

## A REVISION AND STANDARDIZATION OF THE WISC VERBAL SCALE FOR USE IN BRASIL<sup>1</sup>

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**ABSTRACT.** The six verbal subtests of the Wechsler Intelligence Scale for Children were revised and standardized with a sample of 640 school children ages 6 through 15. No significant differences in the mean performance of males and females were found in any subtest. Norms were established for each age level from 6 years through 15 years 11 months at 3 months intervals. The items of each subtest were put in a new order based on the level of difficulty. Several items of the Information and Comprehension subtests were modified and a new list of Vocabulary was adopted.

**RESUMO.** Os seis subtestes verbais da Escala de Inteligência de Wechsler para crianças foram revistos e padronizados com base numa amostra de 640 estudantes de 6 a 15 anos de idade. Não foram encontradas diferenças significativas nos subtestes entre os resultados medios dos grupos femininos e masculinos. Foram estabelecidas normas para cada nivel de idade entre 6 anos de idade até 15 anos e 11 meses de idade com intervalos de 3 meses. Os itens de cada subteste foram colocados em uma nova ordem baseada em seu nivel de dificuldade. Vários itens dos subtestes de Informação e Compreensão foram modificados e uma nova lista dos itens de Vocabulario foi adotada.

The Wechsler Intelligence Scale for Children (WISC) has been revised and standardized in several Latin American countries. As early as 1951, a Spanish translation of the WISC was used in Puerto Rico. Based on the results of a study using the Puerto Rican WISC with 128 children, small changes were made in all the verbal subtests except Digit Span.

Wandenburg (1966) made use of the Puerto Rican revision of the WISC in her adaptation of the verbal subtests in Ecuador and found that it was necessary to reorder the questions based on their difficulty and to modify some items.

Ahumada (1966) encountered problems obtaining a representative sample of children in Mexico because of the very large numbers of children who were not represented in the school population. Test results of males and females in the Mexican sample of 444 school children were significantly different with males consistently scoring higher. Ahumada concluded that these differences were caused by the different subcultures for men and women existing in Mexico.

In 1970, Ramos Lopez investigated the use of the Puerto Rican revision

of the WISC Vocabulary subtest in Peru. The sample he used consisted of 301 children between the ages of 6 and 15. Ramos Lopez concluded that the Puerto Rican revision of the Vocabulary subtest be used with caution for Peruvian children since the differences between the results of the children sampled and the results predicted in the norms of the subtest were statistically significant. A new order of difficulty for the Vocabulary items was found and provisional norms established.

Marques (1969) translated and adapted the WISC manual and standardized the WISC for use in Portugal. Based on the responses of 1000 children from 6 through 15 years of age, the items were rearranged within the subtests to correspond with the newly found order of difficulty. A complete item analysis was done for all 12 subtests at all age levels and for both sexes. Complete tables of norms of each subtest were established at each age level.

The need in Brazil for an individual children's intelligence test standardized on a representative population has been pointed out by Poppovic in the preface of her Portuguese translation of the WISC for use in Brazil published in 1964. This need was later reinforced by Bonilha (1968). The WISC manual of the Poppovic translation advises caution in applying the American norms of 1949 to the Brazilian population, particularly regarding the Vocabulary subtest and suggests changing the use of the Vocabulary subtest for the Digit Span, since the Vocabulary items are not appropriate for the Brazilian population.

The need for adapting the Verbal Scale and modifying several of the items is recognized by psychologists using the Poppovic translation of the WISC because it is mainly in the verbal part of the test that the differences between the Brazilian and American cultures are felt.

This research was done to verify the validity of the verbal items used in the Poppovic translation of the WISC, to propose new items to replace the ones which appeared inadequate, to check the order of the difficulty of the items and to reorder them if necessary, and to establish norms based on a Brazilian sample.

As the effect of the cultural differences is not so impressive in the non-verbal items, the Performance Scale was left to be standardized in the near future.

## METHOD

### *Choice of the New Items*

The Poppovic translation of the Arithmetic, Similarities and Digit Span subtests was used without modification. The new revisions consisted of five additional items in the Information subtest and five additional items

in the Comprehension subtest which were administered in addition to the original items which were felt to be inappropriate for Brazilian culture. The additional items were selected from alternatives submitted by senior psychology majors at Pontificia Universidade Católica. The criteria for selection were that suggested items should be close to the originals in difficulty and require the same type of knowledge.

An entirely new list of 50 vocabulary words was used in place of the 40 Vocabulary words of the Poppovic translation. The first thirty words in the revised list were developed by Bonilha (1968) to measure intelligence in children 6 through 10 years of age. Bonilha found that this list of thirty words showed no significant differences between the sexes and discriminated between children of different age levels. The remaining 20 vocabulary items were suggested by a committee of teachers of Portuguese. These words were selected from Brazilian literary works studied by school children between the ages of 11 and 15. Every effort was made to avoid the selection of words with strong social class bias and sex bias. These 20 words were selected to be of increasing difficulty and equal to the difficulty of the original WISC Vocabulary items.

#### *Subjects and Examiners*

A total of 640 children between the ages of 6 through 15 were administered the experimental revision of the WISC. The sample consisted of 325 males and 315 females between the ages of 6 through 15. Of the children sampled 78% attended public schools, and 22% attended private schools and represented the respective percentages of public and private school students in the state of Guanabara as reported by the Secretaria de Educação e Cultura da Guanabara in 1972.

The statistics of the private and public school were the only ones available upon which to base the sample. No statistics on the socio-economic composition of the school population nor on the number of pupils attending each school were available at the time of this research. The advice of the Centro Brasileiro de Estudos Demograficos was sought as to how to select the most representative sample of the school children throughout the state of Guanabara without bias as to residence, socio-economic status of pupils or size of school. It was decided to pick the sample of public and private schools in a completely random way from a list of all schools in Guanabara. One hundred public and 50 private schools were selected.

The next step was to insure that the children selected from each of the schools would be chosen without bias. This was accomplished by having the examiners draw a random sample of children at the schools on the day of testing. The only stipulations made were that each child must be within 90 days before or after his birthdate at the time of testing and no more

than one child at each year level from 6 through 15, could be tested at any school until a total of 3 children per private and 5 children per public school had been tested.

The number of children tested at each of the ten age levels was not equal. This occurred largely because of a lack of school data making it impossible to know before arriving at any school which age levels would be represented. The number of children tested at each age level was as follows: 6 years - 24, 7 years - 72, 8 years - 58, 9 years - 79, 10 years - 93, 11 years - 83, 12 years - 71, 13 years - 77, 14 years - 55, and 15 year - 24. The small numbers of children at the 6 and 15 years levels may well represent the percentage of children of this age actually represented in the total school population since school attendance by 6 year olds is not compulsory and by the age of 15 a large number of children have dropped out of school because of socio-economic problems.

Forty senior psychology majors of Pontificia Universidade Catolica volunteered to administer the WISC and they were trained in the uniform administration of the WISC and in the sample selection technique.

## RESULTS

The responses for all items of the 640 WISC protocols collected were scored according to the general scoring criteria of Wechsler as used in the original standardization of the WISC reported by Seashore (1950). The cumulative percentages of the total sample answering correctly and the cumulative percentages of males and females answering correctly were computed for each item of every subtest and the items were newly ordered in all Verbal subtests except Digit Span as a result of the analysis of difficulty of each item. The order of difficulty of the WISC items is extremely important since the instructions for each subtest indicate that the examiner cease questioning after a specific number of failures. If the items are not in the correct order of difficulty, the examinee may be capable of responding correctly to items not asked him because questioning has been stopped. Spearman rank order correlation coefficients were computed between the new order and original order of each subtest, and between the order of subtest items based on their difficulty for the male and female sample. The Spearman rank order correlation coefficients are given in Table 1 and show that the difficulty order for the male and female sample was not significantly different for any subtest. The greatest difference between the original order and the new order was found in the Comprehension subtest.

The percentages of the correct answers to each item were tabulated for each age to determine if the item was capable of discriminating between children of different ages and was answered correctly by an increasing

percentage of children as the chronological age increased. Tests of significance between the percentages of males and females answering correctly each item were performed in order to eliminate those items which were discriminating between the sexes.<sup>2</sup>

TABLE 1

SPEARMAN RANK	ORDER	CORRELATION COEFFICIENTS	
		Between New Order and original order	Between Order for Males and Order for Females
Information		0.91	0.95
Comprehension		0.75	0.99
Arithmetic		0.96	0.99
Similarities		0.92	0.99
Vocabulary		0.90	0.98

Two of the five new alternative items of the Information subtest were eliminated on the basis of the item analysis. Both items failed to discriminate among children at the different age levels. The three remaining alternative items were retained since they proved to be more discriminative between age levels than the originals and showed no significant difference between the responses of males and females.

All five new alternative items of the Comprehension subtest were retained to replace the originals. The five new items showed no significant differences between sexes and were more discriminative between children of different age levels than the originals.

The list of thirty vocabulary words developed by Bonilha were retained, although a different order was established. Ten words from the remaining twenty were eliminated because they showed significant differences between the responses of males and females and did not discriminate between children of different age levels. The ten new words retained completed a list of forty words, the number of vocabulary items in the original WISC Vocabulary subtest.<sup>3</sup>

Means and standard deviations for each subtest at each age level are shown in Table 2. These means and standard deviations are comparable to those obtained in the original American standardization and to those of the Portuguese standardization, indicating that the original difficulty and dispersion of the subtest items had been preserved.

The Verbal IQ score of the WISC is a deviation score derived by comparing each subject's performance with the scores earned by other individuals in the same age group. The transformation of the raw scores to standard scores was accomplished by using the distribution of cumulative frequencies of the raw scores, determining the percentile values of the scores, and then locating these values in a normal distribution with a mean of 10, standard deviation of 3, and range of 0 to 20. Tables for converting the raw scores to standard scores were composed for each age level between 6 years 0 months and 15 years 11 months, at 3 month intervals.<sup>4</sup>

TABLE 2  
MEANS AND STANDARD DEVIATIONS FOR  
EACH SUBTEST AT EACH AGE LEVEL

Age Level	INFORMATION		COMPREHENSION		ARITHMETIC		SIMILARITIES		VOCABULARY		DIGIT SPAN	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
6.	6.	2.27	7.	2.10	5.	1.87	5.	2.40	13.	5.26	6.	2.04
7.	7.	2.22	7.	2.74	5.	1.76	6.	2.33	17.	8.80	6.	2.15
8.	9.	3.07	8.	3.02	7.	1.93	6.	2.53	22.	10.92	7.	1.17
9.	10.	2.85	9.	3.36	8.	1.90	7.	3.02	25.	11.61	7.	2.40
10.	10.	2.62	9.	3.07	8.	2.05	7.	2.62	28.	12.65	8.	2.12
11.	12.	3.47	10.	3.40	8.	2.24	8.	2.86	34.	13.81	8.	2.26
12.	12.	3.31	10.	2.93	9.	2.53	9.	2.71	32.	13.84	8.	1.86
13.	13.	3.80	11.	2.79	10.	2.67	9.	3.81	35.	13.65	9.	2.26
14.	14.	4.40	11.	3.52	10.	2.50	9.	4.12	36.	13.58	9.	2.05
15.	16.	4.91	11.	3.08	10.	1.92	10.	2.35	43.	13.12	9.	1.44

### DISCUSSION

The sample upon which this revised WISC Verbal Scale was standardized cannot be considered representative of the entire Brazilian population between the ages of 6 through 15 since the sample included only children living in the state of Guanabara (Rio de Janeiro, and the surrounding suburban and rural areas) and attending school. Therefore, it can only be

administered with caution to a Brazilian child living in a remote village. For use with the school population of Guanabara and similar urban-suburban populations, this revision should offer a better alternative to the previous translation in which the items are out of order and for which the norms were established 25 years ago in a different culture.

As the performance Scale has not yet been standardized with the Brazilian population, it would be incorrect to combine the total of the standard scores from the revised version of the Verbal Scale developed by this research with the standard score for the Performance Scale based on the American sample, in an attempt to derive a Full Scale IQ.

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## FOOTNOTES

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2. Complete tables showing the cumulative difficulty distributions for items of all subtests, for the total sample, for males and females, and for each age level can be obtained from the authors upon request.
3. Permission obtained from the Psychological Corporation to carry out this research, forbids the inclusion in published reports of the specific test items.
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