A GROUP FORM OF THE IES TEST

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PREFACE

The IES Test is an attempt to measure personality characteristics by means of projective techniques using methods of scoring which are as objective as those used with the MMPI. At the present time the test is not adequate for general use, but shows promise as a research instrument. There is little in the way of validation evidence and all research which has been done indicates that reliabilities for the subtest scores are, in most cases, low.

It would seem that more adequate research could be done with this instrument using a group form incorporating the same basic materials and methods as the individual form. With such a group form larger samples could be used. After further development a group form would still be very practical as a screening device. The purpose of this study was to develop such a group form.

My deepest appreciation is expressed to all those who have been of assistance in this study. All members of the Psychology Department of the Oklahoma State University have been most kind in offering any advice asked of them, and their excellent instruction and personal concern in my professional progress is much appreciated. To Dr. Richard Rankin in particular I feel much indebted for the personal guidance and instruction and the unrestricted time and effort which he has devoted to assisting me in this study and in my professional development. Appreciation is also expressed to Dr. Robert Scofield and to Dr. Harry Brobst who have

served on the thesis committee. The valuable aid given me by my friends and fellow graduate students, especially Richard Wikoff, Paula Umphers, and the late Bill Jones, is gratefully acknowledged. Finally, I would like to express my thanks to the authors of the IES Test, Lawrence A. Dombrose and Morton S. Slobin, for their kind permission to construct a group form of the IES Test.

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CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

The field of personality assessment encompasses many instruments designed to measure various dimensions of personality. The structure of these instruments is largely dependent upon the theoretical orientation of their authors. In general, tests designed with an underlying psychoanalytic rationale have been based upon the concept of projection and have been essentially subjective in scoring and interpretation.

The IES Test (Dombrose and Slobin, 1958) is an attempt to use projective material with an underlying psychoanalytic rationale in conjunction with objective scoring techniques and evaluation. All of the four subtests are designed to measure the relative strengths of the impulse, ego, and superego. All subtests assume that the subject will project his own personality characteristics onto the test materials. The rationale concerning this projection varies with the four test situations as follows:

The Arrow-Dot Test (AD) consists of twenty-three graphic problems, the solution of which requires the subject to draw a line from the point of an arrow to a dot. The arrow is considered to represent impulse forces and the dot becomes a goal object. Interspersed between the arrow and the dot are three kinds of barriers represented by lines. Two of these, heavy bars and single lines, are assumed to represent real barriers as set forth by the instructions. The third, consisting of dashed

lines, is considered to exist as a barrier only if the subject so interprets since no mention of them is made in the instructions.

It is assumed that the subject's performance on these problems will be representative of his true behavior in real life situations. The impulsive individual, concerned only with his own gratification, will be expected to ignore barriers and take the most direct path to his goal, no matter what restrictions have been set up by the directions. At other times he will ignore the most direct, most efficient path to his goal in order to follow the direction of his impulse (the direction suggested by the arrow).

The person dominated by superego forces, however, will be expected to set up artificial barriers (the dashed lines), avoid coming in close proximity to real barriers, and take unrealistically long and difficult paths to the goal.

The ego-controlled person is expected to satisfy his impulses in a more realistic manner, neither ignoring real barriers nor perceiving as prohibitive situations which are not intended as such.

The Photo-Analysis Test (PhA) consists of nine photographs of men. Two questions are asked about each man with three possible answers presented for each question. One of these answers assigns impulse characteristics to the man, one answer assigns ego characteristics, and the other assigns superego characteristics. Of the functioning of this test, the test authors say, "It indicates by means of projection upon the photographs how the subject would like (consciously or unconsciously) to function if he were free to behave in a manner of his choosing, as in the permissiveness of fantasy." Therefore, the subject's scores on I, E, and S are taken to be indicative of the degree to which he desires

these elements as part of his own personality structure.

The Picture Story Test (PSC) is made up of thirteen sets of cartoons. In each set two or three cartoons begin a story which the subject is to complete by selecting one cartoon from the three alternatives provided. The three alternatives are scored as I, E, or S. Here, since the situation is external to the subject and the story and responses are provided for him, it is assumed that his responses are indicative of his perception of reality in the outside world in terms of impulse, ego, or superego as he projects them into the environment. His scores on I, E, or S, then, are assumed to be indicative of the degree to which he attends to these impulse arousing, superego constricting, or ego orienting aspects of the environment and externalizes these aspects of his own personality.

The Picture Title Test (PT) bears some resemblance to the Thematic Apperception Test. It consists of twelve drawings each of which the subject is to title. I or S scores are assigned to the titles depending on the area or activity in the picture to which the subject devotes his attention. If the impulsive and superego arousing materials depicted are integrated realistically, an E score is assigned. A D (defensive) score is given in those instances where a subject avoids the significant content of the picture. The D scores are then summed with the S score to provide a $\sum$ S score. The $\sum$ S score is then used as the measure of superego restraint. Since the subject must create the titles, it is assumed that he is at least to some degree aware of this projection and that his ego recognizes and accepts the impulses and superego pressures which he projects. His scores, then, on I, E, and S indicate the degree to which he can accept these aspects as existing in his own personality.

Although it would seem reasonable to combine scores to get an estimate of the relative strengths of I, E, and S over the total test, thus including more items, more variability, and probably higher reliability, the test authors have put forth no hypotheses as to what meaning such combined scores would have.

Purpose of the Study

As published, the IES Test is to be administered to subjects on an individual basis. However, certain weaknesses which will be covered in detail in a following section would seem to prohibit its use as a clinical instrument. It would seem advisable to restrict its use for the time being to rough screening and research. For these purposes and for reasons of economy, it would be most beneficial to use a group form of the test. The purpose of this study was to develop such a group form and to show its equivalence to the individual form. Effort has been made also to improve reliability of the instrument by means of a weighted scoring procedure. For purposes of comparability of subtest scores, T score norms were developed for the group form.

Review of the Literature

The IES Test was first devised by Dombrose and Slobin (1951). The present test (Dombrose and Slobin, 1958) consists of the four subtests which proved to be most productive out of the original battery of ten. Dombrose and Slobin made predictions concerning the scores to be expected from a group of normals, a group of neurotics, and a group of psychotics. All subjects were males. Of the 36 rank order predictions made, 23 were correct. There were 11 significant differences between means at beyond

the .01 level of confidence, 11 beyond the .05 level, and 2 beyond the .10 level. They found that the PSC and AD tests were the best predictors of differences among the groups.

Charnes (1953) administered the IES Test to 10 year old children, adolescents, and normal adults in an attempt to evaluate the test in terms of consistency of test scores over age levels. He found no significant differences between the scores of children and adults, but he did find differences between the adolescents and the other two groups. He made the following conclusions concerning the operation of the IES Test in this study:

> The test behavior of the different groups indicates that the tests tap a basic personality balance which is formed by the age of 10, which is changed by the pressures of adolescence, and which is restored in adulthood to its early equilibrium only somewhat altered by intervening growth, education, and socio-economic status.

Ritz (1954) administered the IES Test to three geriatric groups; a non-institutionalized non-psychotic group, an institutionalized non-psychotic group, and an institutionalized psychotic group. He found that the AD and PSC tests were useful in discriminating among these groups. He also compared his data with all subjects taken as a single group to the scores obtained in previous studies. He concluded that there were significant differences in the scores of his aged subjects as compared to scores of the younger subjects in the other studies.

Golden (1954) compared the IES scores of 11 year old boys and girls with teacher ratings of the children on the basis of impulsive, constricted, and well-adjusted behavior. He found that the proportion of correct to incorrect predictions was highly significant. 15 of 33 hypotheses were supported at or beyond the .05 level of significance using a

t test, and 39 of 45 predictions were supported by a non-parametric test.

He also tested for sex differences in the scores and found that the tests, especially the AD and PT tests, were very sensitive to sex differences.

Rankin and Johnston (1962) further investigated the relation between IES scores and both age and sex. The work of Charnes, Ritz, and Golden all were supported in this study. Using a sample of normal adults, Rankin and Johnston found highly significant correlations between age and IES scores on the AD Test. Sex differences were found to be highly significant on the AD and PhA tests.

Wikoff (1963) using the group form of the IES Test, compared the scores of a sample of male college students with those of a group of male delinquents in a federal reformatory. The subjects in these two groups were matched on age and intelligence. Wikoff found that the AD and PT scales successfully discriminated between the two groups.

Test construction procedures used in this study are standard and can be found in any good textbook on testing and test construction. Specific references will be made where appropriate in the text of this thesis. However, two aspects of test construction may well deserve to be considered at this point.

Kelley (1927) has suggested that the reliability coefficient should be no lower than .94 to evaluate the level of individual accomplishment, no less then .90 to evaluate differences in the level of group accomplishment in two or more performances, and no less than .98 to evaluate differences in the level of individual accomplishment in two or more performances. Anastasi (1961) states that reliabilities in the .80's or .90's are desirable. Lindquist (1959) and Guilford (1954), however, have point-

ed out that although these high reliabilities are indeed desirable, the decision as to whether or not a particular test is to be used is dependent upon the circumstances in the immediate situation. In some instances, for example, a test is needed, but no appropriate test having reliability higher than .40 or .50 is available. In such cases, they advise the use of the unreliable instrument rather than using no test at all. Most subtests of the IES Test may fall into this catagory.

Guilford (1954) suggests that, since items are not all equally correlated with a criterion and have unequal variances and unequal correlations with other items, the application of item scoring weights may be used to improve reliability and validity of a test. He points out that such weighting of items is most effective in short tests of 10 to 20 items. The IES Test appears to be ideally suited for this procedure.

Evaluation of the IES Test

An examination of the test, its rationale, and available data reveal some important strengths and a number of definite weaknesses. Certainly, its greatest value lies in its objective approach. The authors of the IES Test have made a significant contribution by pioneering with this approach.

Validity

Dombrose and Slobin (1951) found significant differences among mean IES scores of normals, neurotics, and psychotics. Charnes (1953) found no significant differences among the mean scores of his sample of normals and those of the normal sample obtained by Dombrose and Slobin. However, he did find significant differences among the mean scores of normal adults, adolescents, and ten year old children. Ritz (1954) found that the IES

could discriminate among three geriatric groups -- non-institutionalized non-psychotics, institutionalized non-psychotics, and institutionalized psychotics. Wikoff (1963) found significant differences between the IES scores of incarcerated delinquent males and a normal college male sample matched on age and intelligence.

Strengths

Beyond the above evidence for validity of the test, it should be pointed out that the IES Test is easy to administer and score; about one hour is sufficient for the entire procedure. The straightforward testing procedure and objective scoring criteria make it possible for a person with less training than a clinical psychologist or highly trained psychometrician to do the testing; thus resulting in considerable savings in time and expense. However, interpretation should be restricted to a trained clinician.

The IES Test is psychoanalytic in every respect. This aspect of the test will almost certainly be objectional to some potential users. However, if the test can be shown to discriminate between normals and those who deviate from normal enough to bring about institutionalization, the value of the test must be admitted though the theoretical orientation may be held in doubt.

Weaknesses

As must be expected in a new test utilizing a new approach, certain rather serious weaknesses seem to exist in the IES Test. Rankin and Johnston (1962) confirmed the findings of Ritz(1954) and Charnes (1953) indicating that the test is sensitive to age, and the work of Golden (1954) indicating a sensitivity to sex differences. This work indicates that separate norms may be needed for males and females and for different age

levels. Wikoff found a significant relationship between some IES Test scores and intelligence, indicating a need for some control over this variable.

Although the reliability coefficients for the AD Test seem to be fairly satisfactory, all available research on the IES Test indicates that reliability of the PhA and PSC S scores are seriously low. All other subtest score reliabilities are indicated to be quite low.

Design of the Study

The experimental design was planned to conform to the following 14 steps:

Step 1: Collect and score IES data from a sample of 75 normal adults (group 1) using the individual form of the test.

Step 2: Construct a group form of the IES Test using the materials and methods of the individual form insofar as possible.

Step 3: Administer the Group IES to a pilot group of subjects in order to detect any problems in directions and administration procedures.

Step 4: If necessary, administer the group form to a second pilot group to determine the effectiveness of revisions made as a consequence of Step 3.

Step 5: Collect and score IES data from a sample comparable to group 1 (group 2) using the group form.

Step 6: Collect and score IES data from a third sample (group 3) administering first the individual form and then the group form.

Step 7: Compute the means and standard deviations of all samples.

Step 8: Perform a t test of the significance of the difference between

the means of groups 1 and 2, and an F test of the significance of the difference between variances of groups 1 and 2.

Step 9: Item analyze the data from all samples and compute KR-20 reliabilities.

Step 10: Compute correlation coefficients between the scores obtained on the two forms, using data obtained from group 3. Correct these coefficients for attenuation.

Step 11: Develop scoring weights for the group form.

Step 12: Apply scoring weights to data obtained from group 3.

Step 13: Compute KR-20 reliabilities for the weighted scores.

Step 14: Develop T score norms for the group form.

CHAPTER II

METHOD

It was decided at the outset that it would be best to keep the group form of the test as closely related to the individual form as possible in order to retain as much equivalence as possible between the two forms. For this reason, wherever possible, the original materials and instructions were used. Where changes were necessary, every attempt was made to retain the general types of materials and the general tone of the instructions. Of course, the atmosphere of the individual testing situation could not be retained in a group situation, and materials were projected on a screen rather than permitting the subjects to hold them in their hands. These were the only significant departures from the individual testing situation.

Preliminary Remarks

The preliminary remarks to the subjects after they were seated in the testing room were designed in part for the experimental situation. These remarks would be deleted in further use of the instrument in other than an experimental situation. The remarks to be deleted were as follows:

> Your cooperation in experiments such as this aids in our gaining knowledge about the human personality and will help make it possible to give assistance to people who have emotional disorders. It may also be very helpful to you personally.

The preliminary remarks to be retained in the group test may be seen in Appendix A.

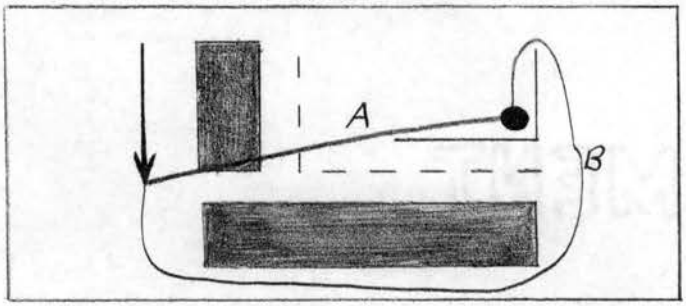
Arrow-Dot

The AD Test was used as printed by the IES publishers. The test is printed in booklet form. The first page consists of three sample problems describing basic problem situations to be found in the test. An example of the type of problem used in the AD Test may be seen in Figure 1. This page was projected on a screen by means of an opaque projector, and instructions were read to the subjects who worked the sample problems on their booklets as the examiner demonstrated the correct procedure with a pointer at the screen. Since the problems on the last page of the AD booklet require new instructions, it was thought best to have all subjects stop working before looking at those items.

Directions for administration of the AD Test may be found in Appendix A.

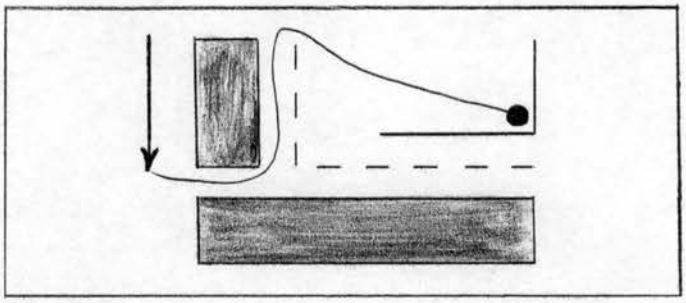
Answer Sheets

After collecting the AD booklets, answer sheets upon which the subjects were to record their responses on the remainder of the test were distributed to the subjects. These answer sheets followed the general plan of those used in the individual form. Changes were made only when necessary for ease of scoring and understanding by the subjects. The format of the answer sheet may be seen in Figure 2. The answer sheet was then projected onto the screen by means of an opaque projector and directions given for filling out the information section. These directions may be seen in Appendix A.



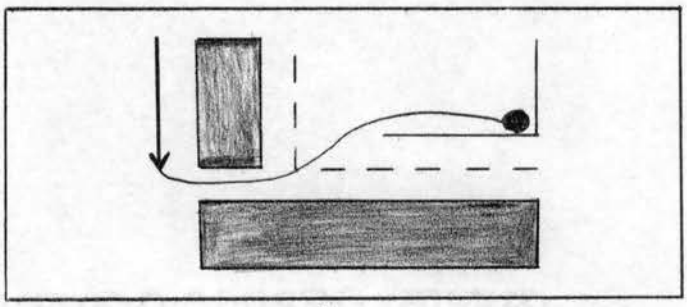
1.a

Either of these responses would be scored as I. Response A is considered to be an impulsive breaking through of barriers to reach the goal. Response B is considered to be an impulsive following of the direction of the arrow.



1.b

This response would be scored as S, since the dashed line has been interpreted as a barrier.



1.c

This response would be scored as E. The goal has been attained in a realistic manner.

FIGURE 1

AN EXAMPLE OF THE TYPE OF ITEM USED IN THE ARROW-DOT TEST AND THE METHOD OF SCORING USED

Name_____ Age___ Date of Test_____ Sex___

Education_____ Major_____ Class_____

ARROW-DOT

Do not write in this space

1.	I	E	S
2.	I	E	S
3.	I	E	S
4.	I	E	S
5.	I	E	S
6.	I	E	S
7.	I	E	S
8.	I	E	S
9.	I	E	S
10.	I	E	S
11.	I	E	S
12.	I	E	S
13.	I	E	S
14.	I	E	S
15.	I	E	S
16.	I	E	S
17.	I	E	S
18.	I	E	S
19.	I	E	S
20.	I	E	S
21.	I	E	S
22.	I	E	S
23.	I	E	S

PHOTO-ANALYSIS

Sample	1.	A	B	C
	2.	A	B	C
Card A	1.	A	B	C
	2.	A	B	C
Card B	1.	A	B	C
	2.	A	B	C
Card C	1.	A	B	C
	2.	A	B	C
Card D	1.	A	B	C
	2.	A	B	C
Card E	1.	A	B	C
	2.	A	B	C
Card F	1.	A	B	C
	2.	A	B	C
Card G	1.	A	B	C
	2.	A	B	C
Card H	1.	A	B	C
	2.	A	B	C
Card I	1.	A	B	C
	2.	A	B	C

PICTURE STORY COMPLETION

1.	A	B	C
2.	A	B	C
3.	A	B	C
4.	A	B	C
5.	A	B	C
6.	A	B	C
7.	A	B	C
8.	A	B	C
9.	A	B	C
10.	A	B	C
11.	A	B	C
12.	A	B	C
13.	A	B	C

Summary IES Total Scores

	I	E	S	
ARROW-DOT				
PHOTO-ANALYSIS				
PICTURE STORY COMPLETION				
PICTURE TITLE			S	D
		Σ S		

PICTURE TITLE

	I	E	S	D
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

Sum of S and D scores _____

FIGURE 2

GROUP IES ANSWER SHEET

Photo-Analysis

The PhA Test could readily be used as published in the individual form simply by projecting the pictures on the screen. However, it was decided after administration to a pilot group of subjects that a sample item was needed in order for instructions to be made clear to the subjects. A sample item of the same general type as the original items was then made up and added to the test. An example of the general form of the items of the PhA Test may be seen in Figure 3. Directions for administration of the PhA Test may be found in Appendix A.

Picture Story Completion

In order to present the PSC Test by opaque projector, it was necessary to have each set of cartoons printed on a single card such that the pictures beginning the story could be shown first and then the three alternative endings presented one at a time in their proper order. This was done by placing all the cartoons of each set in order and reproducing them by the Xerox method. The Xeroxed sheet was then cemented to heavy tagboard. The projector operator placed a piece of stiff tagboard over the three alternatives before projecting the card on the screen. Then, as the examiner announced the endings, the operator uncovered them one at a time. An example of the form of the PSC items may be seen in Figure 4. The directions for the administration of the PSC Test may be found in Appendix A.

Picture Title

The PT Test was administered in essentially the same way as in the

A photograph of a man
appears in this
position.

1. When things go wrong, does this man

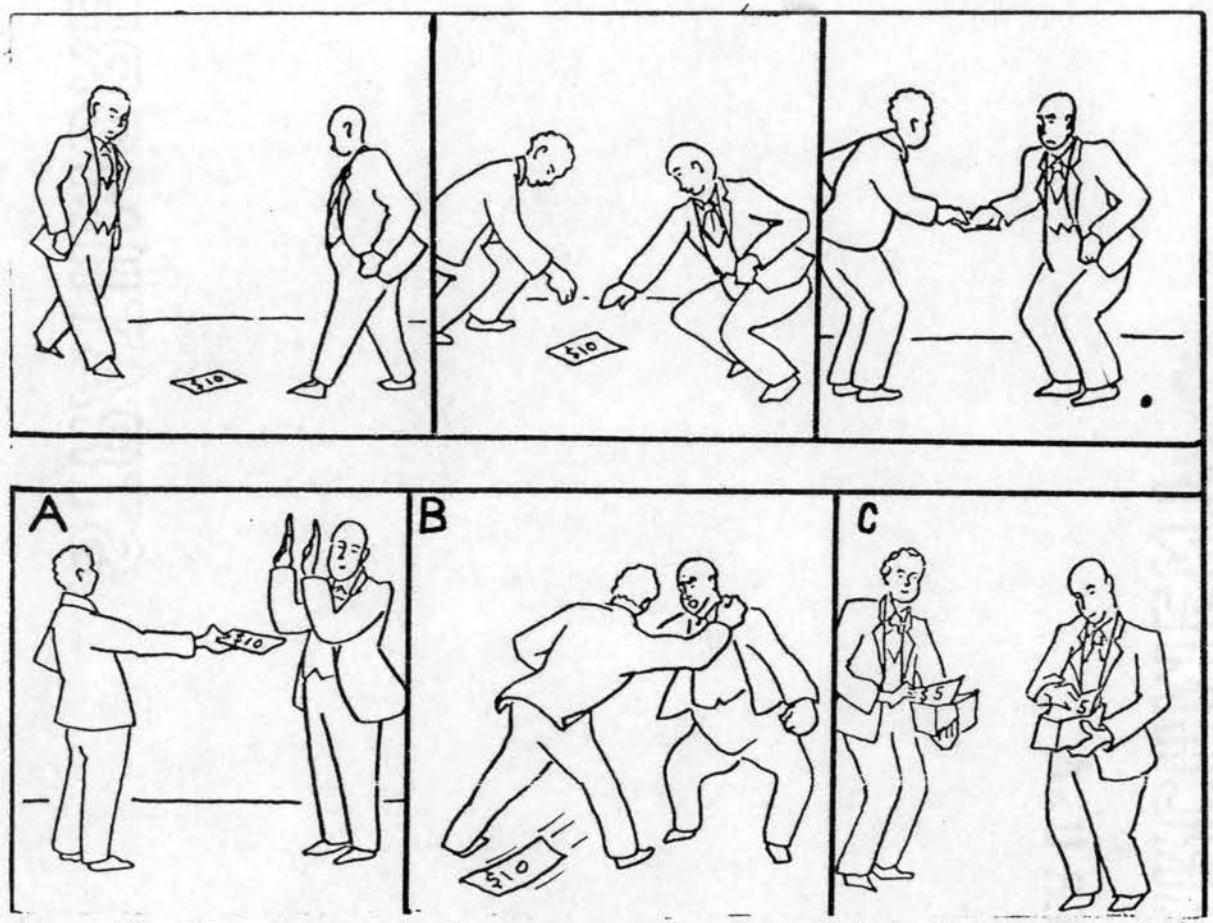
   A. blame his wife
   B. try to find out what is wrong
   C. complain about his lot in life

2. Does he look like

   A. a preacher
   B. a clerk
   C. a baseball player

FIGURE 3

AN EXAMPLE OF THE TYPE OF ITEM USED IN THE PHOTO-ANALYSIS TEST



The story situation appears in the upper panel. The subject chooses one of the endings from the lower panel. Ending A is scored as S, B as I, and C as E.

FIGURE 4

AN EXAMPLE OF THE TYPE OF ITEM USED IN THE PICTURE STORY COMPLETION TEST

individual form, excepting that the pictures were projected on the screen and the subjects wrote their responses on the answer sheet rather than verbalizing them to the examiner. The directions for the administration of the PT Test appear in Appendix A.

Subjects

All subjects were students at Oklahoma State University. Three independent samples were used. Group 1 consisted of 39 males with a mean age of 24 years and a standard deviation of 6.01 years, and 36 females with a mean age of 29 years and a standard deviation of 11.98 years. This sample was used in the study by Rankin and Johnston (1962). These subjects received only the individual form of the test. Group 2 consisted of 64 males with a mean age of 19.98 years and a standard deviation of 1.87 years, and 21 females with a mean age of 19.05 years and a standard deviation of 1.11 years. The mean age of the total sample was 19.75 years with a standard deviation of 1.76 years. These subjects received only the group form of the IES Test. The 64 males in this sample were used as the control group in the study by Wikoff (1963). Group 3 consisted of 15 males with a mean age of 19.60 years and a standard deviation of 1.09 years, and 8 females with a mean age of 18.75 years and a standard deviation of 1.34 years. Mean age of the total sample was 19.30 years with a standard deviation of 1.26 years. This group received both forms of the test.

Procedure

The data were collected first from group 1. The standard procedure given in the IES manual was used in collecting these data. Test adminis-

tration required approximately 25 minutes for each subject. Scoring of the protocols could be done in most cases in about 25 minutes.

Next, data were collected from group 2. Approximately 20 subjects at a time were seated in a room in the audio-visual center at Oklahoma State University. The administration of the test required the services of two experimenters; one gave the instructions and timed the presentation of the test materials, and the other operated the projector and assisted in passing out test materials and taking them up. Testing time was about 45 minutes.

The procedure for collection of data from group 3 was the same as above, excepting that all of these subjects had taken the individual form two weeks prior to taking the group form.

Scoring of the group form answer sheets required about the same length of time as scoring of the individual protocols.

CHAPTER III

ANALYSIS OF THE DATA: RESULTS AND DISCUSSION

Comparisons of Means and Variances

Means and standard deviations for all groups were computed for I, E, and S for each of the four subtests. These data are reported in Table I. A *t* test for the significance of the difference between uncorrelated means of samples of unequal size was used to compare the means of the two samples. No differences were found to be significant at the .05 level or beyond. A *t* value of 1.99 would be necessary for significance at the .05 level, and the highest obtained *t* was 1.90. Obtained *t* values may be seen in Table II. A comparison of the variances of the two groups disclosed two differences beyond the .01 level of significance. These were the AD I scores and the PSC E scores. The AD E score variances were significantly different at the .05 level. All other F values were well below the value needed to reach the .05 level. An F value of 1.93 would be necessary for significance at the .05 level and 2.57 for significance at the .01 level. Variances and obtained F values are listed in Table II.

These results would seem to support the hypothesis that the two forms are equivalent. The differences found between AD I and E scores may readily be explained by differences in the mean ages of the two samples. Rankin and Johnston (1962) have shown that these scales correlate significantly with age. This difference, then, may well be due to differences

TABLE I

MEANS AND STANDARD DEVIATIONS OBTAINED ON INDIVIDUAL AND GROUP FORMS OF THE IES TEST

Test		Individual Form					Group Form			
		Charnes* N=32	Dombrose & Slobin ** N=30		Johnston Group 1 N=75		Johnston Group 2 N=85		Johnston Group 3 N=23	
		M	M	S.D.	M	S.D.	M	S.D.	M	S.D.
	I	3.54	3.08	3.15	2.88	3.35	1.64	1.40	1.13	1.11
AD	E	17.37	18.22	4.12	18.40	4.25	19.78	2.83	20.98	1.87
	S	2.09	1.70	1.82	1.72	2.30	1.58	1.89	.89	1.18
	I	4.44	5.47	2.55	4.17	1.91	4.99	2.03	4.82	2.32
PhA	E	9.50	9.13	2.98	9.69	2.66	8.42	2.44	8.35	2.98
	S	4.06	3.40	1.67	4.14	1.89	4.59	2.01	4.83	1.63
	I	1.78	1.93	1.44	1.49	1.40	1.70	1.66	1.22	1.38
PSC	E	7.12	7.83	2.42	8.28	2.02	7.75	3.53	8.56	2.24
	S	3.09	3.23	1.67	3.23	1.47	3.55	1.49	3.22	1.56
	I	3.19	3.95	1.90	3.83	1.81	4.14	1.73	3.39	1.26
PT	E	3.22	3.73	1.97	4.40	1.97	3.17	1.73	3.57	1.01
	S	3.59	3.58	2.13	3.77	1.83	4.69	1.71	5.04	1.68

* Standard deviations not reported. Two cards were omitted from the PT Test, and one card was omitted from the PSC Test. Data are as reported by Dombrose and Slobin (1958).

** Data are as reported by Dombrose and Slobin (1958) with the exception that a PT D score of .73 was reported. In all other samples the D score is summed with the S score.

TABLE II

COMPARISONS OF MEANS AND VARIANCES OF THE INDIVIDUAL FORM (GROUP 1) AND THE GROUP FORM (GROUP 2) OF THE IES TEST

Test		Means			Variances		
		Group 1	Group 2	t	Group 1	Group 2	F
	I	2.88	1.64	1.6813	11.22	1.96	5.724**
AD	E	18.40	19.78	1.5384	18.06	8.01	2.254*
	S	1.72	1.58	.2064	5.29	3.55	1.490
	I	4.17	4.99	1.2467	3.65	4.12	1.128
PhA	E	9.69	8.42	1.6688	7.08	5.96	1.187
	S	4.14	4.59	.6914	3.57	4.04	1.131
	I	1.49	1.70	.2711	1.96	2.76	1.408
PSC	E	8.28	7.75	.6692	4.08	12.48	3.058**
	S	3.23	3.55	.5597	2.16	2.22	1.027
	I	3.83	4.14	.4830	3.28	2.98	1.100
PT	E	4.40	3.17	1.9004	3.88	2.98	1.302
	S	3.77	4.69	1.4624	3.35	2.92	1.147

** significant at the .01 level
* significant at the .05 level

between the samples used rather than to differences between the two forms of the test. The difference between the two variances of the PSC E scale is more difficult to explain and may well be a true difference between the two forms.

Reliability

Data from all samples were item analyzed and internal consistency reliability coefficients were computed using the Kuder-Richardson formula number 20 (KR-20) (Kuder and Richardson, 1939). These coefficients are reported in Table III. KR-20 coefficients obtained by Dombrose and Slobin and by Wikoff are also reported in Table III. The KR-20 formula was used in preference to the shorter KR-21 approximation because the item analysis indicated unequal item difficulty in several instances.

The discussion of these reliabilities will be handled in terms of the four subtests.

Arrow-Dot

The AD Test would appear to have the highest reliabilities of any of the IES subtests; however, the group form reliabilities appear to be slightly lower than those obtained using the individual form. The reliabilities of the individual form range from .86 for AD I for the group 1 sample to .59 for AD S for the Dombrose and Slobin sample. Group form reliabilities range from .72 on AD E for both the Wikoff sample of inmates and the group 2 sample to .30 on AD S for the Wikoff sample of inmates. AD E appears to be most reliable of the AD scales, the lowest reliability for this scale being .60. The I score seems to have more reliability than the S score when the individual form is used, but the converse seems true when the group form is used. On the AD Test, differences in reli-

TABLE III

KR-20 RELIABILITY COEFFICIENTS OF THE IES TEST AS REPORTED IN SEVERAL STUDIES

		Individual Form		Group Form			
		Dombrose & Slobin N=30	Johnston Group 1 N=75	Johnston Group 2 N=85	Johnston Group 3 N=23	Wikoff (College) N=64	Wikoff (Inmates) N=57
	I	.80	.84	.67	.31*	.41	.65
AD	E	.83	.86	.72	.60	.71	.72
	S	.59	.77	.66	.55	.65	.30
	I	.55	.30	.33	.57	.46	.59
PhA	E	.61	.52	.44	.29*	.47	.61
	S	*	.23	.31	-.03*	.29	.16*
	I	.41	.45	.56	.55	.59	.78
PSC	E	.58	.42	.85	.60	.53	.56
	S	.23*	.13*	.08*	.34*	.28	.02*
	I	.47	.31	.21*	-.37*	.07*	.25
PT	E	.55	.47	.55	.52	.34	.40
	S	.56	.39	.11*	.10*	.11*	.37

* not significant at the .05 level or beyond

abilities may be due to age differences in the samples being compared. Mean ages were considerably higher for both the Dombrose and Slobin sample and the group 1 sample than for the group 2 sample. Age ranges for the samples using the individual form were also much greater than for those using the group from. Differences may also be due to some misunderstanding of the instructions by some subjects or to differences in the testing atmosphere in the two situations.

Photo analysis

This subtest would seem to have some serious problems. The reliabilities obtained on the S score range from .31 on the group 2 sample to -.03 on the group 3 sample. Interpretation of scores on a test with such low reliability would, of course, be questionable. The I score reliabilities range from .59 on the Wikoff sample of inmates to .30 on the group 1 sample. Group form reliability appears to be somewhat better than reliability of the individual form on this scale. E scale reliabilities range from .61 for the Dombrose and Slobin sample and the Wikoff inmate sample to .29 for the group 3 sample. This subtest, like the AD Test, seems to be most reliable in the E score.

Of course, the small number of items (N= 18) probably contributes to the low reliability of the test, but addition of items would increase the time required for administration, thus removing one of the more desirable features of the test.

In general it may be stated that the group form of the PhA Test has reliability comparable to that of the individual form, but that neither of the forms has sufficient reliability for use except as a research instrument. The S score in particular is too unreliable for any use.

Picture Story Completion

The S score of this test also has reliabilities which are too low to permit adequate interpretation. These coefficients ranged from .34 for the group 3 sample to .02 for the Wikoff sample of inmates. The two forms of the test appear to have comparable reliabilities, but both are too low for practical use. Reliabilities for the I and E scores were somewhat better. I score reliability coefficients ranged from .78 for the Wikoff sample of inmates to .41 for the Dombrose and Slobin sample. Group form reliabilities were higher than those of the individual form. E score reliabilities ranged from .42 for the group 1 sample to .85 for the group 2 sample. Here, also, the group form reliabilities were more satisfactory.

The PSC Test shows some promise as a research instrument in the I and E scales, but the S scale reliability is so low as to make its use questionable in any practical situation. In all scales the group form appears to be more reliable than the individual form. The small number of items (N= 13) probably contributes to the low reliability of the PSC Test.

Picture Title

The reliability of the PT Test, from all research evidence except that of Dombrose and Slobin, appears to be seriously low in the I and S scales. I score reliabilities ranged from -.37 for the group 3 sample to .47 for the Dombrose and Slobin sample. Reliabilities for the S scale ranged from .10 for the group 3 sample to .56 for the Dombrose and Slobin sample. Group form reliabilities appeared to be considerably lower on these two scales than those of the individual form. E scale reliability, though still quite low, appears to be better than reliability for the other two scales. E scale reliabilities ranged from .55 for the Dombrose and Slobin sample and the group 2 sample to .34 for the Wikoff college sample.

Group and individual forms seem to have comparable reliabilities on this scale.

It is suggested that these low reliabilities on the PT Test may be due in part to the small number of items (N= 12) and to the need for more complete scoring standards.

Concurrent Validity

Pearson product-moment correlation coefficients were computed between the scores on the group and individual forms of the IES Test using data collected from group 3. These coefficients are reported in Table IV. Following the suggestions made by Block (1963), correction for attenuation was made in the criterion using the formula given by Guilford (1956). These corrected coefficients may be considered as coefficients of concurrent validity.

These coefficients, however, must be interpreted with some caution. It will be noted that three of these correlations, PhA I, PSC S, and PT I, are greater than 1.0. This may be due to the fact that the KR-20 estimation is a conservative one and is probably an underestimation. However, Guilford (1954) points out that results of this kind may be due to sampling errors when small samples are used. Also, Johnson (1944) has demonstrated that errors of measurement may cause fluctuations of a correlation coefficient. All three of these elements are present in this case. Reliabilities used in the computation of these corrected coefficients were taken from the group 2 sample. It will be noted that these reliabilities are all particularly low, namely .30 for PhA I, .13 for PSC S, and .31 for PT I. The sample size was quite small (N= 23), and the KR-20 estimate of reliability based on group 2 was used. The corrected coefficients

TABLE IV

CORRELATIONS BETWEEN THE GROUP AND INDIVIDUAL FORMS OF THE IES TEST BEFORE AND AFTER CORRECTION FOR ATTENUATION

Test		Uncorrected	Corrected
	I	-.07	-.08
AD	E	.48*	.51**
	S	.78**	.89**
	I	.75**	1.37**
PhA	E	.53**	.74**
	S	.29	.61**
	I	.38	.57**
PSC	E	.39	.61**
	S	.51**	1.41**
	I	.64**	1.15**
PT	E	.38	.55**
	S	.46*	.73**

* significant at the .05 level
** signigicant at the .01 level

listed in Table IV, then, must be considered as a very rough estimate of concurrent validity.

These correlations will be discussed in terms of the four subtests.

Arrow-Dot

Correlations between the two forms of the AD Test appear to be satisfactory with the exception of the I score. Following Lindquist (1959), it is suggested that the AD Test may be acting as an insight test. It is quite possible that discussion among the subjects between the times of the first and second administrations of the test may have led to a better understanding of the nature of the problems and a changed pattern of responding on the second marking of the test. This is indicated by the fact that the variances on the second (group) administration were much smaller than on the first. If the AD Test is acting as an insight test, it would be virtually impossible to establish equivalence of the two forms.

Photo-Analysis

The correlations between the two forms of the PhA Test indicate that they are comparable. However, the low reliabilities of the I and S scales give cause for reduced confidence in the validity of the corrected correlations. It will be noted, however, that the uncorrected correlation for PhA I is .75, indicating that this scale is comparable to the individual form.

Picture Story Completion

Correlations between the group and individual forms of the PSC Test, after correction for attenuation, indicate that the two forms are comparable. The spuriously high correlation of the S scale has been discussed above; however, it will be noted that the uncorrected correlation is .51, indicating a rather high degree of correlation before correction is made.

Picture Title

Comparability of the forms is indicated by the corrected correlations on the PT Test. The I scale correlation of .64 indicates a substantial correlation before correction is made.

Scoring Weights

Using the method described by Guilford (1954), scoring weights were developed for the group form in an effort to improve reliability. The IES Test seems almost perfectly to satisfy the criteria for weighting; that is, it contains short subtests, and the average intercorrelations of items is low.

Protocols for group 3 were then rescored using the scoring weights, and KR-20 reliabilities were computed on the weighted scores following the method given by Dressel (1940). These reliabilities are reported in Table V. The scoring weights are reported in Appendix B. It will be seen that in this case the application of scoring weights did not improve reliabilities enough to make their use practicable in light of the increased difficulty of scoring. However, it might be pointed out that these weights were developed on the scores of the group 2 sample (N= 85) and applied to the group 3 sample (N=23). If the weights were to be applied to a larger sample, the increase in reliability might be seen to be somewhat more appreciable.

T Score Norms

The final step in this study was to develop T score norms for the group form of the IES Test. These were developed for the purpose of making subtest scores comparable. These scores have a mean of 50 and

TABLE V

KR-20 RELIABILITY COEFFICIENTS FOR THE GROUP FORM IES TEST WITH WEIGHTED AND UNWEIGHTED SCORES

		unweighted	weighted
	I	.31	.32
AD	E	.60	.61
	S	.55	.54
	I	.57	.63
PhA	E	.29	.25
	S	-.03	.05
	I	.55	.55
PSC	E	.60	.58
	S	.34	.31
	I	-.37	.07
PT	E	.52	-.47
	S	.10	.18

TABLE VI

T SCORE NORMS FOR THE GROUP IES

	AD			PhA			PSC			PT			
T	I	E	S	I	E	S	I	E	S	I	E	S	T
121	----	----	15.0	----	----	----	----	----	----	----	----	----	121
120	11.5	0	----	----	----	----	----	----	----	----	----	----	120
119	----	----	14.5	----	----	----	----	----	----	----	----	----	119
118	----	.5	----	----	----	----	13	----	----	----	----	----	118
117	11.0	----	----	----	----	18	----	----	----	----	----	----	117
116	----	1.0	----	----	----	----	----	----	----	----	----	----	116
115	----	1.5	----	----	----	----	----	----	----	----	----	----	115
114	----	----	14.0	18	----	----	----	----	13	----	----	----	114
113	10.5	2.0	13.5	----	----	----	----	----	----	----	----	----	113
112	----	----	----	----	----	17	12	----	----	----	----	----	112
111	----	2.5	13.0	----	----	----	----	----	----	----	----	----	111
110	10.0	----	----	----	----	----	----	----	----	----	----	----	110
109	----	3.0	----	17	----	----	----	----	----	----	----	----	109
108	----	----	12.5	----	----	----	----	----	----	----	----	----	108
107	----	3.5	----	----	----	16	----	----	12	----	----	----	107
106	9.5	4.0	----	----	----	----	11	----	----	----	----	----	106
105	----	----	12.0	----	----	----	----	----	----	----	----	----	105
104	----	4.5	----	16	----	----	----	----	----	----	----	----	104
103	9.0	----	11.5	----	----	----	----	----	----	----	----	----	103
102	----	5.0	----	----	----	15	----	----	----	----	----	----	102
101	----	----	----	----	----	----	----	----	----	----	----	----	101
100	----	5.5	11.0	----	----	----	10	----	11	----	----	----	100
99	8.5	6.0	----	15	----	----	----	----	----	----	----	----	99
98	----	----	----	----	----	----	----	----	----	----	----	----	98
97	----	6.5	10.5	----	----	14	----	----	----	----	----	----	97

TABLE VI (CONTINUED)

	AD			PhA			PSC			PT			
T	I	E	S	I	E	S	I	E	S	I	E	S	T
96	----	----	----	----	----	----	----	----	----	12	----	----	96
95	8.0	7.0	10.0	----	----	----	----	----	----	----	----	----	95
94	----	----	----	14	----	----	9	----	----	----	----	----	94
93	----	7.5	----	----	----	----	----	----	10	11.5	----	12	93
92	7.5	8.0	9.5	----	----	13	----	----	----	----	----	----	92
91	----	----	----	----	----	----	----	----	----	----	----	----	91
90	----	8.5	----	----	----	----	----	----	----	11.0	----	11.5	90
89	----	----	9.0	13	----	----	----	----	----	----	----	----	89
88	7.0	9.0	----	----	----	----	8	----	----	----	----	----	88
87	----	----	8.5	----	----	12	----	----	9	10.5	----	11.0	87
86	----	9.5	----	----	----	----	----	----	----	----	----	----	86
85	6.5	10.0	----	12	----	----	----	----	----	----	----	----	85
84	----	----	8.0	----	0	----	----	----	----	10.0	----	10.5	84
83	----	10.5	----	----	----	----	----	----	----	----	----	----	83
82	----	----	----	----	----	11	7	----	----	----	----	----	82
81	6.0	11.0	7.5	----	----	----	----	----	----	9.5	----	10.0	81
80	----	----	----	11	1	----	----	----	8	----	----	----	80
79	----	11.5	7.0	----	----	----	----	----	----	----	----	----	79
78	5.5	----	----	----	----	----	----	----	----	9.0	----	9.5	78
77	----	12.0	----	----	----	10	----	----	----	----	----	----	77
76	----	12.5	6.5	----	2	----	6	----	----	----	----	----	76
75	----	----	----	10	----	----	----	----	----	8.5	----	9.0	75
74	5.0	13.0	----	----	----	----	----	----	----	----	----	----	74
73	----	----	6.0	----	----	----	----	----	7	----	----	----	73
72	----	13.5	----	----	3	9	----	0	----	8.0	----	8.5	72
71	----	----	5.5	----	----	----	----	----	----	----	----	----	71
70	4.5	14.0	----	9	----	----	5	----	----	7.5	----	----	70
69	----	14.5	----	----	----	----	----	1	----	----	----	8.0	69
68	----	----	5.0	----	4	----	----	----	----	----	0	----	68

TABLE VI (CONTINUED)

	AD			PhA			PSC			PT			
T	I	E	S	I	E	S	I	E	S	I	E	S	T
67	4.0	15.0	----	----	----	8	----	----	----	7.0	----	----	67
66	----	----	----	----	----	----	----	2	6	----	----	7.5	66
65	----	15.5	4.5	8	----	----	----	----	----	----	.5	----	65
64	----	----	----	----	5	----	4	----	----	6.5	----	----	64
63	3.5	16.0	4.0	----	----	----	----	3	----	----	1.0	7.0	63
62	----	16.5	----	----	----	7	----	----	----	----	----	----	62
61	----	----	----	----	----	----	----	4	----	6.0	----	6.5	61
60	3.0	17.0	3.5	7	6	----	----	----	5	----	1.5	----	60
59	----	----	----	----	----	----	----	----	----	----	----	----	59
58	----	17.5	3.0	----	----	----	3	5	----	5.5	----	6.0	58
57	----	----	----	----	----	6	----	----	----	----	2.0	----	57
56	2.5	18.0	----	----	7	----	----	----	----	----	----	----	56
55	----	18.5	2.5	6	----	----	----	6	----	5.0	----	5.5	55
54	----	----	----	----	----	----	----	----	----	----	2.5	----	54
53	2.0	19.0	----	----	----	----	----	----	4	----	----	----	53
52	----	----	2.0	----	8	5	2	7	----	4.5	----	5.0	52
51	----	19.5	----	----	----	----	----	----	----	----	3.0	----	51
50	----	----	1.5	5	----	----	----	----	----	----	----	----	50
49	1.5	20.0	----	----	----	----	----	8	----	4.0	----	4.5	49
48	----	----	----	----	9	----	----	----	----	----	3.5	----	48
47	----	20.5	1.0	----	----	4	----	----	----	----	----	----	47
46	----	21.0	----	----	----	----	1	9	3	3.5	----	4.0	46
45	1.0	----	----	4	----	----	----	----	----	----	4.0	----	45
44	----	21.5	.5	----	10	----	----	10	----	----	----	----	44
43	----	----	----	----	----	----	----	----	----	3.0	----	3.5	43
42	.5	22.0	0	----	----	3	----	----	----	----	4.5	----	42
41	----	----	----	----	----	----	----	11	----	2.5	----	----	41
40	----	22.5	----	3	----	----	0	----	2	----	----	3.0	40
39	----	23.0	----	----	11	----	----	----	----	----	5.0	----	39

TABLE VI (CONTINUED)

	AD			PhA			PSC			PT			
T	I	E	S	I	E	S	I	E	S	I	E	S	T
38	0	----	----	----	----	----	----	12	----	2.0	----	----	38
37	----	----	----	----	----	2	----	----	----	----	----	2.5	37
36	----	----	----	----	----	----	----	----	----	----	5.5	----	36
35	----	----	----	2	12	----	----	13	----	1.5	----	----	35
34	----	----	----	----	----	----	----	----	----	----	6.0	2.0	34
33	----	----	----	----	----	----	----	----	1	----	----	----	33
32	----	----	----	----	----	1	----	----	----	1.0	----	----	32
31	----	----	----	----	13	----	----	----	----	----	6.5	1.5	31
30	----	----	----	1	----	----	----	----	----	----	----	----	30
29	----	----	----	----	----	----	----	----	----	.5	----	----	29
28	----	----	----	----	----	----	----	----	----	----	7.0	1.0	28
27	----	----	----	----	14	0	----	----	----	----	----	----	27
26	----	----	----	----	----	----	----	----	0	0	----	----	26
25	----	----	----	0	----	----	----	----	----	----	7.5	.5	25
24	----	----	----	----	----	----	----	----	----	----	----	----	24
23	----	----	----	----	15	----	----	----	----	----	----	0	23
22	----	----	----	----	----	----	----	----	----	----	8.0	----	22
21	----	----	----	----	----	----	----	----	----	----	----	----	21
20	----	----	----	----	----	----	----	----	----	----	----	----	20
19	----	----	----	----	16	----	----	----	----	----	8.5	----	19
18	----	----	----	----	----	----	----	----	----	----	----	----	18
17	----	----	----	----	----	----	----	----	----	----	----	----	17
16	----	----	----	----	----	----	----	----	----	----	9.0	----	16
15	----	----	----	----	17	----	----	----	----	----	----	----	15
14	----	----	----	----	----	----	----	----	----	----	----	----	14
13	----	----	----	----	----	----	----	----	----	----	9.5	----	13
12	----	----	----	----	----	----	----	----	----	----	----	----	12
11	----	----	----	----	18	----	----	----	----	----	----	----	11
10	----	----	----	----	----	----	----	----	----	----	10.0	----	10

a standard deviation of 10 -- the same as the MMPI. The norms were based on the group 2 sample of 64 males and 21 females. The norm table is presented in Table VI.

Evaluation

It would seem that the group form of the IES Test is comparable to the individual form, though certain rather serious weaknesses are contained in both forms. Further research and improvement is needed before the test can be said to have practical use in a clinical situation.

The AD Test appears to be the most suitable subtest for present use as a research instrument. Wikoff (1963), using the group form, has presented evidence that the AD Test may be related to the ego control variable identified in the Porteus Maze Test by Docter and Winder (1954) in its ability to detect impulsivity in delinquent males.

A question of ethics might be raised concerning the PhA Test. The subject is told that personality characteristics can be assessed from looking at a photograph. It would seem reasonable to raise the question of whether or not it is ethical to give naive subjects this highly questionable information and to spread a false belief concerning psychological knowledge. Indeed, it has been the experience of the author that many subjects do not believe the statement to be true and answer the questions on the basis of movie and television stereotypes, or stereotypes from their own experience.

It is recommended that future research using this group form of the IES Test might be done in an attempt to improve reliability by deleting the PhA Test and adding items to the PSC and PT Tests. It is also suggested that scoring standards for the PT Test be expanded to cover more

of the possible response types, and thus to improve reliability. Separate norms should be developed for males and females at various age levels and various levels of intelligence using a large national sample.

CHAPTER IV

SUMMARY AND CONCLUSION

This study was concerned with the development of a group form of the IES Test. The individual form of the test was developed by Dombrose and Slobin (1958). Based on psychoanalytic theory, the test assumes projection by the subject of his own personality characteristics onto the test materials; however, the scoring and interpretation of test results are objective.

The test is made up of four subtests, each of which has a separate rationale concerning the use of projection.

Using the materials and instructions of the individual form wherever possible, a group form of the test was constructed such that the test material could be projected onto a screen by means of an opaque projector. Subjects recorded their own responses on a specially constructed answer sheet.

Three independent samples were used, one containing 75 subjects receiving only the individual form (group 1), one containing 85 subjects receiving only the group form (group 2), and one containing 23 subjects receiving both forms (group 3).

The results obtained were as follows:

1. A t test of the significance of the differences between the means of group 1 and 2 showed no significant differences in any of the scales of any of the subtests.

2) An F test of the significance of the difference between the variances of groups 1 and 2 showed significant differences on the AD I and E scales and on the PSC E scale. These differences may have been due to differences in the samples used rather than to differences in the two forms of the test.

3) Computation of KR-20 reliabilities indicated that most reliabilities were quite low. However, some scales, especially the AD Test, are sufficiently reliable for research purposes. Most group form reliabilities appear to be comparable to those obtained with the individual form.

4) Correlations between the group and individual forms of the test, using data from group 3, indicate a high degree of relationship between the two forms in most subtests. These correlations were corrected for attenuation in the criterion only. There are reasons for questioning the validity of these corrected coefficients, however, and they may only be considered as rough estimates of concurrent validity.

5) The application of scoring weights to the group 3 data did not appreciably improve reliability. It was suggested that the use of these weights on a larger sample might be more effective.

6) A norming table of T scores for the group form of the IES Test was developed.

In most subtests scores the two forms of the test appear to be comparable; however, some reliabilities are somewhat higher using the individual form and some are higher using the group form. Since reliabilities are seriously low on many of the subtest scores, it is recommended that neither form of the test be used except as a research instrument. Suggestions for future research included possible methods of improving reliability.

Results of research using the IES Test offer hope that this new approach of using objective methods with a projective instrument may lead to ultimate use of a new type of clinical instrument with unique values not to be found in any instrument now available to the clinician.

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APPENDIX A

DIRECTIONS FOR THE ADMINISTRATION OF THE GROUP IES TEST

Preliminary Remarks

Make certain that all subjects have a pencil and have a clear view of the screen. Then say:

This test will take about forty-five minutes of your time. Please let your answers be your own. Do not confer with others or look to see how others are answering. We want your personal reaction to every problem and every question on the test. Please do not open these booklets or make any marks on them until you are told to do so.

Arrow-Dot

Pass out the AD Test booklets, then stand at the screen with a pointer and say:

Please print your full name in the upper right hand corner of the booklet -- right here. (Point to the correct position on the drawing projected on the screen.) Now, look at the drawings here on the screen. Note that they are the same as the drawings on the front of the booklets. Notice that in each there is an arrow and a black dot. (Point) I want you to draw a line from the point of each arrow to the black dot. Take the shortest distance between the arrow and the dot whenever possible. However, you cannot go through the heavy black bars like this one. (Point) You must always go around them like this. (Demonstrate with the pointer.) Or you may go around like this. (Demonstrate) Now, look at the second drawing. You can go through the single lines like this one whenever it is necessary, like this. (Demonstrate) But do NOT go through the single lines if it is not necessary. Notice that here it is not necessary to go through the line to get to the dot. (Demonstrate on the third example.) Now, when I say "begin", you are to turn the page and work all the problems through page 4 as quickly as you can. Stop at the bottom of page 4. Once you have begun to work, please ask no questions. If you are in doubt about what to do, just do as you think best. When you have reached the bottom of page 4, look up and wait for further instructions. Do not go back and change your answers after you have fin-

ished page 4. All right, turn the page and begin.

After one minute, say:

Remember, you are to stop at the bottom of page 4.

After all have finished, say:

Now turn the page. Notice that the first problem on this page has only one arrow, but two black dots. You are to choose only one dot. Now, work the first problem. (Pause) Now, look at the second problem. Notice that there is only one black dot, but four arrows. You are to draw a line from the point of every arrow to the black dot. All right, work this problem.

Pause, then take up the booklets.

Answer Sheets

After passing out the answer sheets and instruction the subjects to make no marks on them until told to do so, say:

Now, in the space marked "name", right here (point to proper place on the screen), print your full name, last name first. In the space marked "age", right here, (point) write your age to the nearest birthday. In the space marked "education", right here (point), write the highest grade in school or year in college which you have completed. In the space marked "major", here (point), write the area in which you have had the most training. In the space marked "class", (point), give the name of the person in charge of your group.

You are to black out the answers you choose. If you wish to change an answer, you must erase the first answer completely. Notice that there are two spaces in which you are NOT to mark, this one and this one(point). Please leave those spaces blank.

Photo-Analysis

Say:

Now, listen carefully. It has been found that we can tell a great deal about people from the way they look. We are going to show you some pictures of people and we want to see how much you can tell about them. I am going to ask you some questions about the men in the pictures. After each question I shall read three answers. You choose the one answer which you think fits the man best. You may also look at the questions and answers here on the screen as I read them to you. This is a sample item, but do not mark your answer sheets yet.

Read the sample questions and answers. Then say:

Now, find the section on your answer sheet marked "Photo-Analysis". If you think this man is most apt to blame his wife, you would black out the A on your answer sheet for question 1 of the sample item. If you think he is most apt to try to find out what is wrong, you would black out B on your answer sheet, and so on. Now, mark your answer for sample question 1. For question two the process is the same. If you think he looks like a preacher, mark the A; a clerk, mark B; a baseball player, mark C. Now are there any questions? All right, then, here is card A.

Proceed through all the PhA card reading one question and its answers, then allowing ten seconds before reading the next question.

Picture Story Completion

Say:

Now, find the section on your answer sheet headed "Picture Story Completion". Now, look at the pictures on the screen. These three pictures begin a story. However, the story has not been finished. You must finish the story by using one of the three pictures I am about to show you. Here is picture A which could finish the story. Here is picture B which also could finish the story. Here is picture C which is another possible ending to the story. You are to choose one of these endings and black out its letter, A, B, or C on your answer sheet. Mark it now. (Pause 20 seconds.) All right, here is problem two. This time the story begins with two pictures. And here is ending A, here is ending B, and here is ending C. (Pause 20 seconds.) All right, problem three. Here is the beginning of the story -- and here is ending A, ending B, and ending C.

Continue the procedure for problem three on all the rest.

Picture Title

Say:

Now, find the section on your answer sheet headed "Picture Title". I am going to show you some more pictures. This time, I want you to give each picture a name, or title, which will be most fitting for that picture. Here is picture one. Print the name, or title you would give this picture on the line beside the number one under the heading "Picture Title". Please print as clearly as you can. (Pause 45 seconds.) Here is picture two. Print its title beside the number two.

Continue the procedure used for number two for the rest of the cards.

APPENDIX B

ITEM SCORING WEIGHTS FOR THE GROUP IES TEST

Test		Item 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	I	5	6	6	6	4	5	5	6	4	5	6	5	6	6	6	4	6	5	6	4	4	5	5
AD	E	5	6	6	6	6	6	6	7	6	5	6	6	6	6	6	4	6	4	6	4	6	4	4
	S	6	6	6	6	6	6	6	6	6	4	5	6	6	6	6	4	6	5	5	4	6	5	5
	I	4	4	4	4	5	5	5	5	3	5	5	5	6	6	5	5	4	4					
PhA	E	4	5	5	5	5	5	5	6	4	5	5	5	5	5	5	6	5	5					
	S	5	5	5	5	4	5	5	5	5	4	5	4	3	4	5	4	6	5					
	I	7	6	4	6	6	4	6	6	5	5	6	6	6										
PSC	E	5	5	6	5	5	5	5	6	5	5	5	5	5										
	S	5	5	6	6	5	5	5	6	6	6	5	5	5										
	I	5	6	5	5	6	6	4	5	6	5	5	5											
PT	E	6	5	5	5	6	6	6	5	5	4	5	5											
	S	5	5	5	6	5	6	5	5	6	5	5	4											

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