

# Cool As A Cucumber

# Hot As A Pepper



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# The Situation

- Early childhood is an important period for learning and early learning is predictive of academic outcomes or challenges
- Children's "hot" and "cool" temperaments are related to their success in school
  - "hot" temperament - reactive traits, such as activity and anger
  - "cool" temperament - regulatory traits, such as attention and inhibitory control

# Temperamental Self-regulation Skills - “Cool” Temperament

- Characteristics (\*Boyd et al., 2005)

Paying attention on purpose

Matching behavior to setting

Getting along with others

Following directions



- Effortful Control - Children’s Behavior Questionnaire
  - ◆ Attentional Focusing, Inhibitory Control, Low Intensity Pleasure, Perceptual Sensitivity

# Temperamental Reactivity - “Hot” Temperament

- Characteristics (Rothbart & Bates, 2006)

Gross motor activity

Anger and frustration

Excitement and eager  
anticipation



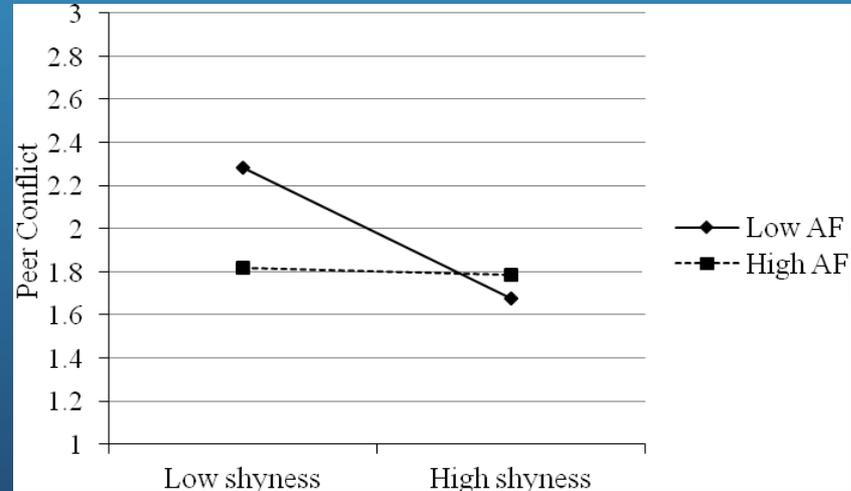
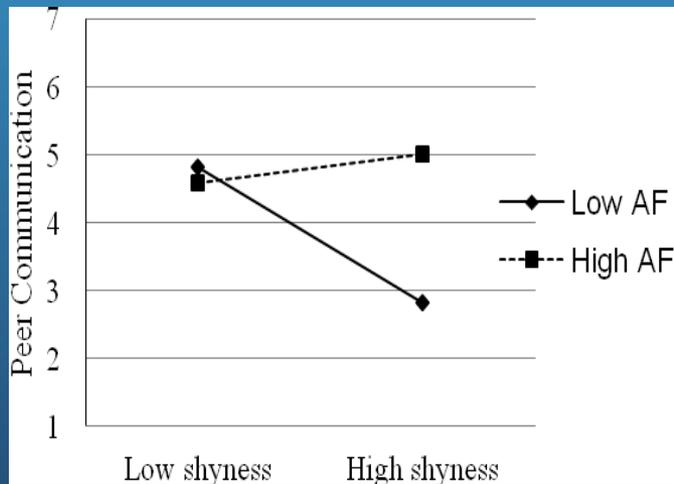
- Reactive temperament traits - Children’s Behavior Questionnaire
  - ◆ Activity, Anger/Frustration, Approach

# Preliminary Evidence: Temperament and Sleep Characteristics

- There is evidence in our sleep studies that temperamental activity level, soothability, and fear are associated with measures of sleep.
  - Toddlers with high temperamental activity levels had less nighttime sleep
  - Toddlers with higher soothability had more total sleep time
  - Toddlers with high fear had more variability in ability to fall and stay asleep

# Preliminary Evidence: Temperament and Pre-K Classroom Behaviors

- The interaction between attentional focusing and shyness was significantly related to children's peer communication ( $\beta = .50$ ,  $t = 2.45$ ,  $p = .02$ ).
- The interaction between attentional focusing and shyness predicted children's peer conflict ( $\beta = .37$ ,  $t = 2.34$ ,  $p = .03$ ).



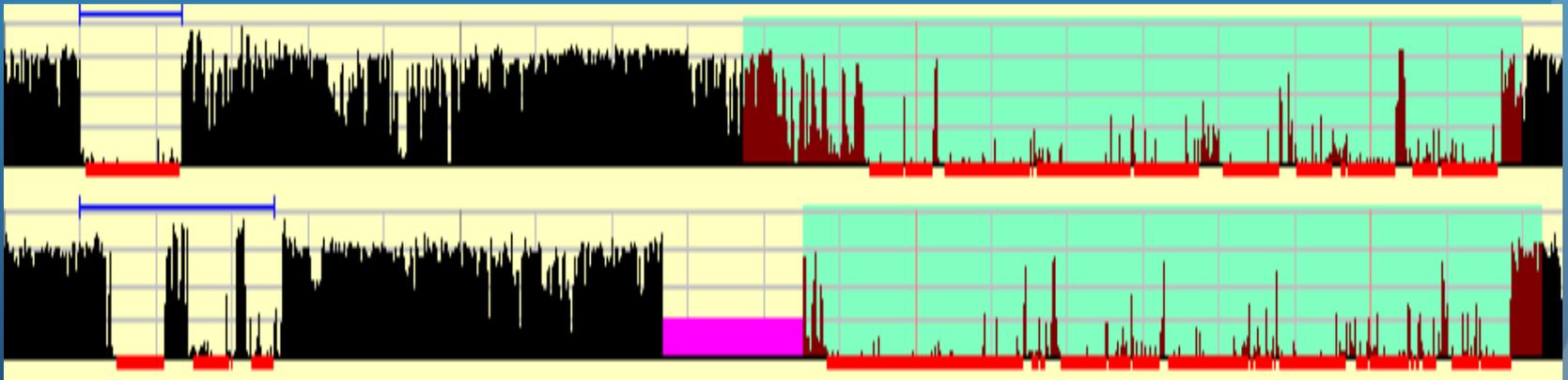
# The Current Study

- We have extended our longitudinal study of toddler temperament and sleep characteristics into pre-K to examine the roles classroom characteristics and academic outcomes
- A pilot study involving children in the toddler study who are now in pre-kindergarten classrooms
  - Participants are 34 children (4- to 5-year olds), their parents and preschool teachers
  - Study sites: our Toddler Lab and preschool classrooms

# Measuring Sleep Characteristics



- Actigraphs are small, portable devices used to record sleep duration and true sleep time (sleep duration with night wakefulness subtracted)
- Parents record day-by-day information on daily bedtime and rise time

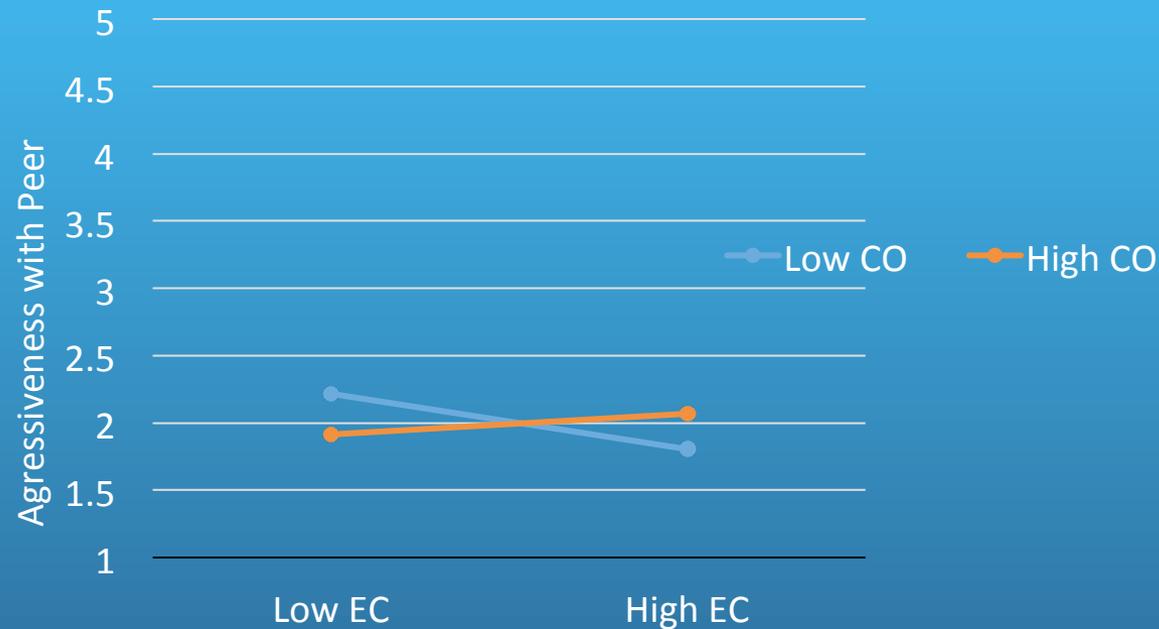


# Measuring Classroom Quality and Child Behavior

- CLASS - Classroom Assessment Scoring System (Pianta et al., 2008) - observations of classroom interactions around emotional support, instructional support, classroom organization
- InCLASS - Individualized Classroom Assessment Scoring (Downer, et al., 2010) - observations of children's engagement with teachers, peers, and tasks
- Child Behavior Scale (Ladd Profilet, 1996): Teacher ratings of Aggressive with Peers, Prosocial with Peers, Asocial with Peers, Excluded by Peers, Anxious-Fearful, Hypteractive-Distractible

# Preliminary Pre-K Findings

- Temperament, CLASS, and Outcomes



Classroom organization moderated the association between children's effortful control and aggressive behaviors with peers ( $\beta = .14$ ,  $t = 2.13$ ,  $p = .04$ ). Children with low EC in Low CO classrooms had higher levels of aggressive behavior than those with low EC in High CO classrooms

# Preliminary Pre-K Findings

- Sleep, CLASS, and Academic Outcomes
  - Sleep and Instructional Support positively predicted WJ Letter-Word and Applied Problems scores, explaining 32% & 27% of variance
  - Sleep and Classroom Organization positively predicted WJ Letter-Word scores, explaining 29% of variance
- Sleep, CLASS and Child Behavior Outcomes
  - Sleep negatively predicted aggressive and asocial behavior in models with Emotional Support and Classroom Organization, explaining 13% and 18% of variance
  - CLASS variables were not significant predictors

# Preliminary Pre-K Findings

- Sleep, “Hot” temperament, and Academic Outcomes
  - Activity negatively predicted WJ Letter-Word scores; all “hot” temperament explained 14% of variance, sleep explained no additional variance
- Sleep, “Hot” temperament, and Child Behavior Outcomes
  - Activity positively predicted Aggressive behavior; all “hot” temperament explained 23% of variance, sleep explained additional 5%
  - Anger positively predicted Asocial behavior; all “hot” temperament explained 23% of variance, sleep explained additional 13%
  - Approach positively predicted Excluded behavior; all “hot” temperament explained additional 28% of variance; sleep explained additional 2%

# Pending Findings

- InCLASS - observations of participant children in classrooms to look at behaviors with teachers, peers and classroom tasks
- We are interested in understanding the influence of temperament and sleep characteristics in children's behaviors in "on demand" situations (lab tasks) compared to observed/perceived behaviors at home and school.
- Additional data will allow us to explore more fully the relations and interactions between variables in our full models

# Summary - Take Away Points

- Children's temperamental self-regulation/reactivity and sleep characteristics influence behaviors at home and at school.
- Observing teacher-child interactions in the classroom and child initiated interactions with teachers, peers and tasks are important for understanding children's temperamental self-regulation.
- Longitudinal studies of toddler to preschool self-regulation and sleep may add to our knowledge of development and school readiness
- Critical Questions - Who benefits most from this information - possibly those whose low self regulation/high reactivity and academic progress is impacted by poor sleep rather than ADHD?

# Questions

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