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ABSTRACT

The K-ABC purports to be a fresh alternative to standardized measures of intellectual functioning, by virtue of separating measurement of acquired factual knowledge from measurement of the ability to solve novel problems. Some researchers have questioned this claim to the capability of distinguishing aptitude and achievement. By analyzing the "g" factor underlying the K-ABC, the present study attempts to determine whether the "g" factor is best conceived as an achievement or intellectual ability factor. Hierarchical confirmatory factor analysis was used to compare the "g" factor underlying the K-ABC subtests with the "g" factor underlying the Wechsler Intelligence Scale for Children-Revised (WISC-R). Results indicate that the "g" factor from the subtests of both instruments can distinguish intelligence from achievement. Another interesting finding was that the WISC-R third factor, normally labeled Freedom from Distractibility or Memory, appeared to have a strong quantitative component. While these results do not refute the K-ABC model, they add to a growing body of evidence supporting an alternative interpretation of the achievement subtests as measures of verbal reasoning and general intelligence. (TJH)

What is the g that the K-ABC Measures?

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Running head: K-ABC g ANALYSIS

What is the g that the K-ABC Measures?

The K-ABC purports to be a fresh alternative to standardized measures of intellectual functioning, by virtue of separating measurement of acquired factual knowledge from the ability to solve novel problems (Kaufman & Kaufman, 1983). However, as Anastasi (1984) has pointed out, the achievement portion of the K-ABC is more like an aptitude test in that the subtests were designed to avoid directly tapping into specific kinds of information presented in the classroom. Page (1985) has also questioned the supposed aptitude-achievement distinction, recommending that the Achievement and MP subtests be combined to provide a global estimate of cognitive functioning. Unfortunately, the K-ABC Interpretative Manual does not offer concise definitions of achievement or ability, and the issue has become more confused following the results of factor analytic investigations. Since the Achievement subtests have typically been among the top five subtests of the first unrotated factor, which represents g (Kaufman & McLean, in press; Keith, 1985), it has been suggested that g then represents achievement rather than general ability (Kaufman & McLean, in press). However, this interpretation implies that achievement, not problem-solving ability, underlies all K-ABC subtests (Keith, 1986).

In order to use the K-ABC to understand children experiencing school problems, it is necessary to determine what

the test actually measures. The purpose of the present study was to study the g factor underlying the K-ABC and to determine whether this g factor is best conceived as an achievement or an intellectual ability factor. Hierarchical confirmatory factor analysis was used to compare the g factor underlying the K-ABC MP subtests with the g factor from the WISC-R (Figure 1). The two g's were very similar (correlation between g factors = .96), and, in fact, were barely statistically distinguishable. These findings suggest that, given that the g factor from the MP subtests estimates intelligence rather than achievement, the g factor from the WISC-R is best conceived as measuring intelligence as well. The second set of confirmatory analyses showed the WISC-R g factor to be statistically indistinguishable from the g obtained from an analysis of all the K-ABC subtests, including both the achievement and MP subtests, further suggesting that the g underlying all K-ABC subtests is also best conceived as an estimate of intelligence rather than achievement (Figure 2). Finally, consistent with other reports, the achievement subtests from the K-ABC were among the best measures of this g factor; Riddles was the best measure from the K-ABC (Table 1).

Another interesting finding was that the WISC-R third factor, normally labeled Freedom from Distractibility or Memory, appeared to have a strong quantitative component.

While these results do not refute the K-ABC model, they add to the growing body of evidence which supports an alternative interpretation of the achievement subtests (especially the Faces & Places, Arithmetic, and Riddles subtests) as measures of verbal reasoning and general intelligence (Keith, 1986; Keith, 1985; Keith & Dunbar, 1984). Such discrepancies warrant closer consideration of the test's claims prior to evaluation of children with learning problems.

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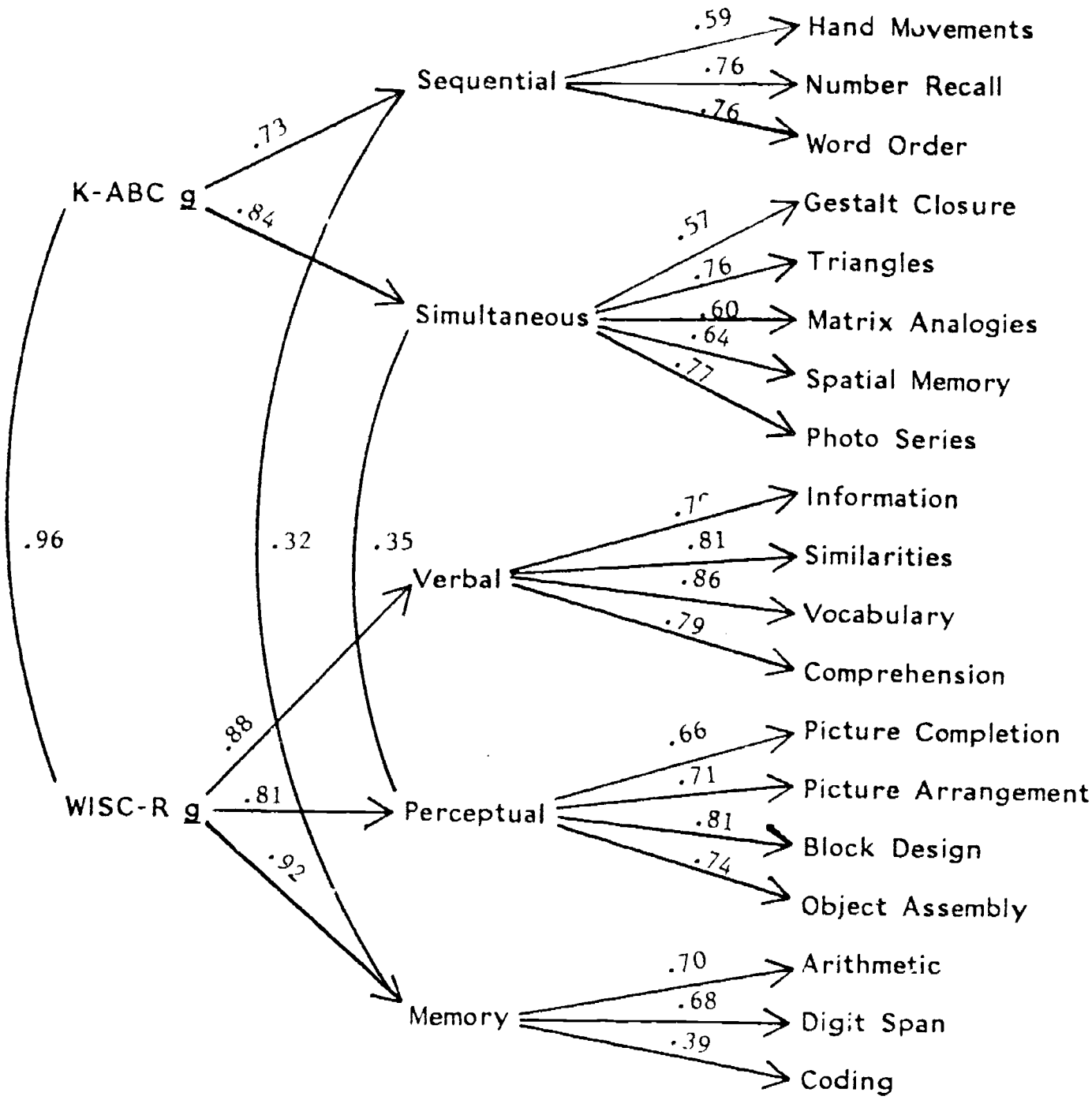

FIGURE 1. Confirmatory hierarchical factor model comparing the g factor derived from the K-ABC MP tests with the g factor derived from the WISC-R. The two factors correlate .96. The model shown here was also constrasted with a model in which the correlations between the two g factors was set to 1.0. The difference in Chi-square between the two models was 4.5 (df = 1, $p > .025, < .05$). The two g factors are thus almost indistinguishable. Chi-square for this model = 534.26 (df =144); fit index = .857; rms = .063.

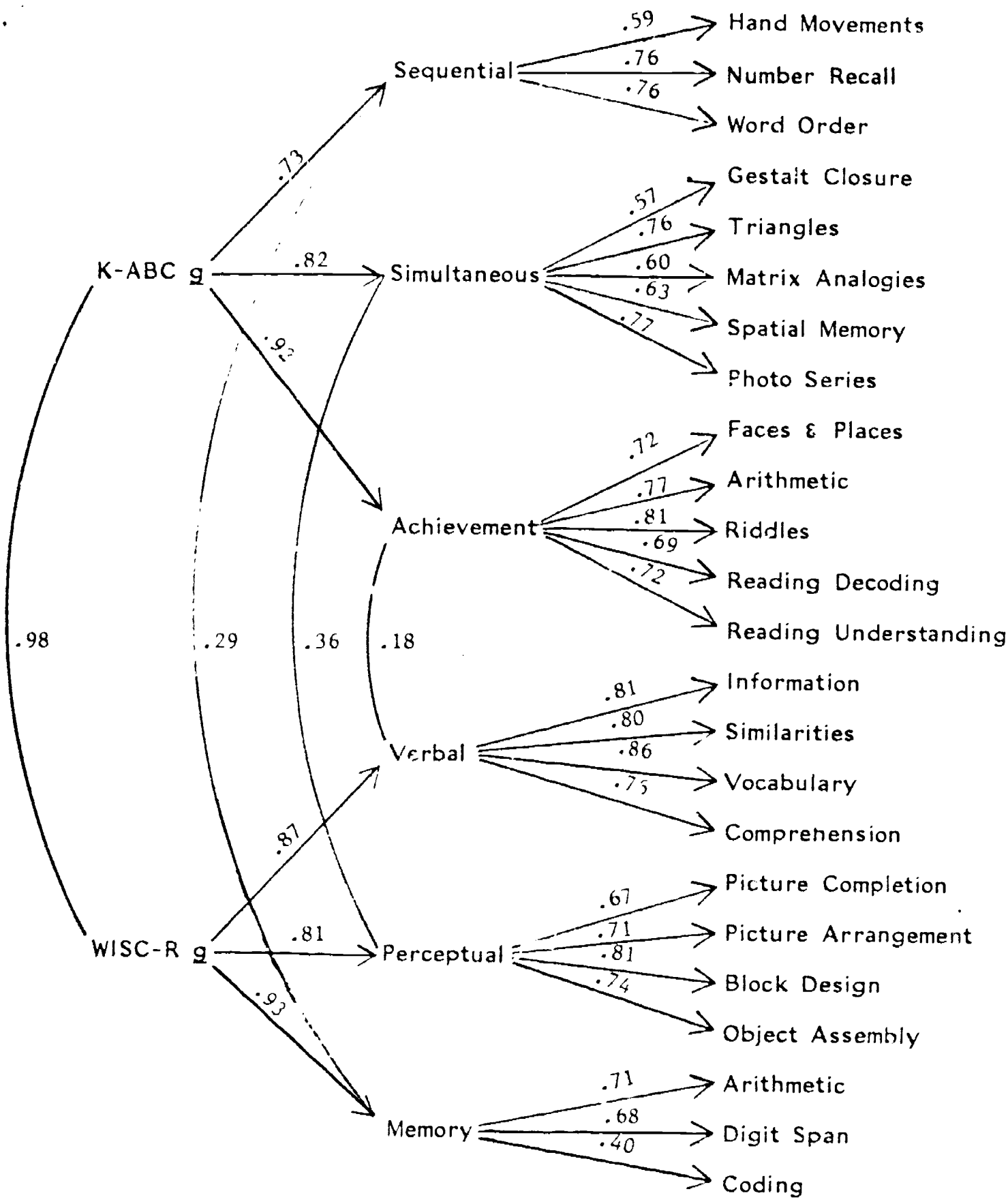

FIGURE 2. Confirmatory hierarchical factor model comparing the g factor derived from all K-ABC subtests with that derived from the WISC-R. The two factors correlate .98; this model is statistically indistinquishable from one in which the correlation between g factors is set to 1.0 (Chi-square difference = 2.99, df = 1, p > .05). Chi-square = 973.39 (df = 242); fit index = .771; rms = .069.

TABLE 1. Factor loadings of K-ABC and WISC-R subtests on the second order g factor. The correlation between the WISC-R g and the K-ABC g is set to 1.0.

Test & Subtest	g loading
K-ABC Sequential	
Hand Movements	.43
Number Recall	.55
Word Order	.55
Simultaneous	
Gestalt Closure	.46
Triangles	.61
Matrix Analogies	.49
Spatial Memory	.51
Photo Series	.62
Achievement	
Faces & Places	.65
Arithmetic	.70
Riddles	.74
Reading Decoding	.63
Reading Understanding	.65
WISC-R Verbal	
Information	.71
Similarities	.70
Vocabulary	.75
Comprehension	.66
Perceptual	
Picture Completion	.54
Picture Arrangement	.57
Block Design	.65
Object Assembly	.59
Memory	
Arithmetic	.65
Digit Span	.62
Coding	.37