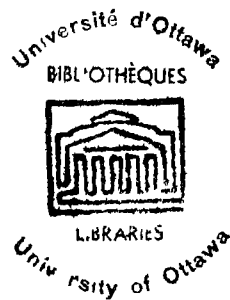


RESPONSE STYLE DIMENSIONS AS A FUNCTION OF
EYSENCKIAN PERSONALITY DIMENSIONS

by Leo Lazar

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CURRICULUM VITAE

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INTRODUCTION

Response style in connection with test-taking responses has been subject to a good deal of controversy. It has been suggested by one group of authors, that response style consists merely of stimulus bound reactions in specific test situations, while others are equally certain that response style is in fact an immediately observable phenomenon arising from deep seated personality syndromes. The trend in the literature at present appears to favour the view that measures of response styles are measures of personality variables.

This study attempts to link up two such measures with recognized personality dimensions based on Eysenck's theoretical framework. While the Eysenckian dimensions in this study are determined by the Maudsley Personality Inventory, which is after all "only" a questionnaire, a considerable amount of research appears to justify the assumption that this test differentiates validly between various personality types in large samples.

Using Eysenck's framework and terminology, Neuroticism and Introversion-Extraversion may be considered as two inherited, unrelated, constitutional personality dimensions or continua which in turn may be expected to influence the development of such response styles as Word Association

Communality and Agreement-Disagreement tendency, which have been designated as response bias and response set respectively.

These four variables have been selected because at the outset of this study the probability appeared high that the above response variables may be phenotypical manifestations of Eysenck's genotypical dimensions. It was expected that the abnormality of a high Neuroticism score would be paralleled by low Word Association Communality and that constitutional Extraversion would find its expression in the impulsivity of the "Agreer".

Chapter one introduces the constitutional variables in detail as well as the tests which are employed for their measurement, while chapter two deals similarly with the response style variables. Hypotheses and consequent experimental design are the subjects of chapters three and four. The results are presented in chapter five, while their interpretation as well as the discussion of theoretical implications of linking up constitution and response style provide the contents of chapter six.

CHAPTER I

CONSTITUTIONAL VARIABLES

Eysenck has been influenced by the Jungian concepts of Neuroticism and Extraversion as distinct and unrelated personality types, whose behaviour and personality development can be predicted according to their position on the continua of Neuroticism and Introversiion-Extraversion.¹ He identified these traits by means of criterion analysis,² demonstrated their inherited characteristics³ and proceeded to link them up with learning theory to predict precisely how they would perform in complex learning situations.⁴

Although not all of Eysenck's hypotheses have been unanimously validated and while some details of the theory are presently being modified, the biological reality of these traits has been sufficiently well demonstrated

1 H.J. Eysenck, Dimensions of Personality, London, Kegan-Paul, 1947, xi-308 p.

2 -----, "Criterion Analysis-An Application of the Hypothetico-Deductive Method to Factor Analysis", Psychological Review, Vol. 57, 1950, p. 38-65.

3 H.J. Eysenck and F.B. Prell, "The Inheritance of Neuroticism: An Experimental Study", The Journal of Mental Science, Vol. 96, No. 408, July 1951, p. 441-465.

4 H.J. Eysenck (Ed.), Handbook of Abnormal Psychology, New York, Basic Books, 1961, xvi-816 p.

to enable other researchers to employ them for further hypothetical formulations.

In the following discussion of each variable, the chapters will attempt to provide definitions of each variable, as their characteristics have come to light in experimental work, the means of measurement, and the expectations, i.e. what kind of behaviour may be hypothesized on the basis of each variable.

1. Neuroticism.

Since much of the observable behaviour of man has been designated as neurotic, there is an endless series of definitions of neuroticism, each mainly a function of the author's point of view. As a representative of the constitutional and experimental approach Eysenck views neuroticism as an inherited personality variable

(...) ranging from the extremely stable nature, well integrated and through the average sort of personality to the extremely unstable poorly integrated, neurotic type of individual. The population is conceived of as lying along this continuum, so that everyone can be assigned a 'neuroticism score' which would specify his exact position. The distribution of people on this continuum is believed to be unlikely to deviate far from the normal type of curve which characterizes the distribution of scores on intelligence tests.⁵

⁵ Eysenck and Prell, Op. Cit., p. 448.

The trait of neuroticism is operationally defined

(...) in terms of the pattern of intercorrelations between a specified set of objective personality tests, in large part determined by heredity.⁶

At this stage, however, Eysenck still relied heavily on psychiatric diagnosis for his samples of neurotics. Eventually, however, he began to regard neuroticism "as a form of drive related to the overexcitability of the autonomic nervous system, particularly the sympathetic branch".⁷

A legion of investigators have further examined neuroticism in relation with other factors such as anxiety,⁸ sedation threshold,⁹ arousal,¹⁰ and sympathetic reactivity¹¹

6 Eysenck and Prell, Op. Cit., p. 449.

7 E.J. Eysenck, "A Dynamic Theory of Anxiety and Hysteria", The Journal of Mental Science, Vol. 101, No. 422, January 1955, p. 33.

8 K.W. Spence, "A Theory of Emotionally Based Drive (D) and its Relation to Performance in Simple Learning Situations", The American Psychologist, Vol. 13, 1958, p. 131-141.

9 C. Shagass, "The Sedation Threshold as an Objective Index of Manifest Anxiety in "psychoneurosis", Journal of Psychosomatic Research, Vol. 1, 1956, p. 45-57.

10 G.C. Claridge and R. J. Harrington, "Sedation Threshold, Personality, and the Theory of Neurosis", British Journal of Psychiatry, Vol. 106, No. 445, October 1960, p. 1568-1586.

11 M.H. Davies, G.C. Claridge and R.J. Wawman, "The Blood Pressure Response to an Adrenaline Antagonist as a Measure of Autonomic Lability", British Journal of Psychiatry, Vol. 109, No. 461, July 1963, p. 558-567.

either directly or in conjunction with introversion-extraversion. The results of these investigations and consequent speculation by the authors may be combined in the view that neuroticism as tapped by the Maudsley Personality Inventory is a potential of general responsiveness to stimuli related to the degree of inherited or habitual reactivity of the sympathetic nervous system. In other words confrontation with and perception of a stimulus arouses individually different degrees of excitement in the sympathetic branch resulting in different degrees of readiness for the total organism to participate effectively in the impending experience or interaction with the stimulus.

Where neuroticism is high the subject may be expected to have a lower threshold of arousal and react more intensively even to the point of interference with the overall efficiency of his performance. Subjectively he cannot detach himself from the experience and what is happening to him. Behaviourally his stimulus-response connections are more easily modified or reinforced, i.e. effects of experience are more modifying and more lasting than in those subjects of lower intensity of neuroticism. In short the higher the degree of neuroticism the more the individual reacts both to the stimulus and his own internal promptings aroused by the stimulus, and the internal

promptings may eventually overrule the stimulus and reinforce previous behaviour patterns.

This interpretation of neuroticism is based on Claridge's attempt to link up Hebb's arousal theory and Eysenck's postulates.^{12,13}

From these considerations and the high correlation between Neuroticism on the MPI and Manifest Anxiety it follows that a high degree of neuroticism should tend to interfere with communality of responses on a word association test, since strong internal promptings should give rise to a higher number of idiosyncratic responses.

For the purpose of this study therefore neuroticism is viewed as an inherited drive to react for the sake of action itself and secondarily only as a drive to react in accordance with the stimulus. Furthermore, this drive is less the result of environmental influences but rather arises from constitutional factors of neurological predisposition and metabolism. In short neuroticism as measured by the MPI is largely an inherited constitutional personality variable.

In this connection it becomes necessary to examine the reliability and validity of the Maudsley Personality Inventory as the instrument which has been selected to

¹² Claridge and Herrington, Op. Cit., p. 1570 and 1580.

¹³ Davies, et al., Op. Cit., p. 563, 564 and 566.

identify the constitutional personality variables under consideration in this study.

Jensen¹⁴ has been one of the first to present extensive normative data for the MPI as well as validating correlations with other scales. He discusses both the neuroticism and the extraversion scales and the implications inherent in this relationship on the basis of the groups that were used in standardization. The results of his own study and the review of the literature lead him to conclude that:

By virtue of the brevity of the scales, their high reliability, their orthogonality in the normal population, their high correlation with other measures of these factors, their negligible correlation with non-personality variables such as age, sex and intelligence, and their correlation with other experimental and non-questionnaire variables relevant to Eysenck's cortical inhibition theory of introversion-extraversion, the MPI may be regarded as the preferred measure of introversion-extraversion and neuroticism. (...) the MPI in its present form can be recommended for research purposes as being perhaps the best questionnaire measure of introversion-extraversion and neuroticism available at the present time.¹⁵

A short time later Eysenck supplied additional normative data and expressed satisfaction that on the whole the results were according to expectations.¹⁶ Further

14 A.K. Jensen, "The Maudsley Personality Inventory", Acta Psychologica, Vol. 14, No. 4, 1958, p. 314-325.

15 Ibid., p. 324.

16 H.J. Eysenck, "The Differentiation Between Normal and Various Neurotic Groups on the Maudsley Personality Inventory", British Journal of Psychology, Vol. 50, Pt. 2, May 1959, p. 176-177.

validation was presented by Field¹⁷ by the method of agreement with ratings based on personal knowledge, with significant results for the neuroticism scale. Independent ratings by outside observers were used in another validation study by S.G.B. Eysenck¹⁸ with significant results for the introversion-extraversion scale.

Finally the question arose as to the possibility of response sets playing an important part in the results reached. In a study with 137 neurotic subjects Eysenck failed to find any evidence of the influence of 'acquiescence' response set of the kind found in connection with the F scale.¹⁹ Eysenck concludes from the results that questionnaires relating to personality items, such as the MPI, might form a class independent of the response set generated by social attitude items, but not completely independent of other response sets generated by a different type of material.

Eysenck bases his conclusion on the lack of a significant correlation between the MPI variables and the

17 J.G. Field, "An Interpersonal Validation of the MPI", Acta Psychologica, Vol.18, No.5, 1961, p.351-355.

18 S.G.B. Eysenck, "The Validity of a Personality Questionnaire as Determined by the Method of Nominated Groups", Life Sciences, No. 1, 1962, p. 13-18.

19 H.J. Eysenck, "Response Set, Authoritarianism and Personality Questionnaires", British Journal of Social and Clinical Psychology, Vol. 1, 1962, p. 20-24.

acquiescence score as well as the lack of 'acquiescence' factor loadings on the neuroticism and extraversion scales. This does not negate the possibility of dependence of response set variables on MPI dimensions, but does suggest that MPI scores are not determined by response sets per se.

It is evident from the above that the MPI scales can be expected to provide an adequate differentiation between the tendency for Stability and Neuroticism on the one hand and Introversion and Extraversion on the other when applied to a sufficiently large sample of a 'normal' population. This means that each half of the statistical distribution should differ significantly from the other half in scores obtained on tests which are theoretically linked to constitutional variables.

2. Introversion-Extraversion.

Eysenck extracted the introversion-extraversion factor from tests differentiating between anxiety states and hysterics.²⁰ On the basis of Pavlov's investigations an inherited constitutional basis is again postulated to account for this variable,²¹ specifically the inherited degree of

²⁰ H.J. Eysenck, "A Dynamic Theory of Anxiety and Hysteria", Journal of Mental Science, Vol. 101, No. 422, January 1955, p. 29-31.

²¹ Ibid., p. 34.

neural excitation and inhibition balance. These postulates in combination with learning theory and neurotic drive level are used to account for the degree of conditionability of the disparate nosological groups represented by anxiety states and hysterics. Anxiety states have been found to be introverted neurotics who condition easily while hysterics represent the extraverted neurotics and are much more difficult to condition.

Some of the hypotheses generated on the basis of cortical excitation-inhibition balance have not been consistently verified by other authors,²² but for the purposes of this study there is in general sufficient evidence to warrant the assumption that the dimension of introversion-extraversion as measured by the MPI is a biological reality, and that individual differences can in large part be accounted for on the basis of inheritance and consequent constitutional functioning.

The work of Petrie²³ demonstrated a shift towards extraversion in surgical brain damage. Reese²⁴ and his associates have similarly demonstrated lack of conditionability

²² W.F. Barry, An Investigation of Relationships Between Introversion-Extraversion and the Negative After-Image Threshold, unpublished Ph.D. thesis, University of Ottawa, 1961.

²³ Quoted by H.J. Eysenck in "A Dynamic Theory of Anxiety and Hysteria", Journal of Mental Science, Vol. 101, No. 422, January 1955, p. 45.

²⁴ Ibid., p. 45.

as a direct consequence of brain damage. Similarly Shagass²⁵ demonstrated low sedation threshold for hysterics and high threshold for anxiety states, suggesting that hysterics are already near the inhibitory extreme. Eysenck also employs the concept of socialization to adduce further evidence that extraverted neurotics as represented by psychopaths take many more years than the average before they learn to live according to the standards of society, while introverted neurotics are overconcerned with doing the 'right' thing.²⁶ Claridge and Herrington found significant correlation between extraversion and sedation threshold in a normal group,²⁷ but not in the neurotic, where higher autonomic reactivity seemed to confound the single effect of the single variable of extraversion. This suggests that normal groups may be employed to greater advantage in an attempt to isolate the effects of extraversion.

²⁵ Quoted by H.J. Eysenck in "A Dynamic Theory of Anxiety and Hysteria", Op. Cit., p. 46.

²⁶ Ibid., p. 45.

²⁷ Claridge and Herrington, Op. Cit., p. 1580.

Eysenck and Claridge²⁸ in an answer to Sigal's²⁹ doubts as to the suitability of neurotic groups for criterion validation discuss the relationship between constitutional and behavioural extraversion and conclude from the available evidence that the MPI measure is related to constitutional extraversion.³⁰

Such considerations and the increasing evidence of inconsistencies has led to postulation of central versus peripheral introversion.³¹ This means that the introvert, sharply aware of social demands, and by virtue of his greater conditionsability, learns to act the extrovert on the outside, i.e. behaviourally, but remains an introvert constitutionally. When faced with a questionnaire such as the MPI this introvert would respond like an extrovert. If he is then included in an experimental group he will of course tend to confuse results because his constitution tends towards introversion. This argument cannot be ignored

²⁸ H.J. Eysenck and G.S. Claridge, "The Position of Hysterics and Dysthymics in a Two-Dimensional Framework of Personality Description", Journal of Abnormal and Social Psychology, Vol. 64, No. 1, 1962, p. 46-55.

²⁹ J.J. Sigal, K.H. Star, and G.M. Franks, "Hysterics and Dysthymics as Criterion Groups in the Study of Introversion-Extroversion", Journal of Abnormal and Social Psychology, Vol. 57, 1958, p.143-148.

³⁰ Eysenck and Claridge, Op. Cit., p. 54.

³¹ C.M. Franks, in H.J. Eysenck (Ed.), Handbook of Abnormal Psychology, New York, Basic Books, 1961, p. 468.

and the group designated as stable extraverts on the MPI will have to be treated with caution, since they may contain a large number of constitutional introverts.

With the possible exception of this group it can therefore be expected with some justification that the MPI will validly differentiate between neurotic introverts, neurotic extraverts, stable introverts, and some stable extraverts. If the stable extraverts do not perform according to expectations for the above reasons, the other differentiations cannot be considered invalidated. Considering the clinical origin of Eysenck's theory it is possible that the drive level of neuroticism is required to get the extravert to show his true colours, so to speak. Or to put it differently the stable extravert, being less bound by internal involvement in his experiencing, is more 'adaptable' in that he can react to a variety of environmental stimuli according to the demands of the external situation rather than according to elaborate internal patterns laid down by extensive previous conditioning. He may generally be less personally and subjectively involved in his experience because of lesser cortical excitation and participation in stimulus-response connections.

This point of view again suggests itself from the previously mentioned discussion by Davies, Claridge and Wawman.³²

In the Handbook of Abnormal Psychology, Eysenck³³ provides a table for the purpose of differentiating between introverts and extraverts behaviourally. In comparison extraverts are characterized by higher speed and lower analysis-synthesis endeavour on the Rorschach, indicating that they have less of a need to integrate experience meaningfully and tend to react more impulsively to the obvious stimulus than the introverts. They may be expected therefore to react speedily to a word association test, i.e. time limit should have a lesser effect on them. They may also be expected to be inclined towards an impulsive response style, welcoming each item with a 'yes' rather than a 'no'. They would not be expected to guardedly defend themselves against new experiences since after all they are personally less involved and less inclined to see each new stimulus as a threat to their integrity.

In short the extravert should tend towards greater impulsivity in his response style than the introvert.

³² M.H. Davis, G.S. Claridge and R.J. Wawman, "The Blood Pressure Response to an Adrenaline Antagonist as a Measure of Autonomic Lability". British Journal of Psychiatry, Vol. 109, No. 461, p. 558-567.

³³ H.J. Eysenck (Ed.), Handbook of Abnormal Psychology, Op. Cit., p. 10.

With respect to the Maudsley Personality Inventory the effect of response style remains an important problem despite Eysenck's negative findings by correlational methods. A lack of linear correlation suggests that two different variables are being measured by the tests employed, but it does not negate the possibility of some dependence of one variable on the other.

Secondly with respect to the structure of Eysenck's constitutional dimensions the intriguing question arises as to whether or not they can be duplicated by response style dimensions, similarly unrelated to each other, but dependent on constitution for their eventual development.

These two problems; namely, the linking-up of genotypically oriented dimensions with phenotypically oriented dimensions, and their relationship of dependence form the central issues of the present study.

CHAPTER II

RESPONSE STYLE VARIABLES

Response style covers a variety of test taking attitudes which are thought to affect systematically the total score on a paper and pencil test. For purposes of discussion this paper differentiates between response bias and response set, the former referring to the degree of word association communality and the latter to the degree of agreeing tendency or acquiescence. Bias (the tendency to deviate) and Set (the tendency to agree) have generally within the last decade become recognized as consistent facets of personality, i.e. expressions of 'personality style'. Despite some holdouts a kinship with personality variables is now assumed, but the intimacy of the relationships as well as the psychological meaning of specific response styles is still a moot point, to say the least.

Aside from an attempt to examine such a relationship between constitutional and response style variables this study is also concerned with exploring an initial possibility of a response style framework composed of two unrelated dimensions similar to the Eysenckian structure. It appears at this time that bias and set offer such a possibility.

1. Response Bias : Word Association Communality.

According to Berg¹ human responses in relatively unstructured situations may reveal biases which represent a marked departure from what could be expected on the basis of chance: three out of four turn to the right when entering a building, four out of five call heads when tossing coins, most people select three in the series, 1, 2, 3, 4, or B in A, B, C, D.

As a result of these observations and his own experimentation,² Berg proposed a general principle which he termed the deviation hypothesis. He suggested that responses to 'ambiguous' tasks are non random and that people who tend to deviate in one situation are likely to deviate in others. While this principle ignores the direction of the deviation it suggests that an 'excessive' frequency of idiosyncratic responses may be indicative of some general tendency to abnormality and perhaps even of abnormality itself. That is, it may be expected that the statistical deviation parallels a clinical deviation as well.

¹ Irwin A. Berg, "Response Bias and Personality: The Deviation Hypothesis", Journal of Psychology, Vol. 40, No. 1, July 1955, p. 61-72.

² I.A. Berg and W.S. Hunt, The Perceptual Reaction Test, Evanston, Illinois, 1949. (not available)

Such a deviation has been explored systematically with word association tests since Kent and Rosanoff³ compiled their list of one hundred stimulus words and their popular responses. They found that abnormal subjects gave a far larger number of idiosyncratic responses and fewer common responses than normals. The standardization of common response associates undertaken by Kent and Rosanoff has survived to this day with only minor modification.⁴

In this respect the stability of the instrument is impressive. Furthermore the comparisons between normal and abnormal groups resulted in the empirical determination of a cutting point of thirty per cent or more of idiosyncratic responses being characteristic of abnormal groups.^{5,6,7}

3 Grace H. Kent and A.J. Rosanoff, "A Study of Association in Insanity", American Journal of Psychiatry, Vol. 67, No. 1, July 1910, p. 37-96, and October 1910, p. 317-390.

4 J.J. Jenkins and W.A. Russell, "Systematic Changes in Word Association Norms: 1910-1952", Journal of Abnormal and Social Psychology, Vol. 60, No. 3, May 1960, p. 293-304.

5 Kent and Rosanoff, Op. Cit., p. 317.

6 H. Lehman and H. Dörken, Jr., "The Administration, Scoring and Percentile Standardization of the Verdun Projective Battery", Canadian Journal of Psychology, Vol. 7, No. 2, June 1953, p. 69-80.

7 J. Sigal, The Verdun Association List: A Standardized Four Measure Screening Test, unpublished Ph.D. thesis, University of Montreal, 1956.

The latter authors selected twenty neutral stimulus words from the Kent-Rosanoff list and found that they readily distinguished between normal and hospital populations.

A number of authors have attempted to relate these results with a general theory of genesis of association as well as abortion of the association process. In a lengthy and scholarly paper and an extensive review of the literature Flavell and Draguns⁸ discuss the concept of microgenesis, the series of events presumed to occur in the course of a single brief conceptual or perceptual act. The implication of this discussion with respect to word association is obvious, particularly since much of the evidence rests on experimentation in word association by Rapaport, Schilder, and Werner to name a few.⁹

It is postulated that normal associative processes pass through stages of set, stimulation, analysis of stimulus, synthesis on the basis of a specific analytic component, all under conditions of drives and needs. In short, association is a developmental process leading to a 'realistic' solution, unless organismic conditions abort this process somewhere along the way. This includes association going

⁸ J.H. Flavell and J. Draguns, "A Microgenetic Approach to Perception and Thought", Psychological Bulletin, Vol. 54, No. 3, 1957, p. 197-217.

⁹ Quoted in Flavell and Draguns, Op. Cit., p. 203, 204, 205, 210.

astray after the analysis of the stimulus components where the response bears little if any relationship to the stimulus word, as well as such obviously incomplected immature associations like clang and perseveration.

Considering Eysenck's postulate of cortical inhibition some relationship between extraversion and word association communality may be expected. Inhibition of processes related to internal promptings and consequent limitation of interference with analytic and synthetic development of the association should result in speedy response with a popular associate, 'a realistic solution', rather than an idiosyncratic one. On the other hand, this expectation is complicated by the supposition that the extravert has been less ready to learn the common associates, and finally this may be overshadowed by the strength of the internal promptings or the neurotic drive level.

In view of this and the discussion of constitutional variables in the previous chapter it may be expected that neuroticism will bring out the differences between introverts and extraverts with respect to the communality of their associative responses. Under equal conditions of drive extraverts should tend less towards communality than introverts. A group of speedy extraverts, however, should show greater communality than slow introverts. On the basis, however, that higher drive level should generally present an

organismic interference with the associative process it would be expected that neurotic subjects will show less communality than stable subjects. It may also be postulated that the inherently neurotic subject, because of distortions in perception, has less of a chance to develop the 'realistic' solution on word association tasks or in a response style which depends on general conformity in thought processes.

The effect of anxiety on word association has been investigated by a number of authors using normal groups. Sarason¹⁰ found lower communality among high anxiety subjects particularly when they were confronted with threatening instructions. On the other hand, Kanfer¹¹ failed to find a significant relationship between the Taylor Manifest Anxiety Scale and word association communality although his data show consistent direction at six levels of decreasing probability of association competition, i.e. low anxiety subjects showed consistently greater communality as the probability for competitive associations decreased.

10 I.G. Sarason, "Relationships of Measures of Anxiety and Experimental Instructions to Word Association Test Performance", Journal of Abnormal and Social Psychology, Vol. 59, No. 1, July 1959, p. 37-42.

11 F.H. Kanfer, "Word Association and the Drive Hypothesis of Anxiety", Journal of Clinical Psychology, Vol. 16, No. 2, April 1960, p. 200-204.

With respect to pressure, i.e. limiting the time allowed for production of associations, Jenkins and Russell,¹² Norton, et al.,¹³ and Schlosberg¹⁴ found that pressure tends to increase the communality score as abstract responses are replaced by more superficial concepts. It would seem therefore that under speed conditions a word association test composed mainly of neutral words would avoid the effect of variables based on defense mechanisms or intellectual sophistication and yet differentiate among associative maturities influenced by neurotic drive and extraversion.

The extravert would be expected to show less communality because of greater inclination towards abortion of associative analysis-synthesis as well as for reasons of having been less conditioned with respect to common responses. The introvert, having undergone more conditioning, would show greater communality. The factor of neurotic drive would be expected, however, to take precedence under speed conditions when tendency towards communality in both

12 Jenkins and Russell, Op. cit., p. 302.

13 D.L. Norton, D. Marlowe, and D.P. Crowne, "The Effect of Instructional Set and Need for Social Approval on Communality of Word Association Responses", Journal of Abnormal and Social Psychology, Vol. 66, No. 1, 1965, p. 67-72.

14 R.S. Woodworth and H. Schlosberg, Experimental Psychology, New York, Holt, Rinehart and Winston, 1961, p. 56.

extravert and introvert should be equalized, because the extravert is expected to be less affected by pressure.

2. Tendency to Agree: Acquiescence.

It should be pointed out that this response style is not characteristic of an agreeable or a compliant personality; the available evidence indicates that the opposite may be true.

In a review of the recent literature on personality structure, Christie and Lindauer¹⁵ suggest that:

It appears plausible that response tendencies may have as much (if not more) to do with personality structure than the content of many widely used scales.¹⁶

A logical extension of this view would require that valid personality inventories need to be so constructed as to elicit response tendencies rather than attempt to avoid them. This may hold true where mainly environmentally determined traits are under investigation, if it may be assumed that response tendencies are acquired in the process of organismic-environmental-developmental interaction.

The response tendency of acquiescence is somewhat different from the response bias elicited by the word

¹⁵ R. Christie and Florence Lindauer, "Personality Structure", Annual Review of Psychology, Vol. 14, 1963, p. 201-230.

¹⁶ Ibid., p. 212.

association test. The latter is concerned with interference with or abortion of the associative processes as demonstrated by deviation from communality, while the former focuses on a consistent set on an agreement-disagreement continuum on the basis of a general habit pattern for handling stimuli, where cognitive processes are expected to play a lesser part than in word association. It is possible that some minimal relationship exists between the two response styles in that, for example, the impulsivity of the agreeer may influence his associative responses. The structure and rationale of the word association test and the agreement test are, however, sufficiently different so that only a minimal relationship between degrees of communality and acquiescence is to be expected. The two therefore should represent two essentially unrelated style dimensions.

Agreement tendency is defined as predilection for 'true' on a true and false test with little if any regard for the content of the item. This observation moved Cronbach¹⁷ to postulate that "a response set is a habit which causes the subject to earn a different score from what he would earn if the same items were presented in a different form".¹⁸ In another article, Cronbach lists a variety of

17 L.J. Cronbach, Essentials of Psychological Testing, New York, Harper and Brothers, 1949, xliii-475 p.

18 Ibid., p. 50.

response sets¹⁹ and concludes that they are stable, work consistently in the same direction, and can therefore affect test reliability and validity. This and a later article by Cronbach²⁰ stimulated systematic research in the area of response sets, as one of the styles of expression of personality. In a review of this research, Jackson and Messick²¹ suggest first of all that:

(...) for certain purposes in personality assessment opportunities for the expression of personal modes for responding should be enhanced and capitalized upon rather than considered as sources of error to be avoided or minimized.²²

They are, however, unable to arrive at a definite conclusion with respect to the effect of item content and confine themselves therefore to the further suggestion that consistency of content above and beyond the component of style seems possible and requires further exploration.²³ Their discussion may be interpreted as suggesting that both

19 L.J. Cronbach, "Response Sets and Test Validity", Educational and Psychological Measurement, Vol. 6, No. 4, Winter 1948, p. 475-494.

20 -----, "Further Evidence on Response Sets and Test Design", Educational and Psychological Measurement, Vol. 10, No. 1, Spring 1950, p. 3-31.

21 D.N. Jackson and S. Messick, "Content and Style in Personality Assessment", Psychological Bulletin, Vol. 55, No. 4, July 1958, p. 243-252.

22 Ibid., p. 244.

23 Ibid., p. 249.

content and style are likely to affect the final score, but the problem lies in an accurate measure of the extent of their effects. An attempt to elicit response style with meaningless material, however, would be analogous to expecting a person to come to grips with his environment when blindfolded in a dark and empty room.

Concerned with personality theory and assessment, Couch and Keniston²⁴ in an extensive investigation initiated systematic exploration of the psychological determinants of the tendency to agree. In view of the orientation of the present study as a link between genotypical and phenotypical characteristics the Couch and Keniston study is a crucial step in this direction. In their own words:

The basic hypothesis of this study is that response set is a manifestation of a deep-seated personality syndrome - whose underlying determinants serve to explain the phenotypical phenomenon of 'acquiescence' or 'agreement'.²⁵

In this endeavour both statistical and clinical methods were combined to enrich the numerical results with molar psychological meanings about personality dynamics. Comparisons with the MPI, Cattell, and Thurstone scales led the authors to conclude that the 'agreement' dimension corresponded to

24 A. Couch and K. Keniston, "Yeasayers and Naysayers: Agreeing Response Set as a Personality Variable", Journal of Abnormal and Social Psychology, Vol. 60, No. 2, March 1960, p. 151-174.

25 Ibid., p. 151, 152.

emotional impulsivity versus intellectual control, which was related to the 'disagreement' dimension.²⁶ This investigation in the questionnaire realm produced the following unified consistent picture of personality characteristics differentiating between 'agreers' and 'disagreers'.²⁷

A. Personality Characteristics of Agreers:

- i) id-dominated, with little concern about integrated control of their impulses;
- ii) express themselves freely and quickly;
- iii) few secondary processes intervene between underlying wish and overt behavioural response;
- iv) desire and search for emotional stimulation and excitement;
- v) little tolerance for delay in gratification, immediate reduction is sought for any tension that may have arisen;
- vi) stimulus acceptance, i.e. pervasive readiness to respond affirmatively or yield willingly to both inner and outer forces demanding expression.

B. Personality Characteristics of Disagreers:

- i) impulses are seen as threats to stability and require control;
- ii) strong secondary processes to retain balance between emotionally impulsive and value-maintaining forces. Impulses undergo a series of delays, censorships, and transformations before they are permitted expression;

²⁶ Couch and Keniston, Op. Cit., p. 155.

²⁷ Ibid., p. 163, 164.

- iii) intellectual orientation, rational approach, denial mechanisms, tendency to excessive inhibition;
- iv) stimulus rejection, i.e. pervasive unwillingness to respond to impulsive or environmental forces.

The above descriptions seem to some extent influenced by clinical intuition rather than strict and sterile interpretation of correlations alone. It does seem evident, however, that the dichotomy is characterized by opposing personality traits which manifest themselves mainly as impulsivity versus control. Furthermore, this likely holds consistently whether the person is engaged in answering a questionnaire, selection of occupation, or interaction with other people.

A final small sample of twenty-one subjects participated in an intensive clinical study, which supported the main lines of the hypothesized personality syndrome.²⁸

The results suggest also that many other response sets may in large part also be manifestations of the same personality syndrome tapped by the Overall Agreement Scale, standardized by Couch and Keniston,²⁹ and differences between the various measures may in part be function of content. This would account, for example, for the relationship between

²⁸ Couch and Keniston, Op. Cit., p. 166-169.

²⁹ Ibid., p. 159.

scores on the Overall Agreement Scale and Edward's Social Desirability Scale³⁰ and consequent attempts by each author to show that his scale was the valid measure of the variable under discussion. Pages 172 to 183 of the January 1961 issue of the Journal of Abnormal and Social Psychology are turned over to the dispute between the two groups with the majority of verbiage contributed by the socially desirable.^{31,32,33,34} It may be that the other researchers were aroused by Freudian orientation in theorizing about the developmental dynamics of acquiescence.³⁵

The evidence in the Couch and Keniston paper does not provide proof of the 'toilet training' origin of the response set nor is it meant to do so. The psychoanalytic approach merely serves to stimulate speculation.

30 A.L. Edwards, The Social Desirability Variable in Personality Assessment and Research, New York, Dryden, 1957.

31 J.B. Taylor, "The Yeasayer and Social Desirability: A Comment on the Couch and Keniston Paper", Journal of Abnormal and Social Psychology, Vol. 62, No. 1, January 1961, p. 172.

32 A.L. Edwards and J.W. Walker, "A Note on the Couch and Keniston Measure of Agreement Response Set", Journal of Abnormal and Social Psychology, Vol. 62, No. 1, January 1961, p. 173-174.

33 A. Couch and E. Keniston, "Agreeing Response Set and Social Desirability", Journal of Abnormal and Social Psychology, Vol. 62, No. 1, January 1961, p. 175-179.

34 A.L. Edwards and J.W. Walker, "Social Desirability and Agreement Response Set", Journal of Abnormal and Social Psychology, Vol. 62, No. 1, January 1961, p. 180-183.

35 Couch and Keniston, Op. Cit., p. 171, 172.

It is the contention of the present study, however, that the origin of response set is found in constitutional determinants related to the interaction between neurotic drive and extraversion.

Other authors have also attempted to provide meaning for the response set of acquiescence, although not quite so extensively as Couch and Keniston. McGee, however, responds excessively negatively to the whole issue and questions the existence of a consistent response set of acquiescence.^{36,37} Using unstructured as well as less ambiguous situations he failed to find high correlations indicating the operation of a pervasive set. It would appear that he overlooked at least two points in his argument. Firstly, low correlations, as long as they are significant, also hint at the operation of a common factor; and secondly, in extremely varied situations it should be expected and shown that responses depend on a common factor rather than vary together, i.e. a hypothesis of dependence rather than covariance should be postulated.

³⁶ R.K. McGee, "The Relationship between Response Style and Personality Variables", Journal of Abnormal and Social Psychology, Vol. 64, No. 3, March 1962, p. 229-233.

³⁷ -----, "Response Style as a Personality Variable: By What Criterion?", Psychological Bulletin, Vol. 59, No. 4, July 1962, p. 284-295.

It should perhaps be pointed out here that inasmuch as Cronbach, for example, drew attention to the effect of style on content, a trend developed to assume that content could be eliminated entirely. It would appear, however, that valid assessment and interpretation as well as design of tests or research still has to take content into consideration as it elicits style. It is unlikely that style can be manifested in a vacuum, and when the experimental situation becomes excessively unstructured it is analogous to stimulus deprivation rather than to stimulus-response testing. That difficult and ambiguous items elicit response set has been amply demonstrated by Banta,³⁸ Gage,³⁹ et al. In addition, Messick and Jackson⁴⁰ found clear evidence that acquiescence plays a dominant role in personality inventories like the MMPI. Elliott⁴¹ further demonstrated interaction

38 T.J. Banta, "Social Attitudes and Response Styles", Educational and Psychological Measurement, Vol. 21, No. 3, Autumn 1961, p. 543-557.

39 N.L. Gage, G.S. Leavitt and G.C. Stone, "The Psychological Meaning of Acquiescence Set for Authoritarianism", Journal of Abnormal and Social Psychology, Vol. 55, 1957, p. 98-103.

40 S. Messick and D.N. Jackson, "Acquiescence and the Factorial Interpretation of the MMPI", Psychological Bulletin, Vol. 58, No. 4, July 1961, p. 299-304.

41 Lois L. Elliott, "Effects of Item Construction and Respondent Aptitude on Response Acquiescence", Educational and Psychological Measurement, Vol. 21, No. 2, Summer 1961, p. 405-415.

between item content, item format, and intellectual aptitude (somewhat related to experiential background) in arriving at an acquiescence score. This seems to lend further support to the view of the influence of environmental-constitutional interaction in the development of the degree of acquiescence.

A validating study of the Couch and Keniston scale has been reported by Mahler⁴² on the basis of the clinical interpretation of agreeers versus nonagreeers. Hypothesizing that agreeers would be more group oriented, the tendency to seek fraternity membership and gain eventual acceptance was predicted on the basis of Overall Agreement Scale scores. The results in the main bear out the hypothesis.

The Overall Agreement Scale, therefore, may be considered a valid and reliable measure of agreement tendency, stable over time and with an internal reliability of .85 as well as significant correlations with hypothesized personality factors on the other scales.⁴³ Moreover the test can be expected to differentiate between differing personality syndromes which are likely to find expression on a continuum from impulsivity to control in relation with affect

42 I. Mahler, "Yeasayers and Naysayers: A Validating Study", Journal of Abnormal and Social Psychology, Vol. 64, No. 4, 1962, p. 317-318.

43 Couch and Keniston, Op. Cit., p. 154, 156, 159, 172, 173.

or emotional responsiveness. On this basis it may be expected that the impulsive will appear as a social extravert while the controlled will be judged by others to be socially introverted. It is, however, also possible that the action of neurotic drive may influence the development of impulsivity in combination with extraversion.

If neurotic drive is a drive for action primarily then it may follow that a high drive subject will seek out stimuli both internally and externally so that he may be in a position to react and relieve the drive. In that case he may appear to be an extravert to an outside observer. On the other hand, he may, through the process of repeated gratification, acquire the habit of the agreeing response style. Having been conditioned to seek and accept stimuli, having experienced repeated gratification in this process, he now may be considered as increasingly ready to accept conditioning. On this basis the freely expressive agreeer poses less of a threat to a group and would be more easily accepted, since he is likely a better subject for conditioning in accordance with group standards.

It follows then that response set is also an indication of the degree of gratification experienced in conditioning, thereby modifying constitutional conditioning readiness with the readiness imbued by life experience. Phenotypical impulsivity therefore would not correlate

linearly with constitutionally endowed variables, but the formation of the trait would depend on the position of the subject on the constitutional continuum.

CHAPTER III

HYPOTHESES

The foregoing chapters have indicated that the Maudsley Personality Inventory is a valid and reliable instrument for dividing populations along the axes of Stability-Neuroticism as well as Introversi-on-Extraversi-on, and that these categories are constitutionally oriented. It has also been shown that Word Association and the Overall Agreement Scale can be expected to similarly dichotomize between communality-deviation, as well as between control-impulsivity, and that these categories are oriented towards response style and ultimately towards phenotypical characteristics of the personality. These instruments may therefore be employed to test a relationship of dependence of response style variables on constitutional personality variables. It has also been pointed out that dependence rather than correlation is to be expected and tested, because the tests measure different variables and no other basic factor aside from these variables is expected to influence the scores on these tests to a significant degree.

On the basis of the discussion of the previous chapters it is expected that, in the main, the development of response bias as manifested in word association is dependent on inherited constitutional neuroticism, while impulsive

expression of internal and external promptings as manifested by agreement set is mainly dependent on constitutional extraversion. It is, in short, expected that Eysenckian dimensions be reflected in response style dimensions in a dependent relationship.

Since dependence rather than correlation is being stressed in this study the predictions are based on expected frequencies in a contingency table, composed of four constitutional categories against four response style categories. Consequently the sixteen cells represent all possible combinations between the constitutional quadrants and the response style quadrants which are formed by orthogonal dimensions of the variables of each class.

This type of design makes it possible to test a large variety of hypotheses with respect to relationship of dependence in both directions. For example: Constitutional extraverts have a higher speed-over-accuracy ratio; therefore they should adopt an impulsive response style. On the other hand, impulsives freely admit their symptoms to themselves and others, and therefore should obtain high neuroticism scores on the Maudsley Personality Inventory. They should obtain this not just because they utilize an impulsive response style, but also because they are telling the truth. On the other hand, people with a high neurotic drive

may tend to adopt an impulsive response style because of the need to discharge this drive.

For the sake of clarity and unity, however, only one main hypothesis can be chosen for this study and this depends on the basic postulates which gave rise to the present study: On the assumption that personality is moulded from without and from within, i.e. it develops out of the interaction between constitutional endowment and environmental challenge, it is postulated that response style is the unique personal way of coping with external and internal stimuli.

The direction and manner of this coping is influenced by a drive for efficiency and integration, in short self-realization, so that it may be expected that response style will be suited rather than opposed to constitution in most instances.

This means that an individual who is 'by nature' labile and reactive perforce develops a style characterized by impulsivity according to the degree of his neural sensitivity.

The main experimental hypothesis for this study, therefore, states that response style is dependent on constitutional variables.

The specific statistical hypothesis, therefore, is one of independence between the four specific constitutional

categories and the four specific response style categories, where each category represents a quadrant resulting from orthogonality of the variables.

Dependence is defined as a relationship between distinct and separate variables which have little if any factors in common, but which are affected by each other's variability systematically. This type of relationship would be demonstrated, for example, by an irregular curvilinear correlation, implying varying interaction effects.

CHAPTER IV

EXPERIMENTAL DESIGN

1. Method.

In order to test the hypothesis of independence between constitutional and response style variables, the Maudsley Personality Inventory, a short word association test, and the Couch and Keniston Overall Agreement Scale were administered to 625 subjects in booklet form.

The Maudsley Personality Inventory has been discussed at some length in the first chapter and requires no further elaboration here. The Overall Agreement Scale has also been dealt with extensively in the second part of the second chapter. The word association test, however, requires further discussion.

According to the previously quoted literature, word association communality scores may be affected by previous conditioning, age, intelligence, test taking attitude, atmosphere of presentation and by the stimulus words themselves. In an effort to reduce the effect of these and possible other variables, while still attempting to preserve their discriminating power between high and low neurotic drive subjects a special list of thirty-one neutral words was selected. Eleven words were added to the twenty stimulus words used

by Sigal at Verdun, since it was not possible to repeat his list under the same conditions again with the same population at the same sitting as he has done in his standardization. All words came originally from the Kent-Rosanoff list, but the expected associate response frequency was determined by the Minnesota modification. The ratio of high response probability was maintained to minimize effects of competing associations. The ratio of high opposite response expectancy was maintained to minimize the effect of intelligence and any other variable which may interfere with the genesis of abstract responses. The neutrality of the words was maintained to minimize the effect of specific individual, personal perceptual defense mechanisms or anxiety conditioning related to specific words. The vast majority of the sample fell between the ages of seventeen to thirty, minimizing the effect of that variable. To maintain standardized presentation for all groups and to minimize the effects of possible auditory variables, the whole list was taped by a Canadian Broadcasting Corporation announcer with a clear and pleasing voice. For the sake of uniformity, the instructions were also taped.

To maximize, however, the effect of the neurotic drive variable the stimulus words were given under time pressure, with four second intervals between words.

The tests were combined in a booklet of uniform quality and administered to groups of twenty-five to thirty-five at a time. A sample of the booklet will be found in the appendix.

In situations where several groups were slated for testing, the work was done as rapidly as possible to minimize opportunity for communication between those who were yet to take the tests and those who had done them already.

To avoid the emergence of sudden unforeseen problems in administration of the tests, three pilot studies were conducted. Since everything went smoothly, however, with these groups they were included in the final analysis. In addition to the preliminary instructions on the first page of the test booklet, the experimenter addressed each group immediately before the test to allay any misapprehensions and ensure maximum cooperation.

The word association test was administered first to each group and subjects entered their responses in numbered and lined spaces. At the conclusion of this test, subjects were asked to proceed at their own rate with the remainder of the booklet.

2. Sample.

The population which participated in this study consisted of 209 men and 418 women. Most of these were student teachers. In addition, the male sample included twenty-five seminarians, twenty-six civil servants, most of these with engineering degrees, and thirty-five psychology students. Of the women, thirty-four were psychology students and the remainder were student teachers. Their ages ranged from seventeen to fifty-four, with a mean age of 22.1 years and a median of 19.5 years. Thirty-eight were over thirty years of age, twelve were over forty.

In short, the sample consisted of professionals and aspiring professionals who were fluent in English and functioned sufficiently well to have climbed at least the first rung of their career ambition.

CHAPTER V

RESULTS

The results were dealt with in three stages. Firstly, the distribution of each variable had to be considered to illuminate the general characteristics of the experimental population as well as afford a basis for calculating a cutting point so that dichotomous categories could be made available for the contingency table. Secondly, intercorrelations between the variables as well as test-retest correlations provided a measure of reliability within this study and a comparison with other consistent correlations reported in the literature. Thirdly, the main hypothesis was tested by a chi-square analysis of a contingency table.

Since no differences were found between the sexes (see Table I), all subjects were combined for calculations of correlations and chi-square. Cutting points were selected as close to the median as possible to provide nearly equal proportions for each dichotomy. Disproportion, however, could not be avoided in the word association distribution and, as a result, fifty-eight per cent of the sample fell above the cutting point.

Table 1.-
Means, Standard Deviations, and Cutting Points.

Variable	Means			Standard Deviations			Cutting Point
	male	female	total	male	female	total	
Word Association	21.2	21.4	21.3	5.35	4.86	5.06	21.5
Neuroticism	23.5	25.1	24.5	9.78	9.51	9.59	24.5
Extraversion	27.4	27.9	27.7	9.72	8.82	9.31	28.5
Overall Agreement Scale	58.5	58.7	58.7	10.75	10.00	10.43	58.5
N of sample	209	416	625	209	416	625	

Table II presents normative data from other sources for Neuroticism, Extraversion, and Agreement Scale for purposes of comparison with the data of the present study.

It would appear from the comparisons that the mean scores of Canadian students are higher than those of American students or the English sample. The mean scores achieved in the present study are fairly close to that of the other Canadian norms.

It is also apparent that the distributions of the variables approach a normal curve with the exception of word association communality. Here the curve is leptocurtic and the peak is closer to the right side of the curve. In short, the population is crowded in the direction of communality rather than deviation in the sample of this study. Since the cutting points in the literature are also off-centre this may not be the function of the number of stimulus words used. It would appear that the trait of communality is not normally distributed when a special effort is made to select a preponderance of neutral words. Another factor which guided the selection for this study was the attempt to reduce competition probability of associative responses. As a result it seems that the items which were finally selected do not discriminate sufficiently among the population of this study. The evidence suggests the possibility that this instrument may differentiate between 'normal' and 'abnormal' groups, but not within

Table II.-

Means and Standard Deviations from the Literature.

Variable	Mean	S.D.	Size of Group	Source
Neuroticism	19.89	11.02	1800	Eysenck ^a
	20.91	10.69	1500	Eysenck ^b
	22.68	9.83	199	Queen's ^c
	24.99	9.56	725	Queen's ^d
Extraversion	24.91	9.71	1800	Eysenck ^a
	26.55	8.28	1500	Eysenck ^b
	26.86	9.08	199	Queen's ^c
	26.80	9.22	225	Queen's ^d
Agreement Scale	55.9	9.2	219	Mahler ^e

a English Sample. H.J. Eysenck, "The Differentiation between Normal and Various Neurotic Groups on the Maudsley Personality Inventory", British Journal of Psychology, Vol. 50, No. 2, May 1959, p. 176.

b American students, ibid.

c Queen's University students - 1959, personal communication.

d Queen's University students - 1961, personal communication.

e American students. I. Mahler, "Yeasayers and Naysayers: A Validating Study", Journal of Abnormal and Social Psychology, Vol. 64, No. 4, 1962, p. 37.

normal groups alone as long as communalities is the sole measure of variability.

Under these circumstances, extreme scores rather than dichotomies may offer significant differentiations.

With respect to reliability, test-retest correlations were determined by administering all tests for a second time within one week. Seventy-six subjects of the total sample participated in this investigation and the coefficients, as shown in Table III are well within the acceptable range and in agreement with results found in the literature.

The next step involved an examination of intercorrelations between all variables as presented in Table IV.

With the exception of the frequencies of 'yes' answers on the MPI all variables are at best only slightly related with each other in terms of linear correlation. Table IV suggests that groups such as were employed in this study show the following 'inventory' characteristics:

1. The neurotic group on the MPI also has a slight but significant tendency in the direction of Introversion as the Neuroticism scores increased;
2. Higher scores on Neuroticism and Extraversion on the MPI tend to be slightly but significantly related to higher scores on the OAS;
3. Increasing age results in slightly higher word association communalities, but a lesser tendency to Neuroticism, lower scores on the OAS, and a lesser tendency to answer 'yes' on the MPI;
4. The tendency to answer 'yes' on the MPI is much more highly correlated with a high score on Neuroticism than a high score on the OAS.

Table III.-
Test-Retest Reliability Coefficients
for 76 Subjects.

Variables	Coefficients
Word Association	.91
Neuroticism	.88
Extroversion	.86
Agreement Scale	.89

Table IV.-
Intercorrelation Coefficients for All
Variables for 625 Subjects.

	Word Association Communality	Neuroticism	Extra- version	Agreement Tendency	'Yes' Answers on <u>MPI</u>
Age	.32 ^a	-.15 ^a	-.04	-.14 ^a	-.21 ^a
Word Association		-.08	.11 ^a	-.14 ^a	-.02
Neuroticism			-.21 ^a	.16 ^a	.64 ^a
Extraversion				.22 ^a	.13 ^a
Agreement Tendency					.59 ^a

a Significant at $p = .01$.

RESULTS

These results are in accordance with the literature and are further suggestive of the reliabilities of the scores in the present study.

The test for the main hypothesis of this study is represented in Table V with a chi-square of 73.3 and a coefficient of contingency of .32. Since at 9 degrees of freedom and $p = .001$ the chi-square = 27.86, the results are highly significant and the null hypothesis of independence can be rejected with certainty.

Two further results are worth mentioning for their implications with respect to validities of Extraversion and word association communality in a behavioural context.

As the administration of the tests took its course it became possible to pick out the speediest as well as the slowest workers in each group. In this way, twenty-four speeders and thirty-one dawdlers were identified. Table VI represents their mean scores on each variable.

This suggests not only that the extravert is generally faster, in this type of situation at least, but also that constitution rather than response set may be responsible for higher communality.

It is evident from these results that constitutional variables, as measured by the MPI, and response style variables, as measured by word association and the OAS, are interdependent although at best they vary together only

Table V.-
Frequencies per Categories.^a

Response Style Variables	Constitutional Variables				Totals	
	I		E			
	N	S	N	S		
Conform.	Imp.	63	21	52	40	176
	Contr.	38	68	23	56	185
Dev.	Imp.	48	17	47	38	150
	Contr.	28	35	12	39	114
		177	141	134	173	625

^a For purposes of tabulation and discussion, the following symbols are convenient:

N= Neuroticism (high score on N scale of MPI)
 S= Stable (low score on N scale)
 E= Extraversion (high score on E scale of MPI)
 I= Introversion (low score on E scale)
 Conform.= Conformity, i.e. communality (high score on WA)
 Dev.= Deviation (low score on WA)
 Imp.= Impulsive (high score on OAS)
 Contr.= Controlled (low score on OAS)
MPI= Maudsley Personality Inventory
WA= word association
OAS= Overall Agreement Scale

Table VI.-
Significance of Difference Between Means of
Fast and Slow Groups.

Group	N	Word Association	Neuroticism	Extra- version	Agreement Scale
Fast	24	22.04	24.33	33.29	59.16
Slow	31	18.23	25.84	24.49	58.29
t of difference		2.81 ^a	.71	3.52 ^a	.32

^a Significant at $p = .01$.

slightly. This suggests further that they are different variables, i.e. the tests employed do not measure the same thing.

The contingency table can be further analyzed by two methods: 1) conversion into a table of proportional discrepancies between expected and observed frequencies and 2) reduction into 2x2 tables of more inclusive categories. The latter analysis of course loses the effect of interaction between the original quadruple categories.

Table VII conveniently indicates those cells and categories which are mostly responsible for the rejection of the null hypothesis. It is of interest to note that the column of stable extraverts contributes least to the discrepancies between observed and expected frequencies. This suggests that this category may contain a number of introverts who at the questionnaire level have learned to respond in a socially desirable manner, i.e. they masquerade as extraverts and confound results in investigations where they are selected by questionnaire methods only.

Tables VIII to XIII demonstrate the dependence between pairs of single variables rather than combinations of variables.

Table VII.-
Proportional Discrepancies.

Response Style Variables	I		E		
	N	S	N	S	
Conform.	Imp.	.26	.45	.37	.18
	Contr.	.27	.62	.43	.10
Dev.	Imp.	.14	.50	.47	.09
	Contr.	.12	.35	.49	.22

Table VIII.-
Relationship Between E-Scale and
Word Association Dichotomies.

	I	E	Totals
Conform.	190	171	361
Dev.	128	136	264
	318	307	625

$\chi^2 = 1.03$, not significant.

Table IX.-
Relationship Between E-Scale and
OAS Scale Dichotomies.

	I	E	Totals
Imp.	149	177	326
Contr.	169	130	299
	318	307	625

$\chi^2 = 7.30$, significant at $p = .01$.

Table I.-
Relationship Between N-Scale and
Word Association Dichotomies.

	N	S	Totals
Conform.	176	185	361
Dev.	135	129	264
	311	314	625

$X^2 = .342$, not significant.

Table XI.-
Relationship Between N-Scale and
OAS Scale Dichotomies.

	N	S	Totals
Imp.	210	116	326
Contr.	101	198	299
	311	314	625

$X^2 = 58.9$, significant at $p = .0001$.

Table XII.-
Relationship Between N-Scale and
E-Scale Dichotomies.

	N	S	Totals
I	177	141	318
E	134	173	307
	311	314	625

$X^2 = 8.97$, significant at $p = .01$.

Table XIII.-

Relationship Between Word Association and
OAS Scale Dichotomies.

	Conform.	Dev.	Totals
Imp.	178	150	328
Contr.	185	114	299
	361	264	625

$\chi^2 = 3.45$, not significant.

It can be seen from Tables IX and XI that there is some relationship between the agreement-disagreement dichotomy and Extraversion as well as Neuroticism. On the other hand, no dependent relationship of word association communality can be demonstrated with respect to the separate constitutional variables according to Tables VIII and X. Table XII indicates some interdependence between Neuroticism and Introversion, while Table XIII suggests no such thing with respect to the response style variables. Since the null hypothesis cannot be rejected for Table XIII and since the coefficient of correlation between word association scores and OAS scores is quite small, it seems reasonable to assume that the response style dimensions of this study are quite independent of each other.

The results of this study, therefore, are not only in line with results of previous investigations, wherever they are available, but also support the contention of a relationship of interdependence between constitutional and response style variables. It is further apparent that some of these relationships are not confined to single variables but depend on the interaction between combinations of variables.

CHAPTER VI

DISCUSSION OF RESULTS

The preceding chapter clearly establishes two facts. Firstly, within this design the four variables are largely separate and distinct. Secondly, the acquiescence variable and the constitutional variables are interdependent under certain conditions in combination with other variables.

Since all cells of Table V are significant at the one per cent level or better, and since bias (communality-deviation) and set (agreement-disagreement) are unrelated, it is possible to determine which of the two response style variables contributes to the significant effect by reducing the 4x4 table to 2x4 tables.

It is evident from Tables XIV and XV that the significant discrepancies are the result of the agreement dichotomies rather than the communality dichotomies. It may be concluded for this study that the list of stimulus words or the mode of their administration was too tightly controlled. There is a hint of a relationship with extraversion in Table VI, which is based on an extreme behavioural group. Extreme groups as determined by the scores on the tests, however, show no significant relationships with respect to word association.

Table XIV.-

Relationship Between Constitutional Variables
and Acquiescence.

	I		E		Total
	N	S	N	S	
Imp.	111	38	99	78	326
Contr.	66	103	35	95	299
	177	141	134	173	625

$\chi^2 = 73.4$, significant at $p = .0001$.

Table XV.-
Relationship Between Constitutional Variables
and Communalities.

	I		E		Total
	N	S	N	S	
Conform.	101	89	75	96	361
Dev.	76	52	59	77	264
	177	141	134	173	625

$\chi^2 = 3.42$, not significant.

The results therefore confine the discussion to the demonstrated interdependence between the acquiescence dichotomies and the constitutional variables. The first explanation that offers itself for the existence of this relationship is that response style of acquiescence is mainly responsible for higher scores on Neuroticism and Extraversion.

On the MPI neurotic items are all scored in the 'yes' direction, while two thirds of the extraversion items are so scored. If, therefore, the tendency to answer 'yes' were the main reason for the results of this study, it would be expected that the three variables would correlate highly among each other, with the correlation between N and OAS higher than between E and OAS. Table XIV, however, tells a different story. The latter correlation is the higher one, but both are quite small, particularly when compared to the correlation between N and 'yes' answers on the MPI. On the other hand, the correlations between the OAS and 'yes' on the MPI is fairly high despite the low correlation between N and OAS, and E and OAS.

These figures do not support a contention that all three scales measure essentially nothing more than the number of 'yes' answers.

A second explanation derives from the clinical hypotheses about agreeers and disagreeers put forth by Couch and Keniston.

It will be recalled that in their clinical investigation they found the 'agreeers' to be impulsive and forthright, aware of their own aberrations and willing to admit them to themselves and others. They therefore did not mind putting down on paper socially undesirable answers entailing admission of symptoms of anxiety or other unwelcome characteristics. It can be seen from simple inspection that the content of the N items on the MPI are precisely admission of symptoms while the E items express preference for personal and social action rather than deliberation and reserve.

On this basis, then, the conclusion is justified that the 'agreeer' will 'impulsively' admit his symptoms and express his preference for action, as well as his dislike for deliberation. Such being the case the next step is the recognition that the 'agreeer' has these symptoms and prefers action, and therefore will be identified by a valid questionnaire such as the MPI.

Having shown that the MPI is a rough but valid measure of constitutional personality variables, it follows that the response style of acquiescence is acquired according to the genotypical predisposition toward neuroticism and extraversion. This would seem to lay the basis for a general conclusion that impulsive behaviour (in structured situations) is the result of the interaction between neurotic

drive and lack of central controls. Putting it in other words, the introvert hangs on to his lability while the extravert expresses it freely. In this study, this has been demonstrated specifically at the questionnaire level shifting from empirically verified content with a 'yes', '?', 'no' scale to empirically verified content with a Likert type scale.

There is little doubt that content plays an important role with the type of sample employed in this study. The types of items which compose the CAS are called anal-expressive by the authors, but seem to have a neurotic-extraversive flavour, i.e. they call forth drive and preference for action. It is therefore not surprising that response set is a manifestation of personality and that the present study was able to link up a response style variable with constitutional personality variables. This therefore provides some justification for concluding that response set is a habitual adaptation developed in line with inherited constitutional variables. The consistencies are both quantitative and qualitative and may be considered the learned responses with which the individual habitually meets similar stimulus situations.

If the degree of acquiescence is the result of personal resolution of problems of impulse control then it must be dependent on the constitutional strength of impulses

and the chemical and structural facilitation for their arousal, build-up, and discharge. Conversely, the constitutional factors determine to a large extent how the child will accept parental efforts at socialization, i.e. how quickly and how well he will internalize parental rules or be unable to condition himself to repress his impulses.

As Neuroticism and Extraversion are measures of degree of conditioning readiness so is acquiescence in a way a measure of the degree of success of conditioning. (Since Introversion is not independent of Neuroticism, Neuroticism must be assumed to be involved in ease of conditioning, despite Eysenck's¹ original arguments.) It may be postulated that the agreeers resisted conditioning at least partially because of their constitution and partially for environmentally generated reasons. They have therefore adopted a habit of resisting conditioning and a conditioning experiment which does not take this adopted style into account may be inconclusive if the conditioning is based on contiguity only. (Contiguity conditioning with animals is highly successful.) If, by chance, however, a group of supposedly easily conditioned introverts has for environmental-developmental reasons adopted an acquiescent style,

¹ H.J. Eysenck, "A Dynamic Theory of Anxiety and Hysteria", Journal of Mental Science, Vol. 101, No. 422, January 1955, p. 50.

i.e. at least superficial resistance to conditioning, then contiguity alone will not serve sufficiently. They may, however, be moved by rewards and successes. Hence, instrumental conditioning has found adherents among those who work with people.

The above considerations imply that learning and conditioning need to take both style and constitution into account in selecting their samples. A further implication suggests itself in that conditioning may not be related to drive directly but rather to the ability and habit of controlling drive. The introvert and extravert may differ in their constitutional ability to control drive, while the agreeer and disagreeer may differ in their acquired habit of controlling or utilizing drive. This suggests further that the method of selection of the sample determines the theory of conditioning and vice versa and in what way the method is a function of the theory.

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Barry, W.F., An Investigation of Relationships Between Introversiion-Extraversiion and the Negative After-image Threshold, unpublished Ph.D thesis, University of Ottawa, 1961.

A precise demolition job on Eysenck's theory of cortical inhibition with respect to introversiion-extraversiion which may have been helped by the method of sample selection. It may be concluded from this paper that introversiion-extraversiion is not a simple linear dimension, acting independently.

Berg, I.A. , "Response Bias and Personality: The Deviation Hypothesis", Journal of Psychology, Vol. 40, No. 1, July 1955, p. 61-72.

A demonstration of the phenomenon of communality as well as deviation in relatively unstructured situations. The paper suggests that subjects reveal personality deviations consistently in situations where they have a choice of giving common or deviant responses. A basic paper initiating Berg's extensive work on defining deviation.

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One of the better examples of the careful experimental designs which have subjected Eysenckian postulates to thorough scrutiny. The paper confirms the cortical inhibition-excitation theory within limits, while suggesting a more complex explanation of interaction at several levels to account for contradictory results and U-shaped functions.

Couch, A., and K. Keniston, "Yeasayers and Naysayers: Agreeing Response Set as a Personality Variable", Journal of Abnormal and Social Psychology, Vol. 60, No. 2, March 1960, p. 151-174.

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The first extensive presentation of Eysenck's theoretical two dimensional framework of constitutional personality variables. It is a basic work outlining relatively simple postulates, but it carries the seed for relating constitutional determinants to a style of coping with the internal and external environment.

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The paper indicates the role which the decline of abstract responses and test-taking attitudes have played in increased communality of responses, at least with respect to today's college population.

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This paper recognizes the dominant role played by response sets in personality inventories and calls for investigations to develop refined interpretations of stylistic consistencies in terms of personality organization. As such, this paper anticipates the Couch and Keniston investigation and any attempt to link style to constitution.

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The results of this paper suggest that experimental pressure will lower word association communality independently of pre-experimental anxiety scores. The author discusses a somewhat tenuous hypothesis of habitual expectation of failure interfering with the tendency to give correct responses.

If there is such an effect, it seemed possible to reduce it by subjecting the whole sample to equal external stress.

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Spence, K.W., "A Theory of Emotionally Based Drive (D) and its Relation to Performance in Simple Learning Situations", The American Psychologist, Vol. 13, 1958, p. 131-141.

A basic summary of Hull-Spence postulates of drive potential and the "objective" approach to motivation. The postulates are based only on peripheral processes such as eye-lid conditioning and may require modification where central processes may be involved to a greater degree.

APPENDIX 1

EXPERIMENTAL TEST BOOKLET

APPENDIX 1

EXPERIMENTAL TEST BOOKLET

This is a study which attempts to define mathematical measurements of personality dimensions. It is expected that many hundreds of individuals will participate in this effort in Ontario and Quebec. The success of this study therefore depends on the co-operation of each person who is selected to participate.

Please answer all questions as best you can; there are no right or wrong answers. We depend on you for the correct answers as you personally see them.

NAME.....DATE.....

SEX (circle one) M. F. AGE.....EDUCATION.....

OCCUPATION.....

Are you fluent in English? Yes No (circle one).

Have you used English as your major language since the age of six?.....

PLEASE LEAVE BOOKLET

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Please turn the page and work at your own speed until you finish all the pages. DO NOT TURN BACK TO CHECK PREVIOUS ANSWERS.

Here are some questions regarding the way you behave, feel and act. After each question there is a "Yes" a "?" and a "No".

Try and decide whether "Yes" or "No" represents your usual way of acting or feeling; then put a circle round the "Yes" or "No". If you find it absolutely impossible to decide, put a circle round the "?" but do not use this answer except very occasionally. Work quickly, and don't spend too much time over any question; we want your first reaction, not a long drawn-out thought process! Be sure not to omit any questions. Now go ahead, work quickly and remember to answer every question. There are no right or wrong answers, and this isn't a test of intelligence or ability but simply a measure of the way you behave.

1. Are you happiest when you get involved in some project that calls for rapid action?..... Yes ? No
2. Do you sometimes feel happy, sometimes depressed, without any apparent reason?..... Yes ? No
3. Does your mind often wander while you are trying to concentrate?.. Yes ? No
4. Do you usually take the initiative in making new friends?..... Yes ? No
5. Are you inclined to be quick and sure in your actions?..... Yes ? No
6. Are you frequently "lost in thought" even when supposed to be taking part in a conversation?..... Yes ? No
7. Are you sometimes bubbling over with energy and sometimes very sluggish?..... Yes ? No
8. Would you rate yourself as a lively individual?..... Yes ? No
9. Would you be very unhappy if you were prevented from making numerous social contacts?..... Yes ? No
10. Are you inclined to be moody?..... Yes ? No
11. Do you have frequent ups and downs in mood, either with or without apparent cause?..... Yes ? No
12. Do you prefer action to planning for action?..... Yes ? No
13. Are your daydreams frequently about things than can never come true?..... Yes ? No
14. Are you inclined to keep in the background on social occasions?... Yes ? No
15. Are you inclined to ponder over your past?..... Yes ? No
16. Is it difficult to "lose yourself" even at a lively party?..... Yes ? No
17. Do you ever feel "just miserable" for no good reason at all?..... Yes ? No
18. Are you inclined to be overconscientious?..... Yes ? No
19. Do you often find that you have made up your mind too late?..... Yes ? No
20. Do you like to mix socially with people?..... Yes ? No
21. Have you often lost sleep over your worries?..... Yes ? No
22. Are you inclined to limit your acquaintances to a select few?..... Yes ? No
23. Are you often troubled about feelings of guilt?..... Yes ? No

- | | | | | |
|-----|--|-----|---|----|
| 24. | Do you ever take your work as if it were a matter of life or death?..... | Yes | ? | No |
| 25. | Are your feelings rather easily hurt?..... | Yes | ? | No |
| 26. | Do you like to have many social engagements?..... | Yes | ? | No |
| 27. | Would you rate yourself as a tense or "highly-strung" individual?..... | Yes | ? | No |
| 28. | Do you generally prefer to take the lead in group activities?. | Yes | ? | No |
| 29. | Do you often experience periods of loneliness?..... | Yes | ? | No |
| 30. | Are you inclined to be shy in the presence of the opposite sex?..... | Yes | ? | No |
| 31. | Do you like to indulge in a reverie (daydreaming)?..... | Yes | ? | No |
| 32. | Do you nearly always have a "ready answer" for remarks directed at you?..... | Yes | ? | No |
| 33. | Do you spend much time in thinking over good times you have had in the past?..... | Yes | ? | No |
| 34. | Would you rate yourself as a happy-go-lucky individual?..... | Yes | ? | No |
| 35. | Have you often felt listless and tired for no good reason?.... | Yes | ? | No |
| 36. | Are you inclined to keep quiet when out in a social group?.... | Yes | ? | No |
| 37. | After a critical moment is over, do you usually think of something you should have done but failed to do?..... | Yes | ? | No |
| 38. | Can you usually let yourself go and have a hilariously good time at a gay party?..... | Yes | ? | No |
| 39. | Do ideas run through your head so that you cannot sleep?..... | Yes | ? | No |
| 40. | Do you like work that requires considerable attention?..... | Yes | ? | No |
| 41. | Have you ever been bothered by having a useless thought come into your mind repeatedly?..... | Yes | ? | No |
| 42. | Are you inclined to take your work casually, that is, as a matter of course?..... | Yes | ? | No |
| 43. | Are you touchy on various subjects?..... | Yes | ? | No |
| 44. | Do other people regard you as a lively individual?..... | Yes | ? | No |
| 45. | Do you often feel disgruntled?..... | Yes | ? | No |
| 46. | Would you rate yourself as a talkative individual?..... | Yes | ? | No |
| 47. | Do you have periods of such great restlessness that you cannot sit long in a chair?..... | Yes | ? | No |
| 48. | Do you like to play pranks upon others?..... | Yes | ? | No |

Please answer the following statements by drawing a circle around that answer which fits best with your own conviction, that is according to how much you agree or disagree with each statement.

If you are absolutely certain that you can neither agree nor disagree, circle "NO ANSWER", but only as a last resort. Work at fairly high speed through this test. It is your first impressions, the immediate "feelings" about the statements that we want. On the other hand please do not be careless, because we want your true impressions.

1. Novelty has a great appeal to me.

Strongly Disagree	Disagree	Slightly Disagree	No Answer	Slightly Agree	Agree	Strongly Agree
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2. I crave excitement.

Strongly Disagree	Disagree	Slightly Disagree	No Answer	Slightly Agree	Agree	Strongly Agree
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3. It's a wonderful feeling to sit surrounded by your possessions.

Strongly Disagree	Disagree	Slightly Disagree	No Answer	Slightly Agree	Agree	Strongly Agree
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4. There are few things more satisfying than really to splurge on something - books, clothes, furniture, etc.

Strongly Disagree	Disagree	Slightly Disagree	No Answer	Slightly Agree	Agree	Strongly Agree
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5. Only the desire to achieve great things will bring a man's mind into full activity

Strongly Disagree	Disagree	Slightly Disagree	No Answer	Slightly Agree	Agree	Strongly Agree
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6. Nothing is worse than an offensive odor.

Strongly Disagree	Disagree	Slightly Disagree	No Answer	Slightly Agree	Agree	Strongly Agree
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7. In most conversations I tend to bounce from topic to topic.

Strongly Disagree	Disagree	Slightly Disagree	No Answer	Slightly Agree	Agree	Strongly Agree
----------------------	----------	----------------------	-----------	-------------------	-------	-------------------

8. I really envy the man who can walk up to anybody and tell him off to his face.
- | | | | | | | |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Slightly Disagree | No Answer | Slightly Agree | Agree | Strongly Agree |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
9. I could really shock people if I said all of the dirty things I think.
- | | | | | | | |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Slightly Disagree | No Answer | Slightly Agree | Agree | Strongly Agree |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
10. There are few more miserable experiences than going to bed night after night knowing you are so upset that worry will not let you sleep.
- | | | | | | | |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Slightly Disagree | No Answer | Slightly Agree | Agree | Strongly Agree |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
11. I tend to make decisions on the spur of the moment.
- | | | | | | | |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Slightly Disagree | No Answer | Slightly Agree | Agree | Strongly Agree |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
12. Little things upset me.
- | | | | | | | |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Slightly Disagree | No Answer | Slightly Agree | Agree | Strongly Agree |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
13. Drop reminders of yourself wherever you go and your life's trail will be well remembered.
- | | | | | | | |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Slightly Disagree | No Answer | Slightly Agree | Agree | Strongly Agree |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
14. I like nothing better than having breakfast in bed.
- | | | | | | | |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Slightly Disagree | No Answer | Slightly Agree | Agree | Strongly Agree |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
15. My mood is easily influenced by the people around me.
- | | | | | | | |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Slightly Disagree | No Answer | Slightly Agree | Agree | Strongly Agree |
|-------------------|----------|-------------------|-----------|----------------|-------|----------------|

APPENDIX 2

ABSTRACT OF

Response Style Dimensions as a Function of
Eysenckian Personality Dimensions

APPENDIX 2

ABSTRACT OF

Response Style Dimensions as a Function of Eysenckian Personality Dimensions¹

The present study arises from an attempt to lay the groundwork for establishing a two-dimensional framework of personality response style variables similar to the Eysenckian constitutional model. The second objective of this study consisted of an attempt to link up both models at the questionnaire level. An examination of the literature indicated that the Maudsley Personality Inventory was a relatively valid instrument for determining the constitutional dimensions of Neuroticism and Extraversion in a large sample. The response style dimensions were represented by Word Association Communalities and the Overall Agreement Scale of Couch and Keniston. The latter had been subjected to both statistical and clinical verification and was therefore particularly suitable as a representative of a phenotypical dimension.

Six hundred and twenty-five subjects participated in this study. They were a relatively heterogeneous group ranging from student teachers to seminarians to psychology

¹ Leo Lazar, doctoral thesis presented to the School of Psychology and Education of the University of Ottawa, Ontario, February 1964, vii-61 p.

students to established graduate engineers. The tests in booklet form were administered to the sample under carefully controlled conditions.

The results indicated that word association communality and the tendency to agree were indeed uncorrelated and independent of each other according to analysis by product-moment correlation, and chi-square. The link up between the constitutional and the response style model of personality dimensions was, however, realized only with respect to the tendency to agree, while word association communality showed no relationship of dependence on the constitutional dimensions.

The tendency to agree according to the Overall Agreement Scale was found to correlate little with Neuroticism or Extraversion, but a chi-square test of independence resulted in a total chi-square of 58.9 with Neuroticism and 8.79 with Extraversion. Both figures are significant beyond $p = .01$ for a two by two table. It was concluded from these results that the tendency to agree was indeed dependent on the variables elicited by the Maudsley Personality Inventory, and that this tendency is likely a phenotypical manifestation of genotypical characteristics. The point was made that the tendency to agree was not an indication of personal agreeability, but rather a response style of impulsivity. In view of this relationship of dependence it was further

postulated that "agreers" may have acquired a habit of resisting conditioning and thereby confounding conditioning experiments unless they are offered rewards.