

A FACTOR ANALYTIC APPROACH TO IMPULSE  
AS MEASURED BY I, Q, AND SORT

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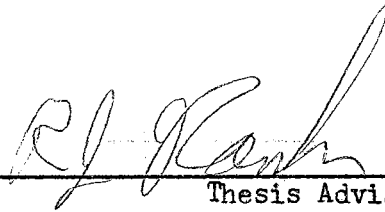
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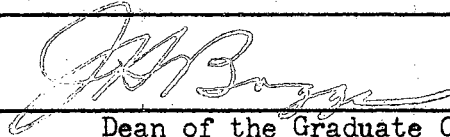
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Thesis Approved:



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## PREFACE

The history of testing has often shown that it is a fallacy to assume that tests with common trait names measure a common factor. If the user is to be effective, he must not be misled by common trait-naming. He must know what factors each test actually measures.

The purpose of this investigation was to determine what factors are actually measured by a group of tests each of which were designed to measure a trait called "impulse".

I would like to thank all of those who have given me guidance and assistance in the preparation of this thesis. For the support and excellent instruction of the faculty of the Psychology Department, Oklahoma State University, my sincere appreciation.

I have profited from the advice and assistance of many people, I am especially grateful to Dr. Richard Rankin whose continual support, encouragement and suggestions were invaluable.

To the instructors and graduate students who aided me in the selection of subjects and testing periods may I express my gratitude.

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Finally I wish to acknowledge the courtesy of the following authors who allowed me to use their tests: Lawrence A. Dombrose and Morton S. Slobin, IES; Stanley D. Porteus, Porteus Maze Q Test; J. B. Stone, SORT;

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## CHAPTER I

### INTRODUCTION AND REVIEW OF THE LITERATURE

There are a group of tests which supposedly measure a trait called impulse. These tests are: IES Impulse Test, (Dombrose and Slobin, 1958); Porteus Qualitative Maze Test, (Porteus, 1959); and Structured-Objective Rorschach Test (SORT), (Stone, 1958).

How does the user go about selecting an impulse test? With several alternatives available for choice, what criteria should dictate the choice of tests? At this point it becomes more than a question of convenience, but a question of whether in actuality these tests measure common factors. Unfortunately, little has been done to evaluate what factors are measured by these various impulse tests.

#### Purpose of the Study

The purpose was not only to answer this question, but to relate these tests to certain outside (logically chosen) variables. The primary purpose was to determine the degree of commonality among these tests using factor analysis. The Arrow Dot (AD) impulse score from the IES test was compared with Porteus Maze Q and SORT impulse and rigidity scores in order to determine whether these measures of impulse are related. Secondly, it was felt that it would be beneficial to the user to look at the relationship of these tests to several important outside

variables such as age, anxiety, intelligence, and direction following ability. An attempt was made to identify the factors involved in the tests and the outside variables.

The IES Test (Dombrose and Slobin, 1958) was designed to measure the relative strengths of the Id, Ego, and Superego as based on psychoanalytical theory. It incorporates the advantages of projective material along with objective and simplified scoring. Of the four sections which make up the test, only the Arrow Dot (AD) subtest has been included in this study, because of its reported high reliability (Rankin and Johnston, 1962).

The subject's task is to draw the shortest possible line from an arrow to a dot without breaking barriers as defined by instructions. Solid bars are not to be crossed, single lines may be crossed only if no other access is available, and dashed lines, not covered by the instructions, are left to the option of the subject. Either following directions or going between spaces in dashed lines represents ego (E) control, while avoiding these gaps and approaching the dot by an unnecessarily long route represents superego (S) control. Impulsiveness is scored when the subject ignores instructions and cuts across lines and bars. Rankin and Wikoff (1964) suggest that this test taps functions similar to those assessed by Porteus Mazes.

The other subtests of the IES are the Photo Analysis Test (PhA), the Picture Story Completion Test (PSC), and the Picture Title Test (PT).

The Porteus Maze Test is a paper and pencil test in which the subject's task is to proceed from an origin to a goal in the shortest



possible route without crossing lines, cutting corners, going up blind alleys, or lifting his pencil. This study used the Qualitative (Q) score as distinct from the Mental Age score. Here the concern is with errors in drawing or execution rather than in planning. Q scores result from such errors as crossing lines, pencil lifting, changing directions, etc. In this sense the Q score is obtained when the subject disobeys instructions and this might be expected to be related to the Arrow Dot. Like the AD the Porteus Q has been reported capable of differentiating between delinquents and normals (Grajales, 1948).

In 1958 Stone developed a group form of the Rorschach test called the S-O Rorschach (SORT). By means of standard blots projected upon a screen the subjects select from multiple choice alternatives. The SORT has several measures of interest: activity potential (M), structuring (F), rigidity (S), impulsivity (F-/F), and anxiety (Fch). The impulse score (F-/F) was expected to have a positive relationship with Q and AD while the rigidity score (S) was expected to be negatively correlated. In addition, activity potential (M) was anticipated to have a positive relation to impulse and a negative relationship to anxiety.

Because age has been shown to be related to impulse from previous research (Rankin and Johnston, 1962) it was included as a variable. Anxiety was measured by the Taylor Manifest Anxiety Scale (TMAS) (Taylor, 1953) with an expectation of a negative relationship between drive and impulse.

The Educational Testing Services Verbal Factor Test V3 (ETS V3) was included to determine whether impulse scales are contaminated with

verbal ability or intelligence as defined by verbal ability. This test is a pure factor, timed, multiple choice test that has the face appearance of most standardized verbal scales.

The MMPI Lie scale was included as a variable to check on the validity of the TMAS and because of the expectation that lie might correlate with impulse score.

The Brown-Carlson Listening Comprehension Test (B-C) (Brown-Carlson, 1955) was included because it is a reliable measure of direction following. This Test measures the student's ability to understand spoken language. The total Brown-Carlson (B-C) score includes immediate recall; following directions (D), in which the S follows verbally administered orders; recognition of transients; recognizing word meaning; and lecture comprehension (E) scores. It was expected that impulse, as defined in the AD, might be related to an ability to comprehend and obey instructions.

#### Review of the Literature

##### IES Arrow Dot

The IES Test was first developed by Dombrose and Slobin in 1951, and revised in 1958. With the present test (Dombrose and Slobin, 1958), predictions were made concerning the scores to be expected from male groups of normals, neurotics, and psychotics. They found that the Picture Story Completion Test (PSC) and the Arrow Dot (AD) Test were the most successful at predicting group differences.

Charnes (1953) administered the IES to different groups to determine the consistency of test scores over different age levels. His groups

consisted of ten year old children, adolescents, and adults. He found the only scores which failed to show a significant difference were those between children and adults.

Ritz (1954) found that the AD and PSC tests could discriminate among three geriatric groups; a non-institutionalized non-psychotic group, an institutionalized non-psychotic group, and an institutionalized psychotic group.

Golden (1954) in testing for sex differences in the IES scores of a group of eleven year old boys and girls found the AD and PT tests very sensitive to sex differences.

Rankin and Johnston (1962) found support for the work of Charnes, Ritz, and Golden in investigating the relation in IES scores in both age and sex. Rankin and Johnston found highly significant correlations between age and IES scores on the AD test with a sample of normal adults. The AD and PhA tests were very sensitive to sex differences.

Herron (1962) administered the IES to a group of rejected and accepted adolescents and found the PSC test and the PT test the most sensitive to personality differences, although individual items on all tests were of discriminative value.

Pickney (1963) gave the IES test to 80 female college students and found that scores for these subjects resembled those of male inhibited neurotics on three of four subtests. From this he interpreted females as having less experienced impulse, more conformity with super-ego values, and more controlled behavior.

Signori, Smordin, Rempel, and Sampson (1964) administered the IES to groups of better adjusted and more poorly adjusted delinquent

adolescent girls and predicted that the "high" adjusted group would make more ego and superego responses than the "low" adjusted groups. No significant difference was found between the two groups.

Rankin and Wikoff (1964) found that the AD and PT tests could successfully discriminate between male college students and incarcerated delinquent males.

Golias and Roback (1965) report that the AD test is capable of differentiating between incarcerated female delinquents and female adolescents institutionalized in a mental hospital.

Walker, Farrell, McCarthy, and Baur (1965) found that the sex of the examiner did not significantly effect the IES scores given to a group of male subjects. However, when comparisons were made between subtest scores obtained by the male subjects in this study and those of female subjects tested by a male examiner in a previous investigation (Pickney, 1963), five of the twelve comparisons were significant. The male subjects scored higher on AD impulse, AD superego, PhA ego, while females obtained higher scores on AD ego and PhA impulse.

McCormick, Schnobrick, and Footlik (1966) administered the AD subtest to a group of Negro girls and boys of low IQs (below 80) and found that the girls exhibited significantly lower ego and significantly higher superego scores. The data were then compared with those of other studies of adolescents. They found the Negro males exhibited significantly higher impulse and lower ego scores in comparison with one group (Herron, 1962). In comparison with another group (Signori, 1964) the Negro males exhibited significantly higher impulse and superego scores and lower ego scores.



In comparing IES measures and intelligence scores from the Revised Beta Examination of male and female undergraduates, Bortner (1966) found few significant correlations and concluded that no strong relationships exist between intelligence and IES measures.

Mangold (1966) found that the AD and PT subtests discriminated significantly between groups of delinquents and non-delinquents.

#### Porteus Qualitative Maze Test

The Porteus Maze Test was initially developed for classification of mental defectives and in the 50 years of its use has been applied to many clinical and cultural groups for a variety of purposes, ranging from intellectual classification to studies in behavior pathology and psychosurgery. (Porteus, 1965). Qualitative scores on the Porteus Maze Test have been found to differentiate delinquents and non-delinquents and criminals and non-criminals, to indicate impulsivity and acting out tendencies (La Barba, 1965).

Grajales (1948) found that the Porteus Q discriminated between delinquents and normals.

Schuessler and Cressey (1950) reviewed four studies which used the Porteus Maze Test and felt that the positive results indicated were contaminated by observer bias due to the use of a single observer for each case, and by a cultural variable, since all subjects were Hawaiian.

Doctor and Winder (1954) investigated the performance of delinquents and non-delinquents on the Porteus Maze using Porteus's qualitative scoring methods. These investigators matched 60 delinquent and

non-delinquent boys on the basis of age, mental ability, race, and socioeconomic status. They found highly significant differences and indicated that the instrument may have some value as a screening device.

La Barba (1965) administered the Rorschach and the Porteus Maze test to a random sample of 15 white male patients in a state hospital. No significant correlations between Q and Rorschach were obtained. Perhaps the small N in this case accounts for the lack of significant correlations.

#### Structured-Objective Rorschach

Langer, Hayes, and Sharp (1963) investigated the effects of anxiety and induced stress on the SORT. Their three major findings were: (a) H (human responses) appeared to be the only valid indicator of anxiety on the SORT, (b) the SORT was not as sensitive to anxiety as the standard Rorschach, and (c) Fch scores were not related to anxiety.

Langer, Carlise, and Hayes (1963) were interested in the effects of anxiety and conformity on the SORT. They administered the TMAS, the Bernberge Humkel Inventory, and the SORT to 119 male and female subjects. Their findings indicated: (1) the tests were sensitive to sex differences, (2) H was related to anxiety, (3) conformity was related to Fch and O (original responses), and (4) interaction effects for S, F-, and P (popular responses) were found.

Weinlander (1965) found support for the construct validity of the SORT when applied to neurotic patients. SORT scores for 25 neurotics were compared with SORT norms of 200 telephone workers. Four of fifteen SORT variables showed significant differences and Fch was significant

at the .01 level.

In a companion study comparing 50 alcoholic patients with the SORT norms of 200 telephone workers, Weinlander (1965) found a significant difference on six of fifteen SORT variables. Fch was significant at the .001 level.

#### Statement of the Hypotheses

Because of the number of factors involved in the matrix, a hypothesis has not been stated for each relationship; however, they are implied. The primary and secondary hypotheses are as follows:

##### Primary Hypothesis:

The IES, AD, Porteus Maze Q, and the S-0 Rorschach Impulse Tests all measure a common factor. (They will all load on a common factor in the factor analysis.)

##### Secondary Hypotheses:

1. Measures of impulse are sensitive to age differences.
2. There is a negative relationship between anxiety as measured by the TMAS test and impulse scores.
3. Measures of impulse are sensitive to intelligence differences as measured by the ETS V3.
4. There is a negative relationship between direction following ability as measured by the Brown-Carlson Listening Comprehension Test and impulse scores.
5. There is a positive relationship between a tendency to lie as measured by the MMPI Lie scale and impulse scores.

## CHAPTER II

### THE EXPERIMENTAL PROCEDURE

The primary purpose of this study was to determine the relationship of the various impulse tests. The first task, then, was to administer these tests (IES Arrow-Dot, Porteus Mazes, and SORT) according to their proscribed procedures. To meet the secondary purpose of the study, an investigation of the relationship of these impulse tests to certain selected variables, the TMAS, ETS V3, MMPI Lie scale, and the Brown-Carlson Listening Comprehension Test were administered.

#### Subjects

Two hundred fifty students in five introductory psychology classes from Oklahoma State University were used. The mean age of the sample was 19.37 years with a standard deviation of 1.18 years. One hundred ninety subjects were present for all test administrations. For ease of data handling, ten male subjects were discarded randomly to balance the Ns at 90 males and 90 females.

#### Procedure

Because of the number of tests involved, it was necessary to administer the tests in several periods of approximately 60 to 90 minutes a period. The first set of the first period consisted of the TMAS,



the MMPI Lie, and the ETS V3. Set two consisted of the B-C, the Porteus Q, and the IES Arrow-Dot. The SORT was administered in the last set. This same order of administration was followed with all the groups of subjects.

The procedures outlined in their respective publications were followed with the TMAS, the MMPI Lie, the ETS V3, the SORT, and the B-C. However, because of the desire to continue to utilize group administration, the following special forms of the Arrow-Dot and Porteus Maze Q were used.

The group version of the AD was employed following the suggestions of Johnston (1963). Johnston found no significant difference between the individual and group tests when administered to the same subjects. This method consisted of projecting material onto a screen by means of an opaque projector, enabling the examiner to demonstrate the correct procedure with a pointer at the screen, while instructions were given.

Special modifications of the Porteus Mazes were made in order to permit group administration. The test is normally administered individually and the subject allowed several trials for each design. For group administration the eight standard Vineland Revision Mazes from year seven to adult were stapled into packets in such a manner that the subject could work through a series of mazes by removing the mazes in successive order from the packet. This procedure provided only one maze per year even if errors are made in execution and the subject can back-track after errors. This method was found to be acceptable as few execution errors occurred and many qualitative errors were obtained. The instructions were structured for group presentation and were read

to the subjects. Directions for administering the group form of the Porteus Maze test are found in the Appendix. These instructions have the same basic framework as the individual form.

## CHAPTER III

### RESULTS AND DISCUSSION

As stated in the introduction, the primary purpose of this study was to determine the relationship of three measures of impulse. The secondary purpose was to look at the relationship of these tests to certain outside variables. To achieve these objectives, the techniques of factor analysis and correlation coefficients were employed.

Table I presents correlations, standard deviations, and means for all variables. The primary hypothesis was not supported as no significant intercorrelations were found between the AD, the Porteus Maze Q, and the SORT. This finding is further evidenced in Table II as we see lack of significant correlations between the AD, the Porteus Maze Q, and the SORT. Because both the AD and Porteus Q have been reported capable of differentiating between delinquents and non-delinquents (Rankin and Wikoff, 1964; Grajales, 1948), a positive correlation had been expected.

There was a lack of significant correlations of the measures of impulse with age. This is in opposition to correlation between age and impulse as found by other investigators (Rankin and Johnston, 1962; Charnes, 1953).

No support was found for the hypothesis of a negative relationship between anxiety and impulse. Although these correlations were not

TABLE I  
CORRELATIONS AMONG VARIABLES WITH  
ASSOCIATED MEANS AND STANDARD DEVIATIONS

		1	2	3	4	5	6	7	8	9	10
1	S Age	1	-.03	-.06	.12	-.12	-.21	-.08	-.13	-.04	-.13
2	Porteus Q		1	-.03	-.08	.14	-.03	.02	-.13	-.06	-.08
3	Arrow Dot I			1	-.74	.21	-.24	-.11	-.27	.02	.04
4	Arrow Dot E				1	-.81	.17	.05	.26	.00	.05
5	Arrow Dot S					1	-.05	.03	-.14	-.02	.04
6	Brown Carlsen Total						1	.73	.77	-.09	-.12
7	Lecture Comprehension E							1	.36	-.07	-.11
8	Following Directions D								1	-.07	-.10
9	MMPI Lie									1	-.16
10	Taylor Manifest Anxiety										1
11	ETS Vocabulary 3										
12	S-O Rorschach W										
13	S										
14	F										
15	F-										
16	M										
17	Fch										
18	F-/F-										
19	Porteus Q First 30										
20	Last 30										
21	Cut Corners										
22	Crossed Lines										
23	Pencil Lifts										
24	Wavy Lines										
25	Wrong Direction										
26	Error in No. 7										

r .18 = .05  
r .21 = .01  
n = 180

TABLE I (Continued)

	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	M	SD
1	-.02	.17	.03	-.08	.00	.00	.19	.10	.05	.17	.04	-.06	-.06	-.02	.00	.07	19.37	1.18
2	-.08	-.06	.04	-.14	.07	.07	-.02	.13	.29	.19	.61	.69	.71	.50	.27	.61	26.26	1.69
3	-.12	-.04	-.11	-.03	-.08	-.08	.13	-.08	.02	.12	-.08	-.11	.06	-.04	-.01	-.04	1.79	2.28
4	.12	.00	-.15	.10	.04	.07	-.10	-.05	-.06	-.18	-.03	.02	-.17	.08	-.05	-.04	19.73	3.78
5	-.08	-.03	-.11	-.12	.01	-.04	.04	.09	.06	.16	.11	.07	.19	-.08	-.08	.09	1.48	2.60
6	.60	.10	.05	.02	-.03	.06	-.11	-.03	-.07	-.16	-.03	.02	.03	-.09	-.05	.00	55.31	7.27
7	.51	.08	.01	-.01	-.01	.06	-.07	.03	-.11	-.04	-.07	.04	.10	-.05	-.02	.02	14.02	2.83
8	.41	.21	.05	.00	-.13	.03	.06	-.09	-.13	-.29	-.05	-.05	-.09	-.04	-.09	-.08	14.93	2.92
9	-.04	-.03	-.02	-.02	.11	-.07	.04	.06	.02	-.10	-.14	-.07	-.02	.04	.10	-.13	3.30	1.90
10	-.07	.01	-.01	.05	.03	-.01	-.09	-.02	-.01	.00	-.07	-.16	.01	-.05	-.06	-.02	17.78	8.13
11	1	.18	.08	-.04	-.11	.13	-.10	-.03	-.05	-.18	-.13	-.02	.04	-.19	-.06	-.02	37.84	9.46
12		1	-.02	-.39	-.36	.02	.45	.07	-.02	-.06	-.02	-.06	-.01	-.06	.04	.15	30.56	5.74
13			1	.33	.04	-.10	.05	-.24	-.02	-.10	.06	.11	-.06	.09	-.04	.00	13.13	2.85
14				1	-.07	-.32	-.27	-.78	-.06	.04	-.13	-.04	-.17	.06	-.11	-.09	28.77	4.45
15					1	-.03	-.20	.61	.04	-.02	.08	.04	.03	-.01	.13	.04	11.74	4.02
16						1	-.39	.22	.08	-.03	-.01	-.01	.10	.05	-.05	.16	9.91	3.34
17							1	.09	-.06	.01	.02	.01	-.01	.05	.08	-.16	17.67	3.87
18								1	.10	-.03	.14	.06	.15	-.10	.17	.10	90.23	2.27
19									1	.21	.21	.11	.09	.02	.41	.21	1.14	1.75
20										1	.16	.08	.16	-.13	.21	.08	.29	0.58
21											1	.52	.14	.21	.04	.41	3.68	4.37
22												1	.20	.23	.14	.31	4.64	5.34
23													1	.07	.13	.39	8.88	9.36
24														1	.08	.40	6.27	4.97
25															1	.03	.98	1.20
26																1	.43	0.81

TABLE II  
ARROW-DOT CORRELATIONS WITH VARIABLES IN  
FACTOR ANALYSIS

Test	r. with Arrow Dot I.
Porteus Q	-.03
Brown Carlsen E	-.11
Brown Carlsen D	-.27
MMPI L	+.02
TMAS	+.04
ETS V3	-.12
SORT W	-.04
SORT S	-.11
SORT M	-.08
Fch	+.13
F-/F	-.08

significant, two were in the expected direction (SORT F-/F and Porteus Q).

No significant intercorrelations were found between impulse and intelligence as measured by the ETS V3, although all correlations were in the expected negative direction. These findings support those of Bortner, using the AD (1966), and Doctor and Winder, who used the Porteus Q (1954).

Support was found for the hypothesis of a negative relationship between impulse and direction following ability. There was a negative relationship for AD impulse and B-C direction following significant at the .01 level. Although the relationship between the other two measures of impulse (Porteus Q and SORT F-/F) were not significant, they were both in the expected negative direction.

Two other findings of interest were noted. No significant intercorrelations were found between the MMPI Lie and impulse measures. Although activity potential (M) did not show a significant relationship to Porteus Q and AD impulse, it did show a significant correlation with SORT impulsivity at the .01 level. Support was found for the hypothesis of a negative relationship between SORT activity potential (M) and anxiety (Fch), significant at the .01 level.

Table III is a Rotated Factor Matrix containing the test variables and the resultant factors and communalities which they incorporate. The U.C.L.A. Biomedical BMD03M 7040 conversion utilizing varimax rotation was employed for the factor analysis. In the communality option, high row-column values were inserted. False factors which resulted from the experimental dependence among the Arrow Dot I, E, and S were eliminated

TABLE III  
ROTATED FACTOR MATRIX

Test	Factor								h <sup>2</sup>
	I	II	III	IV	V	VI	VII	VIII	
Porteus Maze Q	-.04	-.03	.02	-.01	-.01	.42	-.04	-.01	.18
Arrow Dot I	-.11	.06	.07	.01	.51	-.05	.07	-.01	.29
Brown Carlsen E.	.72	-.02	.05	-.01	-.08	.08	.02	-.02	.53
Brown Carlsen D	.47	.19	-.07	.00	-.37	-.20	.00	-.13	.45
MMPI Lie	-.07	-.01	.01	-.41	.03	-.07	.03	.09	.20
TMAS	-.12	-.03	.00	.38	.06	-.12	-.03	.12	.20
ETS V3	.69	.08	-.09	-.01	-.08	-.11	-.17	.03	.54
SORT W	.14	.69	.05	.05	.01	-.07	-.03	.00	.51
SORT S	.03	.02	-.50	-.02	-.10	.06	.05	.05	.27
SORM M	.09	-.09	.19	.06	-.08	.10	-.61	.00	.44
Fch	-.07	.61	.01	-.11	.07	.03	.40	.00	.56
F-/F	-.02	.12	.43	-.08	-.03	.23	-.14	.11	.30
%	29	21	11	08	10	08	13	01	100



by including only the Arrow Dot I and the components of the SORT which were not included in the F-/F score. Direction following and lecture comprehension were the only parts of the B-C which were included because of their lack of auto-correlations with the total score. The variables thus included in the factor analysis were the Porteus Maze Q, Arrow Dot I, Brown-Carlson E (lecture comprehension) and D (directions), MMPI Lie, TMAS, ETS V3, SORT W, S, M, Fch, and F-/F. The requirements of experimental independence was met by each of these variables. Age was not included because of its low correlation with the other variables.

Seven factors and a residual were obtained in the analysis.

Factor I is a verbal fluency factor primarily identified by ETS V3 and the Brown-Carlson E and D. This loading gives further support to Brown and Carlson (1955) who reported a high IQ X B-C correlation. Table I had indicated that all B-C X ETS V3 correlations were significant.

Factor II is a strong SORT W and Fch factor which taps theoretical and anxiety dimensions. It might be that if this is a theoretical factor, it is a non-verbal theoretical, as seen from the low ETS V3 saturation. The low TMAS saturation on factor II gives support to its low correlation with SORT anxiety (see Table I).

Factor III is a SORT impulse factor identified by a negative S (rigidity) loading and a positive F-/F (impulse) loading. The other impulse tests do not load on this factor.

Factor IV is almost a pure TMAS factor, and the negative MMPI Lie score loading is in line with expectations. Although the negative saturation of the impulse tests on this factor was in the expected direction, the loading was so low as to indicate that the impulse

tests are free from dependence upon an anxiety dimension.

Factor V, the IES AD I factor, proved to be of great interest in this investigation. Its independence from the other impulse measures is in line with the findings in Table I. The negative saturation of the B-C is in line with the hypothesis of a negative relationship between impulse and direction following ability. AD I is perhaps related to a non-intellectual direction following component as indicated by the independence of the ETS V3 on this factor.

Factor VI is the Porteus Maze Q factor which also has a light SORT saturation. The lack of an ETS V3 saturation on this factor gives further support for an absence of a relationship between the Porteus Q and intelligence.

Factor VII is a SORT Fch factor. The high negative saturation of activity potential (M) on this factor gives further support to the negative relationship of it with anxiety (Fch).

Factor VIII is a residual.

## CHAPTER IV

### SUMMARY

The investigation had two principle purposes. The first was to determine the level of communality of three measures of "impulse" (IES AD, Porteus Q, and SORT). Here the question was, "Do these impulse tests actually measure a common factor?" The second purpose was to look at the correlations of these impulse tests with various selected factors.

Two hundred fifty introductory psychology students were assessed by the battery of tests and the results were tabulated by means of correlation coefficients and factor analysis.

The primary results of the data indicate that the three measures of impulse do not measure a single common factor, but tap several factors. Of the seven factors which were obtained in the analysis, AD I loaded on factor V, Porteus Q on factor VI, and SORT F-/F on factor VII. The fact that low correlations are found on these impulse measures and that they do not saturate on a common "impulse" factor is further evidence of the remarkable independence of these measures and suggest that the selection and use of an impulse measure be done with great care.

In identifying what these "impulse" tests might be, we have found that they are universally free from verbal and anxiety dimensions. All

the impulse tests were found to have a low saturation on factor I (verbal fluency) and on factor IV (TMAS anxiety). Whereas AD I has a significant negative relationship to a direction following dimension, it seems to be independent from intelligence as defined by verbal ability (ETS V3). Porteus Q has some communality with AD I in this respect, also having a negative relationship to B-C D and a lack of an ETS V3 saturation. The SORT impulse factor is unique in that the other impulse tests do not load on it.

The independence of these three "impulse" measures and the definition problems involved should not be discouraging to the psychometrician. Combined use of these measures present interesting measurement possibilities. The Porteus Maze Q and the AD I have been found capable of differentiating between delinquents and non-delinquents. Perhaps the combination of these measures with the addition of the SORT F-/F score could increase the power of such a predictor even more if it can also be shown to be predictive in such situations.

The secondary results were as follows:

1. There is no support presented by this data for the hypothesis that measures of impulse are sensitive to age differences.
2. No support was found for the hypothesis of a negative relationship between anxiety as measured by the TMAS and impulse scores.
3. The hypothesis that measures of impulse are sensitive to intelligence differences as measured by the ETS V3 was not supported by the data.
4. Support was found for the hypothesis of a negative relationship between impulse and direction following ability.

5. No significant intercorrelations were found between the MMPI Lie scale and impulse measures.

6. Support was found for a significant relationship between SORT activity potential (M) and impulsivity (F-/F). A significant negative relationship was found between SORT activity potential (M) and anxiety (Fch).

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## APPENDIX

### DIRECTIONS FOR THE ADMINISTRATION OF THE GROUP PORTEUS MAZE TEST

#### Preliminary Remarks

Make certain that all subjects have a pencil and a clear desk.

Then say:

This test will take about thirty minutes of your time. Please let your answers be your own. Do not confer with others or look to see how others are answering. The packets will now be passed out. Please do not open or move the packets from the position they are placed on your desk until you are instructed to do so.

Pass out the maze packets, then say:

Please remove the paper clip and turn over the first page from top to bottom so that it is in this position (demonstrate: page turned and inverted with top now at the bottom). As you proceed through the packet each succeeding page will be turned over in the same manner. Now, look at the first page. This is a maze. Your task will be to draw with your pencil from a starting point, usually indicated by an arrow or a capital S to an exit. I want you to suppose that this is a maze in the form of a street map. All the lines are stone walls. You can imagine, if you like, that you are walking or driving a car in here (examiner points to starting point marked S) and you have to find your way out here (examiner

points to exit arrow). But you must be very careful not to bump into any of the walls nor go into any blocked street. This is not a speed test. You can stop anywhere as long as you like while you decide which way to go, but try not to lift the pencil off the paper until you are right outside the maze, and don't bump into any walls. When you have finished the first maze turn over the next page and work the next maze and proceed until you have completed all the mazes. Do not go back to a maze once you have finished it.

Are there any questions? All right, you may begin.

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