Utility of the MacArthur-Bates Communicative Development Inventory for Diverse Learner Groups

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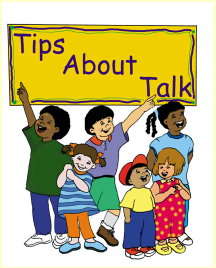

Abstract

The clinical utility of the MacArthur-Bates Communicative Development Inventory (CDI) (Fenson et al., 1993) was examined by giving this tool to caregivers of 85 children who were between the ages of eight and 30 months. All were classified as African American (AA) and lived in low-SES households within the South; the highest level of education completed by 81% of their mothers was high school or less. A number of analyses indicated that this tool is clinically useful for the type of child profile examined here. In addition, our findings are consistent with those of others who have studied low-income children. Findings are considered preliminary until the CDI is evaluated for its concurrent validity and diagnostic accuracy.

Rationale

Although there are a limited number of clinical tools that have been designed for, and validated with, children from diverse family profiles, advances in standardized test development are being made (Oetting, 2004). The re-norming of the CDI is an example of this effort. Unlike most standardized language tools, the format of the CDI is ideal for children from diverse backgrounds because it makes use of caregiver report and encourages caregivers to consider family-particular gestures, words and utterances.

A major limitation of the original CDI norms was the lack of representation of children from diverse families. In 2002, data were collected to improve the demographic representation of the normative database. The purpose of the current study was to examine the utility of this tool for low-income AA children using the old and new norms. Questions included the relation between scores based on the original and new norms, the relative distribution of the children's scores across age and gender, and the consistency of the children's scores to those of other groups of previously studied, low-income children.

Demographic Profiles	Original Norms (%)	Revised Norms (%)
Ethnicity		
White	86.9	73.1
Black	4.0	10.4
Asian	2.9	3.3
Hispanic	4.6	6.5
All others	1.6	6.4
Maternal Education		
Some high school or less	4.5	7.6
High school diploma	17.9	23.9
Some college	24.3	24.8
College diploma or higher	53.3	43.8

Participants

Eighty-five AA children and their caregivers contributed data to this study. Caregivers were required to have a typically developing child who was being raised in a monolingual English environment. Typical development was defined as: delivered full term (>38 weeks) and weighed at least 5.7 lbs at birth, presented no reported hearing loss, no major birth or medical complications, and not diagnosed with developmental disabilities. In addition, caregivers could not have completed a CDI form previously, be receiving services for substance abuse/addiction, or mental health related conditions, and/or received special education services when in school.

The average maternal education level was 11.58 (SD = 2.05), with 50% having less than a high school degree, 31% having a high school degree only, 11% having one to three years of college or technical education, and 8% completing four years of college or more.

The children included 42 males and 43 females with a mean age of 19.55 months (SD = 6.55); 29 were administered CDI/Words and Gestures, designed for use with 8- to 16- month-old infants, and 56 were administered CDI/Words and Sentences, designed for use with children between 16 and 30 months.

Question 1

What is the relation between the children's percentiles using the original and new norms? For all subtests on both versions of the CDI, correlations between the percentiles calculated with the two sets of norms were extremely high (r > .92).

Question 2

How do the children's scores (raw and percentiles) distribute across maternal education, age and gender? For all subtests on both versions of the CDI, raw scores increased with age and percentile scores distributed across a wide range of values. Nonsignificant effects were found for maternal education, and effects for gender were minimal and inconsistent. On Words Understood, percentiles were higher for boys than girls (64 vs. 39) and for MLU, scores were higher for girls than boys (3.9 vs. 3.02).

CDI Words and Gestures: Subtest Percentiles

	Mean (SD)	25th	50th	75th
Phrases understood	52 (28.49)	26	53	43
Words understood	53 (27.62)	30	55	80
Words produced	64 (30.50)	21	50	90
Gestures produced	52 (28.74)	23	60	75

CDI Words and Sentences: Subtest Percentiles

	Mean (SD)	25th	50th	75th
Words produced	40.13 (30.02)	17	28	60
Irregular forms	55.20 (26.32)	31	58	75
Sentence complexity	57.56 (26.17)	36	60	82

Question 3

Are the children's percentiles similar to others that have been reported for low-income children? Using the old norms and data from CDI/Words and Sentences, we were able to compare our data to those of Arriaga et al.(1998). As can be seen, only our vocabulary scores were depressed.

CDI Words and Sentences: Percentiles of Vocabulary and Sentence Complexity

	Vocabulary		Sentence Complexity	
	N	Percentile	N	Percentile
Arriaga et al. middle-income	309	50.04 (27.08)	195	51.69 (26.30)
Arriaga low-income	103	29.74 (26.17)	65	31.15 (25.71)
Louisiana	56	36.50 (31.11)	41	50.17 (28.16)

Question 4

Like Arriaga et al. (1998) and Roberts et al. (1999), do the children's percentiles decrease as a function of age? For all subtests, correlations between the children's ages and their percentile scores were negative, but these correlations were significant for only two subtests, irregular verbs r = -.64, p < .001 and sentence complexity r = -.71, p < .001.

CDI Words and Gestures: Subtest Percentiles

	Age in Months		
	8	12	16
Number of phrases understood	72.00 (28.39)	59.09 (27.83)	56.22 (25.61)
Number of words understood	82.25 (13.65)	50.82 (26.42)	47.67 (29.15)
Number of words produced	66.25 (16.52)	54.00 (32.04)	50.11 (32.04)
Number of gestures produced	74.25 (19.12)	49.82 (26.99)	48.88 (30.65)

CDI Words and Sentences: Subtest Percentiles

	Age in Months			
	18	22	26	30
Number of vocabulary words	43.88 (32.37)	48.89 (33.52)	34.58 (24.88)	33.39 (28.38)
Number of irregular nouns and verbs	74.43 (17.39)	71.17 (16.69)	49.18 (23.70)	35.44 (24.17)
Sentence complexity	89.25 (8.10)	75.00 (16.42)	47.80 (21.41)	43.75 (24.50)

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