

Socialization Issues in NF-1: *Why they occur and what to do to improve them*

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Organization of Talk

- ▶ Why Consider Socialization?
- ▶ The Development of Social Skills
- ▶ The Neuropsychology of NF-1
- ▶ Why Socialization is Difficult for Youth with NF-1
- ▶ ADHD, LD, and Social Skills
- ▶ Transitioning into Adulthood
- ▶ Interventions
- ▶ Questions

Why Consider Socialization?

- ▶ One of the most frequent concerns shared with pediatricians and neurologists
 - Loneliness
 - Struggles with peers
- ▶ Impact on both learning and maturity
 - Influences participation and shared learning experiences
 - Impacts how approach and engage with peers
- ▶ Emotional functioning
 - Depression and Anxiety
- ▶ Adulthood
 - Sustained struggles with friendships and romantic partnerships
 - Affects employment opportunities

Why Consider Socialization?

- ▶ Incidence of Autism Spectrum Disorder in children with NF-1
 - 14–29% children with NF-1 rated as falling in the severe range of autism symptoms
 - Concern about specific shared vulnerabilities
- ▶ Shared neurological considerations
 - Areas of the brain most commonly impacted in NF-1 involve skills required for social competency
 - Awareness of how intervention can ameliorate potential struggles with language, social comprehension

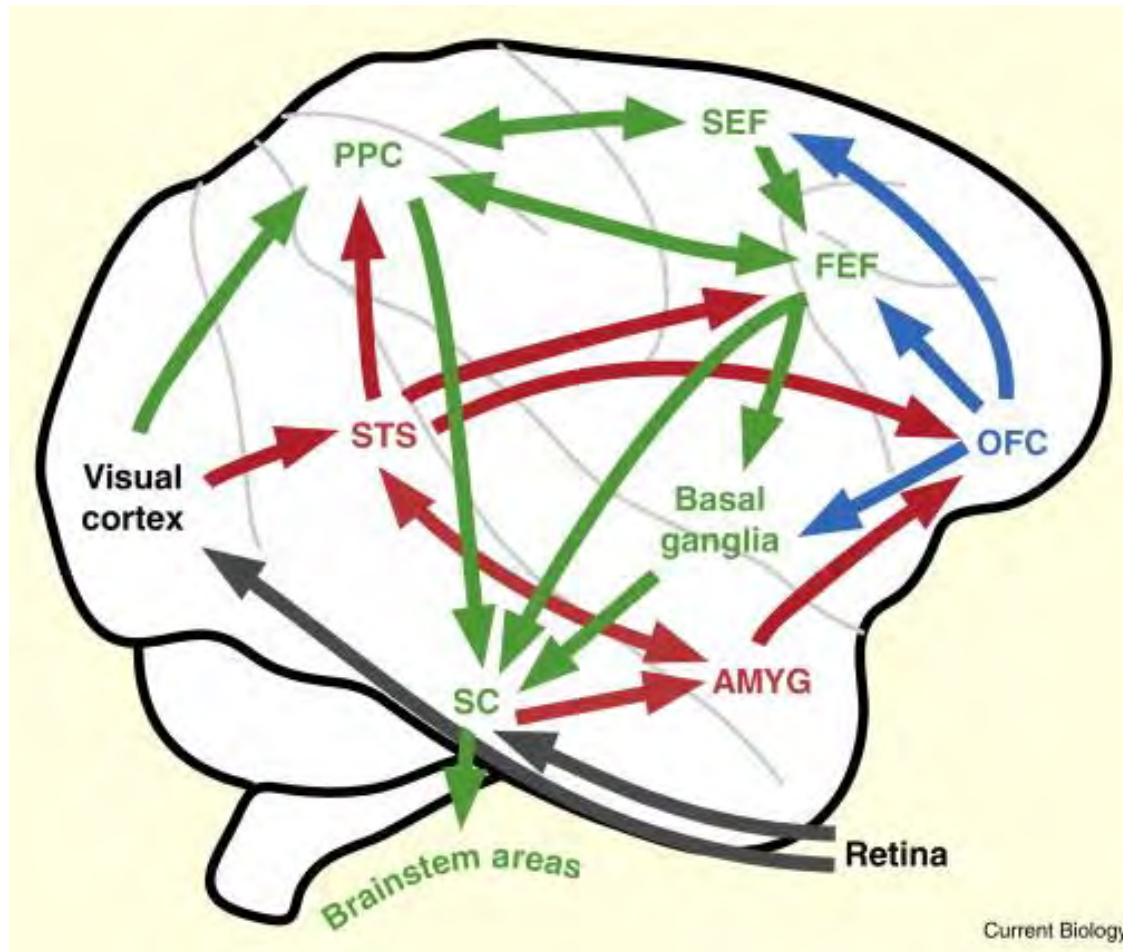
The Development of Social Skills

- ▶ Socialization abilities develop within a mix of genetic, environmental, and behavioral influences
- ▶ Attachment establishes the foundation for engaging with and understanding social demands and cues
- ▶ Joint attention is a determinant of attachment
 - Facilitates engagement and interaction
 - Elicits development of pathways underlying social awareness and reciprocal interactions

The Development of Social Skills

- ▶ Attention underserves many of the cognitive capacities that emerge across time
 - Language
 - Visual-spatial engagement and analysis
 - Memory
 - Learning
 - Social understanding and engagement

The Development of Social Skills



The Development of Social Skills

- ▶ Social understanding and reciprocity requires the capacity to
 - Engage with and appreciate other's thoughts and ideas
 - Associate current interactions with previous experience
 - Appreciate novelty in the context of predictability
 - Identify and then engage in appropriate social responses
 - Correct own response and understanding given feedback

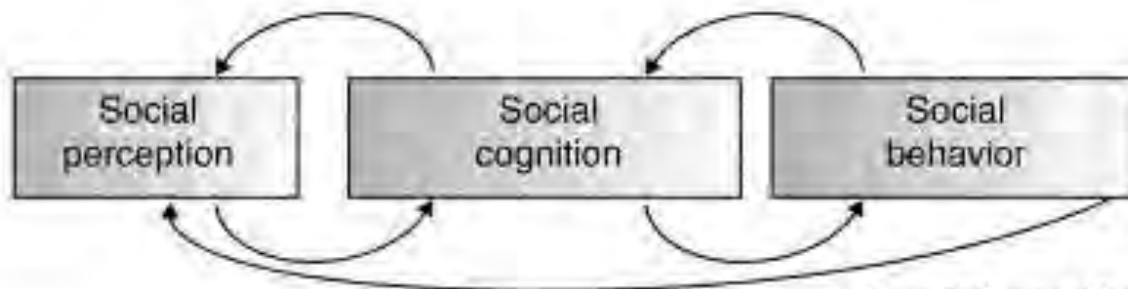
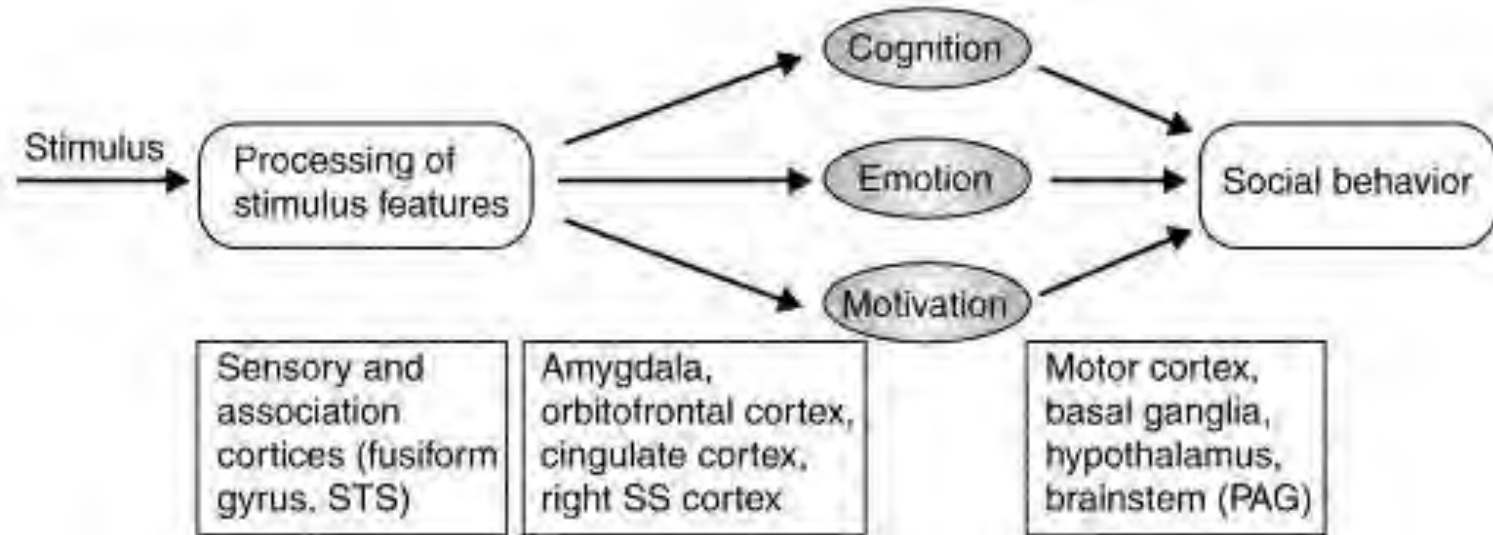
The Development of Social Skills

- ▶ Multiple brain areas are involved
 - Attention network
 - Emotional network
 - Language
 - Receptive understanding
 - Expressive communication
 - Behavioral regulation network
 - Assessment and Choice
 - Executive Functions
 - Working Memory
 - Inhibition
 - Set shifting

The Development of Social Skills

- ▶ Modeling of appropriate social behavior
 - Home
 - School
 - Playground
- ▶ Shaping of social skills and understanding
 - Parents and siblings
 - Teachers
- ▶ Behavioral monitoring and correction
- ▶ Peer relationships
 - Extending the boundaries of appropriate behavior
 - Social understanding

Neuroanatomy of Social Cognition



Current Opinion in Neurobiology

The Neuropsychology of NF-1

- ▶ **Learning difficulties**
 - Studies suggest 25–50% have learning disabilities
 - Some reports emphasize nonverbal learning disorder profile
 - Other reports emphasize verbal learning disorder profile
 - 5–10% may show mental retardation
 - North identified a 3.5% incidence of moderate to severe MR in Australia
- ▶ **Speech problems**
- ▶ **Motor coordination difficulties**
- ▶ **Behavioral problems**
 - Most commonly reported are ADHD-associated symptoms

Common Difficulties in NF-1

▶ ADHD

- Social understanding and execution struggles are very common in ADHD
- Difficulties with regulation and impulse control
- Inattention to cues

▶ Learning disabilities

- Language struggles contribute to difficulties with communication
- Visuospatial analysis difficulties lead to struggles with taking in and reading nonverbal and behavioral cues
- Processing speed struggles impact capacity to “keep up” when engaging verbally and behaviorally with peers

How Neuropsychology Influences Socialization

- ▶ Struggles with “fitting in” and “keeping up with peers”
- ▶ Impulsivity: “Making the wrong choice”
- ▶ Need for predictability
- ▶ Missing social and behavioral cues
- ▶ Immaturity
- ▶ Awkwardness secondary to awareness of physical or cognitive challenges

Relationship between ADHD, LD, and social difficulties

- ▶ Comorbidity with externalizing behaviors
 - Lower frustration tolerance
 - Oppositionality
 - Anger with “being different”
 - Struggle with making socially appropriate choices
 - Challenge with changing approach or style of behavior
- ▶ Comorbidity with mood difficulties
 - Depression
 - Anxiety
 - Low self-efficacy

Transition to Adulthood

- ▶ Capacity to manage independence
- ▶ Ability to drive or determine own transportation
- ▶ Need for accommodations in school or workplace
- ▶ Feeling confident with dating and non-romantic social relationships
- ▶ Choices about alcohol and other substances

Interventions

- ▶ Early childhood
 - Social modeling
 - Playdates and peer opportunities
 - Structured interactions with guided behavioral response
- ▶ Middle childhood
 - Addressing inattention and impulsivity
 - Engagement in structured peer activities
 - Social modeling within peer experiences
 - Small group therapies on social skills

Interventions

- ▶ **Puberty and Adolescence**
 - Social problem solving groups
 - Social communication work, both individually and small groups
 - Structured peer experiences
 - Modeling dating and mixed gender interactions
- ▶ **Late Adolescence**
 - Coaching
 - Social and sexual decision making
 - Dating
 - Forming and sustaining social groups

Interventions

▶ Adulthood

- Individual psychotherapy
 - Mood
 - Medication management
- Couples psychotherapy and counseling
- Coaching
 - Workplace social modeling
 - Managing stress and responsibilities
 - Decision making

Questions?