



# Adaptive behavior in Infants with Neuromotor Delay

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## INTRODUCTION

- Adaptive behavior (AB):
  - Capability to integrate learned conceptual, social, and practical skills appropriately into everyday life tasks.
  - encompasses persistence in a task, preferences for difficult tasks, and motivation in free play
  - decreased for children with disabilities
- Previous research suggests AB is a significant predictor of gross motor function, self-care, and participation in recreation and leisure activities in young children with cerebral palsy.
- Research describing AB in young children and infants, specifically those with neuromotor delays is limited.



**Purpose:** To describe AB in infants with neuromotor delays and to examine the relationship between AB and motor function.

## METHODS

**Participants:** Convenience sample of 25 parents and their infants with neuromotor delay,

- At least 1.0 SD below the mean on the Bayley Scale of Infant and Toddler Development, 3<sup>rd</sup> ed. (Bayley-III) motor scale
- Sample from the larger START-Play randomized controlled trial (Harbourne, et al., 2018).

### Measures:

- The Bayley-III:
  - Therapists completed gross and fine motor function and cognition scales for infants.
  - Parents completed the Bayley-III Adaptive Behavior questionnaire for infant's adaptive behavior.
- Bayley-III Adaptive Behavior questionnaire domains include: 1) communication (Com), 2) community use (CU), 3) functional pre-academics (FA), 4) home living (HL), 5) health and safety (HS), 6) leisure (LS), 7) self-care (SC), 8) self-direction (SD), 9) social (SoC), 10) motor (MO) and general adaptive composite scores (GAC).
  - Higher scores represent better function in the testing domain.

### Data analysis and Interpretation:

- AB scores were compared with test developers' normative data
- Pearson Correlation was used between Bayley-III Adaptive Behavior questionnaire GAC and Bayley-III motor and cognitive scores.

Table 1: Patient Demographics

CHARACTERISTIC	(n=25)
Corrected age in months, Mean (SD)	11.1 (2.4)
Sex, n of females	13
Ethnicity/Race, n	
Caucasian	14
Asian	4
Spanish/Hispanic	3
African American	1
Native Pacific Islander	1
Parent education level, n	
Less than high school	1
High school diploma	0
Some college	13
Post-graduate degree	11
Bayley-III Motor, n of <1 SD	25
Severity level, n	
Mild	11
Moderate	7
Severe	7

Table 2: Scale Scores of Bayley-III AB subdomains

Mean (SD) of the norm: GAC: 100 (15); all other subdomains: 10 (3)

	N	Minimum	Maximum	Mean	Std. Deviation
GAC	25	36	103	70.20	18.407
Com Scale score	25	2	14	7.64	2.885
CU Scale score	10	6	12	9.00	2.055
FA Scale score	10	6	11	8.30	2.003
HL Scale score	10	5	9	6.50	1.434
HS Scale score	25	1	11	7.04	2.541
LS Scale score	25	5	14	9.48	2.535
SC Scale score	25	1	10	5.04	2.669
SD Scale score	25	3	12	8.16	2.703
Soc Scale score	25	1	12	7.28	2.590
MO Scale score	25	1	8	4.60	1.915

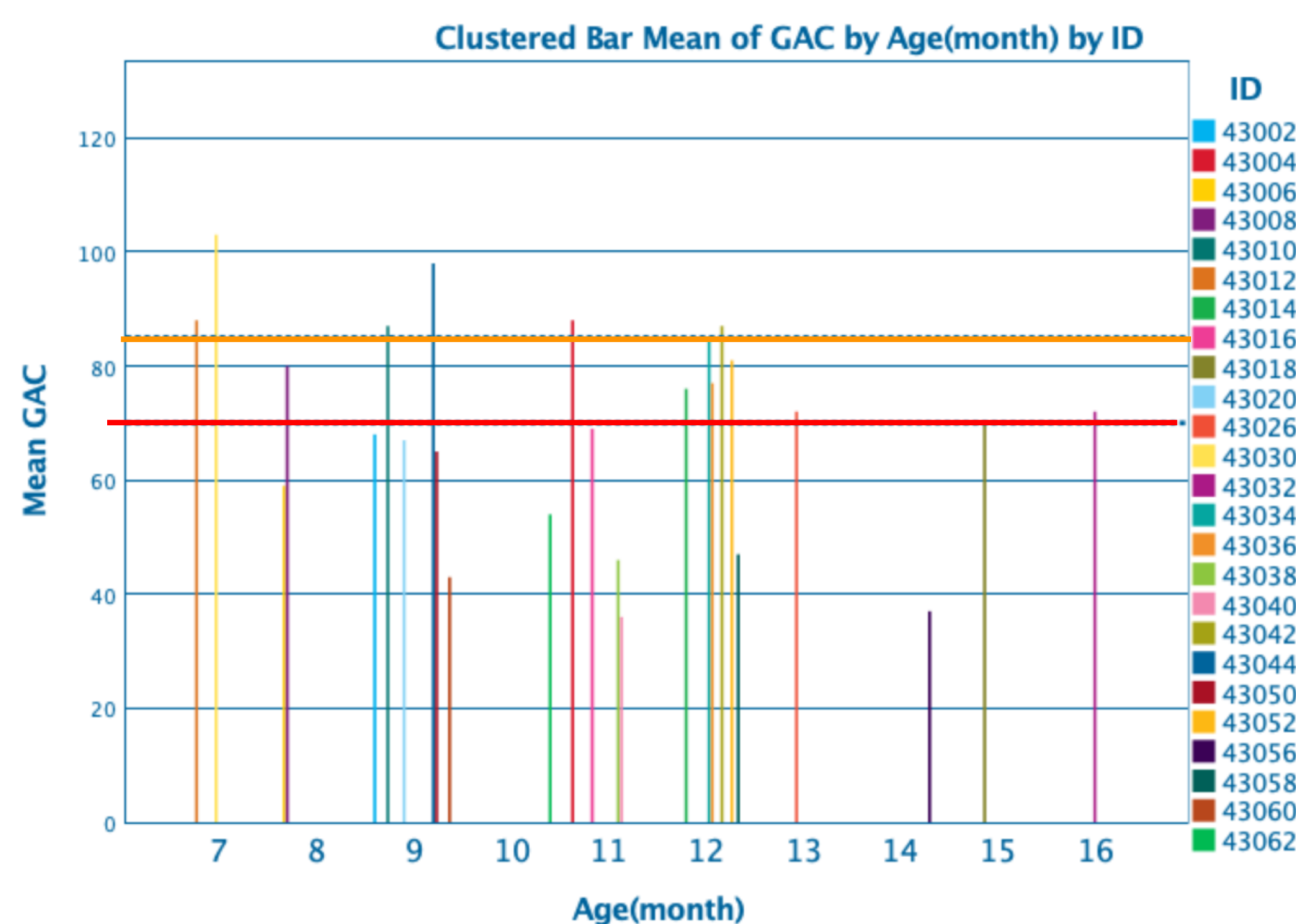


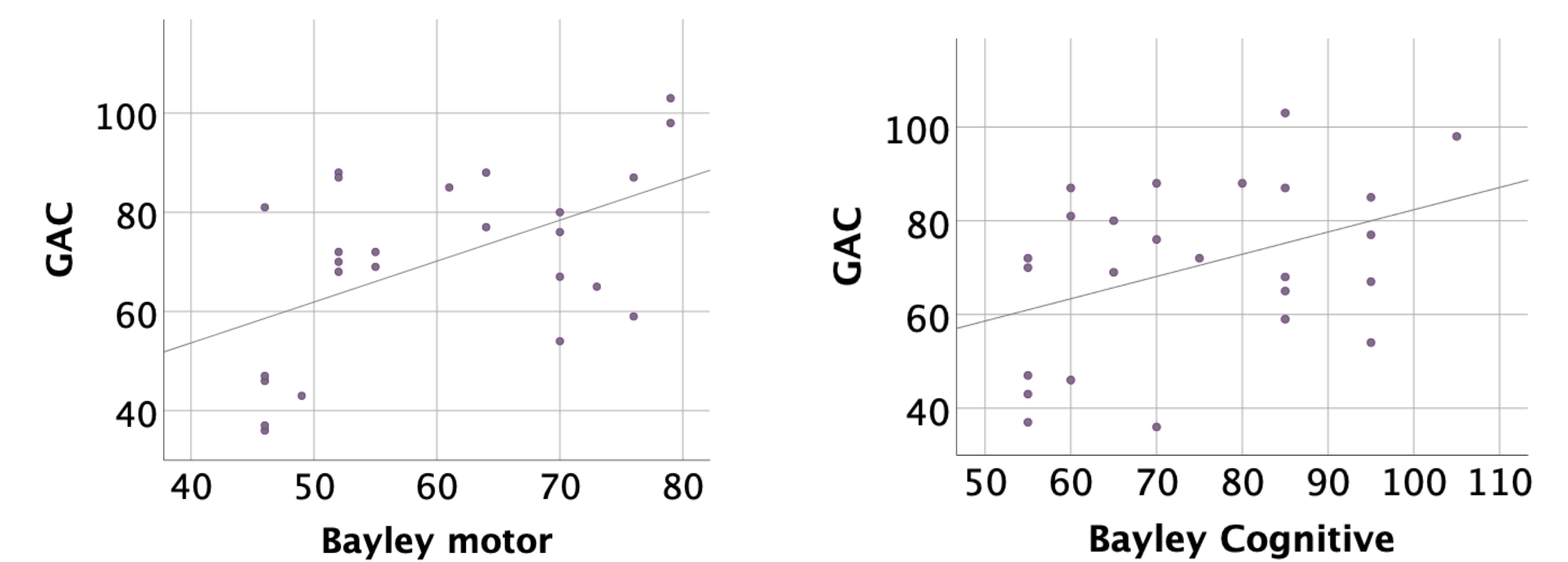
Figure 1: GAC by age

This figure represents GAC scores for all cases lined-up by age. The orange line is at 1SD below the mean of norm (GAC=85). Red line is at 2SD below the mean of norm (GAC=70).

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Figure 2: Correlations between GAC and Bayley-III Motor & Cognitive Composite Scores



## RESULTS

- Compared to normative data, infants with neuromotor delay showed more problematic behaviors (> +1 SD) in HL, SC, and MO, and in overall scores (mean: HL = 6.50; SC = 5.04; MO = 4.60; GAC = 70.20).
- Examination of results within the infants showed that more than 50% of children had some problems in FA (60%), HL (80%), HS (52%), SC (84%), SoC (56%), MO (84%) and GAC (76%).
- Relationship between Bayley-III GAC scores and Bayley-III motor scale scores was moderate ( $r = 0.53, p = 0.007$ ) and with Bayley-III cognitive scale scores was moderate ( $r = 0.41, p = 0.044$ )

## CONCLUSIONS

- Results suggest that infants with neuromotor delay showed some limitations with AB, especially with home living, self-care, and motor domains. More than 50% of infants had some difficulties with health and safety, self-care, and motor domains of AB. Infants who had more difficulties in motor function also in general had more problems in AB. AB was moderately related to motor and cognitive development.

## CLINICAL RELEVANCE

- The Bayley-III Adaptive Behavior Questionnaire can provide valuable information about AB in infants. It can be helpful for identification of AB limitations that affect young children's participation in daily life.
- Medical professionals should examine AB abilities in infants with neuromotor delays in order to incorporate interventions focused on AB and potentially decrease the gap seen with peers who are typically developing.

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