

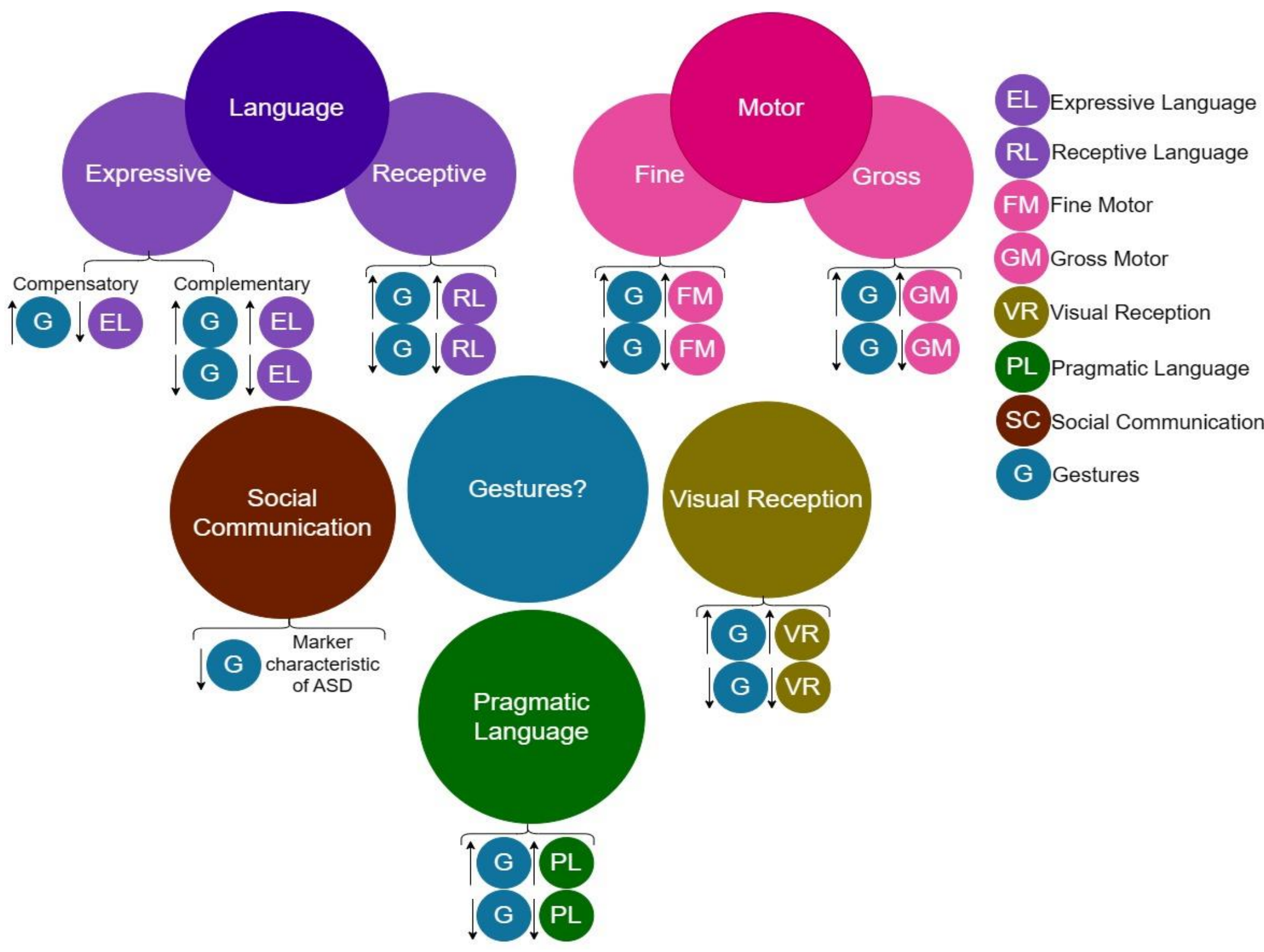
Examining concurrent associations between gestures, developmental domains, and autistic traits in toddlers with Down syndrome

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BACKGROUND & OBJECTIVES

- Gestures are a nonverbal communication strategy, critical for functional communication.¹
- Some research shows higher rates of gesture use in young children with Down syndrome (DS).^{2,3}
- Multiple domains of development may contribute to gesture use, but unexplored is their relationship to gesture use.
- We aimed to:
 - Examine the concurrent relation between gestures and expressive/receptive language, visual reception, fine/gross motor, and pragmatic language.
 - Investigate the concurrent relation of ASD severity scores by domain on the ADOS with gesture use.

Fig.1. Conceptual models of how gestures and developmental domains may interact.



METHODOLOGY

Table 1. Participant (n=30) demographics.

	Mean (range) or n (%)
Gender	
Female	15 (50.00%)
Chronological Age (months)	26.12 (13.89-36.80)
Ethnicity	
Hispanic or Latino	4 (13.33%)
Not Hispanic or Latino	26 (86.67%)
Race	
White	24 (80.00%)
Multirace	6 (20.00%)

Measures:

Words and Gestures Gestures Total Score
Pragmatic Language Part 2 Total Score
Expressive Language
Receptive Language
Fine Motor
Gross Motor
Visual Reception
ADOS Module: Toddler/1
ADOS Severity Scores by Domain (SA/RRBs)

- Analyses:** Pearson partial correlational analyses controlling for child age and sex

RESULTS

Fig.2. Mullen Subscales and Gesture Use

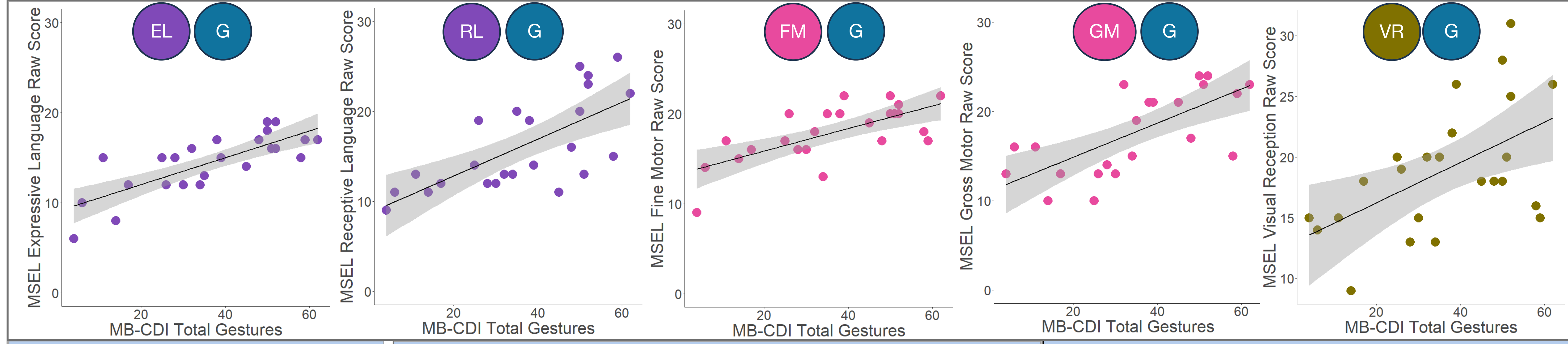


Fig.3. LUI and Gesture Use

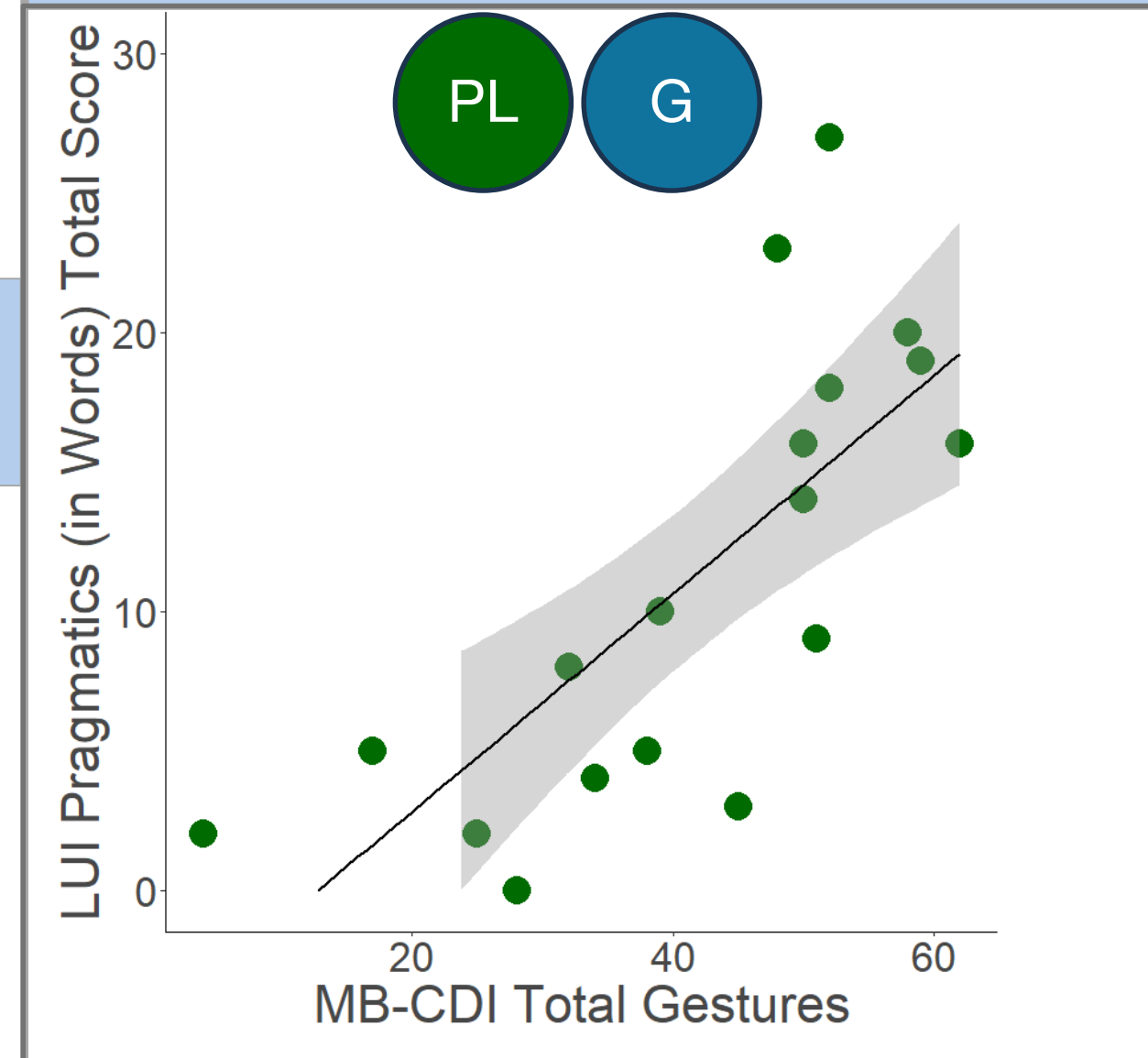


Fig.4. ADOS CSS by Domain and Gesture Use

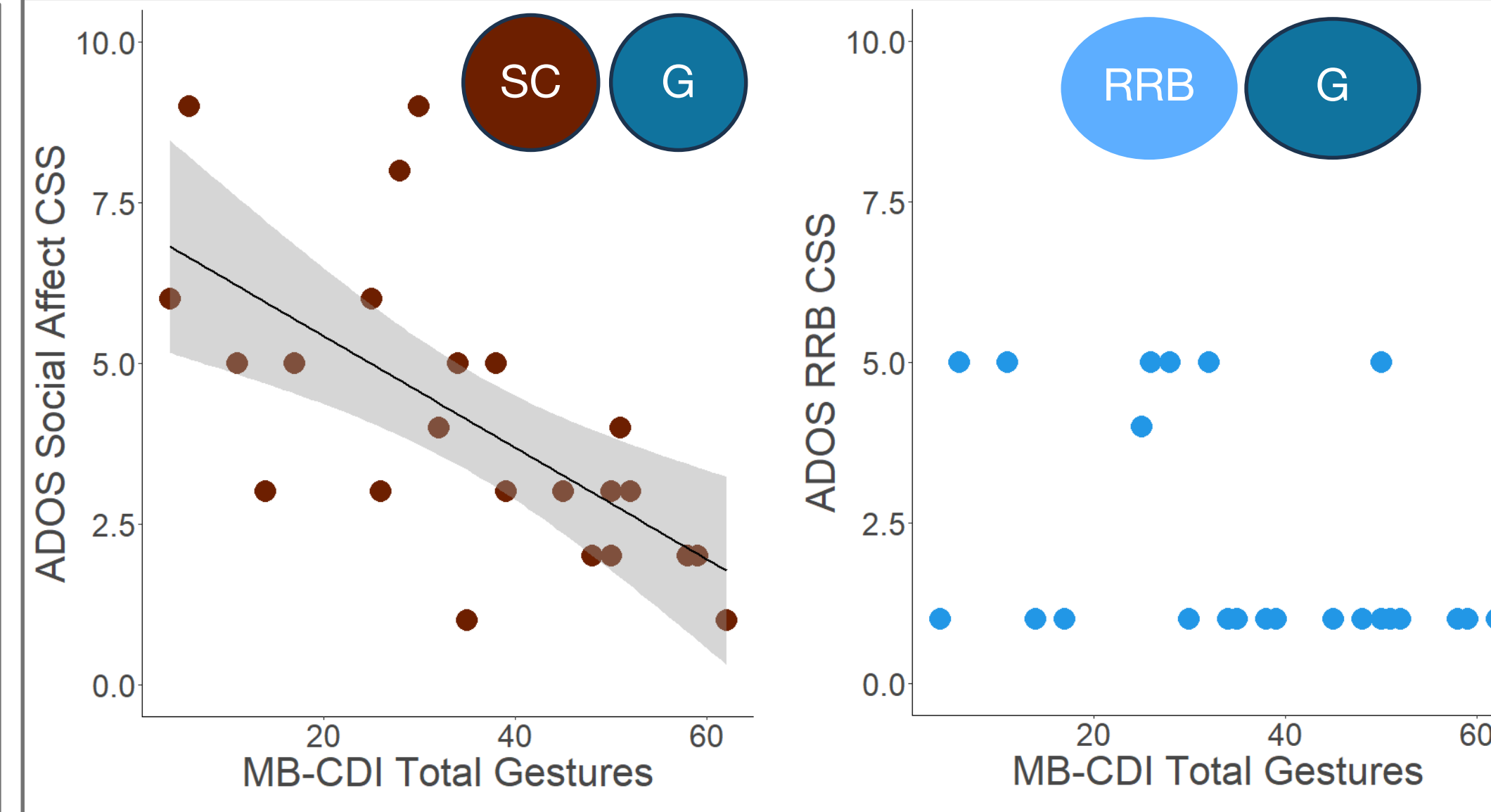


Table 2. Participant assessment and parent report scores.

	Mean (range)
MB-CDI Total Gestures	36.08 (4.00-62.00)
MSEL Raw Score	
RL	15.50 (9.00-26.00)
EL	14.03 (6.00-19.00)
FM	17.43 (9.00-22.00)
GM	17.24 (10.00-24.00)
VR	18.20 (9.00-31.00)
LUI Part 2 Total Score	10.77 (0.00-27.00)
ADOS SA CSS	4.20 (1.00-9.00)
ADOS RRB CSS	2.13 (1.00-5.00)

Fig.5. Visual schematic of the relation between gestures and developmental domains.

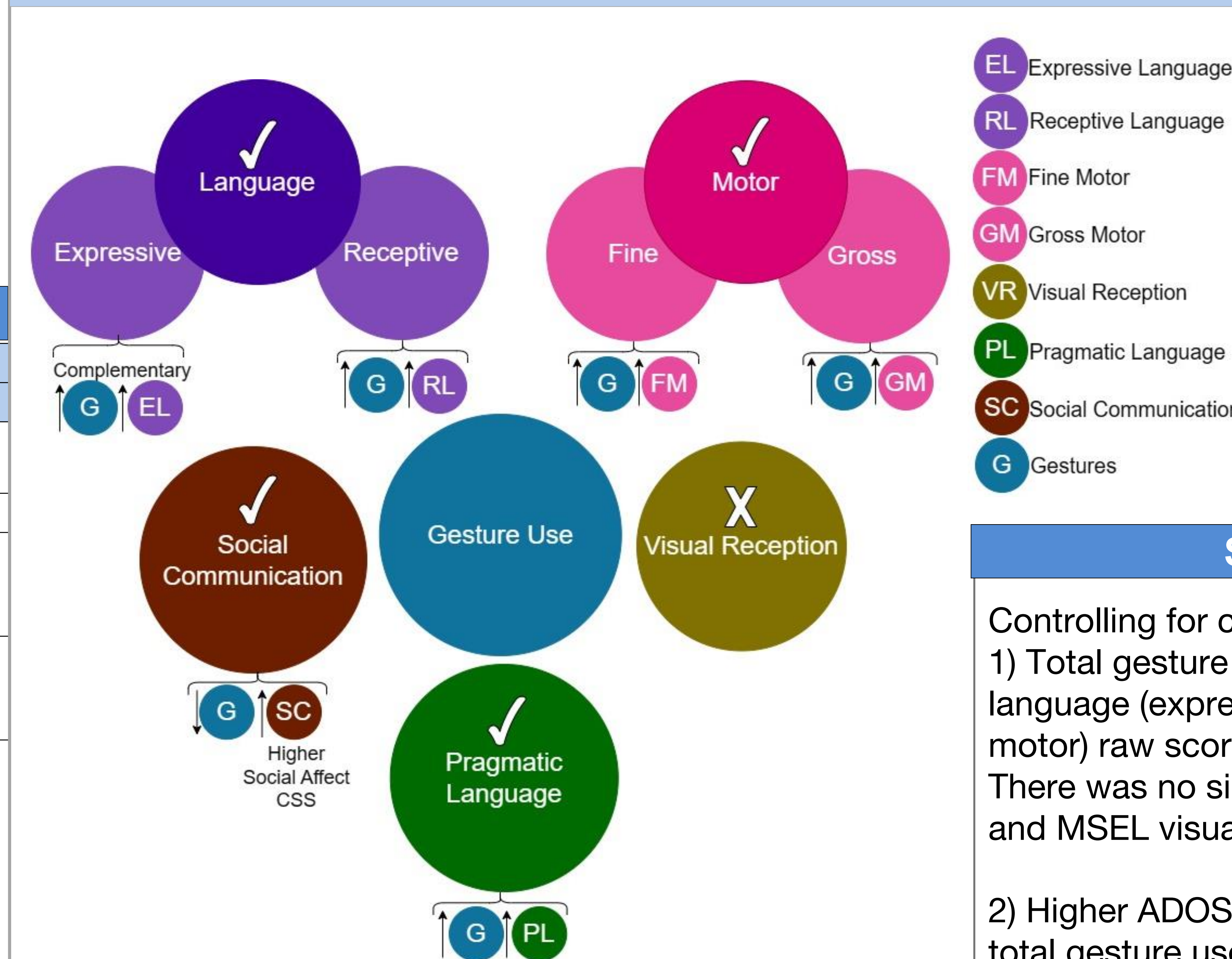


Table 3. Partial correlations controlling for child chronological age (months) and sex.

	Total gestures
Total gestures	1.000
Pragmatic language	.733**
Expressive language	.689***
Receptive language	.600**
Fine motor	.585**
Gross motor	.537*
Visual reception	.230
ADOS SA CSS	-.652**

*p < .05, **p < .01, ***p < .001.

SUMMARY OF FINDINGS

Controlling for child age and sex:

1) Total gesture use was positively associated with MSEL language (expressive/receptive language), motor (gross/fine motor) raw scores, and LUI pragmatic language total score. There was no significant association between gesture use and MSEL visual reception raw scores.

2) Higher ADOS SA CSS was negatively associated with total gesture use. There was no linear relation between ADOS RRB CSS and total gesture use.

CONCLUSIONS

- Quantity of gesture use is related to broader domains of development (language, motor, pragmatic language) but not visual reception.
- Findings suggest that gestures serve a complementary rather than compensatory role in regards to communication.
- Gesture use was inversely related to ADOS SA CSS, suggesting that gesture use may have an important role in distinguishing those with and without ASD.

FUTURE DIRECTIONS

- Longitudinal gesture studies in individuals with DS

- Mixed method approach

- Types

- Quality

- Functions

- DS phenotype (protective factors)

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