

Technical Report



Preschool Language Scale Fourth Edition

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Overview

The *Preschool Language Scale, Fourth Edition* (PLS-4) is an individually administered test for identifying children from birth through 6 years, 11 months who have a language disorder or delay. It is a revision of the *Preschool Language Scale, Third Edition* (PLS-3), published in 1992, and features updated norms and expanded language coverage. PLS-4

targets receptive and expressive language skills in the areas of attention, play, gesture, vocal development, social communication, vocabulary, concepts, language structure, integrative language skills, and phonological awareness.

Revisions in This Edition

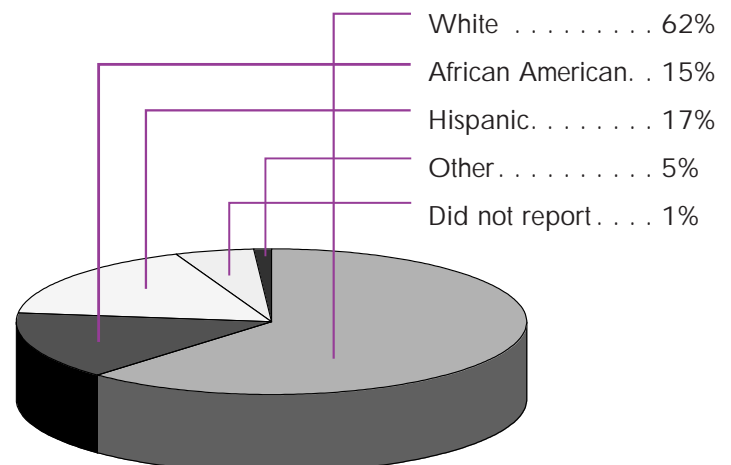
The PLS-4 standardization data collected in 2001 uses 2000 U.S. census figures and is considerably more varied than what we reported 10 years ago, reflecting the increasing diversity in our population. Ethnic minorities now comprise 39.1% of the total sample for PLS-4, an 8% increase from the PLS-3 sample. In addition, 13.2% of the PLS-4 standardization sample included children identified with special conditions/diagnoses such as autism, developmental delay, articulation disorder, hearing impairment, and language disorder. The sample also included a small percentage of children who spoke languages in addition to English and children who spoke a dialect of English other than Standard American English.

A primary goal of the PLS revision was to improve the assessment's psychometric properties. New tasks have been developed to improve the floors, ceilings, and difficulty level gradients of the Auditory Comprehension and Expressive Communication subscales. Scoring studies were conducted to develop and refine the scoring criteria for Expressive Communication tasks to reflect the wide variety of responses that are expressed by children from diverse backgrounds.

Comprehensive research was conducted to ensure that PLS-4 task and test formats reflect current trends in the assessment of young children. For children birth to 2 years, 11 months, there are more items targeting interaction, attention, and vocal/gestural behaviors. For 5- and 6-year-olds, there are more items targeting early literacy and phonological awareness. Language Arts curricula for kindergarten and first grade

provided information about skill sets required of 5- and 6-year-old children in school. In a survey conducted with PLS-3 customers, clinicians described improvements that should be made to the PLS-4, changes to specific tasks, and additions that would make PLS-4 a more useful tool.

Sample by Race/Ethnicity



Minimizing Item Bias

Precautions were taken to ensure that PLS-4 items are appropriate for a wide range of children from diverse cultural/linguistic/socioeconomic backgrounds. An expert panel reviewed all PLS-4 test items for ethnic,

gender, and socioeconomic bias. Statistical procedures were also used to identify possibly biased items, to further assure that items did not put any group at a disadvantage.

Bias Panel Participants

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Development of PLS-4 Tasks

Test tasks selected for inclusion in PLS-4 tap relevant areas of communication development, can be administered and scored in a consistent and reliable way by clinicians from a variety of backgrounds, and demonstrate robust psychometric properties. Throughout development,

PLS-4 tasks and subitems were reviewed by experts in the field for evidence of construct-irrelevant components and construct under-representation. The test was modified based on their feedback.

Reliability and Validity Evidence

The reliability of PLS-4 was estimated using test-retest reliability (data that show that PLS-4 scores are dependable and stable across repeated administrations), internal consistency (data that show tasks in PLS-4 are homogeneous), and inter-rater reliability (data that show scoring is objective and consistent across examiners). The test-retest stability coefficients ranged between .82 and .95 for the subscale scores and .90 to .97 for the Total Language Score. The internal consistency reliability

coefficients range from .66 to .96 (for most ages the coefficients are .81 and higher). The inter-rater reliability study included 15 scorers who scored the Expressive Communication subtest on 100 protocols selected from the standardization sample. Each protocol was scored by two different scorers. The percentage of agreement between scorers was 99% and the correlation between the Expressive Communication scores was .99.

Validity is demonstrated by providing various types of evidence to support a test's interpretations and uses. These are not different types of validity; they are simply different types of evidence that, in totality, provide an evaluation of validity (AERA, APA, NCME, & ARA, 1999)*. Extensive evidence of validity reported in the PLS-4 test manual addresses evidence based on test content, response processes, internal structure, relationships with other variables, and consequences of testing.

Test Content. Evidence of validity based on the PLS-4 content was gathered through an exhaustive literature review and user survey that provided information about language skills that the test should address. The test scope and sequence maps test tasks to the areas tested; and content, bias, and task reviews were conducted to verify breadth and appropriateness of task/subitem coverage and task/subitem formats.

Response Processes. When the tasks were being developed for the PLS-4, each was reviewed to verify that tasks focused on the intended skills, did not require skills that were not acquired by children at the target age, and that the content of the test tasks focused on themes/topics that interest children. Controls were put into place to minimize confounding processes. Children's responses to the test tasks were also analyzed after pilot testing and standardization.

Internal Structure. The internal consistency of the subscales were examined for evidence of high homogeneity. The internal structure of the PLS-4 was also examined—the correlation between the two subscales (Auditory Comprehension and Expressive Communication) across ages was .80.

Relationships with Other Variables. A clinical validity study was conducted with a sample of 150 children (75 with a language disorder, 75 typically developing children). Sensitivity and specificity information for PLS-4 scores for children in this study are:

Auditory Comprehension	Sensitivity .80	Specificity .92
Expressive Communication	Sensitivity .77	Specificity .84
Total Language Score	Sensitivity .80	Specificity .88

Studies were also conducted with children who had previously been identified as having a language disorder; children identified as having a developmental delay; children diagnosed with autism; and children diagnosed with a hearing impairment.

Studies were conducted comparing test results of the Denver II and PLS-3 with PLS-4 results. In the Denver II study, all 37 of the children included in this earned a "normal" rating on the Denver II and scored within 1 standard deviation of the mean on PLS-4, showing a high level of agreement. The correlation of the PLS-3/PLS-4 Auditory Comprehension subtest was .65; the correlation of the PLS-3/PLS-4 Expressive Communication subtest was .79.

Consequences of Testing. To date, there is no evidence to suggest that the PLS-4 has any negative consequences for children when it is used as intended. In fact, anecdotal information collected in surveys of examiners during the tryout of the test indicates that children under age 3 become easily engaged in the interactive activities with caregivers, and that children older than age 3 enjoy the picture stimuli and the test activities.

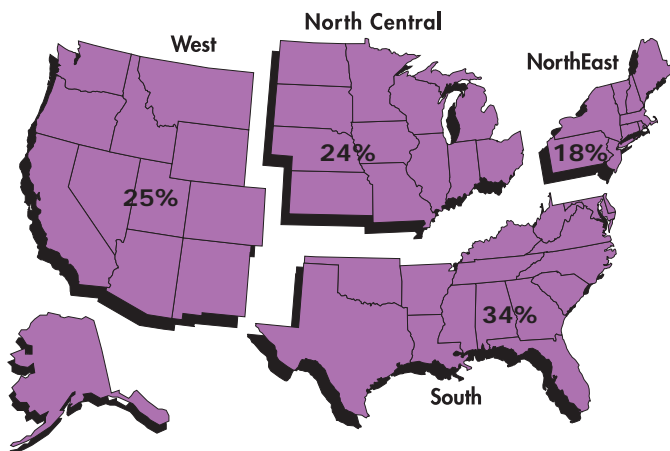
Standardization Sample

Over 2,400 subjects from 357 sites in 48 states and the District of Columbia participated in the standardization and related reliability and validity studies. The PLS-4 standardization sample included 1,564 children, from ages 2 days to 6 years, 11 months. Within each age level, approximately 50% of the sample was male and 50% was female. A representative sampling (based on the 2000 Census of Population)

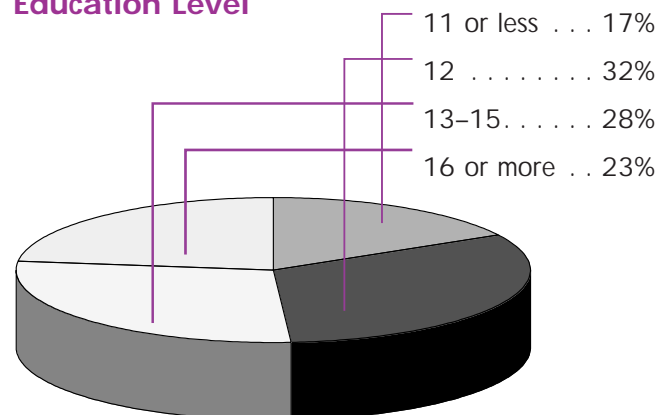
was stratified on the basis of parent education level, geographic region, and race. Additional characteristics of the standardization sample that were reported in the Examiner's Manual included the children's learning environment, languages spoken, English dialect spoken, and identified conditions/diagnoses.

Age in years and months	0:0 to 0:2	0:3 to 0:5	0:6 to 0:8	0:9 to 0:11	1:0 to 1:5	1:6 to 1:11	2:0 to 2:5	2:6 to 2:11	3:0 to 3:5	3:6 to 3:11	4:0 to 4:5	4:6 to 4:11	5:0 to 5:5	5:6 to 5:11	6:0 to 6:5	6:6 to 6:11	Total
Number	75	75	76	75	101	102	100	101	104	101	110	103	108	102	101	100	1,534

Sample by Region



Sample by Primary Caregiver's Education Level



Scores Obtained

PLS-4 provides age-based standard scores, percentile ranks, and age equivalents for the Auditory Comprehension and Expressive

Communication subscale scores and for the Total Language score.

PLS-4 Supplemental Measures

PLS-4 includes three optional measures: the Articulation Screener, the Language Sample Checklist, and the Caregiver Questionnaire. Their

results supplement the information obtained by the Auditory Comprehension, Expressive Communication, or Total Language scores.

Summary

PLS-4 is an enhanced version of the long-standing product leader for assessing infants and preschoolers for language disorder or delay, with particular clinical utility for at-risk populations. With new norms and

expanded coverage of language skills, PLS-4 is an ideal assessment for use in evaluating children for special services, including federal IDEA guidelines, Head Start, Even Start, and Title 1 programs.

*American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (1999), Standards for educational and psychological testing, American Research Association, Washington, D.C.



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