



Pervasive Assessment of Social Behavior

Jim Rehg
Georgia Tech



NSF Workshop in Pervasive Computing at Scale

NSF Expeditions in Computing Program

Computational Behavioral Science:

Modeling, Analysis, and Visualization of
Social and Communicative Behavior

James M. Rehg

Lead PI, Georgia Tech



Understanding Behavior

Ousley, Abowd, and Arriaga

Rapid-ABC Screener for Autism

- Behaviors:

Response to name

Joint attention

Ball game

- Key properties:

Dyadic

Multimodal

Context

Timing

Heterogeneous



- Assessment: *How hard is it to engage Pablo?*

Output: *Score and “felt sense”*

Understanding Behavior

Ousley, Abowd, and Arriaga

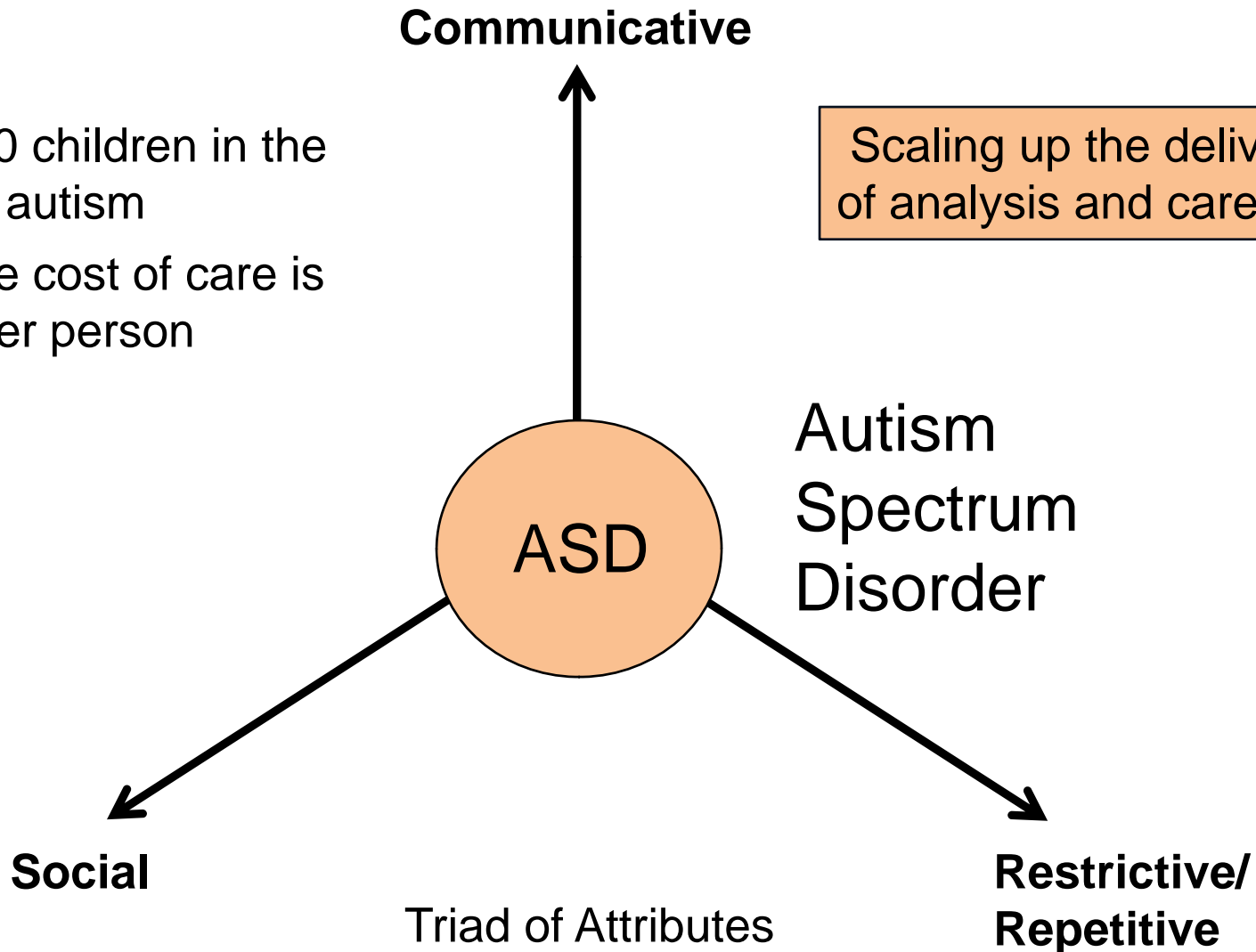
Rapid-ABC Screener for Autism

- Behaviors:
 - Response to name*
 - Joint attention*
 - Ball game*
- Key properties:
 - Dyadic*
 - Multimodal*
 - Context*
 - Timing*
 - Heterogeneous*
- Assessment: *How hard is it to engage Pablo?*
 - Output: *Score and “felt sense”*

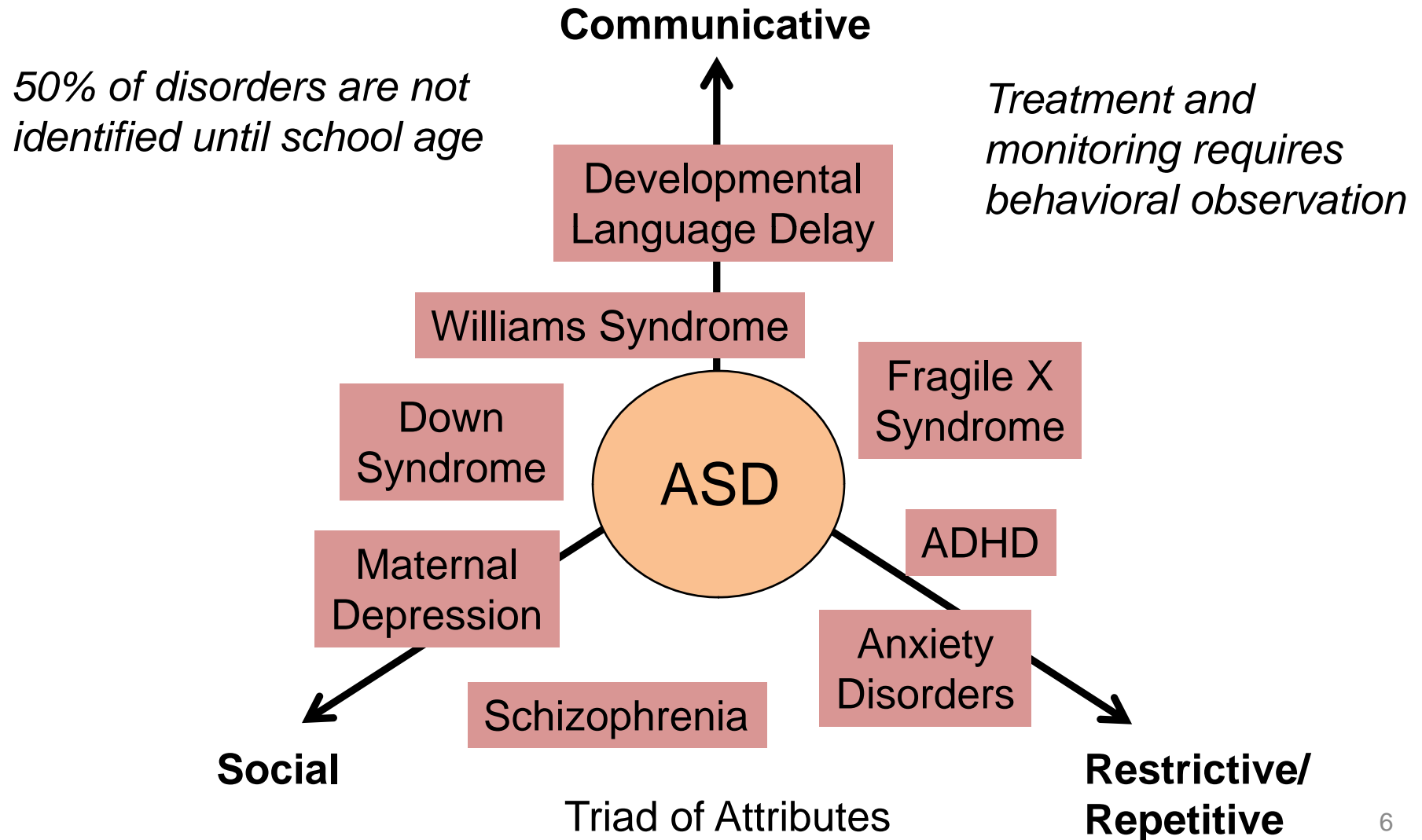


Societal Impact: Autism

- 1 in 110 children in the US have autism
- Lifetime cost of care is \$3.2 M per person



Behavioral and Developmental Disorders



Research Questions

- How to leverage large amounts of data in combining multiple sensing modalities
 - e.g. “Level of social engagement”
- How to assess behavior in natural environments
 - e.g. Identify and interpret the relevant data
- How to scale assessment capabilities to the national level
 - e.g. Screening in doctor’s office or daycare
- How to deliver services to a diverse cross-section of stake-holders (and pay for them)
 - e.g. Children and their caregivers

Goals

- Objective measurements of human behavior from childhood to old age
 - To identify psychiatric disorders at an early stage
 - To give people the tools to understand and manage their interpersonal relationships
 - To better understand the connection between behavior and physical and mental health
 - To provide the behavioral sciences with new data-driven methods for diagnosis, treatment, and research