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THE EFFECTS OF PRE-TEST INFORMATION ON SCHOOL PSYCHOLOGISTS' SCORING OF THE WECHSLER INTELLIGENCE SCALE FOR CHILDREN

DISSERTATION
Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By
Edward Doxsee Fiscus, B.A., M.Ed.

The Ohio State University
1975

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Charles B. Huelsman, Jr.
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Gerald A. Winer

Approved by

Adviser
Department of Education
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My warmest remembrances of life at The Ohio State University revolve around Dr. Charles B. Huelsman, Jr., my major advisor. The title "professor" was invented specifically for men like him.

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>VITA</td>
<td>iii</td>
</tr>
<tr>
<td>PUBLICATIONS</td>
<td>v</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xii</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Introduction to the Problem</td>
<td></td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td></td>
</tr>
<tr>
<td>Objectives of the Study</td>
<td></td>
</tr>
<tr>
<td>Questions for Investigation</td>
<td></td>
</tr>
<tr>
<td>Overview</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>10</td>
</tr>
<tr>
<td>Review of the Literature</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Examiner Differences/Intelligence Testing</td>
<td></td>
</tr>
<tr>
<td>Experiemnter/Examiner Expectancies</td>
<td></td>
</tr>
<tr>
<td>Examiner Bias/Pre-Test Information/Scoring of Intelligence tests</td>
<td></td>
</tr>
</tbody>
</table>
Conclusions III

Methods and Procedures: 35

Overview
General Design of the Study
Statistical Procedures
Subjects
Instrumentation
Preparation of Materials
Pilot Study
Procedures
Summary

Results and Discussion: 54

Introduction
Analysis of Data - Intern School Psychologists
Analysis of Data - Experienced School Psychologists
Summary
Mechanical Scoring Errors
Post Data Collection Check
Fourteen Ambiguous Responses

Summary and Conclusions: 96

Summary
Conclusions
### Implications

Suggestions for additional Research

#### APPENDIX

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>105</td>
</tr>
<tr>
<td>B</td>
<td>132</td>
</tr>
<tr>
<td>C</td>
<td>136</td>
</tr>
<tr>
<td>D</td>
<td>139</td>
</tr>
<tr>
<td>E</td>
<td>142</td>
</tr>
<tr>
<td>F</td>
<td>145</td>
</tr>
<tr>
<td>G</td>
<td>148</td>
</tr>
<tr>
<td>H</td>
<td>151</td>
</tr>
<tr>
<td>I</td>
<td>153</td>
</tr>
<tr>
<td>J</td>
<td>156</td>
</tr>
<tr>
<td>K</td>
<td>158</td>
</tr>
<tr>
<td>L</td>
<td>161</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>163</td>
</tr>
</tbody>
</table>

viii
LIST OF TABLES

Table                                                                 Page

1. Mean WISC Information Subtest Standard Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Average IQ Case) ............... 56

2. Mean WISC Comprehensions Subtest Standard Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Average IQ Case) ..................... 57

3. Mean WISC Similarities Subtest Standard Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Average IQ Case) ..................... 58

4. Mean WISC Vocabulary Subtest Standard Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Average IQ Case) ..................... 59

5. Mean WISC Verbal Scale IQ Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Average IQ Case) .. 61

6. Mean WISC Full Scale IQ Score and Standard Deviations for Type of Pre-Test Information and Level of Experience (Average IQ Case) ..................... 62

7. Summary of Univariate F Tests Across Dependent Variables Relative to Interaction of Pre-Test Information and Level of Experience (Average IQ Case) ..................... 63

8. Summary of Univariate F Tests ix
Across Dependent Variables Relative to Type of Pre-Test Information (Average IQ Case) .......................... 68

9. Mean WISC Information Subtest Standard Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Below-Average IQ Case) ............. 70

10. Mean WISC Comprehension Subtest Standard Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Below-Average IQ Case) ........ 71

11. Mean WISC Similarities Subtest Standard Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Below-Average IQ Case) ........... 72

12. Mean WISC Vocabulary Subtest Standard Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Below-Average IQ Case) ............ 73

13. Mean WISC Verbal Scale IQ Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Below-Average IQ Case) .............................. 74

14. Mean WISC Full Scale IQ Scores and Standard Deviations for Type of Pre-Test Information and Level of Experience (Below-Average IQ Case) ................................. 75

15. Summary of Univariate F Tests Across Dependent Variables Relative to Interaction of Pre-Test Information and Level of Experience (Below-Average IQ Case) ......................... 77

16. Summary of Univariate F Tests Across Dependent Variables Relative to Type of Pre-Test Information (Below-Average IQ Case) ............ 78

17. Mechanical Errors of Experienced School Psychologists on WISC Pro-
18. Mechanical Errors of Intern School Psychologists on WISC Protocols for the Average and the Below-Average IQ Cases .......................... 89

19. Chi-Square Values for Fourteen Ambiguous Responses on the Average WISC IQ Protocol ......................... 94

20. Chi-Square Values for Fourteen Ambiguous Responses on the Below-Average WISC IQ Protocol .......... 95
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>&quot;Average&quot; IQ Case</td>
<td>36</td>
</tr>
<tr>
<td>2.</td>
<td>&quot;Below-Average&quot; IQ Case</td>
<td>37</td>
</tr>
<tr>
<td>3.</td>
<td>Interaction Effect: Type of Pre-Test Information as a Function of</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Levels of Experience (Vocabulary Subtest-Average IQ Case)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Interaction Effect: Type of Pre-Test Information as a Function of</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Levels of Experience (Verbal Scale IQ Score, Average IQ Case)</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Interaction Effect: Type of Pre-Test Information as a Function of</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Levels of Experience (Full Scale IQ Score, Average IQ Case)</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Interaction Effect: Type of Pre-Test Information as a Function of</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>Levels of Experience (Full Scale IQ Score, Below Average IQ Case)</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER I
INTRODUCTION

Introduction to the Problem

Traditionally school psychologists in performing child study have been trained to make tentative hypotheses regarding the nature of the pupils' difficulties after reviewing referral information and prior to the administration of tests to the child. These "hunches" (Gardon, 1971), as they have been called by some, may be akin to the cognitive activity represented in Bruner's discussion of his theory of perception (Bruner, 1964). He theorizes that perceiving begins with the formation of hypotheses. The strength of a hypothesis, he states determines its likelihood of arousal in various situations. The stronger the hypothesis, the less amount of information will be required to confirm it; and, likewise, the stronger the hypothesis, the greater the amount of contradictory information will be needed to disconfirm it.

The results of the school psychologist's testing, then, either supports the original hypotheses or disproves them and promotes the establishment of alternative hypotheses. In following this procedure, the school psychologist may
develop a set or form expectations which may lead him to find what he is looking for (ie. to perceive the data in such a way as to confirm his hypotheses). Some psychologists (L'Abate, 1963; Hill and Giffen, 1963) have supported the use of "blind analysis" of test protocols in order to avoid putting too much emphasis on or perhaps overlooking, a particular cue from a test response and, therefore, become more objective in their work. The "laboratory method of psychodiagnosis" has been proposed for use in the schools by Abidin (1971) for several reasons. One important reason for its use focuses on the reduction of "interpretation contamination" which Abidin believes can be achieved with the laboratory method (blind analysis). He states that (1) the examiner-examinee interaction can be controlled; (2) the possibility that the testee's appearance might affect the examiner's interpretations can be eliminated; and (3) that since the examiner does not have any information about the examinee prior to the testing, there is no opportunity for a set to develop which might influence the psychologist's perception of the data. Extra-protocol information is considered, using this method, but it is reviewed only after the test data has been gathered and interpreted (Abidin, 1971).

Many years ago Robert Merton (1948) presenting an analysis of the economic difficulties which beset our society earlier in this century, observed "...men respond not only to the objective features of the situation but
also, and sometimes primarily, to the meaning the situaiton has for them". Thus, the term "self-fulfilling prophecy" came into some renown. Several years later Robert Rosenthal began a series of investigations into the experimenter effect and experimenter bias in experimental psychology (Rosenthal, 1966; Rosenthal, 1969) which culminated in the publishing of Pygmalion in the Classroom in 1968 (Rosenthal and Jacobsen, 1968). Not only has he shown that the experimenter effect exists in the laboratory, he has also demonstrated that real life situations, like those that exist in public schools, are subject to the manifestations of the "self-fulfilling prophecy". Even though Rosenthal's work, particularly that relating to the influences of teachers' expectations, has been rather thoroughly criticized (Thorndike, 1968; Barber and Silver, 1969), the concept that peoples' actions and judgments can be influenced by their "expectations" does not seem to be in disrepute.

Over thirty years ago F.L. Goodenough (1940) conducted a small unpublished experiment after observing differential teacher scoring of responses on spelling tests in a public school classroom. She found that errors on spelling tests which were made by children judged "most attractive" had often been overlooked. At the same time, the "least attractive" children often had their correct spellings marked wrong if the spellings were at all illegibly written. She reported that when the ratings were correlated...
with the number and direction of teacher errors and $r$ of approximately $+.40$ was obtained. She added, "the teacher was, of course, entirely innocent of any intentional unfairness and was completely ignorant of any irregularities in her grading. But human nature plays strange tricks with all of us." This experience led Goodenough to wonder about the possibility of systematic errors in the administration and scoring of many test items which may considered "borderline" (no absolutely fixed rule) from the Binet.

Until recently this bit of "human nature", which Goodenough had observed, was usually thought of as having application, perhaps, to the relatively less objective testing procedures but not to individual intelligence testing (Sattler and Theye, 1967). Even though the Stanford-Binet Intelligence Scale (Terman and Merrill, 1960) offers a paragraph on the "avoidance of the 'halo' effect", it has been generally believed that the test's design, its standardization, and the existence of a scoring manual assures an objectivity in individual intelligence testing that avoids the influence of possibly biasing circumstances. The assumption has been questioned (Goslin, 1963) and the need for further research has been cited (Cronbach, 1960). Indeed, in more recent years investigations have indicated that the possibility of examiner biases (influencing intelligence test performances and interpretations) is real, in at least some situations. Some of these investigators
(Schroeder and Kleinsasser, 1972) have concluded that the most accurate intelligence testing will occur if the subject is approached by an examiner who does not have prior knowledge of his abilities.

If school psychologists are to modify their general approach to testing and diagnosis (as recommended by many proponents of the "laboratory method") in order to consider adequately the issues of expectation and bias which are currently being raised, more evidence is needed. The investigator hopes to add to the growing body of evidence with the results of the present study.

Statement of the Problem

It is the general purpose of the study to examine the effects of differing types of pre-testing (referral) information on school psychologists' (intern and experienced) scoring of the Wechsler Intelligence Scale for Children. Thus, this investigation is limited to assessing the nature of the expectancy effect through an analysis of the effect of the school psychologists' (as examiners) expectancy on the evaluation of childrens' performances (scoring) on an intelligence test. There is no attempt to demonstrate that school psychologists' expectations affect childrens' performances on intelligence tests. Neither is it the purpose to show that the interaction between school psychologists (as examiners) and children during the administration of intelligence tests affects the childrens'
performances. These could be subjected to later study.

The study of the problem bears special importance for school psychologists practicing in the public schools today. In recent years an increasing emphasis on the consultation model for school psychologists has carried with it a proportionate decrease in emphasis on the more traditional child study model. Whether the change of emphasis is appropriate is not of concern here. What is of significance is the fact that child study and consultation are often inextricably bound together in such a way that a thorough understanding of child study is extremely valuable for the practice of consultation in the schools. Therefore, by attempting to analyze one specific aspect of the child study process, the investigation lends basic support to growth of the practice of school psychology even as it takes on new dimension, an emphasis on consultation.

Another, and perhaps more readily apparent, significance of the investigation is the fact that important decisions are being made by school psychologists regularly on the basis of scores derived from intelligence tests. It behooves the school psychologists making those judgments, then, to understand as much as they can about all of the variables that go into making up test scores.

**Objectives of the Study**

Objectives of the study include the following:

1. to determine if the fact that school psychologists
have pre-testing (referral) information affects their scoring of intelligence test (WISC) responses.

2. to determine if the effects of pre-testing information (referral) on the scoring of intelligence tests (WISC) responses differ depending upon the nature of the information, positively or negatively oriented.

3. to determine if the effects of pre-testing information (referral) on the scoring of an intelligence test (WISC) differ depending upon whether the school psychologist is experienced or is an intern.

4. to determine if the effects of pre-testing information (referral) and the level of experience of the school psychologists differ for situations involving a "below average" IQ case and those involving an "average" IQ case.

Questions for Investigation

The major hypothesis of this study is as follows:

$H_1$ - School psychologists' scoring of WISC protocols is affected by the types of pre-test information they receive.

This major hypothesis has been divided into one hundred and eight more specific hypotheses for investigation which are presented in Appendix A. These hypotheses have, in turn, been organized under four major questions to be answered in the investigation. They are as follows:

Question 1 - Is the scoring by intern school psychologists of the "average" IQ WISC protocol affected by the
type of pre-test information (positive, negative, or none) received?

**Question 2** - Is the scoring by intern school psychologists of the "below-average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

**Question 3** - Is the scoring by experienced school psychologists of the "average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

**Question 4** - Is the scoring by experienced school psychologists of the "below-average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

Overview

In Chapter Two the literature pertinent to the purpose and organization of this investigation is reviewed. It is presented under three major categories as follows: "Examiner Differences/Intelligence Testing", "Experimenter-Examiner Expectancy", and "Examiner Bias/Pre-Test Information/Scoring of Intelligence Tests". Particular emphasis is placed on why the study was necessary and what it would contribute to the general knowledge relative to school psychologists, their expectations, and the scoring of intelligence tests.

Chapter Three provides a review of the general design
of the investigation, the subjects involved in the study, the preparation of materials for the investigation, and the procedures followed in conducting the study. A pilot study is also described.

The results of the analysis of the data collected is described in Chapter Four. A discussion of the hypotheses tested and significant findings derived is presented.

In Chapter Five a summary of the study is presented with emphasis on the conclusions which were reached. Implication of current study for the practice of school psychology and suggestions for further research in the general area of the investigation, school psychologists and expectancy effects, are also presented.
CHAPTER II
REVIEW OF THE LITERATURE

Introduction

The review of literature presented in this chapter includes a discussion of related previous investigations categorized under general topics as follows: 1) "Examiner Differences/Intelligence Testing", 2) "Experimenter-Examiner Expectancy", and 3) "Examiner Bias/Pre-Test Information/Scoring of Intelligence Tests". In this review the investigator shows why the present study was developed in its present form and how the results which may be derived are necessary additions to current knowledge in the area of the influence of examiner (specifically school psychologist) expectancies on intelligence testing. The final section presents conclusions relative to the discussions under the three categories listed above and underlines the importance of the present study as a substantial addition to what is known about examiner expectancy effects relative to intelligence testing.

Examiner Differences/Intelligence Testing

Considerable evidence has been amassed over the past several decades to indicate that differences in intelli-
Intelligence test results are related to various differences in the examiners involved. The importance of the examiner as a critical variable, however, is still often overlooked or minimized in present day discussions of intelligence testing concerns (Schwartz and Flannigan, 1971). Conclusions from studies relating to such aspects of the examiner variable as race, sex testing style, personality, and experience have often been confusing because of poor methodology and the resultant confounding of variable influences (Sattler and Theye, 1967). Studies evaluating the degree of scorer agreement on intelligence tests have found the Stanford-Binet (Form L-M) (Warren and Brown, 1973; Sattler and Ryan, 1973), the Wechsler Intelligence Scale for Children (WISC) (Miller, Chansky, and Gredler, 1970; Miller and Chansky, 1972; Warren and Brown, 1973; Plumb and Charles, 1955; Sattler, Winget, and Roth, 1969; Sattler and Ryan, 1973), and the Wechsler Adult Intelligence Scale (WAIS) (Walker and Hunt, 1965; Schwartz, 1966) to be rather difficult to score and relatively low in interscorer agreement. One aspect of interscorer differences is the relatively large number of clerical errors discovered in several studies (Williams, 1966; Warren and Brown, 1973; Miller, Chansky, and Gredler, 1970; Miller and Chansky, 1972).

Race of examiner has been reported as influencing test scores significantly in some investigations (LaCrosse, 1964; Forrester and Klaus, 1964; Katz, Roberts, and Robinson,
1965; Sattler, 1966; Bucky and Banta, 1972). and as not having a significant influence in others (Canady, 1936; Schacter and Apgar, 1958; Lipsitz, 1966; Pelosi, 1968; Barnebey, 1972). Likewise the examiner's sex has been reported to be a significant factor influencing test scores in some investigations (Cieutat, 1965; Quereshi, 1968; Pendersen, Shinedling, and Johnson, 1968) but not in another (Cieutat and Flick, 1967). Examiner variables such as rapport (Exner, 1966; Reiss, 1970), adjustment (Young, 1959), quality of examiner-subject relationship (Sacks, 1952; Marling, 1959), administrative procedures (Zigler and Butterfield, 1968), tester warmth (Hersh, 1969), and examiner style (Thomas, Hertzig, Dryman, and Fernandez, 1971), have also been investigated with mixed results. In addition, there is some evidence to indicate that the professional background and theoretical orientation of the examiner may influence intelligence test results (Bennett, 1970).

Some investigations have reported non-significant findings relative to the issue of the influence of the examiner's experience on resultant test scores (Jordan, 1932; Curr and Gourlay, 1956; Plumb and Charles, 1955; Schwartz, 1966; Sattler and Ryan, 1973) and others have reported significant findings (LaCrosse, 1964; Smith, May, and Lebovitz, 1966). There has been some support for Rosenthal's belief that the more experienced experimenters
make "better biasers" (Rosenthal, 1967) because of their deeper involvement with their work (Friedman, 1967). Other, however, have disagreed with this view indicating that the more experienced experimenters relied more heavily on their factual observations and were, therefore, less likely to bias the results of the investigation (Ingraham and Harrington, 1966; Barber and Silver, 1968). There is a need for defining the experience variable more precisely in future testing studies because what was called "experienced" in one investigation may have been comparable to the "inexperienced" group in another study (Bennett, 1970).

An examiner variable which has in more recent years become of increased concern (in addition to those variables mentioned above) is that of examiner expectancy effects (Kintz, Delprato, Mettee, Persons, and Schappe, 1965; Sattler and Theye, 1967). An examiner's previous knowledge of what the level of a subject is likely to be may well influence the subsequent administration and scoring of the test. A more detailed discussion of this interesting and crucial variable is presented in the following section.

Experimenter/Examiner Expectancies

The general term, "self-fulfilling prophecy" is referred to more specifically as the "experimenter (or examiner) bias effect" when discussing a phenomenon related
to experimental (or examination) situations. The experimenter (or examiner) biasing effect has been investigated in studies designed to approach the topic using different strategies and purposes as follows:

1. attempting to demonstrate that the expectancies of the experimenter (examiner) affects the subject's performance

2. attempting to evaluate the effects of the experimenter- (or examiner-) subject interaction on the subject's performance on specific, standardized tasks

3. attempting to examine the influence of expectancy on pupils' learning in classroom settings

4. attempting to assess the effect of the experimenter's (examiner's) expectancy on the perception and/or evaluation of the subject's performance (eg. scoring) (Dangel, 1970).

Two summaries, reviewing the influence of the experimenter (examiner) upon the outcomes of the experiment, have been published (Rosenthal, 1966; Rosenthal and Rosnow, 1969). The studies described were designed to demonstrate that the experimenter himself is a significant factor influencing the outcome of the experiment he conducts. The findings generally indicate that the experimenter's influence helps him to obtain the results he expected to find. The work in this area by Rosenthal has been so extensive, in fact, that the presence of experi-
menter (examiner) bias is often referred to as the "Rosenthal Effect" (Masling, 1966). Rosenthal’s work has not gone without challenge, however. Several investigators, interested in the experimenter (examiner) expectancy effect have criticized his work, and thereby his conclusions, on the basis of poor methodology (Barber and Silver 1968; Barber, Calverley, Forgione, McPeake, Chaves, and Bowen, 1969; and Thorndike, 1968).

Administering psychological evaluations using various instruments may be considered somewhat analogous to carrying out an experiment (Sattler, Hillix, and Neher, 1970). Thus, the psychological examiner finds himself in a position quite similar to that of an experimenter. Just as the "experimenter bias effect" has been demonstrated to be a factor in the findings of experiments so too has the "examiner bias effect" been evidenced in the administration and scoring of tests utilized in psychological evaluations.

Investigations into possible examiner biasing effects using projective instruments have demonstrated that examiners can influence their subject's Rorschach performances. (Marwit, 1969; Marwit and Marcia, 1967; Masling, 1965; Strauss, 1968; Strauss and Marwit, 1970; Marwit, 1971). Results on the Thematic Aperception Test (TAT) have also been shown to be influenced by examiner expectations (Simmons and Christy, 1962; Turner and Coleman, 1962; Rosenthal, 1963).
Other instruments used in psychological evaluations have also been used in studies designed to evaluate the effect of examiner bias. The results obtained, however, have been mixed. In the case of the Vineland Social Maturity Scale some evidence for examiner bias was reported. (Behrle, 1968) Relative to the Bender Visual Motor Gestalt Test (Gravitz, 1970) and speech audiometric tests (Hipskind, 1969) no significant results for the examiner expectancy effect were uncovered.

Examiner Expectancy and IQ Scores

For some time it was assumed that the more objective tests used in psychological evaluations were not subject to the biasing influence of the examiner's expectancies on the scores obtained as was true of the more subjective testing procedures (eg. projective). However, the results of studies which have investigated the affects of examiners' expectancies on intelligence test scores by methods which involved the actual administration of the intelligence tests (or parts of intelligence tests) are contradictory. The designs utilized and the procedures followed in setting up the pre-test information expectancies were also varied. The highlights of these studies are described below in order to establish their relationship to the development of the study presently under consideration.

The Wechsler Adult Intelligence Scale (WAIS) was the instrument used in two studies designed to evaluate the
effect of examiner's pre-knowledge of examinee's performance levels. The WAIS Block Design subtest score was the dependent variable in the first study (Wartenburg-Ekren, 1962) in which the eight subjects (undergraduate students) were told that half of thirty-two examinees they would be testing were "high" in scholastic achievement and half were "low". No significant difference was found between the scores subsequently obtained by the "high" and "low" achievers. Likewise the results of the second study (Getter, Mulry, Holland, and Walker, 1966) demonstrated no significant effect in the WAIS scores of college students for the expectancy established by pre-test information given to the examiners.

The Stanford-Binet (Form L-M) was the instrument utilized in a study performed to investigate the relationship of referral reports (positive and negative) to test results as well as the relationship among test results, tester warmth, and testee social responsiveness (Hersh, 1970). This study is especially interesting because of the attempt to simulate natural conditions as closely as possible rather than using a laboratory setting. Twenty-eight graduate students in testing evaluated fifty-six, five and six year old head-start pupils. The results indicated that, although there was no difference in testee "warmth" and no difference in testing time between the two referral conditions (positive and negative), when children
were referred under the positive condition they received significantly higher IQ scores than when they were referred under the negative condition. Thus, it seems apparent that the teacher's referral has a definite influence upon the psychological examiner's scoring of a subsequently administered intelligence test.

Five studies, designed to investigate the effect of pre-information on the scoring of intelligence test by psychological examiner's and involving the actual administration of the tests, have used the Wechsler Intelligence Test for Children (WISC). As has been the case in studies using other instruments, the results have been both positive and negative.

Three studies have found no significant examiner' expectancy effect relative to intelligence test scores for differing types of pre-test information (Dangel, 1970; Gillingham, 1970; Saunders and Vitro, 1971). All three studies suffered from methodological problems which limited their generalizability involving the establishment of the studies' "true" purposes, and the numbers and kinds of subjects which were used. One study sought to include (in the prepared pre-test information) they types of information typically found on referrals to school psychologists (Dangel, 1970). The areas of behavioral comments included verbal expression, social ability, task orientation, and emotional behavior. The completed forms, however, as
designed by the investigator to convey "negative", "positive", or "neutral" impressions were not evaluated along those dimensions by anyone other than the investigator himself (i.e., the referral conveyed "positive", "negative", or "neutral" impressions because the investigator said they did). Although the investigation outlined above used the "standard" referral form, the subjects (examiners) were told that their results would not be used in making placement decisions. That circumstance does not seem to have been designed to replicate conditions in the "real" world of the school psychologist as nearly as it might have been. Another study, which concluded that the influence of the examiner's expectancy was not a great problem in intelligence testing, did not set up the pretest information condition appropriately (Gillingham, 1970). The practice of giving the subjects (examiners) "predicted WISC IQ scores" as a means of setting up the expectancy effect seems very artificial, quite unlike conditions typically found in everyday practice. The terms "retarded" or "gifted" were written next to each name on the lists of children prepared for the subjects (examiners) to test in another study designed to see if the reason for referral biased the examiner's assessment of intelligence (Saunders and Vitro, 1971). These lists were given to each subject after they had received verbal instructions indicating that teachers had conducted a scoring process to
determine which students would be placed into the "gifted" program and which would be placed in the "retarded" program. Their test results were to be used in making the final determination. While at first glance this "cover story" may seem to be well conceived, it is probably true that the gap between how the examiner thought the child was going to perform and how the child subsequently performed, caused by the "gifted" and "retarded" expectancies, was much greater than is usually found under typical referral conditions in the public schools (eg. youngsters who are referred for possible placement in the gifted program do not frequently turn out to be retarded).

All three of the investigations referred to above used graduate students who had taken course work in the administration of the WISC as subjects (examiners). The numbers of examiners involved were relatively small (eight, six and three), and in none of the studies were the examiners randomly selected. Whether or not graduate students, no matter how well trained, can be made aware of the many ramifications of intelligence test results as is the practicing school psychologist is certainly open to question. It is doubtful, however, that this can be the case.

Two studies have found significant examiner expectancy effects relative to intelligence test scores for differing types of pre-test information (Larrabee and Kleinsasser,
Despite the differences in results the investigations mentioned above, which found significant results for the effect of pre-test information on the obtained intelligence test scores, suffered from methodological problems which were similar to those described previously for the studies which found no significant biasing effect. The announced purposes of the studies were not really sufficient to overcome suspicions about what the true purpose was. Also, the pre-conditions established were not comparable to the pre-test (referral) conditions typically encountered by school psychologists in their everyday activities. The examiners were told that they were to help examine the reliability of the WISC for subjects who were exceptionally high and low in intelligence; contrived IQ scores from previous tests were provided as the only source of pre-test information variance. (Schroeder and Kleinsasser, 1972).

Likewise the two studies which found significant results also used relatively small numbers of subjects (five and eighteen) and did not choose the subjects randomly. In both cases the subjects were graduate students who were taking course work in intellectual assessment.

Investigators studying the effect of biased pre-test information on examiner's scoring of the WISC have reported both significant (Larrabee and Kleinsasser, 1967;
Schroeder and Kleinsasser, 1972) and non-significant results (Dangel, 1970; Gillingham, 1970; Saunders and Vitro, 1971). These studies have also failed to use random selection of the subjects (examiners). They also have failed appropriately to approximate the everyday referral process in which a school psychologist is typically involved. This is true not only relative to the subjects which were used (in all cases graduate students were used) but also relative to the "cover" story conditions established for the investigations.

Examiner Bias/Pre-Test Information/Scoring of Intelligence Tests

In the previous discussions presented above the examiner expectancy effect was evaluated in terms of the examiner-examinee interaction and the resultant effects upon the subjects' performance and/or the examiners' interpretations of those performances. In this section several studies which investigated the influence of pretest information on examiners' scoring of intelligence tests without using "live" subjects will be reviewed.

Experienced Subjects (Examiners)

Most of the studies on the influence of examiners' expectancies, as has been noted above, have used graduate students as subjects and, therefore, may be open to the criticism that the results may not be relevant for the 'real' world where experienced psychological examiners
may not be biased in the same manner or degree. Two relatively recent studies of interest here, however, did use experienced practicing psychological examiners (Auffrey and Robertson, 1972; Jacobs and DeGraaf, 1973). One of these used school psychologists as the target population under investigation. The later study (Jacobs and DeGraaf, 1973) was, in fact, the only one involving school psychologists that this investigator was able to uncover. Although the purposes of both studies were similar (e.g. to investigate the influence of examiner expectancy on intelligence test scores) and both studies used a relatively large number of subjects (32 and 36), their methods of investigation as well as their results were quite different.

In addition to examining the effects of expectancy upon school psychologists' scoring of the WISC, the Jacobs and DeGraaf study examined the effects of the examiner's race and its interaction with the subject's race in determining intelligence test scores. The 32 school psychologists (16 black and 16 white) who served as subjects for the study were not randomly selected. The rather clever method used in the design was to have each school psychologist individually view a video tape recording of a WISC administration after hearing the reading of fictitious case histories (one positively oriented and the other negatively oriented). The subjects were then
asked to score the WISC administration on the tapes. The results of this study, while not supporting the concept that the races of the examiner and child influence the test scores derived, did support the hypothesis that expectancy, as derived through pre-test (case history) information, has a significant effect on the scores which the examiners obtained. The data also suggested that the expectancy effect was strongest when the race of the examiner and the subject were the same. Methodological problems encountered included the fact that no explanation was given as to what type of responses were used. The reader was left to wonder just how ambiguous the responses may have been. Also, the pre-test information, while containing comments as to the child's home background, attitude toward school, and scholastic history, apparently reported nothing about his intellectual ability. This does not seem to be a very realistic condition in light of the typical referral forms generally used in the schools for making referral for psychological evaluations.

Contrary to the results reported above, no significant differences in the scoring of WISC and WAIS protocols among examiners who received differing conditions of the pre-test case history information (pessimistic, optimistic, and none) were found in a study by Auffrey and Robertson. Thus, their hypothesis that the scoring of WISC and WIAS would be systematically biased by differing
types of pre-test information was not supported. The study, however, like that of Jacobs and Degraaf, did not use random selection of subjects although it did take into consideration three levels of the subject variable; experts, interns, and novices. Three additional weaknesses of methodology may have, in the opinion of this investigator, contributed to the non-significant findings of the study. First, while the responses on the protocol were designed to represent an "ambiguous scoring situation" no attempt was made to ascertain the degree of ambiguity through pre-study pilot procedures. Thus, the reader is left very much to wonder just what types of protocols were used. Secondly, there was no "cover story" proposed when the subjects were presented with their tasks. They were simply told to read the case history information and, then, score the test. This seems very artificial. Although it was reported that none of the 36 examiners were able to identify either of the independent variables when interviewed after their tasks were completed, it is somewhat difficult to believe that this group of subjects were not keenly aware that their "product" (scoring of responses) would be closely scrutinized. Lastly none of the case-history summaries contained any information or statement about the child's intellectual ability. Therefore the pre-test information which was designed for the expressed purpose of setting up expectancies for examiners
relative to intellectual ability did not really fill the bill! In this respect (lack of comment on intellectual ability) the case-histories were also probably not relevant to those generally reviewed by psychological examiners in their day-to-day activities.

In summary, it is apparent that the two studies designed to assess the biasing effect of pre-test information on the scoring of intelligence tests which used experienced examiners as subjects resulted in different findings. The first (Jacobs and DeGraaf) found that pre-test information significantly affected the resultant intelligence test scores. The other (Auffrey and Robertson) found that no significant effect for differences in pre-test case histories was found in the WISC IQ scores obtained. Several methodological problems were noted including the use of non-randomly selected samples, ambiguity as to how the protocols were derived (especially in relation to the ambiguous responses used), and the use of procedures which apparently made no attempt to disguise the true intent of the studies.

**WISC Verbal Scale Subtests**

Three studies have been conducted to investigate the examiner expectancy effect as it relates to specific subtests of the WISC. Two of these studied expectancy effects in the scoring of WISC Vocabulary subtest items and found that the scorer's expectancies did exert a
significant influence upon the scoring process (Simon, 1969; Sattler, Hillix, and Neher, 1970). The latter study had also studied the Comprehension subtest but no significant bias effect was found. Another investigation looked at the scoring of the Comprehension subtest but no significant bias effect was found. Another investigation looked at the scoring of the Comprehension, Similarities, and Vocabulary subtests and found that the scoring of both the Comprehension and the Similarities subtests was affected by pre-test knowledge of the child's past academic and intellectual level (Egeland, 1969).

As has often been the case, all three studies used volunteer students for subjects, however, relatively large samples (46 and 72) were used in two of them (Egeland, 1969; Simon, 1969). The generalizability of Simon's results may be questionable because of his use of undergraduate students to whom he gave a set of "Standard Scoring Instructions" (actually the instructions for scoring the WISC Vocabulary subtest) and told them to rate twenty responses. The number and origin of the ambiguous responses was spelled out in the Egeland study. Thirty-one ambiguous responses (eight in Comprehension, nine in Similarities, and fourteen in Vocabulary) were selected by inspecting the test records in a public school psychological file. The numbers of ambiguous responses used seems to make it apparent that this was an especially
difficult protocol to score. Both studies used carefully developed "cover stories". In Egeland's study the subjects were given fictitious information regarding the child's IQ score from a previous group test (80 IQ in the case of the "slow learner" and 130 IQ in the case of the "above average" child) in addition to appropriately leveled standardized achievement scores. The subjects were then asked to score the subtests in order to help their instructor make recommendations for homogeneous groupings. In Simon's study the subjects were given a mini-page booklet which, among other things, explained that the child was being tested because his teacher felt he was reading far above (for the "bright" condition) or far below (for the "dull" condition) grade level. Testing was said to be needed in order to determine a more appropriate reading group placement. At the conclusion of Simon's study a rather extensive post experimental survey was conducted to ascertain whether or not the subjects had been aware of the study's true purpose. The subjects were asked to describe how they felt while participating in the study and also to indicate any suspicions which they might have regarding the investigation's true purpose. Although several subjects reported that they suspected that the true purpose of the study was not what it was purported to be, none were able to offer accurate guesses as to the actual intent.
Although some methodological problems which might cast doubt upon the validity and generalizability of the findings were involved, it has been demonstrated that the scoring of certain subtests on the Verbal Scale of the WISC are subject to examiner bias in the form of pre-test information regarding the child's responses which are being scored. The Vocabulary subtest (Simon, 1969; Sattler, Hillix, and Neher, 1970) as well as the Comprehension and the Similarities subtests (Egeland, 1969) have been found to be susceptible to these conditions. The importance of developing a rationale for the generation and use of ambiguous responses (Egeland) for planning a convincing, relevant "cover story" (Egeland, 1969; Simon, 1969), and for using a post study inquiry to determine how successfully you have masked the true purpose (Simon, 1969) has also been made evident.

**WAIS Verbal Scale Subtests**

The results of two investigations which studied the possible influence of expectancy upon examiners' scoring of the WAIS Verbal Scale subtests have been reported (Sattler, Hillix, and Neher, 1970; Sattler and Winget, 1970). One of these studies used taped scripts pre-recorded to follow the "superior" or "average" performances on the WAIS. The subjects, who were graduate students in testing, then "tested" the examinees for the announced purpose of investigating the WAIS Verbal Scale as a
predictor of academic success.

In summary, it is apparent that the possibility for scoring the same ambiguous responses on intelligence tests differently depending upon what setting the responses appear in ("superior" or "average") has been demonstrated. Although the effect of pre-test information on scoring per se was not demonstrated in these studies, it is obvious that some biasing influence does exist. The WAIS Verbal Scale subtests are similar to the subtests of like name on the WISC, thus, it can be assumed that a similar effect may be in operation relative to that particular intelligence test as well.

Conclusions

The review indicates that there is some evidence to suggest that the experimenter expectancy effect reaches beyond the laboratory. The psychological examiner, whose role is in many respects similar to that of an experimenter, has been shown to be influenced by pre-test information in the test results he obtains. This condition has been demonstrated not only with the more subjectively scored projective tests but also with the intelligence tests previously considered to be very objective and, thus, not open to the effect of examiner bias.

Most of the studies designed to assess the effect of examiner expectancy on the administration and/or scoring of intelligence tests have used graduate students as
subjects. The results obtained, relative to significance of the biasing effect, have varied. Only one investigation (Jacobs and DeGraaf, 1973) utilized practicing school psychologists as subjects. In that study significant results were obtained for the expectancy effect. Thus, there is a need to further extend and expand the scope of investigations relating to examiner expectancy influences with a relatively large population of psychologists working in the schools. Random selection of subjects (examiners) which has been recommended as critical for studies designed to test the expectancy effect (Hammond, 1954) has not been generally used. In most cases the subjects were "volunteers" from graduate classes in intellectual assessment. In addition, the number of subjects involved in many studies was quite limited. Therefore, the present study, while concentrating on school psychologists specifically, uses random selection of a relatively large (compared to earlier studies) sample of subjects (examiners).

Although the results of many studies involving the scoring of intelligence tests by experienced and inexperienced examiners seems to indicate that the level of experience is not a significant variable, the findings are confusing because of the different meanings covered under the labels of "experienced" and "inexperienced" in the various investigations. In school psychology, at
least in Ohio, the term "intern" connotes a specific and readily identifiable level of school psychologists. Any discussion of findings relevant to differences between intern school psychologists and experienced school psychologists, therefore, has meaning relative to professional activities performed in the "real" world. The present study investigates the effect of pre-test information on more than one level of the examiner variable (intern school psychologist and experienced school psychologist) as has been recommended previously (Sattler and Theye, 1967).

Previous investigations have demonstrated that the Verbal Scale of the WISC, because of the relatively more subjective scoring criteria used in most of the subtest, is most likely to be susceptible to influences of examiner bias in scoring. Specifically the Information, Comprehension, Similarities and Vocabulary subtests have all been found to be open to this biasing condition. The present study, therefore, is concerned specifically with responses given on the four WISC Verbal Scale subtests listed above.

With the exception of a few (Dangel, 1972; Sattler and Winget, 1970) most of the studies reviewed previously, whether they included the actual test administration and scoring or just the interpretation (scoring) of test responses, involved cases where the children's
IQ scores were in the "average" range of intellectual ability. There is a need in the present study to broaden the scope of inquiry and to examine cases which relate to a wider range of IQ scores. To do so means that a greater number of relevant implications can possibly come into review. Therefore, both "average" and "below average" IQ protocols are utilized in the present study.

Three major problems which must be confronted in investigations designed to assess the effect of pre-test information (referral) on examiners' scoring of intelligence scores are as follows:

1. The task must be presented to the subjects (examiners) in a manner that does not reveal the true purpose of the study.

2. The background and types of pre-test information which are used must be relevant to the subjects' (examiners') everyday activities and must be "believable". If not, the artificiality of the situation will surely influence the results obtained.

3. The quantity and quality of the responses used must be given careful consideration. The questions of "what is an ambiguous response?" and "how many ambiguous responses are found in a typical referral?" need to be answered.

Reports of previous studies have expressed varying degrees of concern with each of these three major problem
areas. The design of the present study combines those techniques which have been demonstrated to be successful in earlier studies with newly devised strategies in order to respond more appropriately to the problems outlined above.
CHAPTER III
METHODS AND PROCEDURES

Overview

Chapter Three presents an analysis of the general design of the study, an outline of the statistical procedures, a description of the subjects, a review of the instrumentation, an outline of the preparation of materials, a review of the pilot study, and a summary of the general procedures. A concluding section summarizes the most significant aspects of the topics mentioned above.

General Design of the Study

The design of the study involves using the same experimental procedure with two similar but separate situations ("average" IQ case and "below-average" IQ case) as outlined in Figures 1 and 2.

Essentially the design of the study is a 2x3 factorial design. The first independent variable, school psychologists, has two levels, intern school psychologists and experienced school psychologists. The other independent variable, pre-testing information, has three levels identified as "positive", "negative", and "none". The six dependent variables in the "average" case as well as
Figure 1
"Average" IQ Case

<table>
<thead>
<tr>
<th>Condition A (positive)</th>
<th>Intern</th>
<th>Experienced</th>
</tr>
</thead>
<tbody>
<tr>
<td>( A_1 )</td>
<td>( I_1, I_4, I_7, I_{10} )</td>
<td>( E_1, E_4, E_7, E_{10} )</td>
</tr>
<tr>
<td>( A_2 )</td>
<td>( I_{13}, I_{16}, I_{19}, I_{22} )</td>
<td>( E_{13}, E_{16}, E_{19}, E_{22} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition B (negative)</th>
<th>Intern</th>
<th>Experienced</th>
</tr>
</thead>
<tbody>
<tr>
<td>( B_1 )</td>
<td>( I_2, I_5, I_8, I_{11} )</td>
<td>( E_2, E_5, E_8, E_{11} )</td>
</tr>
<tr>
<td>( B_2 )</td>
<td>( I_{14}, I_{17}, I_{20}, I_{23} )</td>
<td>( E_{14}, E_{17}, E_{20}, E_{23} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition C (none)</th>
<th>Intern</th>
<th>Experienced</th>
</tr>
</thead>
<tbody>
<tr>
<td>( C )</td>
<td>( I_3, I_6, I_9, I_{12} )</td>
<td>( E_3, E_6, E_9, E_{12} )</td>
</tr>
<tr>
<td></td>
<td>( I_{15}, I_{18}, I_{21}, I_{24} )</td>
<td>( E_{15}, E_{18}, E_{21}, E_{24} )</td>
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</tbody>
</table>
Figure 2
"Below-Average" IQ Case

<table>
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<th>Condition A</th>
<th>Intern</th>
<th>Experienced</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>I₁ I₄ I₇ I₁₀</td>
<td>E₁ E₄ E₇ E₁₀</td>
</tr>
<tr>
<td>A₂</td>
<td>I₁₃ I₁₆ I₁₉ I₂₂</td>
<td>E₁₃ E₁₆ E₁₉ E₂₂</td>
</tr>
<tr>
<td>Condition B</td>
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<td>(negative)</td>
<td>B₁</td>
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<td></td>
<td>I₂ I₅ I₈ I₁₁</td>
<td>E₂ E₅ E₈ E₁₁</td>
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<td>B₂</td>
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<td></td>
<td>I₁₅ I₁₈ I₂₁ I₂₄</td>
<td>E₁₅ E₁₈ E₂₁ E₂₄</td>
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</tbody>
</table>
in the "below average" case are scores obtained on the Wechsler Intelligence Scale for Children. They are as follows: Information subtest standard score, Comprehension subtest standard score, Similarities subtest standard score, Vocabulary subtest standard score, Verbal Scale IQ score, and Full Scale IQ score.

**Statistical Procedures**

The resultant standard scores on the four WISC subtest, the Verbal Scale IQ score, and the Full Scale IQ score were analyzed using a multivariate analysis of variance procedure identified as "MANOVA" which is available through the Instruction and Research Computer Center of The Ohio State University.

**Subjects**

The forty-eight subjects chosen for the study include twenty-four intern psychologists and twenty-four experienced school psychologists. The twenty-four experienced school psychologists (one or more years as a certificated school psychologist) were randomly selected from a total of eighty-five school psychologists serving Central Ohio in the following counties: Delaware, Fairfield, Franklin, Licking, Madison, Morrow, Muskingum, Richland and Union. (Those Central Ohio school psychologists who had knowledge of this study through participation in coursework at The Ohio State University were not included in the sample population prior to the random selection.)
The twenty-four intern school psychologists were randomly selected from a total of twenty-nine intern school psychologists serving in Ohio public schools under the supervision of The Ohio State University and Ohio University.

Instrumentation

Data were collected through the scoring of responses on two Wechsler Intelligence Scale for Children protocols, one "average" IQ case and one "below-average" IQ case. The Wechsler Intelligence Scale for Children (WISC) is widely used by school psychologists as a measure of general intelligence. It was published in 1949 and standardized on a sample of two hundred children (one hundred boys, one hundred girls) at each of eleven age levels (age five through age fifteen). The sample was drawn with the variables of geographic area, urban-rural, and parental occupation taken into consideration. Only white children were included in the sample.

Preparation of Materials

In order to present the subjects with the experimental situation described above it was necessary to prepare two kinds of materials, pre-testing referral information and WISC protocols. The pre-testing referral information included three types as follows: positive, negative, and none. The two WISC protocols prepared included one "average" case and one "below-average" case.

Background data needed to prepare both the pre-
testing referral information and the WISC protocols was gathered from the files of the Pupil Personnel Department of the Franklin County Schools. All child study cases which had been conducted by school psychologists in the Franklin County Schools during the five year period preceding July, 1973, were available to the investigator. Those cases which met the following criteria were selected for potential review:

1. included an administration of the Wechsler Intelligence Scale for Children,

2. the WISC IQ score obtained was between 69 and 110,

3. the child's chronological age at the time of testing was between 8-0 and 12-0,

4. there were complete written responses to the WISC Verbal Scale Subtests, and

5. the psychological report was accompanied by a written referral describing the problem as originally presented to the school psychologist.

After processing the available cases through the screen as defined by the criteria outlined above, two hundred twenty-seven cases in the "below-average" category remained as did four hundred twenty-seven cases in the "average" category. Of these one fifth (forty-four "below-average" cases and eighty-four "average" cases) were randomly selected by the investigator for a thorough
review. This review included the taking of notes on the behavioral descriptions used in the "description of the problem" sections of the psychological referral and the listing of "ambiguous" responses given to items on four of the WISC Verbal Scale subtests. These were Information, Comprehension, Similarities, and Vocabulary. "Ambiguous" responses were defined by this investigator as those responses which are not readily scored by using the scoring criteria presented in the WISC manual.

The behavioral descriptions gleaned from the "description of the problem" sections of the psychological referrals were used by this investigator to prepare fourteen new "description of the problem" paragraphs. Seven of these paragraphs were designed to be positive in nature while the remaining were written to include a preponderence of negative comments.

Four WISC protocols were prepared incorporating the appropriate number of ambiguous responses selected from the review discussed above. Two of these protocols were designed to result in "below-average" IQ scores in the 69-89 range. The other two protocols were designed to describe an "average" case with IQ scores in the 90-110 range. Since the review outlined above had indicated that the typical number of ambiguous responses to the WISC Verbal Scale subtests was fourteen for both the "average" and the "below-average" cases, there were
fourteen ambiguous responses included on each of the four protocols prepared by the investigator.

Ratings by Experts

Ten school psychologists who attended a graduate seminar in school psychology with the investigator at The Ohio State University rated the "description of the problem" paragraphs prepared by the investigator. A Likert-type scale was used to rate the paragraphs on the following dimensions:

1. positive/optimistic-negative/pessimistic-relative to the child's potential to learn and succeed in school

2. believable-unbelievable-relative to the total impact of the paragraph's content

In order to determine if the two protocols which the investigator had designed to be "average" were indeed perceived as "average" by others and if the two cases prepared as "below-average" were indeed perceived by others to be "below-average" protocols these same ten school psychologists were again involved. Each of them scored two of the four WISC protocols (one of the two "average" cases and one of the two "below-average" cases).

The ratings by the ten school psychologists indicated that all of the "description of the problem" paragraphs were seen as "believable" and most were rated as "highly believable". Of the seven "positive" paragraphs two were
rated higher than the others and of the "negative" paragraphs two also stood out as more negative than the other five. The scoring of both the "average" and the "below-average" protocols indicated that the protocols had been appropriately prepared as "average" and "below-average" cases respectively. It was also apparent that in the majority of cases the ten school psychologists scoring the protocols identified as being ambiguous those responses specifically designed by the investigator to be perceived as ambiguous.

Referrals

Using the "description of the problem" paragraphs rated by the ten school psychologists as "believable" as well as "very positive" or "very negative", two "positive" referrals ("Request for Child Study Services") and two "negative" referrals ("Request for Child Study Services") were prepared. The referrals were designed to approximate in format the types of referrals commonly used in the Central Ohio area. They included sections on "Identifying Information", "Family Data", "Standardized Test Results", and "Description of the Problem".

On all referrals, both "positive" and "negative", the child's and the teacher's names were the same. Differences, other than those in the "Standardized Test Results" and the "Description of the Problem" sections which are explained below, are found in the "Family Data"
and the "Educational History" sections. The "positive" referral indicates that the child's father is a bank manager, that he has one sibling, that he is a fourth grader, and that his parents are anxious for this evaluation. The "negative" referral indicates that the child's father is a plumber, that he has four siblings, and that his grandmother lives with the family. The "negative" referral also indicates that the child, Chris Jones, has attended his present school for four years, is ten years old, and is in the third grade. Thus, the supposition that he has been retained is reinforced.

The two "positive" referrals (see Appendices B and C) were similar in content except for the different "Description of the Problem" sections and different information in the "Standardized Test Results" section depending upon whether the referral was used with the "average" or the "below-average" protocol, the "Standardized Test Results" section listed the group IQ test score as 95 and group achievement scores as being on grade level. However, when the referral form was paired with the "average" protocol, the "Standardized Test Results" section listed the group IQ test score as 115 and the group achievement scores as being one year above grade level.

The two "negative" referrals (see Appendices D and E) were similar in content except for the different
"Description of the Problem" sections and different information in the "Standardized Test Results" section depending upon whether the referral was used with the "average" or the "below-average" protocol. If the referral form was used with the "below-average" protocol, the "Standardized Test Results" section listed the group IQ test score as 64 and the group achievement scores as being a year and a half below grade level (two and a half years below expected grade level). However, when the referral form was paired with the "average" protocol, the "Standardized Test Results" Section listed the group IQ test score as 84 and the group achievement scores as being a half year below current grade level (one and a half years below the expected grade level).

**Protocols**

Using the ambiguous responses to four WISC subtests (Information, Comprehension, Similarities, and Vocabulary) which had been gleaned from the review of a random sample of completed protocols and which had been scored and rated as ambiguous by the group of ten school psychologists, the investigator prepared two complete WISC protocols. One was designed to be scored in the "average" IQ range (90-110) while the other was designed to be scored as "below-average" in IQ (69-89). Both protocols contained fourteen ambiguous responses in the four subtests as follows: Information-1, Comprehension-4, Similar-
ities-2, and Vocabulary-7.

The "average" protocol (see Appendix F) was designed to be scored with a Verbal Scale IQ score of 103, a Performance Scale IQ score of 100, and a Full Scale IQ score of 101. All of the Performance Scale Subtests and the Arithmetic subtest on the Verbal Scale has the responses to items pre-scored on the protocol, so that the only steps left to the school psychologists were addition and transformation of the raw scores into scaled scores. On the Verbal Scale, however, the responses required the psychologists' judgment in determining what rating each particular item should receive. This use of judgment was particularly critical when the items were ambiguous and thus not readily scorable using the WISC manual.

The items for which ambiguous responses on the "average" protocol were provided are as follows: Information-Number 14; Comprehension-Numbers 5, 6, 7, and 9; Similarities-Numbers 7 and 8; and Vocabulary-Numbers 6, 10, 11, 12, 15, 17, and 18. In the case of the Information, Similarities, and Vocabulary subtests the responses were designed to vary in the degree of credit which could most probably be given to them. For example some of the responses were perceived as ambiguous between a "1" or a "0" while others were most probably either a "2" or a "1".

The "below-average" protocol (see Appendix G) was designed to be scored with a Verbal Scale IQ score of 81,
a Performance Scale IQ score of 80, and a Full Scale IQ score of 79. On all of the Performance Scale subtests and on the Arithmetic subtest of the Verbal Scale, the responses to the items were pre-scored on the protocol. Thus, the only steps left to the school psychologists were addition and transformation of the raw scores into scaled scores. On the Verbal Scale, however, the responses to the items were not pre-scored and required the use of the school psychologists' judgment in determining what rating each particular item should receive. This use of judgment was particularly critical when the items were ambiguous and thus not readily scorable using the WISC manual.

The items for which ambiguous responses on the "below-average" protocol were provided are as follows: Information- Number 14; Comprehension-Numbers 4, 5, 6, and 7; Similarities-Numbers 7 and 8; and Vocabulary-Numbers 9, 10, 11, 12, 13, 15, and 17. In the case of the Information, Similarities, and Vocabulary subtests the responses were designed to vary in the degree of credit which could most probably be given to them. For example, some of the responses were designed to be perceived as ambiguous between a "1" or a "0" while others were most probably either a "2" or a "1".

Pilot Study

Prior to beginning the actual study this investigator
conducted a pilot study to determine if the announced intent of the study would appropriately mask the actual purpose, to aid in the discovery of procedural errors which could prove to be irritating during the collection of data, and to see if a trend toward the anticipated effect in the data would be evidenced.

Twelve volunteer school psychologists from outside of Central Ohio were secured at The Spring Meeting of the Ohio School Psychologists's Association. Each of them was provided with instructions and a set of materials for one of the six conditions ("positive" referral information-average protocol, "negative" referral information-average protocol, no referral information, "positive" referral information-below average protocol, "negative" referral information-below average protocol, and no referral information-below average protocol). Following their completion of the task they were asked to respond to a questionnaire (see Appendix H) which ostensibly was designed to register their opinion of the study but which also indicated, by their responses to certain items, whether or not they suspected that the true purpose of the investigation was other than that stated in the introductory materials.

All twelve school psychologists completed the tasks as they were directed to do. Only one of them responded to the questionnaire indicating that they suspected the
ture purpose of the study may not have been as was stated. This school psychologist suggested that the "real" purpose of the study may have been to "...compare scoring of IQ tests among psychologists with varying degrees of experience". This suspicion may quite naturally have arisen by virtue of receiving the protocol to score with no pre-testing (referral) information. Thus, it was the opinion of the investigator that the materials and instructions did appropriately mask the true intent of the study and that, therefore, the resultant data would not be contaminated by the effects of the subjects' suspicions about the study's purpose.

Procedures

After the forty-eight subjects were randomly selected (twenty-four experienced psychologists and twenty-four intern psychologists), each was contacted by the investigator by telephone to gain agreement for his or her participation in the study. Nothing about the study was discussed at that time except for the approximate amount of time that would be required of participants. Two of the forty-eight originally selected subjects chose not to participate at that time and two new names were randomly selected to replace them as subjects for the study. When the selected subjects agreed to participate, they were given more particular background information about the study using the cover letter (see Appendix I) that was
later sent to them with the materials to be completed.

Once the forty-eight subjects had agreed to participate each was randomly assigned to one of the three conditions: "positive" pre-testing information, "negative" pre-testing information, or no pre-testing information. Next each participant except those who had been assigned to the no pre-testing information condition was randomly assigned to one of two pre-testing information forms, which differed only in the "Description of the Problem" section, within the "positive" or "negative" conditions. This assignment was made with reference to the "average" protocol. The other form was then assigned to the subject as part of their other task, completing the "below-average" protocol. In order to rule out any biasing effect which may be caused by one protocol being scored first by all subjects, the order of protocol presentation was reversed for one-half of the subjects. That is, one-half of the subjects received the "average" protocol first and the other half of the subjects received the "below-average" protocol first.

Each participant received two "packages" of materials, each sealed in their own manila envelope. A set of directions (see Appendix J) accompanied each large envelope and instructed the subjects to complete package "1" first and mail it in before opening and completing task "2". Each of the smaller envelopes contained a cover letter
(see Appendix I), a set of instructions (see Appendices K and L), a referral form providing the pre-testing information (see Appendices B, C, D, and E) unless they had been assigned to the no pre-testing information condition, and a WISC protocol, either "average" (see Appendix F) or "below-average" (see Appendix G) to be scored. The cover letter in each package identified the purpose of the study as a comparison between recommendations made by school psychologists on the basis of limited amounts of data and those recommendations made as a result of the original child study which had been completed at an earlier date. The participants were also instructed to complete the tasks independently and not to discuss the study with other school psychologists until they were notified that the "packages" had been completed and collected. After all the data was returned, a questionnaire (see Appendix H) was sent to each participant in an attempt to determine whether the results of the study may have been influenced by suspicion of its actual intent.

Summary

This chapter includes an overview of the content; an analysis of the general design; a description of the subjects and the materials, a review of the pilot study, an outline of the general procedures, and a description of the statistical analysis.

Forty-eight school psychologists (twenty-four exper-
enced psychologists and twenty-four intern school psychologists) served as subjects for the study which was organized into a 2x3 factorial design. One independent variable, school psychologists, has two levels, experienced school psychologists and intern school psychologists. The other independent variable, pre-testing (referral) information, has three levels: "positive" pre-testing information, "negative" pre-testing information, and no pre-testing information. The six dependent variables are scores on the Information, Comprehension, Similarities, and Vocabulary subtests of the WISC along with WISC Verbal Scale and Full Scale IQ scores.

Materials were prepared to make the tasks as relevant as possible and included four pre-testing referral forms (two positively oriented and two negatively oriented) and two WISC protocols (one "average" case and one "below-average" case). A pilot study was conducted to determine whether or not the true purpose of the study was masked by the expressed purpose and to refine the procedures for data collection.

The agreement to participate by the subjects was gained through telephone conversations with the investigator. Each participant was then sent a large envelope containing two "packages" (the expressed tasks were to study the referral information, to score the WISC, and to make recommendations for programming) which were
completed and returned to the investigator. A questionnaire, designed to ascertain whether or not the true purpose of the study had been suspected was then sent to each of the subjects.
CHAPTER IV
RESULTS AND DISCUSSION

Introduction

The present study investigated the effects of three different types of pre-test information (positive, negative, and none) on the scoring of WISC protocols by school psychologists, both intern and experienced. The specific WISC subtests under study were Information, Comprehension, Similarities, and Vocabulary. Two WISC protocols, one from an "average" IQ case and one from a "below-average" IQ case, were used in order to determine what differences, if any, the level of IQ might have on the results.

This chapter begins with a review of the results and discussion relative to the following questions:

Question 1 - Is the scoring by intern school psychologists of the "average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

Question 2 - Is the scoring by intern school psychologists of the "below-average" IQ WISC protocol affected by the type of pre-test information (positive, negative,
or none) received? A similar section follows which presents the findings and discusses the results pertinent to the following questions:

Question 3 - Is the scoring by experienced school psychologists of the "average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) they received?

Question 4 - Is the scoring by experienced school psychologists of the "below-average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

The remaining sections of this chapter review data relating to the ratings of the fourteen ambiguous responses, the incidence of mechanical scoring errors, and a check on the subjects' suspicions as to the true purpose of the investigation.

Analyses of the Data - Intern School Psychologists

Question 1 - Is the scoring by intern school psychologists of the "average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

WISC standard score means and standard deviations for the intern school psychologists' scoring of the Information, Comprehension, Similarities, and Vocabulary subtests ("average" IQ case) are presented in Tables 1, 2, 3, and 4 respectively. The Verbal Scale IQ mean scores and
**TABLE 1**

MEAN WISC INFORMATION SUBTEST STANDARD SCORES AND STANDARD DEVIATIONS FOR TYPE OF PRE-TEST INFORMATION AND LEVEL OF EXPERIENCE (AVERAGE IQ CASE)

<table>
<thead>
<tr>
<th>Subject Group</th>
<th>Number of Subjects</th>
<th>Group Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>10.375</td>
<td>.518</td>
</tr>
<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>10.625</td>
<td>.518</td>
</tr>
<tr>
<td>Negative-Experienced</td>
<td>8</td>
<td>10.500</td>
<td>.535</td>
</tr>
<tr>
<td>Negative-Intern</td>
<td>8</td>
<td>10.625</td>
<td>.518</td>
</tr>
<tr>
<td>None-Experienced</td>
<td>8</td>
<td>10.125</td>
<td>.354</td>
</tr>
<tr>
<td>None-Intern</td>
<td>8</td>
<td>10.250</td>
<td>.463</td>
</tr>
<tr>
<td>Subject Group</td>
<td>Number of Subjects</td>
<td>Group Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------</td>
<td>------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>12.250</td>
<td>.707</td>
</tr>
<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>11.875</td>
<td>.835</td>
</tr>
<tr>
<td>Negative-Experienced</td>
<td>8</td>
<td>11.250</td>
<td>1.165</td>
</tr>
<tr>
<td>Negative-Intern</td>
<td>8</td>
<td>11.875</td>
<td>1.356</td>
</tr>
<tr>
<td>None-Experienced</td>
<td>8</td>
<td>10.875</td>
<td>1.126</td>
</tr>
<tr>
<td>None-Intern</td>
<td>8</td>
<td>11.000</td>
<td>2.390</td>
</tr>
<tr>
<td>Subject Group</td>
<td>Number of Subjects</td>
<td>Group Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------</td>
<td>------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>10.375</td>
<td>.916</td>
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<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>10.000</td>
<td>1.069</td>
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<tr>
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<td>10.000</td>
<td>.756</td>
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<td>10.625</td>
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<td>9.750</td>
<td>.707</td>
</tr>
<tr>
<td>None-Intern</td>
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<td>10.125</td>
<td>.991</td>
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<td>Subject Group</td>
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<td>Group Mean</td>
<td>Standard Deviation</td>
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</tr>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>10.375</td>
<td>1.598</td>
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<tr>
<td>Positive-Intern</td>
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<td>9.375</td>
<td>1.302</td>
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<td>1.282</td>
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<tr>
<td>Negative-Intern</td>
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<td>10.125</td>
<td>1.356</td>
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<tr>
<td>None-Experienced</td>
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<td>9.125</td>
<td>1.835</td>
</tr>
<tr>
<td>None-Intern</td>
<td>8</td>
<td>10.500</td>
<td>1.195</td>
</tr>
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</table>
the standard deviations and the Full Scale IQ mean scores and the standard deviations for the intern school psychologists are presented in Tables 5 and 6, respectively.

The results of the two-way analysis of variance between groups when both independent variables (type of pre-test information and level of experience) are considered together are summarized in Table 7. A review of the data presented in Table 7 indicates that significant differences exist only in the standard scores obtained on the Vocabulary subtest, the Verbal Scale IQ scores, and the Full Scale IQ scores. In the cases of the Vocabulary subtest standard score, the Verbal Scale IQ score, and the Full Scale IQ score, the F-statistics of 4.578, 3.356, and 3.305 respectively, are significant at the .05 level of significance.

Considering the significant difference found to exist relative to the interaction effects on the Vocabulary subtest standard scores, the cell means were graphed in Figure 3. The Tukey-HSD Procedure was then used in a post-hoc analysis to determine which of the pairs of means (see Table 4) were significantly different. The resultant HSD of 1.542 was not exceeded by the differences between the interns' sets of means. Therefore, it can be concluded that the scoring by intern school psychologists (scoring the "average" IQ case) of the WISC Information, Comprehension, Similarities, or Vocabulary subtests is not
<table>
<thead>
<tr>
<th>Subject Group</th>
<th>Number of Subjects</th>
<th>Group Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>106.750</td>
<td>2.915</td>
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<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>104.375</td>
<td>4.033</td>
</tr>
<tr>
<td>Negative-Experienced</td>
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<td>103.000</td>
<td>2.390</td>
</tr>
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<td>Negative-Intern</td>
<td>8</td>
<td>106.625</td>
<td>3.815</td>
</tr>
<tr>
<td>None-Experienced</td>
<td>8</td>
<td>102.500</td>
<td>1.690</td>
</tr>
<tr>
<td>None-Intern</td>
<td>8</td>
<td>105.000</td>
<td>4.986</td>
</tr>
<tr>
<td>Subject Group</td>
<td>Number of Subjects</td>
<td>Group Mean</td>
<td>Standard Deviation</td>
</tr>
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<td>-----------------------</td>
<td>--------------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>Positive-Experienced</td>
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<td>104.000</td>
<td>1.512</td>
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<tr>
<td>Positive-Intern</td>
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<td>102.625</td>
<td>2.504</td>
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<tr>
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<td>101.000</td>
<td>0.926</td>
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<tr>
<td>None-Intern</td>
<td>8</td>
<td>102.750</td>
<td>3.059</td>
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TABLE 7
SUMMARY OF UNIVARIATE F TESTS ACROSS DEPENDENT VARIABLES RELATIVE TO INTERACTION OF PRE-TEST INFORMATION AND LEVEL OF EXPERIENCE (AVERAGE IQ CASE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>F</th>
<th>Mean Square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Subtest</td>
<td>.087</td>
<td>.021</td>
<td>.916</td>
</tr>
<tr>
<td>Standard Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comprehension Subtest</td>
<td>.527</td>
<td>1.000</td>
<td>.594</td>
</tr>
<tr>
<td>Standard Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Similarities Subtest</td>
<td>1.260</td>
<td>1.083</td>
<td>.294</td>
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<tr>
<td>Standard Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary Subtest</td>
<td>4.578</td>
<td>7.521</td>
<td>.016</td>
</tr>
<tr>
<td>Standard Score</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Verbal Scale IQ</td>
<td>3.356</td>
<td>40.692</td>
<td>.044</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Scale IQ</td>
<td>3.305</td>
<td>14.774</td>
<td>.046</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at .05 level
Figure 3
Interaction Effect: Type of Pre-Test Information as a Function of Levels of Experience
(Vocabulary Subtest-Average IQ Case)

$A_1 =$ Positive  $A_2 =$ Negative  $A_3 =$ None
affected by the type of pre-test information received.

Considering the significant difference found to exist relative to the interaction effects on the Verbal Scale IQ scores, the cell means were graphed in Figure 4. The Tukey HSD-Procedure was then used in a post-hoc analysis to determine which of the pairs of means (see Table 5) were significantly different. The HSD of 4.228 was not exceeded by the differences between the interns' sets of means. Thus, it can be concluded that the scoring by intern school psychologists (scoring the "average" IQ case) of the Verbal Scale IQ score is not affected by the type of pre-test information received.

Analyzing the significant difference found to exist relative to the interaction effects on the Full Scale IQ scores, the cell means were graphed in Figure 5. The Tukey HSD-Procedure was then used in a post-hoc analysis to determine which sets of means (see Table 6) were significantly different. The HSD of 2.565 was not exceeded by the differences between the interns' sets of means. Therefore, it is concluded that the scoring by intern school psychologists (scoring the "average" IQ case) of the Full Scale IQ score is not affected by the type of pre-test information received.

Results of the two-way analysis of variance between groups when the independent variable of pre-test information was considered alone are summarized in Table 8. A
Figure 4

Interaction Effect: Type of Pre-Test Information
As a Function of Levels of Experience
(Verbal Scale IQ Score, Average IQ Case)

A₁ = Positive  A₂ = Negative  A₃ = None
Figure 5
Interaction Effect: Type of Pre-Test Information
As a Function of Levels of Experience
(Full Scale IQ Score, Average IQ Case)

Full Scale IQ Scores

A₁ = Positive          A₂ = Negative
A₃ = None

Interns (B₁)            Experienced (B₂)
TABLE 8
SUMMARY OF UNIVARIATE F TESTS ACROSS DEPENDENT VARIABLES RELATIVE TO TYPE OF PRE-TEST INFORMATION (AVERAGE IQ CASE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>F</th>
<th>Mean Square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Subtest</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Standard Score</td>
<td>.078</td>
<td>.021</td>
<td>.925</td>
</tr>
<tr>
<td>Comprehension Subtest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Score</td>
<td>1.389</td>
<td>1.521</td>
<td>.261</td>
</tr>
<tr>
<td>Similarities Subtest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Score</td>
<td>1.077</td>
<td>.583</td>
<td>.350</td>
</tr>
<tr>
<td>Vocabulary Subtest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Score</td>
<td>1.379</td>
<td>1.396</td>
<td>.263</td>
</tr>
<tr>
<td>Verbal Scale IQ Score</td>
<td>2.170</td>
<td>11.645</td>
<td>.127</td>
</tr>
<tr>
<td>Full Scale IQ Score</td>
<td>1.619</td>
<td>3.812</td>
<td>.210</td>
</tr>
</tbody>
</table>
review of the data presented therein indicates that there are no significant differences between the subtest (Information, Comprehension, Similarities, and Vocabulary) standard scores, the Verbal Scale IQ scores, and the Full Scale IQ scores obtained by school psychologists under each of the three pre-test information conditions (positive, negative, and none).

It would appear from the evidence presented that "Question 1" must be answered in the negative. The scoring by intern school psychologists of the "average" IQ WISC protocol is not affected by the type of pre-test information (positive, negative, or none) received.

Question 2 - Is the scoring by intern school psychologists of the "below-average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

WISC standard score means and standard deviations for the intern school psychologists' scoring of the Information, Comprehension, Similarities, and Vocabulary subtests ("below-average" IQ case) are presented in Tables 9, 10, 11, and 12 respectively. The Verbal Scale IQ mean scores and the standard deviations are presented in Tables 13 and 14 respectively.

The results of the two-way analysis of variance between groups when both independent variables (type of pre-test information and level of experience) are considered
### TABLE 9
MEAN WISC INFORMATION SUBTEST STANDARD SCORES
AND STANDARD DEVIATION FOR TYPE OF PRE-TEST INFORMATION
AND LEVEL OF EXPERIENCE (BELOW-AVERAGE IQ CASE)

<table>
<thead>
<tr>
<th>Subject Group</th>
<th>Number of Subjects</th>
<th>Group Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>6.500</td>
<td>.535</td>
</tr>
<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>6.625</td>
<td>.518</td>
</tr>
<tr>
<td>Negative-Experienced</td>
<td>8</td>
<td>6.750</td>
<td>.463</td>
</tr>
<tr>
<td>Negative-Intern</td>
<td>8</td>
<td>6.500</td>
<td>.535</td>
</tr>
<tr>
<td>None-Experienced</td>
<td>8</td>
<td>6.500</td>
<td>.535</td>
</tr>
<tr>
<td>None-Intern</td>
<td>8</td>
<td>6.625</td>
<td>.518</td>
</tr>
</tbody>
</table>
TABLE 10
MEAN WISC COMPREHENSION SUBTEST STANDARD SCORES
AND STANDARD DEVIATIONS FOR TYPE OF PRE-TEST
INFORMATION AND LEVEL OF EXPERIENCE (BELOW-AVERAGE IQ CASE)

<table>
<thead>
<tr>
<th>Subject Group</th>
<th>Number of Subjects</th>
<th>Group Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>7.125</td>
<td>1.642</td>
</tr>
<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>6.500</td>
<td>1.195</td>
</tr>
<tr>
<td>Negative-Experienced</td>
<td>8</td>
<td>6.375</td>
<td>0.744</td>
</tr>
<tr>
<td>Negative-Intern</td>
<td>8</td>
<td>6.125</td>
<td>0.835</td>
</tr>
<tr>
<td>None-Experienced</td>
<td>8</td>
<td>5.875</td>
<td>0.641</td>
</tr>
<tr>
<td>None-Intern</td>
<td>8</td>
<td>6.750</td>
<td>0.886</td>
</tr>
</tbody>
</table>
### TABLE 11

**MEAN WISC SIMILARITIES SUBTEST STANDARD SCORES AND STANDARD DEVIATIONS FOR TYPE OF PRE-TEST INFORMATION AND LEVEL OF EXPERIENCE (BELOW-AVERAGE IQ CASE)**

<table>
<thead>
<tr>
<th>Subject Group</th>
<th>Number of Subjects</th>
<th>Group Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>8.375</td>
<td>.744</td>
</tr>
<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>7.625</td>
<td>.518</td>
</tr>
<tr>
<td>Negative-Experienced</td>
<td>8</td>
<td>7.750</td>
<td>.463</td>
</tr>
<tr>
<td>Negative-Intern</td>
<td>8</td>
<td>8.000</td>
<td>.926</td>
</tr>
<tr>
<td>None-Experienced</td>
<td>8</td>
<td>7.500</td>
<td>.756</td>
</tr>
<tr>
<td>None-Intern</td>
<td>8</td>
<td>7.750</td>
<td>.886</td>
</tr>
<tr>
<td>Subject Group</td>
<td>Number of Subjects</td>
<td>Group Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------------------</td>
<td>------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>8.500</td>
<td>0.926</td>
</tr>
<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>8.375</td>
<td>1.188</td>
</tr>
<tr>
<td>Negative-Experienced</td>
<td>8</td>
<td>7.625</td>
<td>0.916</td>
</tr>
<tr>
<td>Negative-Intern</td>
<td>8</td>
<td>8.125</td>
<td>0.991</td>
</tr>
<tr>
<td>None-Experienced</td>
<td>8</td>
<td>8.000</td>
<td>1.069</td>
</tr>
<tr>
<td>None-Intern</td>
<td>8</td>
<td>8.625</td>
<td>0.916</td>
</tr>
<tr>
<td>Subject Group</td>
<td>Number of Subjects</td>
<td>Mean Group</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------</td>
<td>------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>83.000</td>
<td>3.024</td>
</tr>
<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>81.500</td>
<td>2.330</td>
</tr>
<tr>
<td>Negative-Experienced</td>
<td>8</td>
<td>80.375</td>
<td>1.685</td>
</tr>
<tr>
<td>Negative-Intern</td>
<td>8</td>
<td>81.000</td>
<td>2.878</td>
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<tr>
<td>None-Experienced</td>
<td>8</td>
<td>79.750</td>
<td>1.669</td>
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<tr>
<td>None-Intern</td>
<td>8</td>
<td>82.000</td>
<td>1.927</td>
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</table>
TABLE 14

MEAN WISC FULL SCALE IQ SCORES AND STANDARD DEVIATIONS FOR TYPE OF PRE-TEST INFORMATION AND LEVEL OF EXPERIENCE (BELOW-AVERAGE IQ CASE)

<table>
<thead>
<tr>
<th>Subject Group</th>
<th>Number of Subjects</th>
<th>Group Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive-Experienced</td>
<td>8</td>
<td>80.000</td>
<td>2.138</td>
</tr>
<tr>
<td>Positive-Intern</td>
<td>8</td>
<td>79.000</td>
<td>1.512</td>
</tr>
<tr>
<td>Negative-Experienced</td>
<td>8</td>
<td>78.625</td>
<td>1.188</td>
</tr>
<tr>
<td>Negative-Intern</td>
<td>8</td>
<td>78.750</td>
<td>1.753</td>
</tr>
<tr>
<td>None-Experienced</td>
<td>8</td>
<td>77.750</td>
<td>1.035</td>
</tr>
<tr>
<td>None-Intern</td>
<td>8</td>
<td>79.500</td>
<td>1.309</td>
</tr>
</tbody>
</table>
together are summarized in Table 15. A review of the data presented in Table 15 indicates that significant differences exist only in the Full Scale IQ scores obtained. The F-statistic of 3.248 is significant at the .05 level of significance.

Considering the significant difference found to exist relative to the interaction effects on the Full Scale IQ scores, the cell means were graphed in Figure 6. The Tukey HSD-Procedure was then used in a post-hoc analysis to determine which of the pairs of means (see Table 14) were significantly different. The resultant HSD of 1.861 was not exceeded by the differences between the interns' sets of means. Therefore, it is concluded that scoring by intern school psychologists (scoring the "below-average" IQ case) of the Full Scale IQ score is not affected by the type of pre-test information received.

Results of the two-way analysis of variance between groups when the independent variable of pre-test information was considered alone are summarized in Table 16. A review of the data presented therein indicates that there are no significant differences between the subtest (Information, Comprehension, Similarities, and Vocabulary) standard score, the Verbal Scale IQ scores, and the Full Scale IQ scores obtained by school psychologists under each of the three pre-test information conditions (positive, negative, and none).
TABLE 15
SUMMARY OF UNIVARIATE F TESTS ACROSS DEPENDENT VARIABLES RELATIVE TO INTERACTION OF PRE-TEST INFORMATION AND LEVEL OF EXPERIENCE (BELOW-AVERAGE IQ CASE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>F</th>
<th>Mean Square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Sub-test</td>
<td>.700</td>
<td>.187</td>
<td>.502</td>
</tr>
<tr>
<td>Comprehension Sub-test</td>
<td>2.226</td>
<td>2.438</td>
<td>.121</td>
</tr>
<tr>
<td>Similarities Sub-test</td>
<td>2.462</td>
<td>1.333</td>
<td>.098</td>
</tr>
<tr>
<td>Vocabulary Sub-test</td>
<td>.638</td>
<td>.646</td>
<td>.533</td>
</tr>
<tr>
<td>Verbal Scale IQ Score</td>
<td>2.636</td>
<td>14.147</td>
<td>.083</td>
</tr>
<tr>
<td>Full Scale IQ Score</td>
<td>3.248</td>
<td>7.646</td>
<td>.049 *</td>
</tr>
</tbody>
</table>

* Significant at the .05 level
<table>
<thead>
<tr>
<th>Variable</th>
<th>F</th>
<th>Mean Square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Subtest Standard Score</td>
<td>2.712</td>
<td>.646</td>
<td>.078</td>
</tr>
<tr>
<td>Comprehension Subtest Standard Score</td>
<td>2.681</td>
<td>5.083</td>
<td>.080</td>
</tr>
<tr>
<td>Similarities Subtest Standard Score</td>
<td>.678</td>
<td>.583</td>
<td>.513</td>
</tr>
<tr>
<td>Vocabulary Subtest Standard Score</td>
<td>.545</td>
<td>.896</td>
<td>.584</td>
</tr>
<tr>
<td>Verbal Scale IQ Score</td>
<td>1.094</td>
<td>13.269</td>
<td>.344</td>
</tr>
<tr>
<td>Full Scale IQ Score</td>
<td>1.906</td>
<td>8.519</td>
<td>.161</td>
</tr>
</tbody>
</table>
From the evidence presented "Question 2" must be answered in the negative. The scoring by intern school psychologists of the "below-average" IQ WISC protocol is not affected by the type of pre-test information (positive, negative, or none) received.

Analyses of Data - Experienced School Psychologists

Question 3 - Is the scoring by experienced school psychologists of the "average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

WISC standard score means and standard deviations for the experienced school psychologists' scoring of the Information, Comprehension, Similarities, and Vocabulary subtests ("average" IQ case) are presented in Tables 1, 2, 3, and 4 respectively. The Verbal Scale IQ mean scores and the standard deviations for the experienced school psychologists are presented in Tables 5 and 6, respectively.

The results of the analysis of variance between groups when both independent variables (type of pre-test information and level of experience) are considered together are summarized in Table 7. A review of the data presented in Table 7 indicates that significant differences exist only in the standard scores obtained on the Vocabulary subtest, the Verbal Scale IQ scores, and the Full Scale IQ Scores. In the cases of the Vocabulary subtest standard score, the Verbal Scale IQ score, and the Full
Scale IQ score, the F-statistics of 4.578, 3.356, and 3.305 respectively are significant at the .05 level of significance.

Considering the significant difference found to exist relative to the interaction effects on the Vocabulary subtest standard scores, the cell means were graphed in Figure 3. The Tukey-HSD Procedure was then used in a post-hoc analysis to determine which of the pairs of means (see Table 4) were significantly different. The resultant HSD of 1.542 was only exceeded by the difference between one set of means, the 10.375 scored by experienced-positive group and the 8.750 scored by experienced-negative group. The experienced school psychologists who received the positive pre-test information scored the Vocabulary subtest significantly higher than the experienced school psychologists who received the negative pre-test information. Therefore, it can be concluded that the scoring by experienced school psychologists of the Vocabulary subtest on the "average" IQ WISC protocol is affected by the type of pre-test information received.

Considering the significant difference found to exist relative to the interaction effects on the Verbal Scale IQ scores, the cell means were graphed in Figure 4. The Tukey HSD-Procedure was then used in a post-hoc analysis to determine which of the pairs of means (see Table 5)
were significantly different. The HSD of 4.228 was exceeded only by the difference between one set of means, the 106.750 scored by the experienced-positive group and the 102.500 scored by the experienced-none group. The experienced school psychologists who received the positive pre-test information scored the Verbal Scale IQ score significantly higher than the experienced school psychologists who received no pre-test information. Therefore, it can be concluded that the scoring by experienced school psychologists of the Verbal Scale IQ score on the "average" IQ WISC protocol is affected by the type of pre-test information received.

Analyzing the significant difference found to exist relative to the interaction effects on the Full Scale IQ scores, the cell means were graphed in Figure 5. The Tukey HSD-Procedure was then used in a post-hoc analysis to determine which sets of means (see Table 6) were significantly different. The HSD of 2.565 was exceeded only by the difference between one set of means, the 104.000 scored by the experienced-positive group and the 101.000 scored by the experienced-none group. The experienced school psychologists who received the positive pre-test information scored the Full Scale IQ score significantly higher than the experienced school psychologists who received no pre-test information. Thus, it can be concluded that the scoring by experienced school psy-
chologists of the Full Scale IQ score on the "average" IQ WISC protocol is affected by the type of pre-test information received.

Results of the two-way analysis of variance between groups, when the independent variable of pre-test information was considered alone, are summarized in Table 8. A review of the data presented therein indicates that there are no significant differences between the subtest (Information, Comprehension, Similarities, and Vocabulary) standard scores, the Verbal Scale IQ scores, and the Full Scale IQ scores obtained by school psychologists under each of the three pre-test information conditions (positive, negative, and none).

It appears from the evidence presented above that "question 3" must be answered in the affirmative. The scoring by experienced school psychologists of the "average" IQ WISC protocol is affected by the type of pre-test information (positive, negative, or none) received. This pre-test information effect is evident, however, only on the Vocabulary subtest, the Verbal Scale IQ score, and the Full Scale IQ score.

Question 4 - Is the scoring by experienced school psychologists of the "below-average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

WISC standard score means and standard deviations
for the experienced school psychologists' scoring of the Information, Comprehension, Similarities, and Vocabulary subtests ("below-average" IQ case) are presented in Tables 9, 10, 11, and 12 respectively. The Verbal Scale IQ mean scores and the standard deviations and the Full Scale IQ score means and standard deviations are presented in Tables 13 and 14 respectively.

The results of the two-way analysis of variance between groups when both independent variables (type of pre-test information and level of experience) are considered together are summarized in Table 15. A review of the data presented in Table 15 indicates that significant differences exist only in the Full Scale IQ scores obtained. The F-Statistic of 3.248 is significant at the .05 level of significance.

Considering the significant difference found to exist relative to the interaction effects on the Full Scale IQ scores, the cell means were graphed in Figure 6. The Tukey HSD-Procedure was then used in a post-hoc analysis to determine which of the pairs of means (see Table 14) were significantly different. The resultant HSD of 1.861 was exceeded only by the difference between one pair of means, the 80.000 scored by the experienced-positive group and the 77.750 scored by the experienced-none group. The experienced school psychologists who received the positive pre-test information scored the Full Scale IQ
Figure 6

Interaction Effect: Type of Pre-Test Information
As a Function of Levels of Experience
(Full Scale IQ Score, Below Average IQ Case)

Full Scale IQ Scores

Interns  Experienced

A₁ = Positive   A₂ = Negative   A₃ = None
score significantly higher than the experienced school psychologists who received no pre-test information. Therefore, it can be concluded that experienced school psychologists scoring the Full Scale IQ score on the "below-average" IQ WISC protocol do have their scoring affected by the type of pre-test information they receive.

Results of the two-way analysis of variance between groups when the independent variable of pre-test information was considered alone are summarized in Table 16. A review of the data presented therein indicates that there are no significant differences between the subtest (Information, Comprehension, Similarities, and Vocabulary) standard scores, the Verbal Scale IQ scores, and the Full Scale IQ scores obtained by school psychologists under each of the three pre-test information conditions (positive, negative, and none).

It appears from the evidence presented above that "Question 4" must be answered in the affirmative. The scoring by experienced school psychologists of the "below-average" IQ WISC protocol is affected by the type of pre-test information (positive, negative, or none) received. This pre-test information biasing effect is evident, however, only on the Full Scale IQ score obtained. The subtest (Information, Comprehension, Similarities, and Vocabulary) standard scores and the Verbal Scale IQ score apparently are not affected.
Summary

Generally the biasing effect of pre-test information on the scoring of WISC protocols was found to exist only among the experienced school psychologists. The intern school psychologists evidenced no susceptibility to the influence of pre-test information. Indeed the mean scores they obtained were often in the direction opposite to that which would be expected given the types of pre-test information presented.

Both the "average" and the "below-average" IQ WISC cases were found to be subject to the effects of pre-test information. In the "average" IQ case the ratings obtained on the Vocabulary subtest standard score, Verbal Scale IQ score, and Full Scale IQ score were affected by the biasing effects of the pre-test information. Those experienced school psychologists who scored the Vocabulary subtest ("average" IQ case) under the positive pre-test information condition scored it significantly higher than did those experienced school psychologists scoring under the negative pre-test information condition. Relative to the Verbal Scale IQ score ("average" IQ case) those experienced school psychologists who scored under the positive pre-test information condition obtained a significantly higher mean score than did the experienced school psychologists who completed the scoring with no pre-test information. Likewise, the mean Full Scale IQ
score ("average" case) obtained by those experienced school psychologists under the positive pre-test information condition was significantly higher than the mean score obtained by the experienced school psychologists scoring with no pre-test information. The latter result was also found in the "below-average" case where the mean Full Scale IQ score obtained by those experienced school psychologists who scored under the positive pre-test information was significantly higher than the mean score obtained by the experienced school psychologists scoring with no pre-test information.

Only one of the four WISC subtest under investigation (Information, Comprehension, Similarities, and Vocabulary) was found to be subject to the biasing effect of pre-test information. The scoring of that subtest, Vocabulary, however, was influenced to a significant degree only in the "average" IQ case. The experienced school psychologists (as mentioned above) obtained a significantly higher mean score on the Vocabulary subtest under the "positive" condition than under the "none" condition.

**Mechanical Scoring Errors**

As cited in Chapter II, previous studies relative to psychologists' (and students of psychological testing) scoring of WISC protocols have reported an abundance of mechanical scoring (clerical) errors. These errors, in addition to those which relate to judging Verbal Scale
responses and are much more subjective in nature, have been cited as being responsible for large variances in obtained IQ scores among psychologists (Miller and Chansky, 1972; Miller, Chansky, and Gredler, 1970; Williams, 1965; and Warren and Brown, 1973).

Table 17 and Table 18 summarize the mechanical errors made, by the school psychologists and the intern school psychologists respectively, in the present study. When the total number of errors by both experienced and intern school psychologists (23) is considered relative to the total number of protocols scored (96), the average number of errors made per protocol is .2. This is much different than the 2.37 error-per-protocol rate reported earlier (Miller and Chansky, 1972). Four of the protocols in the present study contained more than one error, therefore, the total number of protocols containing mechanical errors was eighteen. This number is only eighteen percent of the total number of protocols scored and stands in sharp contrast to previous studies which reported that thirty-seven percent of intelligence test protocols contained errors (Warren and Brown, 1973) in one case, and that fifty-four of sixty-four contained errors in another (Miller and Chansky, 1972).

Fifteen of the nineteen errors, however, resulted in changes in the Full Scale IQ score. Of these fifteen changes in score caused by mechanical errors, ten were in
<table>
<thead>
<tr>
<th>Type of error</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to credit a correct response</td>
<td>6</td>
</tr>
<tr>
<td>Credit given after cutoff</td>
<td>2</td>
</tr>
<tr>
<td>Miscalulation of subtest raw score</td>
<td>2</td>
</tr>
<tr>
<td>Credit given to an incorrect response</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
</tr>
<tr>
<td>Type of error</td>
<td>Frequency</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Failure to credit a correct response</td>
<td>4</td>
</tr>
<tr>
<td>Credit given after cutoff</td>
<td>2</td>
</tr>
<tr>
<td>Miscalculation of subtest raw score</td>
<td>3</td>
</tr>
<tr>
<td>Credit given to an incorrect response</td>
<td>2</td>
</tr>
<tr>
<td>Failure to credit non-administered passed items</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>
the opposite direction to that which might have been expected considering the pre-test information that accompanied the protocol. Only five changes were in the same direction (raising or lowering of IQ points) that might be expected given the certain pre-test information.

Thus, it appears that scoring errors of a mechanical type are not as frequently found among Central Ohio school psychologists, both intern and experienced, as has been reported in studies of scorers from a wider population. The errors do not seem to be related to the biasing influence of pre-test information, however, they do change IQ scores.

**Post Data Collection Check**

In order to ascertain whether the results of the present study may have been influenced by the subjects' guessing its true intent, questionnaires (see Appendix H) were sent to each participant upon receipt of their completed tasks. Previous data collected in a pilot study (see Chapter III) using the same questionnaire had demonstrated that the announced purpose of the study was able to camouflage its true intent. Of the forty-eight questionnaires sent out, forty-two were returned to the investigator. Of the forty-two participants which did respond, twenty-five indicated a generally negative response to the question, "Do you have any reason to believe that the real purpose of the study was not what it was stated to be?"
The other seventeen respondents indicated that they did believe that there was another "real" purpose to the study. Several purposes (often two or three by the same subject) were stated, but the one most frequently offered was "to check interscorer reliability on the WISC."

The true intent of the study apparently was guessed on only three of the returns. On all three of these questionnaires the "true purpose" was listed as one of three possible other purposes for the study, indicating a degree of uncertainty on the part of the respondent.

It seems apparent that the announced purpose of the study did cover up the investigation's true intent as had been determined during the pilot study. Even the small amount of suspicion that was generated may have been due to the fact that the evaluation questionnaire was sent to the participants.

Fourteen Ambiguous Responses

As indicated previously in Chapter III both the "average" and the "below-average" WISC protocols contained fourteen ambiguous responses gleaned from a review of test protocols in the psychological files of the Franklin County Schools. These ambiguous responses were included in the Information (1), Comprehension (4), Similarities (2), and Vocabulary (7) subtests. Each response was designed to be scored as a "1" or a "0" or as a "2" or a "1".

In order to determine if the same ambiguous responses
were scored "high" or "low" ("1"-"0"/"2"-"1") across conditions of pre-test information (positive, negative, or none), a nonparametric procedure using the chi-square test and Fisher's test for a 2x2 contingency table was followed. (This program is available through the Instruction and Research Computer Center of The Ohio State University as part of the IBM Scientific Subroutine Package). Three of the ambiguous responses on the "average" IQ WISC protocol (two in the Comprehension subtest and one in the Vocabulary subtest) obtained chi-square values above the level (5.99) required for the .05 level of significance (see Table 19). Only one of the ambiguous responses on the "below-average" IQ WISC protocol (on the Vocabulary subtest) obtained a chi-square value above the level (5.99) required for the .05 level of significance (see Table 20).

This finding, that some of the same ambiguous responses are scored differently across differing conditions of biased pre-test information, is similar to the finding that the same ambiguous responses are scored differently depending upon the supposed intellectual level of the subject (Sattler, Hillix, and Neher, 1970; Sattler and Winget, 1970). It is contrary, however, to the finding that the frequency of questionable scoring (too high or too low) was not different across two referral (pre-test information) conditions (positive and negative) (Dangel, 1970).
<table>
<thead>
<tr>
<th>Ambiguous Response</th>
<th>Degree of Freedom</th>
<th>Chi-Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information # 14</td>
<td>2</td>
<td>2.265</td>
</tr>
<tr>
<td>Comprehension #5</td>
<td>2</td>
<td>0.666</td>
</tr>
<tr>
<td>Comprehension #6</td>
<td>2</td>
<td>0.545</td>
</tr>
<tr>
<td>Comprehension #7</td>
<td>2</td>
<td>6.342*</td>
</tr>
<tr>
<td>Comprehension #9</td>
<td>2</td>
<td>6.937*</td>
</tr>
<tr>
<td>Similarities #7</td>
<td>2</td>
<td>0.581</td>
</tr>
<tr>
<td>Similarities #8</td>
<td>2</td>
<td>1.476</td>
</tr>
<tr>
<td>Vocabulary #6</td>
<td>2</td>
<td>5.236</td>
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<tr>
<td>Vocabulary #10</td>
<td>2</td>
<td>2.327</td>
</tr>
<tr>
<td>Vocabulary #11</td>
<td>2</td>
<td>6.933*</td>
</tr>
<tr>
<td>Vocabulary #12</td>
<td>2</td>
<td>3.066</td>
</tr>
<tr>
<td>Vocabulary #15</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td>Vocabulary #17</td>
<td>2</td>
<td>1.476</td>
</tr>
<tr>
<td>Vocabulary #18</td>
<td>2</td>
<td>1.786</td>
</tr>
</tbody>
</table>

*Significant at .05 level
TABLE 20
CHI-SQUARE VALUES FOR FOURTEEN AMBIGUOUS RESPONSES ON THE BELOW-AVERAGE WISC IQ PROTOCOL

<table>
<thead>
<tr>
<th>Ambiguous Response</th>
<th>Degree of Freedom</th>
<th>Chi-Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information # 14</td>
<td>2</td>
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</tr>
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</tr>
<tr>
<td>Vocabulary # 13</td>
<td>2</td>
<td>2.042</td>
</tr>
<tr>
<td>Vocabulary # 15</td>
<td>2</td>
<td>5.250</td>
</tr>
<tr>
<td>Vocabulary # 17</td>
<td>2</td>
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</tr>
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*Significant at .05 level
CHAPTER V
SUMMARY AND CONCLUSIONS

Summary

The general purpose of the present study was to examine the effects of differing types of pre-testing (referral) information on school psychologists' (intern and experienced) scoring of the Wechsler Intelligence Test for Children. By design the investigation was limited to assessing the nature of the expectancy effect through an analysis of the effect of the school psychologists' (as examiners) expectancy on their evaluation of childrens' performances (scoring) on an intelligence test.

The objectives of the study were as follows:

1. to determine if the fact that school psychologists have pre-testing (referral) information affects their scoring of intelligence test (WISC) responses.

2. to determine if the effects of pre-testing information (referral) on the scoring of intelligence test (WISC) responses differ depending upon the nature of the information, positively or negatively oriented.

3. to determine if the effects of pre-testing
information (referral) on the scoring of an intelligence test (WISC) differ depending upon whether the school psychologist is experienced or is an intern.

4. to determine if the effects of pre-testing information (referral) and the level of experience of the school psychologists differ for situations involving a "below-average" IQ case and those involving an "average" IQ case.

Forty-eight school psychologists (twenty-four intern and twenty-four experienced) served as subjects for the study. Each of them scored two WISC protocols (one "below-average" IQ case and one "average" IQ case) under one of the three pre-test information (referral) conditions which were positive, negative, and none. The data collected on the resultant ninety-six completed WISC protocols, were analyzed using the multivariate analysis of variance procedure in an attempt to answer the four significant questions as follows:

1. Is the scoring by intern school psychologists of the "average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

2. Is the scoring by intern school psychologists of the "below-average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?
3. Is the scoring by experienced school psychologists of the "average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

4. Is the scoring by experienced school psychologists of the "below-average" IQ WISC protocol affected by the type of pre-test information (positive, negative, or none) received?

Conclusions

On the basis of the results of this study it can be concluded that intern school psychologists do not have their scoring of either the "average" or the "below-average" IQ WISC affected by differing types of pre-test (referral) information. None of the WISC subtests under investigation (Information, Comprehension, Similarities, and Vocabulary) were scored significantly differently depending upon the type of pre-test (referral) information that accompanied them. This was also true for the WISC Verbal Scale IQ scores ("average" and "below-average" IQ cases) and the WISC Full Scale IQ scores ("average" and "below-average" IQ cases). Scoring of the WISC by intern school psychologists appears to not be susceptible to the biasing effects of pre-test (referral) information.

In the case of experienced school psychologists, however, there is some evidence for concluding that a
biasing effect of pre-test (referral) information does exist. The Full Scale IQ score for the "average" as well as the "below-average" case was scored significantly higher by those experienced school psychologists who were scoring under the positive pre-test information condition than by those experienced school psychologists who were scoring with no pre-test information. Likewise, on the "average" IQ case the experienced school psychologists who scored under the positive pre-test information condition obtained a significantly higher Verbal Scale IQ score than did those experienced school psychologists who completed the scoring with no pre-test information.

Of the four WISC subtests under investigation (Information, Comprehension, Similarities, and Vocabulary) only the scoring of the Vocabulary subtest was influenced by pre-test information differences. Those experienced school psychologists who scored the Vocabulary subtest (the "average" IQ case) under the positive pre-test information condition scored it significantly higher than did those experienced school psychologists scoring under the negative pre-test information condition.

In general, it can be concluded that the biasing effect of pre-test information on the experienced school psychologists' scoring of the WISC protocols does exist whether the case is one resulting in an "average" or a
"below-average" IQ. While the question of practical significance might be raised relative to the "average" IQ case, there is no doubt that the resultant differences in the "below-average" IQ case are significant in the day-to-day operations of the school psychologist. An IQ score of 77 in many cases results in a special class placement whereas an IQ score of 80 is less likely to do so. As related to specific WISC Verbal Scale subtests, however, it does not seem to be present except in the case of the Vocabulary subtest. Unlike their more experienced colleagues, intern school psychologists do not seem to have their scoring of WISC protocols affected by differences in pre-test information.

Implications

Compared with most of the earlier studies completed in the area of biasing of pre-test information on the results of intelligence tests, the present investigation may be considered rather conservative in its design. While many studies used relatively large numbers of ambiguous responses or had no control over the types of responses the present study attempted to use an average number of ambiguous responses which might be found on the "typical" WISC protocol. The somewhat greater degree of objectivity in the present study (evidenced by the lesser number of ambiguous responses), then, probably provided a more difficult environment for the biasing
effect of pre-test information to be demonstrated. Also compared with most of the earlier investigation, the present study used pre-test (referral) information that was more realistic and more typically found in everyday circumstances. Just as it is true that most referrals are "negative", in a sense, by virtue of their purpose, it is also true that most referrals have some "positive" connotations in them. In attempting to replicate, as closely as possible, actual referral conditions the present study undoubtedly took on an "average" stance which would be considered as conservative relative to the skewed pre-test information positions which may exist in some instances and which have been duplicated in several investigations.

The question of why the intern school psychologists did not score the WISC protocols differently to a significant degree under the three different conditions of pre-test information is an interesting one. Perhaps interns have not yet had enough experience with the referral process per se to learn to make judgments on the basis of the teachers' referrals to the degree that experienced school psychologists do. Also a greater measure of the desire to "check it out" for themselves (which interns generally seem to have) may lead to a situation that is less likely to involve influencing of one professional by another.
The present study has value for all those professionals who are involved with either the pre-service and/or the in-service training of school psychologists. Although a recent text (Sattler, 1973) does seem to devote appropriate space to a discussion of the possible biasing effects in intelligence testing, most texts used in school psychology training programs give the topic little, if any, attention. It is time that school psychology trainees be made aware of the potential biasing effects as part of their general instruction in psychological assessment.

For the experienced school psychologists the results of this study can be helpful in planning in-service training programs designed to help those school psychologists who have been working "on the firing line" to review and refine their assessment skills. Too often in-service programs are designed to present new and different ideas to "catch the eye" of the participants. The results of this study seem to indicate that some time should be provided to review and study old topics (e.g. intellectual assessment) through new perspectives.

It has been suggested by some that the technology of the future may enable psychologists to overcome the biasing effects involved in psychological evaluations (Kintz et al, 1965). The use of the machine (computer), they foresee, will eliminate men's (psychologists')
biasing influence in these subjective situations. Maybe so, but who is going to program the machine? This investigator agrees with those who believe that the problem of examiner bias is one that will be with us for a long time to come and that we must attempt to learn as much about it as possible (Sattler and Theye, 1967).

Perhaps the greatest value the present study could have had would be to serve as one small point for encouraging the study of the school psychologist and his or her activities as part of the total school scene. If school psychologists as individuals, and if school psychology as a profession, are to grow and flourish it will be necessary for considerable time and energy to be spent in reflecting upon and evaluating what they do, as well as how and why they do it!

Suggestions for Additional Research

It is the opinion of this investigator that the results of this study do not warrant full scale adoption of the laboratory method by school psychologists working in the public schools in order to avoid the effects of examiner bias as has been suggested by some (Abidin, 1971). Before such a decision can be made additional research is needed in order to answer the following questions.

1. Are intelligence tests with greater numbers of ambiguous responses more likely to be subject to biasing effects than those used in the current study?
2. Do school psychologists, because of what they already know about the child, effect the child's actual performance on various tests to a significant degree?

3. Are school psychologists, because of what they already know about the child including an actual observation of his test performance, biased in their interpretation and evaluation of the child's test performance?

4. From a quantitative perspective, how much can a school psychologist know about a child prior to evaluating his performance on various instruments without being biased in his behavior with the child or in his interpretation of the child's responses?

Further research in the general area of the topic might be designed to attack questions of broader concern as follows:

5. In what other areas of testing (other than intelligence) might the school psychologists' evaluations be biased by pre-test (referral) information?

6. How does the school psychologist, who is part of a school system's professional staff, influence or bias the thinking and behavior of other school personnel by what he says or does? Likewise, how is a school psychologist's behavior and/or thinking influenced or biased by other school personnel with whom he comes into contact?
APPENDIX A
108 HYPOTHESES
H₁ - There is a significant difference between the mean standard score obtained on the "average" WISC Information subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving the negative pre-testing information.

H₂ - There is a significant difference between the mean standard score obtained on the "average" WISC Information subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving the negative pre-testing information.

H₃ - There is a significant difference between the mean standard score obtained on the "average" WISC Information subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving the negative pre-testing information.

H₄ - There is a significant difference between the mean standard score obtained on the "average" WISC Information
subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those psychologists receiving no pre-testing information.

H₅ - There is a significant difference between the mean standard score obtained on the "average" WISC Information subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

H₆ - There is a significant difference between the mean standard score obtained on the "average" WISC Information subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

H₇ - There is a significant difference between the mean standard score obtained on the "average" WISC Information subtest by school psychologists receiving the negative pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₈ - There is a significant difference between the mean standard score obtained on the "average" WISC Information subtest by intern school psychologists receiving the negative pre-testing information and the mean standard score
obtained by those intern school psychologists receiving no pre-testing information.

H₀ - There is a significant difference between the mean standard score obtained on the "average" WISC Information subtest by intern school psychologists receiving the negative pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

H₁₀ - There is a significant difference between the mean standard score obtained on the "average" WISC Comprehension subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving the negative pre-testing information.

H₁₁ - There is a significant difference between the mean standard score obtained on the "average" WISC Comprehension subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving the negative pre-testing information.

H₁₂ - There is a significant difference between the mean standard score obtained on the "average" WISC Comprehension subtest by experienced school psychologists receiving the negative pre-testing information.

H₁₃ - There is a significant difference between the mean standard score obtained on the "average" WISC Comprehension
subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₁₄ - There is a significant difference between the mean standard score obtained on the "average" WISC Comprehension subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

H₁₅ - There is a significant difference between the mean standard score obtained on the "average" WISC Comprehension subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

H₁₆ - There is a significant difference between the mean standard score obtained on the "average" WISC Comprehension subtest by school psychologists receiving the negative pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₁₇ - There is a significant difference between the mean standard score obtained on the "average" WISC Comprehension subtest by intern school psychologists receiving the negative pre-testing information and the mean standard standard
score obtained by those intern school psychologists receiving no pre-testing information.

H₁₈ - There is a significant difference between the mean standard score obtained on the "average" WISC Comprehension subtest by experienced school psychologists receiving the negative pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

H₁₉ - There is a significant difference between the mean standard score obtained on the "average" WISC Similarities subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving the negative pre-testing information.

H₂₀ - There is a significant difference between the mean standard score obtained on the "average" WISC Similarities subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving the negative pre-testing information.

H₂₁ - There is a significant difference between the mean standard score obtained on the "average" WISC Similarities subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving the negative pre-testing infor-
H22 - There is a significant difference between the mean standard score obtained on the "average" WISC Similarities subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H23 - There is a significant difference between the mean standard score obtained on the "average" WISC Similarities subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

H24 - There is a significant difference between the mean standard score obtained on the "average" WISC Similarities subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

H25 - There is a significant difference between the mean standard score obtained on the "average" WISC Similarities subtest by school psychologists receiving the negative pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H26 - There is a significant difference between the mean
standard score obtained on the "average" WISC Similarities subtest by intern school psychologists receiving the negative pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

$H_{27}$ - There is a significant difference between the mean standard score obtained on the "average" WISC Similarities subtest by experienced school psychologists receiving the negative pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

$H_{28}$ - There is a significant difference between the mean standard score obtained on the "average" WISC Vocabulary subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving the negative pre-testing information.

$H_{29}$ - There is a significant difference between the mean standard score obtained on the "average" WISC Vocabulary subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving the negative pre-testing information.

$H_{30}$ - There is a significant difference between the mean standard score obtained on the "average" WISC Vocabulary subtest by experienced school psychologists receiving
the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving the negative pre-testing information.

H₃₁ - There is a significant difference between the mean standard score obtained on the "average" WISC Vocabulary subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₃₂ - There is a significant difference between the mean standard score obtained on the "average" WISC Vocabulary subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

H₃₃ - There is a significant difference between the mean standard score obtained on the "average" WISC Vocabulary subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

H₃₄ - There is a significant difference between the mean standard score obtained on the "average" WISC Vocabulary subtest by school psychologists receiving the negative pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-
testing information.

$H_{35}$ - There is a significant difference between the mean standard score obtained on the "average" WISC Vocabulary subtest by intern school psychologists receiving the negative pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

$H_{36}$ - There is a significant difference between the mean standard score obtained on the "average" WISC Vocabulary subtest by experienced school psychologists receiving the negative pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

$H_{37}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "average" WISC by the school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those school psychologists receiving the negative pre-testing information.

$H_{38}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "average" WISC by the intern school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those intern school psychologists receiving the negative pre-testing information.

$H_{39}$ - There is a significant difference between the mean
Verbal Scale IQ score obtained on the "average" WISC by the experienced school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those experienced school psychologists receiving the negative pre-testing information.

$H_{40}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "average" WISC by the school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those school psychologists receiving no pre-testing information.

$H_{41}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "average" WISC by the intern school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those intern school psychologists receiving no pre-testing information.

$H_{42}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "average" WISC by the experienced school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those experienced school psychologists receiving no pre-testing information.

$H_{43}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "average" WISC by the school psychologists receiving the negative pre-
testing information and the mean Verbal Scale IQ score obtained by those school psychologists receiving no pre-testing information.

H44 - There is a significant difference between the mean Verbal Scale IQ score obtained on the "average" WISC by the intern school psychologists receiving the negative pre-testing information and the mean Verbal Scale IQ score obtained by those intern school psychologists receiving no pre-testing information.

H45 - There is a significant difference between the mean Verbal Scale IQ score obtained on the "average" WISC by the experienced school psychologists receiving the negative pre-testing information and the mean Verbal Scale IQ score obtained by those experienced school psychologists receiving no pre-testing information.

H46 - There is a significant difference between the mean Full Scale IQ score obtained on the "average" WISC by the school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those school psychologists receiving the negative pre-testing information.

H47 - There is a significant difference between the mean Full Scale IQ score obtained on the "average" WISC by the intern school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score
obtained by those intern school psychologists receiving the negative pre-testing information.

H₄₈ - There is a significant difference between the mean Full Scale IQ score obtained on the "average" WISC by the experienced school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those experienced school psychologists receiving the negative pre-testing information.

H₄₉ - There is a significant difference between the mean Full Scale IQ score obtained on the "average" WISC by the school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those school psychologists receiving no pre-testing information.

H₅₀ - There is a significant difference between the mean Full Scale IQ score obtained on the "average" WISC by the intern school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those intern school psychologists receiving no pre-testing information.

H₅₁ - There is a significant difference between the mean Full Scale IQ score obtained on the "average" WISC by the experienced school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those experienced school psychologists receiving no pre-testing information.
H_{52} - There is a significant difference between the mean Full Scale IQ score obtained on the "average" WISC by the school psychologists receiving the negative pre-testing information and the mean Full Scale IQ score obtained by those school psychologists receiving no pre-testing information.

H_{53} - There is a significant difference between the mean Full Scale IQ score obtained on the "average" WISC by the intern school psychologists receiving the negative pre-testing information and the mean Full Scale IQ score obtained by those intern school psychologists receiving no pre-testing information.

H_{54} - There is a significant difference between the mean Full Scale IQ score obtained on the "average" WISC by the experienced school psychologists receiving the negative pre-testing information and the mean Full Scale IQ score obtained by those experienced school psychologists receiving no pre-testing information.

H_{55} - There is a significant difference between the mean standard score obtained on the "below average" WISC Information subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving the negative pre-testing information.

H_{56} - There is a significant difference between the mean standard score obtained on the "below average" WISC
Information subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

$H_{57}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Information subtest by school psychologists receiving the negative pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

$H_{58}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Information subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving the negative pre-testing information.

$H_{59}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Information subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

$H_{60}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Information subtest by intern school psychologists receiving the negative pre-testing information and the
mean standard score obtained by those intern school psychologists receiving no pre-testing information.

H₆₁ - There is a significant difference between the mean standard score obtained on the "below average" WISC Information subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving the negative pre-testing information.

H₆₂ - There is a significant difference between the mean standard score obtained on the "below average" WISC Information subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

H₆₃ - There is a significant difference between the mean standard score obtained on the "below average" WISC Information subtest by experienced school psychologists receiving the negative pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

H₆₄ - There is a significant difference between the mean standard score obtained on the "below average" WISC Comprehension subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving the
the negative pre-testing information.

H₆₅ - There is a significant difference between the mean standard score obtained on the "below average" WISC Comprehension subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₆₆ - There is a significant difference between the mean standard score obtained on the "below average" WISC Comprehension subtest by school psychologists receiving the negative pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₆₇ - There is a significant difference between the mean standard score obtained on the "below average" WISC Comprehension subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving the negative pre-testing information.

H₆₈ - There is a significant difference between the mean standard score obtained on the "below average" WISC Comprehension subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

H₆₉ - There is a significant difference between the mean
standard score obtained on the "below average" WISC Comprehension subtest by intern school psychologists receiving the negative pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

$H_{70}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Comprehension subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving the negative pre-testing information.

$H_{71}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Comprehension subtest by experienced school psychologists receiving the negative pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

$H_{72}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Comprehension subtest by experienced school psychologists receiving the negative pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

$H_{73}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC
Similarities subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving the negative pre-testing information.

H₇₄ - There is a significant difference between the mean standard score obtained on the "below average" WISC Similarities subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₇₅ - There is a significant difference between the mean standard score obtained on the "below average" WISC Similarities subtest by school psychologists receiving the negative pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₇₆ - There is a significant difference between the mean standard score obtained on the "below average" WISC Similarities subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving the negative pre-testing information.

H₇₇ - There is a significant difference between the mean standard score obtained on the "below average" WISC Similarities subtest by intern school psychologists
receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

$H_{78}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Similarities subtest by intern school psychologists receiving the negative pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

$H_{79}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Similarities subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving the negative pre-testing information.

$H_{80}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Similarities subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

$H_{81}$ - There is a significant difference between the mean standard score obtained on the "below average" WISC Similarities subtest by experienced school psychologists receiving the negative pre-testing information and the
mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

H₈₂ - There is a significant difference between the mean standard score obtained on the "below average" WISC Vocabulary subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving the negative pre-testing information.

H₈₃ - There is a significant difference between the mean standard score obtained on the "below average" WISC Vocabulary subtest by school psychologists receiving the positive pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₈₄ - There is a significant difference between the mean standard score obtained on the "below average" WISC Vocabulary subtest by school psychologists receiving the negative pre-testing information and the mean standard score obtained by those school psychologists receiving no pre-testing information.

H₈₅ - There is a significant difference between the mean standard score obtained on the "below average" WISC Vocabulary subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving the negative pre-testing information.
H_{86} - There is a significant difference between the mean standard score obtained on the "below average" WISC Vocabulary subtest by intern school psychologists receiving the positive pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

H_{87} - There is a significant difference between the mean standard score obtained on the "below average" WISC Vocabulary subtest by intern school psychologists receiving the negative pre-testing information and the mean standard score obtained by those intern school psychologists receiving no pre-testing information.

H_{88} - There is a significant difference between the mean standard score obtained on the "below average" WISC Vocabulary subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving the negative pre-testing information.

H_{89} - There is a significant difference between the mean standard score obtained on the "below average" WISC Vocabulary subtest by experienced school psychologists receiving the positive pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

H_{90} - There is a significant difference between the mean
standard score obtained on the "below average" WISC Vocabulary subtest by experienced school psychologists receiving the negative pre-testing information and the mean standard score obtained by those experienced school psychologists receiving no pre-testing information.

$H_{91}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "below average" WISC by the school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those school psychologists receiving the negative pre-testing information.

$H_{92}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "below average" WISC by the school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those school psychologists receiving no pre-testing information.

$H_{93}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "below average" WISC by the school psychologists receiving the negative pre-testing information and the mean Verbal Scale IQ score obtained by those school psychologists receiving no pre-testing information.

$H_{94}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "below average" WISC by the intern school psychologists receiving the
positive pre-testing information and the mean Verbal Scale IQ score obtained by those intern school psychologists receiving the negative pre-testing information.

H95 - There is a significant difference between the mean Verbal Scale IQ score obtained on the "below average" WISC by the intern school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those intern school psychologists receiving no pre-testing information.

H96 - There is a significant difference between the mean Verbal Scale IQ score obtained on the "below average" WISC by the intern school psychologists receiving the negative pre-testing information and the mean Verbal Scale IQ score obtained by those intern school psychologist receiving no pre-testing information.

H97 - There is a significant difference between the mean Verbal Scale IQ score obtained on the "below average" WISC by the experienced school psychologists receiving the positive pre-testing information and the mean Verbal Scale IQ score obtained by those experienced school psychologists receiving the negative pre-testing information.

H98 - There is a significant difference between the mean Verbal Scale IQ score obtained on the "below average" WISC by the experienced school psychologists receiving the positive pre-testing information and the mean Verbal
Scale IQ score obtained by those experienced school psychologists receiving no pre-testing information.

$H_{99}$ - There is a significant difference between the mean Verbal Scale IQ score obtained on the "below average" WISC by the experienced schools psychologists receiving the negative pre-testing information and the mean Verbal Scale IQ score obtained by those experienced school psychologists receiving no pre-testing information.

$H_{100}$ - There is a significant difference between the mean Full Scale IQ score obtained on the "below average" WISC by the school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those school psychologists receiving the negative pre-testing information.

$H_{101}$ - There is a significant difference between the mean Full Scale IQ score obtained on the "below average" WISC by the school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those school psychologists receiving no pre-testing information.

$H_{102}$ - There is a significant difference between the mean Full Scale IQ score obtained on the "below average" WISC by the school psychologists receiving the negative pre-testing information and the mean Full Scale IQ score obtained by those school psychologists receiving no pre-testing information.
H_{103} - There is a significant difference between the mean Full Scale IQ score obtained on the "below average" WISC by the intern school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those intern school psychologists receiving the negative pre-testing information.

H_{104} - There is a significant difference between the mean Full Scale IQ score obtained on the "below average" WISC by the intern school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those intern school psychologists receiving no pre-testing information.

H_{105} - There is a significant difference between the mean Full Scale IQ score obtained on the "below average" WISC by the intern school psychologists receiving the negative pre-testing information and the mean Full Scale IQ score obtained by those intern school psychologists receiving no pre-testing information.

H_{106} - There is a significant difference between the mean Full Scale IQ score obtained on the "below average" WISC by the experienced school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those experienced school psychologists receiving the negative pre-testing information.

H_{107} - There is a significant difference between the mean Full Scale IQ score obtained on the "below average" WISC
by the experienced school psychologists receiving the positive pre-testing information and the mean Full Scale IQ score obtained by those experienced school psychologists receiving no pre-testing information.

H_{108} - There is a significant difference between the mean Full Scale IQ score obtained on the "below average" WISC by the experienced school psychologists receiving the negative pre-testing information and the mean Full Scale IQ score obtained by those experienced school psychologists receiving no pre-testing information.
APPENDIX B

POSITIVE REFERRAL - 1
POSITIVE REFERRAL - 1

REQUEST FOR CHILD STUDY SERVICES

Identifying Information
Child's Name Chris Jones Date of Birth 3-20-63
Age 10 Grade 4 Teacher D. Smith

Family Data
Father's Name Ed Jones Education College Occupation Bank Manager

Mother's Name Julie Jones Education H.S. Occupation Housewife

Other comments: parents are anxious for this evaluation

Educational History
Number of Years in Present School 4
Previous Schools Attended (name) none (city) 
(when?) 
(name) (city) 
(when?) 

Standardized Test Results
Most Recent Mental Ability Test (name) Henmon-Nelson
(grade given) 4
(date given) 10-17-72
(IQ Score) 115 IQ
Most Recent Achievement Test (name) Iowa Basic Skills
(grade given) 4
(date given) 10-72
(arith. score) 5.3
(reading score) 5.7 how??
(composite) 5.6

Description of the Problem

Chris is an attractive, healthy youngster who exudes enthusiasm (sometimes too much). His reading skills, however, are obviously underdeveloped—he is able to give initial consonant sounds but he seems to be unable to hear final consonant sounds. His reading difficulty is making his other work difficult for him. Only periodically does he do his homework and he seems to have a hard time keeping his mind on his work, at home or at school. Persistence is certainly not his most visible virtue.

On the playground Chris seems to want to be the center of attention as he attempts to "show off" frequently. His mother says that her pending divorce has added to Chris's troubles.

I believe that Chris could do much better than he has been doing so far this year. He definitely has leadership ability, and I'm wondering if he wouldn't benefit
from tutoring, especially in reading. Could emotional problems resulting from the family situation be influential factors? What can be done?

Dorothy Smith
REQUEST FOR CHILD STUDY SERVICES

Identifying Information
Child's Name Chris Jones Date of Birth 3-20-63
Age 10 Grade 4 Teacher D. Smith

Family Data
Father's Name Ed Jones Education College Occupation Bank Manager
Mother's Name Julie Jones Education H.S. Occupation H.Wife
Ages of Brother 8 Ages of Sisters None
Other Comments: parents are anxious for this evaluation

Educational History
Number of Years in Present School 4
Previous Schools Attended (name) none (city) 
(when?) 
(name) (city) 
(when?)

Standardized Test Results
Most Recent Mental Ability Test (name) Henmon-Nelson 
(grade given) 4 
(date given) 10-17-72 
(IQ score) 115 IQ
Most Recent Achievement Test (name) Iowa Basic Skills
(grade given) 4
(date given) 10-72
(arith. score) 5.3
(reading score) 5.7
(composite) 5.6

Description of the Problem

Chris has had excessive school absences (more than 30 days absent so far this year) throughout his school career. So far he has never been retained, but this year he is experiencing a great deal of difficulty in keeping up with his classmates, especially in reading assignments. On some days Chris appears to be very tired. On other days he taps his pencil continuously and can't seem to keep his hands to himself.

Homework seldom gets done and, in the classroom, Chris seldom finishes any work, if I am fortunate enough to have him start it. Sometimes I feel he has a basic disrespect for adult authority.

Once in awhile Chris surprises me with glimpses of what appears to be a very good memory. His parents and I would like to know if we can expect more from Chris and if so, how do we get it out of him? For one 6-week grading period he was on a contingency management program in the classroom, and his grades improved. Could this be reinstated? Perhaps with cooperation from home?
APPENDIX D
NEGATIVE REFERRAL - 1
NEGATIVE REFERRAL - 1

REQUEST FOR CHILD STUDY SERVICES

Identifying Information
Child's Name Chris Jones Date of Birth 3-20-63
Age 10 Grade 3 Teacher D. Smith

Family Data
Father's Name Ed Jones Education H.S. Occupation Plumber
Mother's Name Julie Jones Education H.S. Occupation H.Wife
Ages of Brothers 6,4 Ages of Sisters 13,9
Other Comments: grandmother live with the family

Educational History
Number of Years In Present School 4
Previous Schools Attended (name) none (city) __
(when?) ______________
(name) _____________ (city) __
(when?) ______________

Standardized Test Results
Most Recent Mental Ability Test (name) Henmon-Nelson
(grade given) 3
(date given) 10-17-72
(IQ score) 64 IQ
Description of the Problem

What can we expect of Chris? Does he have the intelligence to do 3rd grade level work? I feel he's working up to his capacity even though he is achieving at a level far below all of his classmates.

Chris has begun to copy the work of his friends and hand it in as his own—I'm afraid he's become a quitter. He seems to be afraid to attempt difficult problems on his own. Although he's older than most of his classmates (he's been retained once), he is able to perform less independently than most of them. Similar learning problems have been observed by the special reading teacher who works with Chris for an hour twice a week.

Dorothy Smith
APPENDIX E
NEGATIVE REFERRAL - 2
NEGATIVE REFERRAL - 2

REQUEST FOR CHILD STUDY SERVICES

Identifying Information
Child's Name Chris Jones Date of Birth 3-20-63
Age 10 Grade 3 Teacher D. Smith

Family Data
Father's Name Ed Jones Education H.S. Occupation Plumber
Mother's Name Julie Jones Education H.S. Occupation H.Wife
Ages of Brothers 6,4 Ages of Sisters 13,9
Other Comments: a grandmother lives with the family

Educational History
Number of Years in Present School 4
Previous Schools Attended (name) none (city) ______
(when?) ______________
(name) _____________ (city) ______
(when) ______________

Standardized Test Results
Most Recent Mental Ability Test (name) Henmon-Nelson
(grade given) 3
(date given) 10-17-72
(IQ Score) 64 IQ
**Most Recent Achievement Test**

(name) Iowa Basic Skills

(grade given) 3

(date given) 10-72

(arith. score) 1.6

(reading score) 1.4

(composite) 1.7

**Description of the Problem**

Chris needs special attention that I have been unable to give him. He can be a behavior problem, but usually he just sits there and doesn't respond when called upon. The subject appears to be too difficult for him as he is very low in all his academic work.

Chris frequently refuses to do his work—doesn't try to do it at all. When I try to question him, he rarely opens up and talks to me. I've tried to give him extra help in reading but progress is quite slow. His mother reports that his sister, Jan, responds in much the same way to school—could this be a family-related problem?

I feel that Chris could benefit greatly from a special class where he could receive more individualized help. His parents and I are worried that he'll be in way over his head in the regular 4th grade program next year. What types of special help are available for him? Is he below average in intelligence?

Dorothy Smith
APPENDIX F

"AVERAGE" IQ WISC PROTOCOL
**WISC RECORD FORM**

**NAME**  Chris Jones

**ADDRESS**  2824 Cartelty Drive

**PARENT'S NAME**  Ed & Julie Jones

**SCHOOL**  Whittie Ele.  **GRADE**  

**REFERRED BY**  Teacher

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**NOTES**

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**EXAMINER**

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Printed in U.S.A.

The Psychological Corporation, 304 East 45th Street, New York, N.Y. 10017
January 6, 1975

Dear Mr. Fiscus:

Thank you for your letter of December 29. We have no objection to your reproducing the front page of the Wechsler Intelligence Scale for Children Record Form, filled out, in the appendix of your dissertation. The remainder of the Record Form, however, contains actual test content. When we receive a request for permission to reproduce copies of tests or test items in a thesis or dissertation, we normally respond with a form letter which includes the following paragraphs:

"We can understand your wish to include copies of test items from the WISC in your thesis in order to provide full documentation. If any member of your faculty committee who must read the thesis is not already acquainted with the WISC, there is no objection to your providing him with a loose copy of the instrument itself and/or the manual or other materials along with his copy for reading.

"There is general agreement, however, that actual copies of tests or test items should not or bound in, or permanently filed with, theses and dissertations. Professors who are thesis advisors have concurred in the belief that it is unwise to place test copies in libraries—even within the bindings of a thesis—where the public can have free and unsupervised access to them. Beyond this, many dissertations now are available through University Microfilms which does not restrict their availability to professional persons. Any professional person who needs the dissertation would know how to gain access to the test used if he wants and needs to do so.

"We are sorry that we are unable to give you the permission you request, but we are sure you understand the reasons why it is undesirable to make test content generally available."

Sincerely,

[Signature]
Louise Rifenburgh
Rights and Permissions
Test Division

P.S. An extra copy of this letter is enclosed in case you need to pass it along to your advisor or committee.
Enc.
APPENDIX G
"BELOW AVERAGE" IQ WISC PROTOCOL
**WISC RECORD FORM**

**NAME**  Chris Jones  **AGE** 10  **SEX**  M  

**ADDRESS**  2834 Eastcliff Drive  

**PARENT'S NAME**  Ed & Julie Jones  

**SCHOOL**  Whittier Ele.  **GRADE**  

**REFERRED BY**  Teacher  

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**VERBAL TESTS**  
- Information  
- Comprehension  
- Arithmetic  
- Similarities  
- Vocabulary  
- (Digit Span)  

**PERFORMANCE TESTS**  
- Picture Completion  
- Picture Arrangement  
- Block Design  
- Object Assembly  
- Coding  
- (Mazes)  

**Sum of Verbal Tests**  

**Sum of Performance Tests**  

**Notes**  

**Year Month Day**  
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*Prorated if necessary*

**Examiner**
January 6, 1975

Mr. Edward D. Fiscus  
Pupil Personnel Services  
46 East Fulton Street  
Columbus, Ohio 43215  

Dear Mr. Fiscus:

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"We are sorry that we are unable to give you the permission you request, but we are sure you understand the reasons why it is undesirable to make test content generally available."

Sincerely,

Louise Kiflenburgh  
Rights and Permissions  
Test Division

P.S. An extra copy of this letter is enclosed in case you need to pass it along to your advisor or committee.

Enc.
APPENDIX H
POST DATA COLLECTION QUESTIONNAIRE
POST DATA COLLECTION QUESTIONNAIRE

To: "Project Abreviate" Participants

From: Ed Fiscus

Subject: Your participation in the recently-completed study

Thanks again for your involvement in my recent study. Your expenditure of time and effort was much appreciated.

Please answer the questions below and return them as soon as possible in the enclosed, self-addressed, stamped envelope.

1. How relevant do you think the results of this study will be to your own work as a school psychologist? to the profession of school psychology, generally?

2. What was your first reaction to the study? Has this initial feeling changed since you completed the tasks asked of you?

3. Do you have any reason to believe that the purpose of the study was not what it was stated to be? If so, why? and what do you think the "real" purposes were?
APPENDIX I
COVER LETTER
Dear ________________________.

Thank you for agreeing, in our recent telephone conversation, to serve as a participant in a study which I am conducting as part of my doctoral dissertation at The Ohio State University. The purpose of this study is to investigate the hypothesis that school psychologists can make viable recommendations based upon various and limited degrees of behavioral and psychometric data. The recommendations resulting from this study will be compared with those made as a result of the original child studies. These previous recommendations have already been judged as appropriate and adequate on the basis of several relevant criteria. If it can be shown that the same, or similar, recommendations can be made on the basis of less data, then, appropriate modifications of traditional child study procedures may be in order. Also under investigation is the correlation between experience (interns/experienced school psychologists) and the recommendations developed.

In the attached "package" you will find a case which you are requested to study and to provide recommen-
dations. The information presented in the case is actually only a part of a larger amount of information which was available to the psychologist who completed the original child study. You are asked to list as many recommendations as come to mind.

Although the task does not have to be completed within one sitting, it should be completed within a three-day period. It is also important for the purposes of this study that the task be completed independently. Therefore, it is requested that you do not discuss the study with any colleague (whether or not they were also participants) until you have been notified that the project has been completed.

When you have completed the task, return the entire packet to me in the self-addressed, stamped envelope which is enclosed. Please be assured that your response will remain anonymous. (Your name is needed on the packet only for purposes of my own record-keeping). After the investigation is completed, it will be my pleasure to send you a copy of the conclusions for your professional interest.

Sincerely,

Ed Fiscus
APPENDIX J

DIRECTIONS
DIRECTIONS

Dear ___________________________,

Thanks for agreeing to participate in my dissertation research.

Enclosed in this large yellow envelope are two smaller yellow envelopes which are stamped and addressed to me. Each of these envelopes contains a separate task which I am asking you to complete. The directions for each task are included inside the envelopes.

The task in the envelope marked "1" should be completed first and the task in the envelope marked "2" should be completed last. It is important that each task be done independently, so please complete task "1" and place the envelope in the mail before opening and completing task "2".

Please complete and return both tasks to me by June 12.

Thanks,

Ed Fiscus
APPENDIX K

INSTRUCTIONS: PRE-TEST INFORMATION AVAILABLE
INSTRUCTIONS-PRE-TEST INFORMATION AVAILABLE

Name ______________________

Directions: This case has the following data available for study.

1) Referral information
2) Intelligence test information

Please review the referral information, complete the scoring of the attached intelligence test, and then make recommendations for programming (in the space provided below) based on your study.

Please mark any questions or errors you observe in the data with a '?', but complete the task as best you can with the information as it is.

If, after you study the information available, you believe that further assessment would enhance your ability to make recommendations in this case, please list these procedures below in the appropriate space.

Return the entire packet with your responses to the investigator in the enclosed (self-addressed, stamped) envelope.

Recommendations:
Suggestions for further assessment:
APPENDIX L

INSTRUCTIONS: NO PRE-TEST INFORMATION AVAILABLE
INSTRUCTIONS—NO PRE-TEST INFORMATION AVAILABLE

Name _________________________

Directions: This case has the following data available for study.

1) Intelligence test information

Please score the intelligence test, review the content and the information available to you, and then make recommendations for programming (in the space provided below) based on your study.

Please mark any questions or errors you observe in the data with a "?", but complete the task as best you can with the information as it is.

If, after you study the information available, you believe that further assessment would enhance your ability to make recommendations in this case, please list these procedures below in the appropriate space.

Return the entire packet with your responses to the investigator in the enclosed (self-addressed, stamped) envelope.

Recommendations:

Suggestions for further assessment:
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