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|  |  | **HOW WELL DOES THE K-BIT PREDICT WISC-III RESULTS?**  **C. L. Boyd and Ron Dumont**  **A similar article appeared in the NASP Communiqué, 24, 6, 24**  The Kaufman Brief Intelligence Test (K-BIT) is recommended by its publisher for use as a general intellectual screening measure. For this reason, school personnel may consider using the K-BIT as part of screening procedures prior to referring a student for an evaluation by a school psychologist. Considering the popularity of the Wechsler Intelligence Scale for Children-Third Edition (WISC-III), many school psychologists may choose to use the WISC-III as a part of a student's comprehensive evaluation. School psychologists may very well be interested in knowing how accurately results from the K-BIT predict results on the WISC-III.  Since the K-BIT was published prior to the publication of the WISC-III, the K-BIT manual is only able to present correlation studies comparing the results of the K-BIT and the WISC-III's predecessor, the Wechsler Intelligence Scale for Children-Revised (WISC-R). To establish construct validity for the K-BIT, the WISC-R IQ scores for 35 normal children, ages 6-15 were compared to the K-BIT standard scores. Results of that study suggested adequate correlations between the Vocabulary, Matrices, and Composite IQ's and the Verbal, Performance, and Full Scale IQ's respectively. Correlations for the Vocabulary vs. Verbal IQ ranged from .54 to .78 while the correlations for the Matrices vs. Performance IQ ranged from .48 to .56. Correlations for the K-BIT Composite vs. the WISC-R Full Scale IQ ranged from .63 to .80. While constrained by small sample sizes, those studies revealed that the K-BIT yields a lower IQ Composite score than the WISC-R Full Scale IQ but that correlations of substantial magnitude exist between WISC-R and K-BIT results. This finding suggests that using results from the K-BIT to predict WISC-R results might be feasible. However, is it equally feasible to assume that results of the K-BIT will predict WISC-III results? Several letters to the editor appeared in Communiqué within the past year reporting considerable differences observed between prior WISC-R results and WISC-III results. Those observations seemed inconsistent with studies reported in Chapter 5 of the WISC-III manual comparing results from the WISC-R and the WISC-III. However, Dr. Lawrence Weiss (1995) reviewed 22 studies comparing WISC-R to WISC-III scores. He found "Taken together, these findings are consistent with the expected rate of change in intelligence scores over time. The expected rate of change is approximately 1/3 point per year (Flynn, 1987). Because the WISC-R and WISC-III were normed 17 years apart, there should be approximately -5.57 points difference between the respective FSIQs. The obtained difference of -5.69 points across 22 studies is remarkably similar to expectation."  To determine the relationship between results from the K-BIT and the WISC-III, protocols from 613 students referred to the Psychological Services Department of The School Board of Polk County, Florida from August 1993 through January 1994 were examined. The Polk County public schools serve a student population of about 78,000 in a geographical area approximately the size of the state of Rhode Island. While traditionally a rural county, Polk County is similar to other areas of Florida in experiencing rapid population growth and urbanization, being influenced by the adjacent metropolitan Orlando and Tampa Bay areas as well as by nearby Disney World. Interestingly, the student population in Polk County is remarkably close to national demographics in many important characteristics, including racial and ethnic composition. Most of the students included in this study were referred for school psychological evaluations to aid in determining possible eligibility for special education programs (in descending order of predominance, Specific Learning Disabilities, Gifted, Mentally Handicapped, and Emotionally Handicapped). Some of the students were referred for an educational evaluation at parent request to determine learning strengths and weaknesses without suspicion of potential special education eligibility. None of the referred students were currently identified as eligible for any special education program, except that some students may have been receiving consultative or part-time (no more than 1.5 hours per week) services from the Speech and Language program for articulation or language therapy. Some of the referred students were receiving services from a federally-funded Chapter 1 reading reinforcement program.  The K-BIT was administered to all students in this study before referral for an individual school psychological evaluation. K-BIT testing was usually done by a school guidance counselor or other specialist with experience in administering screening assessments. Before using the K-BIT for this purpose, school personnel were trained through a series of inservice programs on the administration and scoring of the K-BIT. These inservice programs were provided to assure a minimum level of competence in use of the K-BIT. The instructors for these inservice programs included an expert provided by the publisher of the K-BIT and a Polk County school psychologist with considerable experience in using the K-BIT.  The WISC-III was administered in subsequent evaluations by Polk County school psychologists. Each of the 26 school psychologists contributing cases to this study are certified in Florida as a Specialist in School Psychology and have considerable experience in administering and scoring the Wechsler scales. Each psychologist completed a mandatory inservice training program on the administration, scoring, and interpretation of the WISC-III, including both an educational component (a three-hour workshop) and a supervised practicum (observation of a WISC-III administration, a critique of the administration, and a review of the scoring of the case).  From the available sample of 613 students, two sets of data were generated. For 200 students, data was provided for each of the 3 global scores available from the tests (WISC-III Verbal, Performance, and Full Scale; K-BIT Vocabulary, Matrices, and Composite), while for the remaining 413 students, only Full Scale and Composite scores were available.  Correlation coefficients were calculated for the 200-student subset where additional scores were available (K-BIT Vocabulary and Matrices plus WISC-III Verbal IQ and Performance IQ scores).  **Means, Standard deviations, and Correlation between WISC-III and K-BIT scales**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  | K-BIT Scale |  |  | |  | Mean | SD | Vocabulary | Matrices | Composite | | WISC-III |  |  |  |  |  | | Verbal IQ | 95.45 | 19.51 | .82 | .61 | .77 | | Performance IQ | 94.94 | 20.44 | .64 | .68 | .68 | | Full Scale IQ | 94.68 | 20.44 | .77 | .75 | .83 | |  |  | K-BIT mean | 96.8 | 100.4 | 98.6 | |  |  | SD | 20.4 | 19.2 | 19.4 |   The K-BIT Vocabulary correlated better with the Wechsler Verbal IQ than with the Performance IQ (mean .82 versus .64), while the Matrices subtest correlated about equally with the Wechsler Performance IQ than the Wechsler Verbal IQ (mean .61 versus .68). The WISC-III Full Scale IQ correlated highly (.83) with the K-BIT Composite score and had a mean difference of approximately 4 points, with the K-BIT producing the higher score. Pearson product-moment correlations for the K-BIT IQ Composite scores and the WISC-III Full Scale IQ scores were additionally calculated for each of the 613 children separated by age group. Inspection of those correlations show them all to be acceptably high, ranging from .73 to .88 (average .83), suggesting that a strong, positive relationship exists between the results from the K-BIT and the WISC-III at each of the separate age levels.  Although this study found high correlations between the K-BIT and the WISC-III, one of the purposes for administering the K-BIT was to predict the students' current level of cognitive functioning that would be determined by the classification obtained when the entire WISC-III was administered. The mean K-BIT composite (98.6) was found to be approximately 4 points higher than the mean WISC-III FSIQ (94.2). This difference is significant (t[612] = 9.66, p =<.0001). Each student's intelligence classification obtained from the WISC-III was compared to the classification obtained from the K-BIT. Of the 613 children re-tested, 263 classification labels (43%) were found to be unchanged using the K-BIT. The K-BIT had, however, underestimated the classification of 99 children (16%) while overestimating the classification of 251 others (41%). Kaufman (1990) notes, "Probably clinicians and researchers place too much weight on the 'misclassification index', because so called errors in classifying a person's levels of intelligence can occur even if the short form IQ estimate is only one point away from the actual IQ (e.g. 69 IQ vs. 70 IQ)." IQ scores on the WISC-III and the K-BIT are "obtained" scores and are best represented by reporting them in confidence bands. In order to investigate the meaning of these "misclassifications" two approaches were taken.  First, given the high reliabilities of the two measures (WISC-III Full Scale = .96, K-BIT = .94) and the correlation between the measures found in this study (r=.83), it was possible to compute the magnitude of the difference required for significance. When this was done it was found that a difference of greater than 9 points might be considered a 'significant' difference. Using this information, the WISC-III Full Scale and the K-BIT Composite scores were compared. Of the 613 students tested, 353 (58%) were found to have obtained scores on the tests within 10 points of each other. However, 260 (42%) had scores that were 'significantly' different, with the K-BIT overestimating 209 (34%) students while underestimating 51 (8%).  Second, a 'practical" approach to the misclassification was investigated. Every one of the 350 children with a differing classification was identified. The two classification labels (one from the K-BIT Composite and one from the WISC-III FSIQ) were compared to see if they were at least in adjacent categories (for example: a WISC-III FSIQ classification of "AVERAGE" was compared to the K-BIT classification to see if the K-BIT was in either the "LOW AVERAGE" or "ABOVE AVERAGE" range.) This allowed us to determine if the misclassification extended beyond a single label. When this was done, 97 children (16%) has scores from the tests that placed them at least two classification labels apart.  Results of this investigation suggest that although the K-BIT is an adequate screening instrument for use in a pre-referral evaluation process, caution must be taken to ensure that the scores obtained from the K-BIT are not used in determining eligibility for special education services. As noted in the K-BIT manual, although it has the same mean and standard deviation as the Wechsler and Kaufman scales, "...it does not imply that the K-BIT may substitute for a comprehensive measure of a child's or adult's intelligence."  Flynn, J. R., (1987) Massive gains in 14 nations: What IQ tests really measure. Psychological Bulletin, 95, 29-51.  Kaufman, A. S. (1990) Assessing Adolescent and Adult Intelligence. Allyn and Bacon.  Weiss, L. G. (1995). WISC-III IQs: New norms raise queries. in Assessment Focus. The Psychological Corporation  C. L. Boyd NCSP is Director of the Psychological Assessment Center for the School Board of Polk County, Florida |

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