depression, and stress.

Two-hundred and sixty (69% females; 82% Caucasian) undergraduate students (Mage= 19.70) from a Midwestern university participated in the study. Temperament was assessed using the Adult Temperament Questionnaire (Rothbart et al., 2000) and adaptive strategies were measured using the Positive Metacognitions and Positive Metaemotions Questionnaire (Beer & Moneta, 2010). Depression, stress, and anxiety were measured with the Depression Anxiety Stress Scales-21 (Lovibond & Lovibond, 1995).

Results of hierarchical regressions suggest that extinguishing perseverative thoughts, effortful control, and sadness significantly predicted anxiety ($R^2=0.29$, $F(4, 241)=24.31$, $p<0.001$) after accounting for sex. Extinguishing perseverative thoughts, sadness, and effortful control also significantly predicted depression ($R^2=0.42$, $F(4, 241)=43.88$, $p<0.001$) with self-efficacy approaching significance ($p=.093$). Finally, metacognitive strategies, effortful control, and sadness were significant predictors of stress ($R^2=0.43$, $F(4, 241)=44.47$, $p<0.001$).

Due to the large prevalence of internalizing symptoms in college students (Hunt & Eisenberg, 2010), there is a need to improve overall mental health in universities. Self-efficacy did not have a significant influence on internalizing disorders, suggesting it may be more related to situational factors, such as states of arousal (Bandura, 1988), instead of chronic symptomology. However, findings support the relations between both temperament and metacognitive adaptive strategies with anxiety, depression, and stress. Further research is necessary, however, this study provides some impetus for the benefit of metacognitive strategies and effortful control training.

The Role of Preschool Attachment and Behavioural Inhibition in Predicting Intolerance of Uncertainty in Adulthood Magdalena A. Zdebik, University of Montreal; Ellen Moss, Université du Québec à Montréal; Jean-François Bureau, University of Ottawa

Intolerance of uncertainty (IU), the tendency to react negatively to uncertain situations, has been identified as an important cognitive component of anxiety disorders, yet little is known about its etiology. Links to temperament, particularly behavioural inhibition (BI), and insecure attachment have been proposed in the development of IU, but no prospective empirical investigation has yet been done. Sixty children were observed in a separation-reunion procedure at age 6 and classified as either having a 'secure' (B), 'avoidant' (A), 'ambivalent' (C), 'disorganized controlling' (Dcontrol) or 'behaviourally disorganized' (BehD) attachment to their caregiver. BI was also assessed observationally at age 6. IU was reported by participants when they were 21-years-old. Attachment (specifically C and Dcontrol) and BI were both positively related to IU over a 15-years span, even after controlling for neuroticism and maternal anxiety. Attachment and BI had no interacting effect on the development of IU. Maternal anxiety was positively related to child BI and insecure attachment, but not IU. This study is the first to empirically confirm a link between ambivalent and disorganized controlling attachment and BI in preschool children to the development of IU in adulthood. Results have not only etiological and preventative implications for anxiety disorders but for all disorders related to IU.