Characterizing Development in Down Syndrome: From Infancy to Adolescence

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Our Goal = Promote Positive Development

Dr. Hahn's Focus

- Identify patterns of early social, cognitive, and communicative skills
- Describing trajectories of development and how they affect later skills

Dr. Channell's Focus

- How language, cognition, and social-emotional skills impact communication in the school-age years
- Document how communication impacts post-school outcomes

Translating research for interventions

Behavioral Phenotype

Behavioral Outcomes

(Cognitive, Linguistic, Social, Emotional, Motor)

Genetic Syndrome

Down Syndrome Phenotype: Infancy

- Limited Research
  - Recent studies
    - Developmental differences in those with and without heart defects (Visootsak et al., 2011)
  - Older studies
    - Small sample sizes
      - Descriptive
  - Conflicts with later periods of development

Down Syndrome Phenotype: Early Childhood

- Behavioral phenotype emerges early (2-5 yrs)
  - Relative strengths
    - Social functioning
    - Receptive language
  - Relative weaknesses
    - Expressive language
    - Task persistence/motivation

Nonverbal Communication

Characterizing Early Development

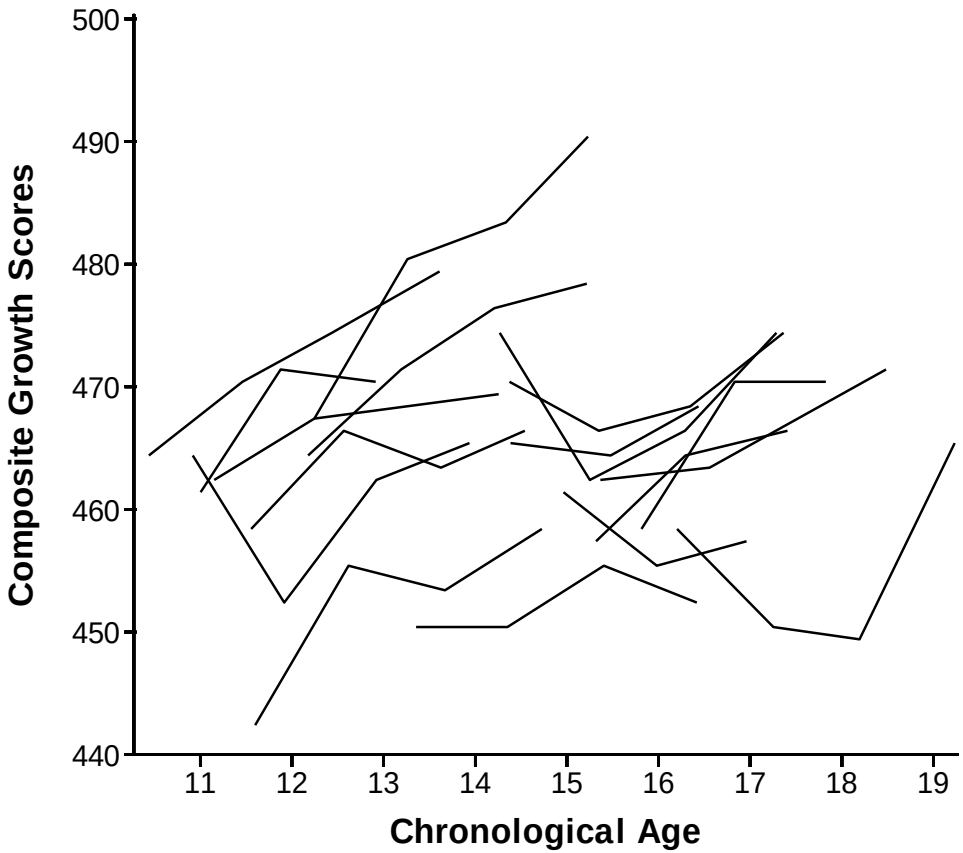
- Where does the behavioral phenotype start?
  - Cascading effects?
- How do we begin to address this question?
  - Prospective infant studies
    - Follow children from infancy into early childhood and onward
- Leads to:
  - Better understanding of development
  - Better identification of targets and support for early intervention

Down Syndrome Phenotype: Middle Childhood through Adolescence

- What We Know

	Relative Strengths	Relative Challenges
Cognitive	Visuo-spatial processing Visual memory	Auditory processing Auditory memory
Linguistic	Receptive language Vocabulary	Expressive language Syntax (grammar)
Social/ Emotional	Social engagement Nonverbal communication	Social cognition (e.g., perspective-taking) *very little research

Example of Individual Variability



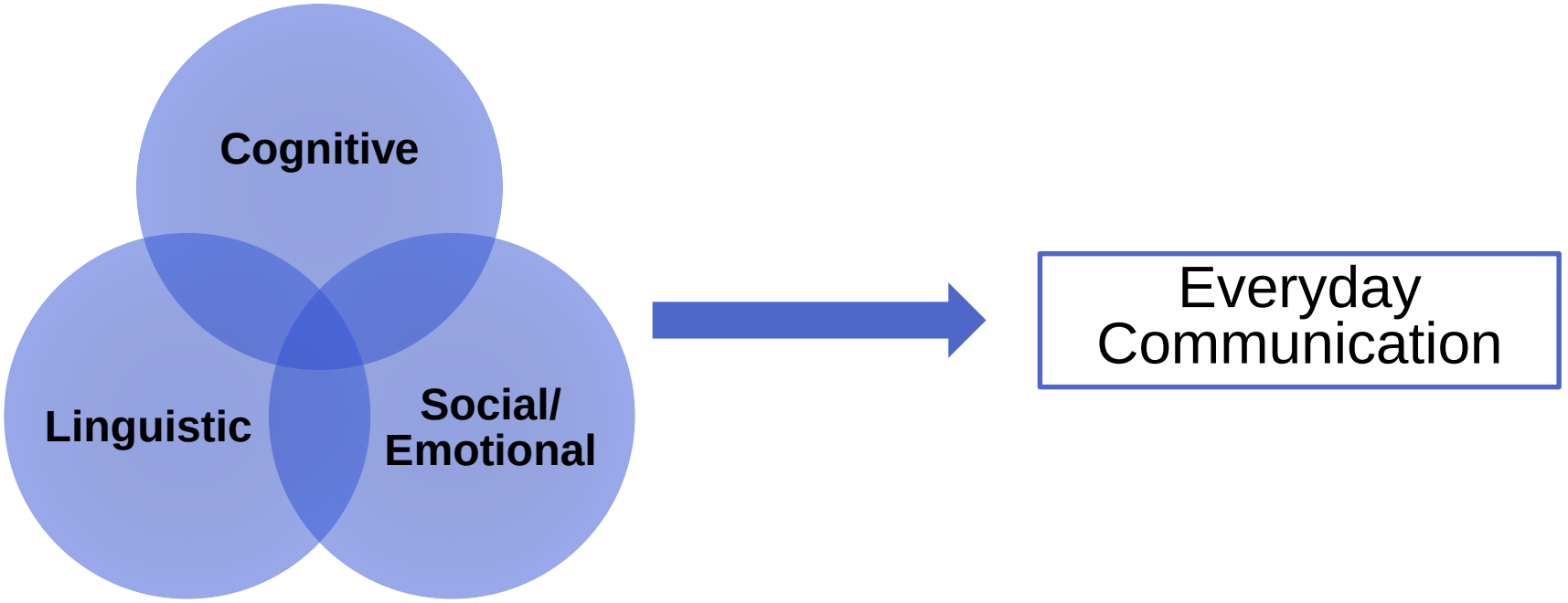
- Cognitive delays overall, with abilities varying widely from one individual to the next and increasing over time

Channell et al., 2014, *Research in Developmental Disabilities*

Down Syndrome Phenotype: Middle Childhood through Adolescence

- What We Don't Know
  - *How does the phenotype impact everyday communication?*
  - *What accounts for the observed inter-individual variability?*

Addressing These Questions



- Example: Narrative Storytelling
  - We all use narrative (telling a story) as a tool for communicating our personal experiences to others
  - Narrative ability is also related to literacy

Example: Narrative Storytelling

- Communicating a well-developed story to a listener in a coherent way requires:
  - **Cognition**
    - Mentally organizing event sequences; planning how to convey the message
  - **Language**
    - Complex sentence structures to communicate order of events, cause and effect
  - **Social/Emotional Skill**
    - Telling an engaging story; taking the perspective of the story characters; discussing why characters act and react

Current Research Projects at UIUC

- Early Development in Down Syndrome
- Spoken Language Development in Down Syndrome
- Down Syndrome Cognition Project
- Transition to Adulthood in Down Syndrome (coming soon)

Thank You!

- Without families like you we would not be able to do our research!

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Research currently funded by: National Institute on Child Health and Human Development (NICHD), LuMind Down Syndrome Research Foundation, & The University of Illinois