

# TECHNICAL REPORT

## Preschool Language Scale, Fourth Edition UK

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Preschool Language Scale  
Fourth Edition - UK

### Overview

The *Preschool Language Scale, Fourth Edition UK (PLS-4<sup>UK</sup>)* is an individually administered test for identifying children from birth to 6 years, 5 months who have a language disorder or delay. It is a revision of the *Preschool Language Scale, Third Edition UK (PLS-3<sup>UK</sup>)*, published in 1997, and features updated norms and expanded language coverage.

*PLS-4<sup>UK</sup>* 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

A primary goal of the current *PLS-4* 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. All tasks in this revised version have been reviewed for ethnic, gender, regional and socio-economic bias, both by statistical analysis and by expert review.

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 behaviours. For 5 and 6-year olds, there are more items targeting early literacy and phonological awareness. 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.



### Minimising 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.

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## Development of PLS-4UK Tasks

Throughout development, test tasks for the *PLS-4* were reviewed for evidence of construct-irrelevant components and construct under-representation. Those test tasks and subitems that did not discriminate between children in the standardisation sample and clinical group were removed. The remaining tasks were then reordered within and across age groups, if needed. As a result the test tasks selected for inclusion tap relevant areas of communication development and can be administered and scored in a consistent and reliable way by speech and language therapists and psychologists.

The *PLS-4<sup>UK</sup>* comprises two subscales: Auditory Comprehension and Expressive Communication.

The Auditory Comprehension (AC) subscale consists of 62 numbered tasks and is used to evaluate how much language a child understands. For example for:

- Infants and toddlers - the tests look at skills that are important precursors for language development. For example attention to speakers and appropriate object play
- Preschool and early years children - the tests involve the comprehension of basic vocabulary, concepts and grammatical markers
- 5 to 6 year old children - the tests tap a child's ability to understand complex sentences and make comparisons and inferences.

The Expressive Communication (EC) subscale includes 68 numbered tasks, and is used to determine how well a child communicates with others.

The tests tasks are designed for:

- Infants and toddlers - to address vocal development and social communication
- Preschool and early years children - the tests involve naming common objects, using concepts that describe objects and express quantity, and use specific prepositions, grammatical markers and sentence structures
- 5 to 6 year old children - the tests examine preliteracy skills including phonological awareness tasks, the ability to tell a short story in sequence, and the use of language to define words.

In addition the *PLS-4<sup>UK</sup>* also includes three supplemental assessments:

- the **Language Sample Checklist** - which can be used with any child who speaks in connected utterances. It provides an overview of the content and structure of a child's spontaneous utterances, from which a summary profile can be created and the mean length of utterance (MLU) calculated.
- the **Articulation Screener** - for children aged 2 years, 6 months to 6 years, 11 months. The screener yields age-appropriate cut scores that can be used to determine if further articulation testing is required.
- the **Caregiver Questionnaire** - which provides specific questions to ask the caregiver of a child under the age of three. This information can supplement that information obtained during the test.

## Scores Obtained

*PLS-4<sup>UK</sup>* 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.

## Standardisation sample

The standardisation sample was based on the 2001 UK Census information on age, gender, geographic region, ethnicity, and parental education. The data was collected on a total of 800 children from 1:0 to 1:5 years and 2:0 to 6:11 years; with a ratio of boys:girls of 49%:51% for children under 10 years old. The number of children required for each geographic region (the Census divides the UK into 12 regions) was also in accordance with the proportion of under 10 year olds living in different population densities within each region. Each child was categorised by his or her parents as belonging to one of a number of ethnic groups. For the purpose of sampling,

4 main groups were used; White, Black (inc. African, Caribbean, and Other), Asian (inc. Indian, Pakistani, Bangladeshi and Other) and Other (inc. Chinese and mixed race). The intended ratios were based on the ethnicity proportions for children under the age of 16 in the UK. Information on the parent's education level was obtained from the parental consent forms. The response rate of completed parental consent forms was 10.4%, which is an acceptable rate of return. Efforts were made to ensure that the proportion of children of parents from each educational level was representative of the population at large.

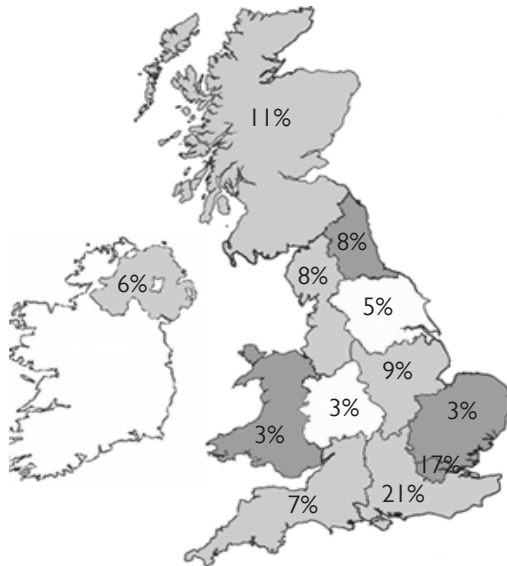
## Standardisation sample by age\* \*\*



\* US data is provided from birth to 11 months.

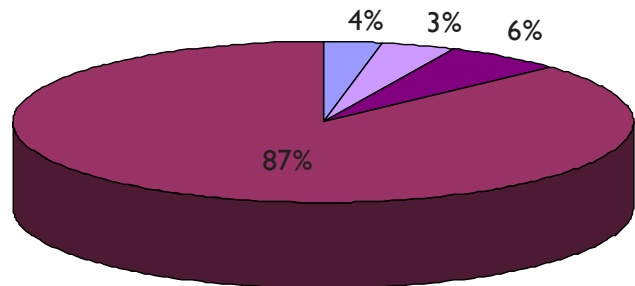
\*\* UK data was derived for age groups 1:0 to 1:5 years and 2:0 to 2:5 years via interpolation.

## Standardisation sample by geographic region

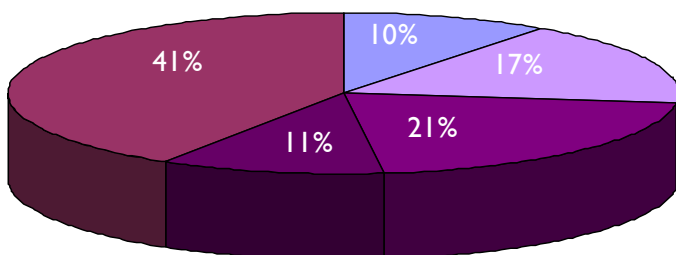


## Sample by Race/Ethnicity

- White - 87%
- Black - 3%
- Asian - 4%
- Other - 6%



## Standardisation sample by parental education level



- No qualifications - 10%
- 1-4 GCSEs/equivalent - 17%
- 5 or more GCSEs/equivalent - 21%
- 2 or more A levels/equivalent - 11%
- First and higher degrees/ equivalent - 41%

## Reliability and Validity Evidence

For the *PLS-4<sup>UK</sup>* the internal consistency was assessed by examining the average inter-correlations between items in each subscale, and for the Auditory Comprehension, Expressive Communication and Total Language standard scores for each age group using the formula for Cronbach's alpha. With the exception of age group 6:0-6:5 years, the values for Cronbach's alphas are generally very good and are excellent ( $> .90$ ) for the Total Language standard scores. Values above  $.90$  have been suggested as benchmarks for clinical testing.

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 for the US Project is reported in the *PLS-4* test manual, evidence for the UK Project is also reported and addresses evidence based on item content, internal structure, age differences, bias, and gender differences in performance.

**Item Difficulties:** The rank order of the items in each age group was investigated in two ways. The first check concerned the sequence of item numbers within each age group - in each group items were sorted in descending order and compared with the item number. Higher item numbers indicate more difficult items. The pattern of decreasing *p*-values with ascending item numbers clearly emerged in all age groups. Minor errors were attributed to sampling variations. The second check concerned the rank order of the *p*-values for each item across the age groups, because older age groups are expected to be at a higher performance level regarding their expressive and receptive language skills, and the item difficulties must decrease considerably from the lowest to the highest age group. There were very few errors of this kind, largely confirming the rank ordering of the items.

**Age Differences in Auditory Comprehension and Expressive Communication:** The average performance on the Auditory and Expressive subscales was examined to determine if performance would increase with age. The data indicated that a considerable year by year increase in average performance is evident for most age groups. A one way Analysis of Variance also revealed highly significant age trends for Auditory Comprehension and Expressive Communication. Statistical follow-up analysis showed that there were large and significant ( $p < .001$ ) year on year increases in performance in expressive and receptive language skills for the younger age groups. For

the older age groups however, the mean differences were smaller and sometimes nonsignificant. These results confirm that the increase in performance across the age groups is in accordance with a typical developmental trend.

**Examination of Possible Examiner Bias:** Fifty-one examiners were involved in the PLS-4<sup>UK</sup> standardisation project. As all the examiners were given clear instructions, no systematic differences were expected in the test results from different examiners assessing within the same age group. The results produced by using mains effects mixed-model ANCOVA revealed a very small variance of 1% of the total variance of the raw scores, implying no evidence of examiner bias.

**Gender Differences in Performance:** Using a factorial ANOVA with 'gender' and 'age group' as the two factors, gender differences in Comprehension and Expressive Communication were investigated. No significant interaction emerged between age group and gender. The effect size for the main effect 'gender' was overall extremely small; below 1% for both the Auditory Comprehension and Expressive Communication subscales. Only one significant mean difference for the age group 2:0-2:5 years emerged in relation to Auditory Comprehension and Expressive Communication. All other gender differences in performance were small to modest and statistically unreliable.

## Summary

PLS-4<sup>UK</sup> is an enhanced version of the long-standing product leader for assessing infants and children in the early years for language disorder or delay, with particular clinical utility for at-risk populations.

Lynne Ralston, Highly Specialist Speech and Language Therapist, "Exceptionally user-friendly - very useful for learning difficulties up to six years for initial Assessment"

Age Range: Birth to 6 years 5 months  
Administration: Individual - 20 to 45 minutes  
Qualification Code: CL2

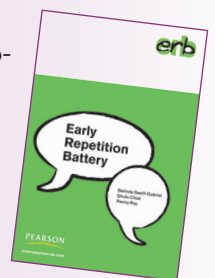
**Complete kit:** includes examiner's manual, picture manual, 25 record forms and manipulatives in a bag  
978 0 749145 00 2 £363.00 (exc VAT)

**Record forms, pack of 25:**  
978 0 749145 02 6 £68.50 (exc VAT)

For more information on PLS-4<sup>UK</sup>, our range of products, and to place an order, visit [www.pearsonclinical.co.uk](http://www.pearsonclinical.co.uk) or call 0845 630 8888.

PLS-4<sup>UK</sup> is co-normed with the *Early Repetition Battery* which assess phonological and morpho-syntactic processing abilities in children aged 2 years to 6 years.

Visit [www.pearsonclinical.co.uk/erb](http://www.pearsonclinical.co.uk/erb) for more information.



The PLS-4<sup>UK</sup> was used by The Communication Trust for the Hello, Talk of the Town Project

"Integral to the project, these assessments have provided the information needed to understand the depth and scale of the problem across the Federation and it has been reported that they have been most useful for the schools that have used them in their Ofsted inspections. A number of schools are now looking to commission for the PLS-4<sup>UK</sup> assessment of all children in reception at the beginning and end of every year."  
The Communication Trust

