

Inter-observer reliability of the Concise Assessment Method for Children's Handwriting (BHK): findings from a research.

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INTRODUCTION

Difficulty in reproducing alphabetical signs and numbers is a symptom which can often be found in children diagnosed with Developmental Coordination Disorder and with Specific Learning Disorders.

Often the assessment of the graphic sign and, more in general, of the organization of the graphic space is carried out by instruments which are qualitatively susceptible to interpretation by the operators utilizing them.

OBJECTIVES

This work aims to assess the reliability of use of the BHK Scale (Hamstra-Bletz et al., 1987), an instrument used to assess the writing ability of school-aged children, in relation to the homogeneity of the results obtained by the different administrating operators.

Table 1: general information

Scale utilized	BHK
Reliability of the scale (concordance among the operators)	> 0,70 Cronbach's Alpha Test
Case histories to which the scale applies	DCD , SLD

SUBJECTS

A sample group of 20 children with poor handwriting and who had been referred by a teacher or a specialist was chosen and administered the Italian adaptation of the BHK Scale (Di Brina and Rossini, 2011).

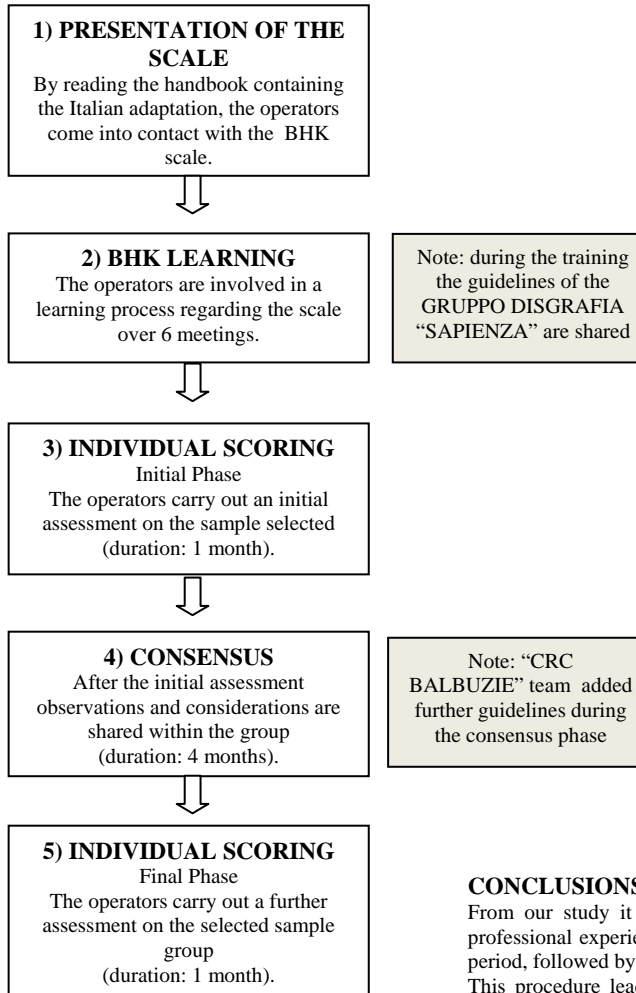
The sample group was made up of 17 boys and 3 girls aged between 93 and 139 months diagnosed with DCD or SLD.

Each subject was tested with the BHK Scale and the results were analyzed by 6 different operators.

The operators which belong to the working group of the CRC Balbuze of Roma are homogenous in terms of their studies and professional experience.

METHOD

The project is structured in the different phases described in Figure 1. Figure 1: the procedure adopted



RESULTS

Based on the scores obtained by the observers Cronbach's Alpha test was calculated in order to measure the degree of internal concordance among the scores reported by the different examiners for each subject. The indicator (tab. 1) predictably shows a bigger value (close to unity) in the post-test, revealing a greater concordance among the operators' assessments.

Table 1: comparing initial and final values

	Initial Assessment	Final Assessment
Cronbach's Alpha	0.91	0.99

In relation to the initial high value of the index it must be observed that it is not a typically observable value. In fact, in previous works (Italian adaptation of the BHK scale by Di Brina, Rossini, 2011) Cronbach's Alpha test had highlighted initial concordance values equal to 0.72. In the case of the working group high pre consensus concordance values can be observed (0.91), which can probably be attributed to the previous experience that the working group had with Ajuriaguerra's D scale. Therefore, the average increase of measurable concordance in the gap between the initial and final indicator, is to be presumed on average higher in relation to the one obtained in this study.

Chart 2: comparing standard deviations



Chart 2 records the variance of the total scores obtained by the different operators for each patient of the sample under examination, highlighting the fact that:

- the variance among the results of the single final assessments for each subject examined is more contained compared to the one relative to the initial assessments.

- in the final phase the values regarding the variance of the assessments among the operators of the different subjects examined end up being more homogeneous; furthermore the variability of the assessments among the different operators of the different subjects is reduced in the final assessments.

CONCLUSIONS

From our study it can be inferred that it is possible to reduce the subjectivity ensuing from the single professional experience of interpreting graphic signs when the BHK scale is applied throughout the training period, followed by a discussion period within the working group.

This procedure leads to a high internal concordance among the operators which is expressed through the indicators of variance utilized.

It is hoped that the instruments assigned to the assessment of the graphic sign and to the organization of the graphic space are endowed with elements which are able, from the very start, to reduce the subjective element of the interpretation given by the administering operators.

Where margins of subjectivity remain, such as in the case of the scale under consideration, it becomes necessary to identify and share guidelines within the working group that further reduce the individual variability linked to the subjectivity of the scale, improving therefore its degree of reliability.