

94

26228

U·M·I
MICROFILMED 1994

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

U·M·I

University Microfilms International
A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
313/761-4700 800/521-0600

PREVIEW

Order Number 9426228

**Evaluation of the WISC-III in the assessment of attention and
concentration processes in children**

Kardell, Edward Gerard, Psy.D.

Pace University, 1994

U·M·I

300 N. Zeeb Rd.
Ann Arbor, MI 48106

PREVIEW

**Evaluation of the WISC-III in the Assessment of
Attention and Concentration Processes in Children**

by

Edward G. Kardell

**A Doctoral Project Submitted in Partial Fulfillment of
the Requirements for the Degree of Doctor of Psychology
in the Department of Psychology at Pace University**

NEW YORK

1994

(Please type all information)

NAME: Edward G. Kardell

TITLE OF PROJECT: Evaluation of the WISC-III in the Assessment of
Attention and Concentration Processes in Children

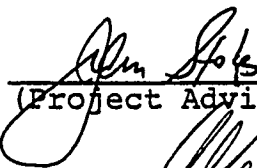
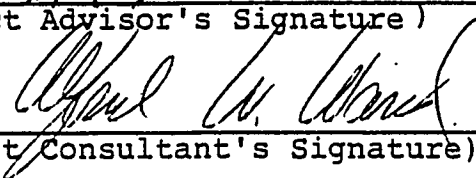
DOCTORAL PROJECT COMMITTEE:

PROJECT ADVISOR: John Stokes, Ph.D.
(Name)
Associate Professor of Psychology
(Title) (Affiliation)

PROJECT CONSULTANT: Alfred W. Ward, Ph.D.
(Name)
Associate Professor of Psychology
(Title) (Affiliation)

FINAL APPROVAL OF COMPLETED PROJECT:

I have read the final version of the doctoral project and certify that it meets the relevant requirements for the Psy.D. degree in School-Community Psychology.


(Project Advisor's Signature)

(Project Consultant's Signature)

5/11/94
(Date)

5/16/94
(Date)

ACKNOWLEDGMENTS

I would like to extend my deepest appreciation to Dr. John Stokes for his patience, kindness and expertise. He gave me a second chance and for that I will always be grateful. I would like to thank Dr. Alfred W. Ward for helping me clarify and organize my ideas and for all his time in helping me make sense out of my data. My deepest thanks to Linda for pushing me to pursue my dreams long after I should have given up on them. I know she gave up some of her own dreams to allow me to pursue mine. My love to Christopher, Heather and Caitlin who always help me realize that there is much more to life than personal achievement. Special thanks to the two other women in my life, Denise Antonacci and Beverly McDaniels. I will never forget that both of you covered for me allowing me the time I needed to pursue this work. Finally thanks to all the children who participated in this study. All of the people mentioned above should know that this work is as much theirs as it is mine.

TABLE OF CONTENTS

Chapter	Page
Acknowledgments.....	iii
List of Tables.....	vii
Abstract.....	xi
I. Introduction.....	1
History of the Wechsler Scales	
WISC-R	
Attentional Measures Associated with the WISC-III	
Freedom from Distractibility-The Third Factor	
Digits Forward and Backward	
Mazes	
Subtest Composite Constellations	
Introduction to Attentional Problems	
Overview of ADHD	
Historical Perspective	
Current Formulation of ADHD	
Controversies Regarding Current Formulation	

Methods of Assessing ADHD
Behavior Rating Scales
Conventional Testing
Neuropsychological Approaches
Continuous Performance Test
Stroop Color and Word Test
Wisconsin Card Sorting Test
Trail Making Test
Attention
Problem Statement
Goals of the Research

II. Methodology..... 46

Subjects
Procedure
Demographics
Instruments
Wechsler Intelligence Scale
for Children-III
Continuous Performance Test
Stroop Color and Word Test

	Wisconsin Card Sorting Test	
	Trail Making Test	
	Teacher Rating Scales	
	ADD-H Comprehensive Teacher's Rating Scale (ACTeRS)	
	Snap Rating Scale (Checklist)	
	Test Groupings	
III.	Results.....	61
	Demographics	
	WISC-III Data	
	WISC-III and External Variables	
	WISC-III and the Internal Variables	
	Internal Variables with the External Variables	
	Factor Analysis	
	Additional Analyses	
IV.	Discussion.....	93
	Implications for School/Community Psychology	
	References.....	107

LIST OF TABLES

Table	Page
1. Structural Overview of the Current Study...	44
2. Demographic of the Current Sample.....	62
3. Means and Standard Deviations for the Wechsler Intelligence Scale for Children -Third Edition Subtest Scaled Scores, IQ Scores and Factor Scores.....	65
4. Correlation Coefficients Among Single Subtest Scores Underlying the Wechsler Intelligence Scale for Children-Third Edition Third and Fourth Factors.....	66
5. Correlation Coefficients of the Third and Fourth Factors of the Wechsler Intelligence Scale for Children-Third Edition with Older Subtest Configurations Measuring Attention and Concentration.....	68
6. Correlation Coefficients Between Wechsler Intelligence Scale for Children-Third Edition Attention/Concentration Constellations and Teacher Ratings of Attention, Hyperactivity, Impulsiveness, Social Skills and Oppositional Behavior....	69
7. Correlation Coefficients Between SNAP Rating Scale Variables and ADD-H Comprehensive Teacher's Rating Scale Variables.....	71

8.	Correlation Coefficients Between the Wechsler Intelligence Scale for Children -Third Edition Third and Fourth Factors and Wisconsin Card Sorting Test Variables..	72
9.	Correlation Coefficients Between the Wechsler Intelligence Scale for Children -Third Edition Third and Fourth Factors and Trail Making Test Variables.....	74
10.	Correlation Coefficients Between the Wechsler Intelligence Scale for Children -Third Edition Third and Fourth Factors and Continuous Performance Test (CPT) Variables.....	75
11.	Correlation Coefficients Between the Wechsler Intelligence Scale for Children -Third Edition Third and Fourth Factors and Stroop Color Word Test Variables.....	76
12.	Correlation Coefficients Between Continuous Performance Test (CPT) Variables and Trail Making Test, Stroop Color Word Test and Wisconsin Card Sorting Test Variables.....	78
13.	Correlation Coefficients Between Trail Making Test (Trails) Variables and Stroop Color Word Test and Wisconsin Card Sorting Test (WCST) Variables.....	79
14.	Correlation Coefficients Between Wisconsin Card Sorting Test (WCST) and Stroop Color Word Test Variables.....	80

15.	Correlation Coefficients Between Continuous Performance Test (CPT) Variables and Teacher Ratings from the ADD-H Comprehensive Teacher's Rating Scale (ACTeRS) and the SNAP Rating Scale.....	82
16.	Correlation Coefficients Between Stroop Color Word Test Variables and Teacher Ratings from the SNAP Rating Scale and the ADD-H Comprehensive Teacher's Rating Scale (ACTeRS).....	83
17.	Correlation Coefficients Between Trail Making Test Variables and Teacher Ratings from the SNAP Rating Scale and the ADD-H Comprehensive Teacher's Rating Scale (ACTeRS).....	84
18.	Correlation Coefficients Between Wisconsin Card Sorting Test Variables (WCST) and Teacher Ratings from the SNAP Rating Scale and ADD-H Comprehensive Teacher's Rating Scale (ACTeRS).....	85
19.	Factor Analytic Study of Attention Measures Using 10 Measures with 80 Subjects.....	87
20.	Multiple Regression Analyses Indicating the Contribution of Individual Subtests from the Wechsler Constellations to the Prediction of the Average Number of Items Completed on the Stroop (STROOPMI).....	89
21.	Multiple Regression Analyses Indicating the Contribution of Individual Subtests from the Wechsler Constellations to the Prediction of the Mean Number of Commission Errors on the CPT (CPTCOM).....	91

22.	Multiple Regression Analyses Indicating the Contribution of Individual Subtests from the Wechsler Constellations to the Prediction of the Mean Number of Correct Responses (CPTMHIT) on the Continuous Performance Test (CPT).....	92
23.	The Mirsky Model in Comparison with the Results of the Current Factor Analysis.....	100

ABSTRACT

This study assessed the correlation between the Third (FDI) and Fourth (PSI) Factors of the Wechsler Intelligence Scale for Children-Third Edition and established measures of attentional functioning (behavioral rating scales and conventional/neuropsychological testing). Eighty children who were referred for educational evaluation were tested using the WISC-III and other objective measures of attentional functioning including the Continuous Performance Test, Stroop Color Word Test, Wisconsin Card Sorting Test and Trails A and B. Two teacher rating scales, the ACTeRS and SNAP, were completed on each child. Test results showed no correlation among the various sets of measures. It appeared that the three sets of measures (behavior rating scales, WISC-III and conventional/neuropsychological testing) assessed differential aspects on the attention/concentration spectrum. The need for a multi-dimensional evaluation of attentional functioning was affirmed. Factor analysis indicated the Mirsky model of attentional processes was not directly transferable to a child population. Results demonstrated that

certain neuropsychological tests may function differently with children due to the complex cognitive demands of the test. Implications for the assessment of attention deficits by the school psychologist were discussed.

Chapter I

Introduction

The Wechsler Intelligence Scale for Children-Revised (WISC-R) was one of the most widely researched and extensively cited psychological tests in the professional literature. Hundreds of published studies have appeared since 1974 and many provided evidence for the validity of the interpretation and the uses of the WISC-R (Wechsler, 1991). Research has continually expanded the breath and depth of the WISC-R. While it remained first and foremost a test of global cognitive ability it also yielded information (through higher level analyses) regarding clinical and special education populations. Studies have utilized the WISC-R in the diagnosis and delineation of learning disabilities, giftedness, mental retardation, psychiatric disorders, hyperactivity and organic/biologically based mental disorders. Most recently the Wechsler scales have become integral parts of most neuropsychological evaluations (Boll, 1981).

Several researchers (Doppelt & Kaufman, 1977; Flynn, 1984; Kaufman, 1990) have demonstrated that norms for intelligence tests become dated over time.

In response to such findings the Psychological Corporation revised the WISC-R releasing the Wechsler Intelligence Scale for Children-Third Edition (WISC-III) in 1991. In addition to the principal goal of updating the norms several other goals were attempted including enhancement of the factor structure underlying the WISC-R and improving the subtest content, administration and scoring rules. As part of the revision process the WISC-III was subjected to preliminary comparison studies with other testing instruments as well as application to various clinical groups and samples of exceptional children. This preliminary data (Wechsler, 1991) supported the utility of the WISC-III in the assessment of intellectual functioning in a wide variety of groups. In addition the Freedom from Distractibility Index and Processing Speed Index appeared promising as measures of mental ability that provide information different from the more g-related information obtained from the IQ scores. However, much more substantial research with the WISC-III needed to be done over the next several years. The combination of this anticipated research and the buildup of clinical experience with the WISC-III, coupled with the already established clinical and

research knowledge base of the WISC-R, will result in a greater understanding of the utility of the WISC-III in assessment and diagnosis.

The present study will examine the relationship between the present Third Edition of the WISC (WISC-III) and the processes of attention and concentration in children. The WISC-III provides a four factor model which has not been studied as extensively as the WISC-R three factor model. The fourth factor involves a re-arrangement of subtests that were previously part of the freedom from distractibility factor as well as the creation of an additional supplemental subtest. The labeling of the third factor as well as the validity of the four factor model have both been disputed as has been the most frequently suggested hypothesis that they relate to attentional functioning. The controversial Third Factor (currently termed Freedom from Distractibility Index [FDI]) will be evaluated in terms of its relationship to established measures of attention/concentration, namely behavior rating scales and other conventional and neuropsychological instrumentation. The purpose of the present study is to examine how the WISC-III subtests relate to attentional and concentrational processes in children

with respect to both conventional measures of attentional/concentrational functioning and teacher observation ratings/scales. A better understanding of attentional and concentrational factors measured by the WISC-III will help to determine if the WISC-III, and specifically the FDI in the newly evolved four factor structure, can aid in the diagnosis of attentional and concentrational dysfunction in children.

History of the Wechsler Scales

Anastasi (1976) indicated that the first form of the Wechsler scales, known as the Wechsler-Bellevue Intelligence Scale, was published in 1939. The majority of available intelligence tests at the time had originally been designed primarily for schoolchildren and had been adapted for adult use by adding more difficult items of the same kind. As a result the content of such tests held little interest or applicability to most adults. This compromised the face validity of the intelligence test items. Wechsler (1939) also felt that the overemphasis on speed in most of the available tests handicapped the older person. In addition Wechsler felt that relatively routine manipulation of words received undue weight in the traditional intelligence test, that mental age norms

were inapplicable to adults and that few adults had been included in the standardization samples that were available at the time. In order to meet these objections and concerns the original Wechsler-Bellevue was developed. The presence of a number of technical difficulties with regard to size and representativeness of normative sample and reliability of subtests resulted in the development of the Wechsler Adult Intelligence Scale (1955) and, most recently, the Wechsler Adult Intelligence Scale-Revised (1981).

The Wechsler Intelligence Scale for Children (WISC) was first prepared as a downward extension of the original Wechsler-Bellevue (Seashore, Wesman, & Doppelt, 1950). Many items were taken directly from the adult test; and easier items of the same types were added to each test. A revised edition, WISC-R, was published in 1974. In the revised edition special effort was made to replace or modify adult-oriented items so as to bring their content closer to common childhood experiences. In 1991 the test was again revised resulting in the Wechsler Intelligence Test for Children-Third Edition (WISC-III).

WISC-R

The Wechsler Intelligence Scale for Children-Revised, over the course of its existence, has been the subject of extensive research and analysis. From a test which just yielded IQ scores the WISC-R has evolved into an instrument which is multi-faceted and from which one can extrapolate a wealth of information about a child's cognitive and psychological functioning.

Kaufman (1979) outlined a systematic method of analyzing a WISC-R profile beginning with the most global scores and working from the general to the specific analyzing the data at ever deepening levels. Such an approach began with an interpretation of the Verbal IQ, Performance IQ and Full Scale IQ and any significant Verbal-Performance IQ differences. Analysis then moved to the three underlying factors that have been identified which included Verbal Comprehension, Perceptual Organization and Freedom from Distractibility. Kaufman indicated the Verbal Comprehension and Perceptual Organization factors bore a close resemblance to Wechsler's Verbal and Performance scales and as a result the IQ's were a good estimate of the child's Verbal Comprehension and

Perceptual Organizational abilities. The third factor, Freedom from Distractibility, involving Arithmetic, Coding and Digit Span was more elusive and difficult to interpret but Kaufman felt could relate to freedom from distraction, ability to manipulate numerical symbols and sequencing ability.

Attentional Measures Associated with the WISC-III

In the analysis of the WISC-III several different areas reportedly contribute to the measure of attention/concentration in children. These areas include the Third Factor, the difference between Digits Forward and Digits Backward and the Mazes subtest. In addition a number of researchers have recommended the regrouping of Wechsler subtests into composite scores based on theory and research. A number of such composites have been linked with attention and concentration functioning.

Freedom from Distractibility-The Third Factor

The so called Third Factor had a long and controversial history. Matarazzo (1972) indicated that Cohen had been one of the most vigorous investigators interested in the factor analytic structure of intelligence as reflected in the Wechsler scales. In 1952 he was the first to carry out a factor