Stratification for Behavioral Measures

A. **Language Function**: Connectivity in language-related brain regions will be correlated with verbal IQ (VIQ) and language subscales from ADOS and ADI-R. Children will be stratified into high, medium, and low language ability categories.

High Language Ability:

1. VIQ >= 115
2. ADOS Communication domain: (minimal to mild impairment)
    - Module 1: Score **1-2**
    - Module 2: Score **1-2**
    - Module 3: Score **1-2**
    - Module 4: Score **1-2**
3. ADI-R: Score 0-1 (no to minimal language impairment)

Medium Language Ability:

1. VIQ 85-114
2. ADOS Communication domain: (moderate impairment)
    - Module 1: Score **3-4**
    - Module 2: Score **3**
    - Module 3: Score **2-3**
    - Module 4: Score **2-3**
3. ADI-R: Score 2 (moderate impairment)

Low Language Ability:

1. VIQ < 85
2. ADOS Communication domain: (severe impairment)
    - Module 1: Score 5
    - Module 2: Score 4
    - Module 3: Score 4
    - Module 4: Score 4
3. ADI-R: Score 3 (severe impairment)

To combine VIQ, ADOS, and ADI-R for stratifying children into high, medium, and low language ability categories, here are the steps:

Step1: Establish a Scoring System for Each Metric

Each of the three metrics (VIQ, ADOS, ADI-R) can be scored individually, and then combined into a composite score to determine the final stratification.

1. VIQ Scoring:
    a. High: 2 points (VIQ >= 115)
    b. Medium: 1 point (VIQ 85-114)
    c. Low: 0 points (VIQ < 85)

2. ADOS Scoring:
    a. High: 2 points (ADOS score 1-2)
    b. Medium: 1 point (ADOS score 3-4)

c. Low: 0 points (ADOS score >= 5)

3. ADI-R Language Subscale Scoring:
    a. High: 2 points (ADI-R score 0-1)
    b. Medium: 1 point (ADI-R score 2)
    c. Low: 0 points (ADI-R score 3)

Step 2: Calculate Composite Language Ability Score for each child

Now, for each subject, calculate a composite score by summing the individual scores from the three metrics (VIQ, ADOS, ADI-R):

1. High Language Ability: Total score 5-6 points. (These children show high language ability across all measures)
2. Medium Language Ability: Total score 3-4 points. (These children show medium language ability on some measure or mixed results across different metrics.)
3. Low Language Ability: Total score 0-2 points. (These children demonstrate low language ability across most or all measures)

Step 3: Adjust Weighting (if necessary)

If any of the metrics is considered more important than the others for the analysis, we can apply different weights to reflect its significance.

B. **Social Function**: Connectivity in social cognition regions will be correlated with SRS scores and social interaction measures from ADOS and ADI-R. Children will be stratified into high, moderate, and low social functioning subgroups.

High Social Function:

1. SRS: T-score < 59 (Normal range; no significant social impairment)
2. ADOS Social Interaction domain (minimal to mild impairment):
    - Module 1: Score 1-2
    - Module 2: Score 1-2
    - Module 3: Score 1-2
    - Module 4: Score 1-2
3. ADI-R Social Interaction domain: Score 0-1 (no to minimal social impairment)

Moderate Social Function:

1. SRS: T-score 60-75 (Moderate social impairment)
2. ADOS Social Interaction domain (moderate impairment):
    - Module 1: Score 3-4
    - Module 2: Score 3
    - Module 3: Score 2-3
    - Module 4: Score 2-3
3. ADI-R Social Interaction domain: Score 2 (moderate social impairment)

Low Social Function:

1. SRS: T-score ≥ 76 (Severe social impairment)
2. ADOS Social Interaction domain (severe impairment):
    - Module 1: Score 5
    - Module 2: Score 4

- Module 3: Score 4
- Module 4: Score 4

3. ADI-R Social Interaction domain: Score 3 (severe social impairment)

C. **Motor Function**: Motor-related connectivity will be analyzed in relation to motor assessments from ADI-R and ADOS. Children will be stratified into high, moderate, and low motor function subgroups.

High Motor Function:

1. ADI-R Motor Domain: Score 0-1 (no to minimal motor impairment)
2. ADOS Motor-Related Observations (minimal to mild impairment):
    - Module 1: Score 1-2
    - Module 2: Score 1-2
    - Module 3: Score 1-2
    - Module 4: Score 1-2

Moderate Motor Function:

1. ADI-R Motor Domain: Score 2 (moderate motor impairment)
2. ADOS Motor-Related Observations (moderate impairment):
    - Module 1: Score 3-4
    - Module 2: Score 3
    - Module 3: Score 2-3
    - Module 4: Score 2-3

Low Motor Function:

1. ADI-R Motor Domain: Score 3 (severe motor impairment)
2. ADOS Motor-Related Observations (severe impairment):
    - Module 1: Score 5
    - Module 2: Score 4
    - Module 3: Score 4
    - Module 4: Score 4

D. **Cognitive Function**: Cognitive connectivity will be analyzed based on executive function scores from ADOS and ADI-R. Children will be stratified into high, moderate, and low performance subgroups.

High Cognitive Function:

1. ADI-R Executive Domain: Score 0-1 (no to minimal cognitive impairment)
2. ADOS Executive-Related Observations (minimal to mild impairment):
    - Module 1: Score 1-2
    - Module 2: Score 1-2
    - Module 3: Score 1-2
    - Module 4: Score 1-2

Moderate Cognitive Function:

3. ADI-R Executive Domain: Score 2 (moderate cognitive impairment)
4. ADOS Executive -Related Observations (moderate impairment):
    - Module 1: Score 3-4
    - Module 2: Score 3

- Module 3: Score 2-3
- Module 4: Score 2-3

Low Cognitive Function:

3. ADI-R Executive Domain: Score 3 (severe cognitive impairment)
4. ADOS Executive -Related Observations (severe impairment):
    - Module 1: Score 5
    - Module 2: Score 4
    - Module 3: Score 4
    - Module 4: Score 4

The composite scores for **B. Social**, **C. Motor**, and **D. Cognitive** will be calculated in the same manner as for **A. Language**.