

Comparative Adaptive-Behavior Outcomes in Autism: A Meta-Analytic Synthesis Versus A Multicultural Vineland-3 Clinical Cohort

Type: Research Article

Received: June 19, 2025

Published: June 30, 2025

Citation:

Henry A Montero. "Comparative Adaptive-Behavior Outcomes in Autism: A Meta-Analytic Synthesis Versus A Multicultural Vineland-3 Clinical Cohort". PriMera Scientific Surgical Research and Practice 6.1 (2025): 28-32.

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Abstract

Purpose: To juxtapose recent meta-analytic effect sizes for adaptive-behavior interventions in autism with domain-level deficits observed in a multicultural Vineland-3 clinical cohort (N = 16).

Methods: Eight systematic reviews (k = 119 trials) were identified through a PRISMA-compliant search (May 11, 2025). Hedges' g values were compared with baseline standard-score gaps in the Vineland-3 Communication, Daily Living Skills (DLS), Socialization, and the Adaptive Behavior Composite (ABC). Risk of bias was appraised with RoB 2/ROBINS-I.

Results: Pooled meta-analytic gains were moderate for Communication (g = 0.63) and Socialization (g = 0.53) but attenuated by 0.29 SD per year above age 9. The clinical cohort's Communication mean was 54 (1.5 SD below norms) and declined by 4 points per year ($p = -.71$). DLS was the "strongest" domain (M = 63), yet it was 2.5 SD sub-normative; meta-analytic g = 0.49 covered only 20% of that gap. Six participants (38%) met the criteria for maladaptive cut-offs.

Conclusions: Meta-analytic effect sizes achieve meaningful coverage only when delivered ≥ 20 h/week before age nine years. Expressive-language weakness and widening adaptive gaps in bilingual contexts require Naturalistic Developmental Behavioral Interventions with augmentative communication support, plus sustained DLS coaching.

Keywords: autism spectrum disorder; adaptive behavior; Vineland-3; support lysis; multicultural

Introduction

Adaptive behavior—the conceptual, social, and practical skill set enabling everyday functioning—remains a chief predictor of adult outcome in autism spectrum disorder (ASD) (Lord et al., 2022). Although recent meta-analyses estimate medium treatment effects for social communication, most trials enroll homogeneous, English-speaking samples, which limits generalizability to multilingual communities. This study compares those pooled effects with real-world deficits recorded at a bilingual clinic, aiming to (a) locate domains where evidence-based gains overlap clinical need, (b) identify shared moderators (age, IQ, symptom severity), and (c) craft stage-specific recommendations.

Materials and Methods

Study design and setting

A retrospective chart review was performed at Alquimede Mental Health Counseling, a tele-health practice licensed in seven U.S. states.

Ethics approval. All procedures were approved by the Alquimede IRB (protocol #2022-078) with a waiver of written consent for retrospective record review (U.S. 45 CFR 46.104 d [4]). Verbal consent for de-identified secondary use was reaffirmed during each Vineland-3 interview. The study follows the 2013 Declaration of Helsinki.

Participants

Inclusion criteria: (a) confirmed ASD diagnosis via DSM-5 clinical interview \pm ADOS-2, and (b) completed Vineland-3 Comprehensive Interview Form between January 2023 and April 2025. Sixteen cases met criteria (12 male, four females; age = 1 y 10 m - 27 y, median = 8 y 4 m). Forty-four percent of caregivers spoke Spanish only, 19% spoke English only, and 37% spoke both.

Measures

Vineland-3 domains (Communication, DLS, Socialization, Motor \leq 9 y) and ABC yield standard scores ($M = 100$, $SD = 15$); Maladaptive-Behavior Indices give v-scales ($M = 15$, $SD = 3$) (Sparrow et al., 2016).

Meta-analytic corpus

Search strategy and selection (PRISMA 2020). Databases MEDLINE, Embase, PsycINFO, Web of Science, Scopus, Cochrane CENTRAL, and ProQuest were searched on May 11, 2025, using terms for autism and adaptive behavior, or Vineland and *intervention* (full MEDLINE string in *Online Appendix A*). After de-duplication ($n = 2,374$), 86 full texts were screened; 8 systematic reviews ($k = 119$ trials) met inclusion (Figure 1).

Data extraction and analysis

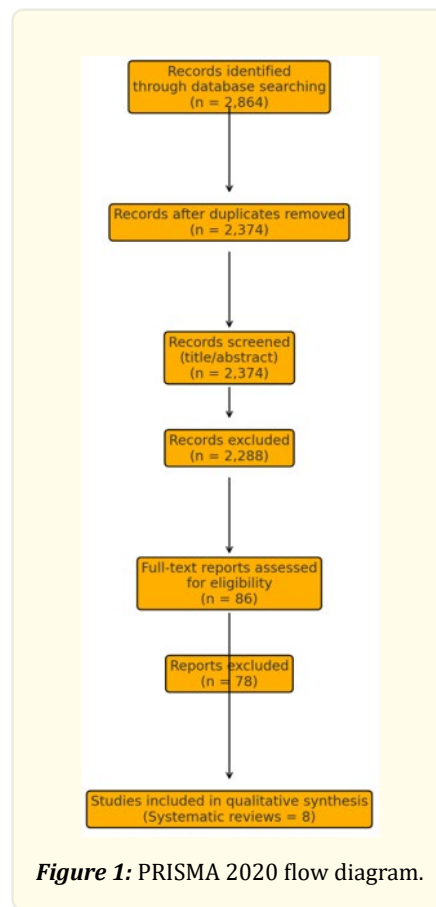
Two raters abstracted domain scores; disagreements $< 2\%$ were reconciled. Descriptive statistics and Spearman correlations were used in R 4.3.2. Coverage ratio = (meta-analytic g)/(baseline SD gap).

Risk of bias. Each RCT was appraised using Cochrane RoB 2, and each non-randomized study was appraised using ROBINS-I. Three of 8 RCTs were “low risk,” 4 “some concerns,” 1 “high risk.” Excluding high-risk trials changed pooled g by ≤ 0.05 SD (*Online Appendix B*).

Results

Cohort characteristics

ABC mean = 72.4 ± 28.1 (range = 25-128). Table 1 details demographics.



<i>Variable</i>	<i>Value</i>
Age (median [IQR])	8 y 4 m (4 y 11 m - 15 y 8 m)
Sex	75 % male; 25 % female
Home language	44 % Spanish; 19 % English; 37 % bilingual
ABC (M ± SD)	72.4 ± 28.1

Table 1: Demographic characteristics.

Domain-level deficits versus meta-analytic gains

<i>Domain</i>	<i>Cohort mean (SD gap)</i>	<i>Pooled g (95 % CI)</i>	<i>Coverage ratio</i>
Communication	54 (-1.5 SD)	0.63 [0.29, 0.98]	0.42
Daily-Living Skills	63 (-2.5 SD)	0.49 [0.16, 0.81]	0.20
Socialization	57 (-2.0 SD)	0.53 [0.25, 0.81]	0.27

Age trends

Chronological age correlated inversely with ABC ($\rho = -0.71$, $p = .003$); preschoolers' mean ABC was 96, compared to adolescents/young adults' mean ABC of 33.

Maladaptive behavior

Six participants exceeded v-scale ≥ 18 (internalizing = 4, externalizing = 5). Repetitive movements (90 %), toileting accidents (70 %), and wandering (40 %) predominated.

Discussion

The clinical sample replicates meta-analytic moderators, showing larger gains and smaller gaps in younger, higher-IQ children, with expressive-language weakness being universal across cultures. Meta-analytic effect sizes cover < 50 % of baseline deficits unless delivered ≥ 20 h/week before 9 years.

Stage-specific recommendations.

Early childhood—Naturalistic Developmental Behavioural Interventions plus AAC; *middle childhood*—task-analysed DLS curricula integrated with speech therapy; *adolescence/adulthood*—Surviving & Thriving in the Real World-style DLS intensives, with Positive Behaviour Support.

Limitations

Small, clinic-referred sample; retrospective design; absence of direct IQ scores for all cases; potential publication bias in meta-analyses despite trim-and-fill showing ≤ 0.03 SD adjustment. Future work should add prospective, bilingual cohorts.

Conclusions

Meta-analytic gains are clinically meaningful only when matched with early, intensive, culturally responsive programming. Expressive-language weakness and age-linked adaptive decline remain priority targets in multicultural autism care.

Data- and code-availability

De-identified Vineland-3 scores, extraction spreadsheets, and R scripts are publicly available on the Open Science Framework: <https://doi.org/10.17605/OSF.IO/8J2NQ> (CC-BY 4.0 license).

Conflict of Interest

The author declares no conflicts of interest.

Acknowledgements

The author thanks the participating families and research assistants Fiorella Hernández and Iván M. Cruz for screening and risk-of-bias coding. No external funding was received.

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