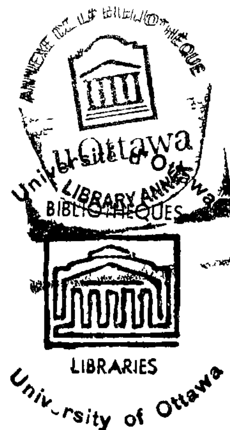
THE PERSONALITY STRUCTURE
OF THYROID PATIENTS ON THE <u>RORSCHACH TEST</u>

by Arthur M. Bolle

Thesis presented to the School of Psychology and Education of the University of Ottawa as partial fulfilment for the degree of Doctor of Philosophy.



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INTRODUCTION

There has been no attempt, hitherto, to organize the known information concerning personality changes that take place in hypothyroid and hyperthyroid, nor has there been sufficient distinction made between the two kinds of diseases. Although medical science has been aware of "changes" in thyroid patients since the Sixteenth Century, it is not until the last fifty years that a specialized branch of medicine, psychiatry, has enumerated some of their different features, and has attempted to relate symptoms of thyroid dysfunctions to psychological disease entities.

For the purposes of this study, a population was randomly selected from thyroid patients hospitalized for their condition, each of whom was given a Rorschach Test for personality features, in an effort to find out if there existed a "typical" hypothyroid and/or hyperthyroid pattern, and what differences if any, existed.

The first chapter of this thesis is mainly concerned with a thorough investigation of medical and psychological reports pertinent to this particular problem. The information derived from this study has been assessed for each disease separately, comparisons and contrasts have been made and the results noted.

Chapter II gives a description of the methods used

for the investigation of the population, and the restrictions placed on the choice of the research patient. The statistical methods employed are also given here.

Chapter III is concerned with a comparison of both quantitative and qualitative analyses of the results, and the appropriate interpretation of significant data found in the two research populations. An effort has been made in Chapter IV to describe a "typical" thyroid protocol. The main body of the thesis is concluded by a comparative analysis of these thyroid results with other functional diseases.

The summary and findings given last of all, whilst affording some indication of the great general need for further study, are intended principally as a guide to the present investigator for future research.

CHAPTER ONE

A HISTORICAL SURVEY OF STUDIES OF THYROID DISORDERS

Although the first historical reference to the effect of the thyroid on the functioning of the individual would appear to have been made in the Sixteenth Century when Paracelous noted that endemic goiter was associated with idiocy, it was not until 1873, when Sir William Gull reported on five females who showed physical lethargy, that there began to be any systematic study. Five years later, Ord, a physician who performed post-mortems on patients showing the same symptoms, found atrophic thyroids (myxedema)[1]

In Germany during the Nineteenth Century, it was noted that the removal of a goiter from a young boy had certain consequences on his later development. By his fortieth year, he was described as resembling a mentally and physically retarded youth.[2]

It would seem from the evidence at our disposal that early attempts to describe the symptoms present in the diseases of the thyroid gland were made by the attending general practitioner, and consequently were often more physiological than psychological. Although the medico-clinical

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[1] J. H. Means, The Thyroid and its Diseases, Philadelphia, J. B. Lippincott Co., 1948, p. 202 - 204.

[2] Ibid.

impressions of hypothyroidism and hyperthyroidism have been rather carefully described, the emotional accompaniments varying from slight tension, or apathy, to a full-blown psychosis, have very often been confused and confusing.

By 1920, however, a few careful and detailed studies attempted to describe personality symptoms, and by 1930 there were relatively more articles appearing in the professional journals concerning the emotional and intellectual components in thyroid problems. Dispensa's research marked a real beginning in the detailed approach: "Clinical medicine has established the fact that mental and emotional disturbances result when there is a dysfunction of one of the endocrines, the thyroid gland", and that, "Included among the long-accepted signs of thyroid hypofunction or under-function are the idiocy of the cretin, and the mental apathy and torpor of the myxedematous individual. Heightened irritability and emotional instability, on the other hand, indicate hyper- or overfunction of the thyroid"[3].

Hyperthyroidism - Specific:

One particularly significant approach in these studies was an attempt to describe the typical emotional maladjustments usually found in hyperthyroid patients, both from the psychodynamic and descriptive points of view.

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[3] J. Dispensa, "Relationship of the Thyroid with Intelligence and Personality", in the Journal of Psychology, Vol. 6, 1938, p. 181.

In outlining the emotional features of this disease, Sainton stated that it may be characterized by a series of psychoses.[4] Bastos and Arruda concluded that the symptoms accompanying hyperthyroidism usually include anxiety and insomnia.[5] Wolf noticed the exaggerated sensitivity of these patients.[6] Ficarra and Nelson, in their investigation, found that phobias were present, especially among females. Claustrophobia and fear of being alone were most notable in this syndrome.[7] Porta and Salvini, working with a group of hyperthyroid subjects, used biographical data and availed themselves of the Rorschach, and the T.A.T. Their results showed emotional tension, general abnormal tendencies, and a certain affective maladjustment. No definite type of Rorschach psychogram was found, however.[8]

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[4] P. Sainton, "Les psychoses des thyroidiens", Sem. Hop., Paris, No. 13, 1937, p. 346-353, as reported in the Psychological Abstracts, Vol. 12, 1938.

[5] F. De O. Bastos, and J. Arruda, "Contribuicao para o estudo clinico des relacoes entre o hipertiroidismo e disturbios psiquicos", S. Paulo Med. Vol. 13, Part 2, 1941, p. 57-95, as reported in the Psychological Abstracts, Vol. 16, 1942.

[6] W. Wolf, "The Role of the Endocrine Glands in Emotional Disturbances, Crime, and Rehabilitation", in the Journal of Clinical Psychopathology and Psychotherapy, Vol. 7, 1946, p. 539-560.

[7] J. Ficarra, and R. A. Nelson, "Phobia as a Symptom in Hyperthyroidism", in the American Journal of Psychiatry, Vol. 103, No. 6, May, 1947, p. 831-832.

[8] V. Porta, and M. Selvini, "Indagini sulla personalita degli ipertiroidei", in Arch. Psicol Neurol Psichiat, Vol. 14, 1953, p. 315-318, as reported in the Psychological Abstracts, Vol. 28, 1954.

Hoskins has described in considerable detail the more general effects of hyperthyroidism:

> As the disorder progresses, restlessness, nervousness, and psychical exitement become increasingly marked. This may develop into an anxiety neurosis so typical as to distract the physician's attention from its thyroid origin. The manifestations, in addition to general anxiousness, include labile pulse and palpitation, sweating, muscular tremors, abnormal skin sensation, ringing of the ears, weakness, feelings of heat and cold, and capricious appetite. The condition may go on even to the point of a major psychosis.[9]

and Bleuler has given a more detailed description of the actual psychosis:

> (...) as a chronic condition marked by extreme exitement, dissociation of thought, confusion, delusions, hallucinations of hearing and sight, and eventually of the other senses - taste, smell, and physical sensations. In some cases this psychosis in its earlier stages cannot be distinguished from schizophrenia. It is finally differentiated, however, by the fact that emotional dullness does not supervene and the stream of thought is less disconnected.[10]

One common denominator, as Selye has pointed out, of all these observed patterns of behavior is the nervous instability of hyperthyroidism:

> The great nervous instability of hyperthyroidism is one of its most prominent manifestations. These patients are almost continuously in motion and many of the motor disturbances (...) may be primarily of nervous origin. The psychic instability of hyperthyroid patients is also very typical. It may manifest itself by alternate periods of depression and manic exitation (...). Sometimes the psychic disturbances become more serious. The

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[9] R. G. Hoskins, Endocrinology: The Glands and their Functions, London, Trubner, 1941, p. 91.

[10] E. Bleuler, Dementia Praecox or The Group of Schizophrenias, New York, International Universities Press, 1952, p. 468.

> patients are subject to spells of crying, fear and sometimes agoraphobia. In extreme instances, it has become customery to speak of 'Basedowian insanity' which often takes the form of true melancholia or manic-depressive psychosis.[11]

It is this instability, according to the investigations of Lidz, in his interviews with fifteen hyperthyroid patients, which is directly responsible for the successful rivalry of hyperthyroid children with their siblings for parental affection. They demand and maintain close bonds with their parents, even after the other children have broken away. The same pattern of behavior continues after marriage, for hyperthyroids demand similar fidelity from their own children. Lidz further has stated that, "Without evidence of their own importance to others, they feel hopeless and helpless".[12]

Racovsky, striving for a more dynamic description, has suggested that the thyroid function is related to the organization of the super-ego, and that the character of its adaptation as normal or pathological is governed by the quality of the introjected environment which regulates the instinctive discharge. According to Racovsky it is the fear of losing the affection of the introjected (i.e. mother) that serves as a 'moral sphincter' and makes the essential function of the ego that of anticipating the probable reaction of the external

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[11] H. Selye, Textbook of Endocrinology, Montreal, Acta Endocrinologica Inc., 1949, p. 754.

[12] T. Lidz, "Emotional Factors in the Etiology of Hyperthyroidism: the Report of a Preliminary Survey", in Psychosomatic Medicine, Vol. 11, No. 1, Jan.-Feb. 1949, p. 2-8.

world to one's impulses. Fear and anxiety are increased in individuals whose mother or mother-substitute has proved too much demanding perfection and this, as Racovsky has shown, produces, in time, a disturbance of the thyroids. Two further suggestions of his deserve close study: that hyperthyroidism occurs spontaneously only in man;[13] that the thyroid gland is a repressing and prospective instance of the pregenital libidinal tendencies and as a stimulant of genital activity.[14]

Another major method of investigation in the medical literature has been to try to discover causal relationships between the thyroid upset and the reacting personality. Kiene has described the personality of the hyperthyroid as a type of individual who reacts to psychogenic trauma with development of excessive and prolonged tension which finally results in a physiological response.[15] Both Ginsburg, and Goodall have agreed that thyrotoxicosis immediately follows some profound

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13 A. Racovsky, "Consideracoes psicodinamicas sobre a funcao tiroidea; observacoes sobre disfuncoes tiroideas em psico-neuroticos", Impr. med., Rio de J., Vol. 22 (402), 1947, p. 74-87, as reported in the Psychological Abstracts, Vol. 23, 1949.

14 Ibid"Interpretacion psicodinamica de la funcion tiroidea", Rev. Psicoanal, B. Aires, Vol. 4, 1947, p. 413-450 as reported in the Psychological Abstracts, Vol. 23, 1949.

15 H. E. Kiene, and H. H. Dixon, "A Study of Psychogenic Factors in Thyrotoxicosis", in the Journal of Nervous and Mental Diseases, Vol. 74, No. 2, Feb., 1931, p. 483-493.

emotional disturbance[16, 17]. Ginsburg has stated further that the symptoms closely resemble a neurosis. Katzenelbogen, in his study on hyperthyroids has also noticed that there is a close relationship between personality reactions, and reactions of the thyroid gland in the autonomic nervous system.[18]

One causal relationship, psychic trauma, has been identified by several workers. Conrad has stated that a trauma preceded the onset of Graves' Disease in 94 percent of the cases.[19] Perrusi, on the basis of a psychoanalytic study, found psychic trauma to be responsible for hyperthyroidism, and has described the onset as being due to the stimulation of the sympathetic nervous system by emotional factors, and that most cases occur in predisposed persons.[20] Another detailed study of causal relationships has suggested that a

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16 S. Ginsburg, "Masked Thyrotoxicosis Simulating Primary Neurosis", in the Journal of Nervous and Mental Diseases, Vol. 76, No. 3, Mar. 1932, p. 331-357.

17 J. S. Goodall and L. Rogers, "The Effects of the Emotions in the Production of Thyrotoxicosis", in the Medical Journal and Records, Vol. 138, 1933, p. 411-415.

18 S. Katzenelbogen, "The Psychosomatic Aspect of Hyperthyroidism", Bol. Asoc. Med., P. Rico, Vol. 40, 1948, p. 15-19, as reported in the Psychological Abstracts, Vol. 23, 1949.

19 A. Conrad, "The Psychiatric Study of Hyperthyroid Patients", in the Journal of Nervous and Mental Diseases, Vol. 79, No. 5, Nov., 1934, p. 505-529, and 656-674.

20 L. C. Perussi, "El factor emocional en la etripatogenia de la enfermidad de Basedow", El Ateneo, Buenos Aires, 1939, p. 190, as reported in the Psychological Abstracts, Vol. 16, 1942.

severe emotional stress precedes the onset of hyperthyroidism in over 90 percent of the cases, and that these patients reacted violently to disruption or threat of disruption of the dominant interpersonal relationships upon which their security rests.[21]

Another causal relationship, organic predisposition to hyperthyroidism, was noticed first by Brown and Gildea and then Perussi two years later. They stated that this predisposition is due to a sensitive thyroid gland, which causes individuals to experience feelings of personal insecurity, a strong urge to fulfill their responsibilities, and a tendency to internalize effects of emotional experience.[22]

In attempting to isolate specific causes, it is necessary to heed Selye's warning that it is not always possible to do so with exact precision:

> Hyperthyroidism is another disease which is often due to stress (...). Sometimes this condition develops immediately after a particularly shocking mental experience; but in man the relationship between hyperthyroidism and stress is not always evident, because - probably due to differences in hereditary constitution - only some people respond that way.[23]

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[21] T. Lidz, and J. C. Whitehorn, "Life Situations, Emotions, and Graves' Disease", in Psychosomatic Medicine, Vol. 12, A. No. 3, May-June, 1950, p. 184-186.

[22] W. T. Brown, and E. F. Gildea, "Hyperthyroidism and Personality" in the American Journal of Psychiatry, Vol. 94, No. 1, July, 1937, p. 59-76.

[23] H. Selye, The Stress of Life, New York, McGraw-Hill, 1956, p. 183.

Hypothyroidism - Specific:

Research on hypothyroidism has received considerably less attention. The methods of investigation employed in this area of thyroid malfunction have been in the main confined to symptomatological description and categorization.

Hayward and Woods, in their study of hypothyroids, have found that the undersupply of thyroid secretion may product malfunctioning of the brain cells which results in mental derangement, with its concomitants, slowing of the intellect, intense fear, restlessness, hallucinations and delusions. It may take the form of either depression or irritability and excitement, leading to a diagnosis of mania.[24] Watkins discovered these patients showed further highly significant characteristics - abnormal fatigue, loss of initiative, nervousness, mental apathy, and an abnormal desire to sleep. He found it necessary to add, however, that, "With few exceptions the patients were of high intelligence".[25]

From quite a different point of view, Hoskins has described the overt symptoms in their progressive debilitation of the patient:

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24 E. P. Hayward, and A. H. Woods, "Mental Derangements in Hypothyroidism. Their Misleading Effects in Diagnosis", in the Journal of American Medical Association, Vol. 97, July-Dec. 1931, p. 164.

25 R. M. Watkins, "Mild Hypothyroidism" in the Annals of Internal Medicine, Vol. 7, No. 12, 1934, p. 1534-1539.

> As the disease develops, both the patient and his friends become aware of his increasing difficulty in mental activity. He grows more and more forgetful, and recalls only with difficulty the events of his past life. He becomes unable to concentrate effectively on reading, thinking or listening. He loses his initiative and his capacity to reach decisions or carry out plans (...). The depression may go on to the extent of a genuine psychosis. In severe cases delusions and hallucinations of hearing, sight, smell, and taste may occur. The patient may find himself uncontrollably impelled to bizarre conduct. In the most severe cases confusion is also seen. In short, a condition may develop that is clinically indistinguishable from the ominous psychosis, dementia praecox.[26]

From the somatic aspect, Selye has outlined some of the more important symptoms:

> In adult myxedema, the salient characteristics are: slowing of mental reactions, a slurring, defective speech, poor memory, somnolence, decrease in libido, parasthesias, and a general indolence towards life. However, in some cases of adult myxedema, temporary mental depressions, schizoid or anxiety states have developed.[27]

At least two articles were found which attempted to relate the personality changes to known diagnostic categories in the psychoses. Sainton, in his investigation of the thyroid-produced psychoses, stated that the hypothyroid psychoses include melancholic depression and mania:[28] Hoskins and Sleeper,

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[26] R. G. Hoskins, "Endocrinology, the Glands and Their Functions" London, Kegan Paul, 1951, p. 81

[27] H. Selye, Textbook of Endocrinology, Montreal, Acta Endocrinologica Inc., p. 737.

[28] P. Sainton, "Les psychoses de thyroidiens", Sem. Hop., Paris, No. 13, 1937, p. 346-353, as reported in the Psychological Abstracts, Vol. 12, 1938.

blamed thyroid deficiency for over 10% of the hospitalized cases of dementia praecox. However, in both cases it was soon realized that medical treatment of the thyroid condition usually resulted in improvement.[29]

Hyperthyroidism and Hyperthyroidism - General Studies:

There has been some attention of a more general nature to the study of thyroid dysfunction, but the results have not been too encouraging. One approach, attempting to relate intelligence to thyroid activity, would seem to have originated with Crile's investigation. He concluded that in the high intellectual functioning groups, many of the patients were found to be hyperthyroid.[30] Along the same lines of investigation, Dispensa found only slight correlational trends between the B.M.R., and intelligence and personality tests, on 78 young women. In differentiating between the hypothyroid and hyperthyroid groups he has added that those with a low functioning thyroid appear to be less intelligent and lack self-restraint, while the group with a high functioning thyroid appear more intelligent and seem less neurotic.[31] A final

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[29] R. G. Hoskins, and F. H. Sleeper, "The Thyroid Factors in Dementia Praecox", in the American Journal of Psychiatry, Vol. 10, No. 3, July, 1930, p. 411-432.

[30] G. Crile, The Phenomena of Life, New York, Norton, 1936, p. 120.

[31] J. Dispensa, "Relationship of the Thyroid with Intelligence and Personality", in the Journal of Psychology, Vol. 6, 1938, p. 181-186.

article on this particular approach states:

> Il est donc permis de conclure ici que le traitement thyroidien n'a apporté aucune amélioration au Q.I., dont la constance s'est maintenue malgré tous les efforts, tant du côté intellectual que du côté physique.

This latter study, however, is a longitudinal one done on a single case![32]

Some of the researchers have attempted to relate thyroid activity to personality characteristics and to diagnostic categories. One of the earlier studies, by Man and Kahn, concerned with a general investigation, has found no correlation between the two:

> The dysfunction of the thyroid cannot be considered as an essential factor in manic-depressive conditions or in manic overactivity or depressed underactivity. There is no way to prove or disprove that occasionally disturbances of the thyroid may not participate in starting a manic-depressive cycle.[33]

Small but significant differences were found by Brody in his attempts to use serum iodine levels as a measure of tension. He classified different groups of patients according to the levels of tension and determined the iodine levels.[34]

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[32] R. Lussier, "Glande Thyroide v.s. Quotient Intellectuel" Abstract in the Bulletin of the Canadian Psychological Association, Vol. 6, No. 1, 1946, p. 99.

[33] E. B. Man and E. Kahn, "Thyroid Function of Manic-Depressive Patients Evaluated by Determinations of Serum Iodine", in the Archives of Neurology and Psychiatry, Vol. 15, No. 1, 1945, p. 51-56.

[34] E. B. Brody, "Psychologic Tension and Serum Iodine Levels in Psychiatric Patients Without Evidence of Thyroid Disease", in Psychosomatic Medicine, Vol. 11, No. 1, Jan-Feb. 1949, p. 70-73.

The larger diagnostic categories were investigated by Bowman _et al_. for thyroid activity. The results showed no significant differences between patients and controls as measured by the radio-active iodine uptake, and no changes in thyroid function in patients during or after insulin shock, electroshock, or psychotherapy.[35] The same researchers later found significant differences between groups of schizophrenics, manic and depressive patients from those of normal controls. There was no evidence, however, in clinical evaluation and test results.[36]

Summary and Hypothesis:

The foregoing survey of the literature has, in fact, produced few symptoms that could be readily used in a differential diagnosis. The hyperthyroid is designated as having: a more active cerebration; a more intelligent appearance; an organic predisposition in a sensitive thyroid gland; a reaction of the autonomic nervous system to psychic trauma in over 90% of cases; and a personality that reacts to frustrated dependency needs. Hypothyroids, in contrast, have: slower cerebration: poor memory; a less intelligent appearance; and a decrease in the power of taking the initiative.

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[35] K. M. Bowman, et al, "Thyroid Function in Mental Disease Measured with Radioactive Iodine I 131", in the _American Journal of Psychiatry_, Vol. 106, No. 8, Feb. 1950, p. 561-572.

[36] -------- "Thyroid Function in Mental Disease: A Multiple Test Survey" in the _Journal of Nervous and Mental Diseases_, Vol. 112, No. 5, Nov. 1950, p. 404-424.

Common to both the hyperthyroid and hypothyroid groups are the following symptoms: increased irritability and anxiety; phobias; generalized weakness; emotional instability; possibility of schizophrenic or manic-depressive psychoses with secondary symptoms; depression or melancholia; confusion; sleeplessness; and high intellectual function.

There are a number of possible reasons for the apparent paucity of diagnostic signs. First, there has been no attempt to differentiate between the mild and severe cases within each syndrome. Distinguishing quantitatively may point out the differences existing in the so-called 'neurotic' and 'psychotic' patients. Secondly, because of individual differences in inherent constitutions, the age of the patient, the premorbid emotional makeup, etc., the reactions to the diseases are likely to be different. Hoskins has pointed out a reason for this confusion.

> In addition to the sluggish, myxedematous type of deficiency (...) some writers also emphasize another, 'thin, irritable, non-myxedematous' type. The subjects, far from being phlegmatic, are overresponsive to environmental annoyances (...). Even in the myxedematous type of deficiency, however, truculent irritability rather than lethargy may occur - as was noted in the classic report of the British Myxedema Committee as early as 1888.[37]

It is possible that an actual dichotomy exists within each group. Either the underfunctioning or overfunctioning thyroid

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[37] R. G. Hoskins, <u>Endocrinology: The Glands and Their Functions</u>, London, Kegan Paul, 1951, p. 80.

may produce a lethargic or an agitated reaction in the individual.

It is the purpose of this research, therefore, to attempt to distinguish between the two diseases, and to describe these differences in terms of the features found by the Rorschach Test. Besides this proposal, it is anticipated that a better understanding of the psychological mechanisms may be gained, and a means of differentiating thyroid disorder from a purely functional maladjustment.

Although there are numbers of secondary considerations to be dealt with using the results of the test population, the main problem here is the comparison of the hypothyroid protocol with that of the hyperthyroid. With this in mind, the following hypothesis may be stated: that the Rorschach Test can be used as an instrument to differentiate between hypothyroid and hyperthyroid conditions, and the condition can give rise to different personality manifestations.

Definition of Terms:

In order to acquaint the reader with terms used in each of the two major diseases, the following definitions are submitted. Hyperthyroidism is, "An abnormal condition brought about by excessive functional activity of the thyroid gland". The terms: exophthalmic goitre; Graves' Disease; Baselow's Disease; Parry's Disease; and thyrotoxicosis are subsumed under

this heading. The slight variations that may exist in these subtitles are not differentiated for this purpose.

Hypothyroidism is defined as:

> A morbid condition due to deficiency of the thyroid hormone; in advanced form expressed as cretinism or myxedema. In mild form, a non-myxedematous condition associated with basal metabolic rates approximately 20% below normal and, to a mild degree, with other characteristics of myxedema.[38]

The term 'cretinism' will not be found in these pages, as it is a disease associated with infants and children, and therefore not included in the research population. Differentiation between the mild and severe states in hypothyroidism has also not been made.

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[38] Blakiston's _New Gould Medical Dictionary_, Second Edition, Philadelphia, The Blakiston Co., 1956, p. 581.

CHAPTER II

THE EXPERIMENTAL DESIGN

In order to test the hypothesis, an adequate number of thyroid patients who fulfilled certain conditions, had to be found to act as a sample and to be subjected to a test that would reveal possible personality structures.

It was felt that a random selection from the hospitalized population of hypothyroids and hyperthyroids would be most likely to give evidence of easily recognized and readily diagnosed thyroid disorders. Such individuals were obviously unable to carry on with their daily tasks, and, in most cases, had to be institutionalized by their respective doctors on account of the severity of their symptoms. It was deemed necessary to take the precaution of screening these selected patients with a view to eliminating those who had other accompanying diseases, such as cardiac disorders often found in hyperthyroidism which might easily falsify the results of the present investigation. Though this precautionary measure could in no sense be considered foolproof, it did, nevertheless, tend to keep at a minimum the possible psychological reactions to such secondary diseases.

As a further precaution against possible attributable contamination of symptoms that were not purely thyroid malfunction, certain other restrictions were placed on the selection of the sample population. Only patients who were between

the ages of twenty to sixty years were accepted for the survey. It had to be sufficiently established that there were no other complicating physiological diseases present, or at least a minimum of them; that the onset of the disease was recent; that there was no history of emotional disorder; that these patients had at least a grade eight education; and that they had received no treatment for their disability (i.e. thyroid extracts or drugs in cases of hypothyroidism, and either surgical intervention or radio-active iodine in cases of hyperthyroidism).

By this means it was possible to create a sample that fulfilled desirable requisite conditions. It was especially important that the mental attitude of the group should be more or less homogeneous. The educational achievement of the final population varied only between grade eight and university entrance. None had received a university degree, and there were no individuals in the professional-managerial occupational categories.

Table I shows the age distribution of the sample population. There were twenty-four hypothyroids and twenty-six hyperthyroids between the ages of twenty to sixty. The hypothyroid group contained ten males and fourteen females, and the average ages for the group were 36.6 years, and 38.07 years respectively. The hyperthyroid group consisted of eight males and eighteen females, and the average ages in this category were 43.13, and 37.11 respectively. It will be noticed that

Table I - Age Distribution of the Hypothyroid and Hyperthyroid Groups.

Age	Hypothyroids		Hyperthyroids	
	Male:10	Female:14	Male:8	Female:18
20 - 24.5	2	3		1
25 - 29.5	1			4
30 - 34.5	2	3	2	5
35 - 39.5	1	2	2	3
40 - 44.5	1	2		1
45 - 49.5	1	2	1	1
50 - 54.5			1	
55 - 60	2	2	2	3
Mean Age	36.60	38.07	43.13	37.11

females predominated, especially in the hyperthyroid group. As an attempt was made to obtain the largest sample possible over a period of two and one half years in a relatively small disease entity, it was felt that this difference in representation of sexes would not prejudice the results of the investigation unduly.

It was necessary to choose a method of procedure that would give a maximum of information about these subjects, so that results could be tabulated and analyzed statistically. Once the patients were in hospital, therefore, the staff of the endocrinology department made the investigation, the subsequent diagnosis being based on one or more of the following procedures: clinical observations and investigations; radio-active iodine thyroid uptake (T.U.) and conversion ratio (C.R.); basal metabolic rate (B.M.R.); and serum cholesterol analysis. In every instance a definite hypothyroid or hyperthyroid diagnosis was confirmed.

Due to the fact that there could possibly be many psychological symptoms present in these two diseases, and that the test used in this investigation must be of the type that could tap all areas of personality and be capable of detecting structural changes in personality makeup, it was felt that the Rorschach Test would be the better tool for this research. Hence, after the diagnostic work had been completed, and a diagnosis of hyperthyroidism or hypothyroidism had been

definitely made, each patient was subjected to the test. The protocols were then scored according to the method outlined by Klopfer and Kelly. No attempt was made to evaluate individual test results.

The individual Rorschach scoring categories were tabulated under the following headings: Location (W, d, Dd, and S); Determinants (M, FM, m, k, K, FK, F, Fc, c, C^1, FC, CF and C); and Content (H, Hd, A, Ad, A Obj, At, Obj, Pl, N, and Geo). Similar consideration was given to: number of responses to cards (R); response time to cards (R.T.); card rejections (Rj); P%; sum C; M:sum C; (FM+m):(Fc+c+C^1); R(VIII, IX, X)%; FK+F"Fc/R%; A%; (H+A):(Hd+Ad); and W:M - categories established by the Klopfer and Davidson Individual Record Blank. Other categories have been omitted, however, because of infrequency of appearance in the protocols. This was especially true of certain of the Content categories such as sex, art and description, architecture, blood, clouds, etc. The qualitative results were also considered as a source of interpretative data.

Once the scores of each protocol had been entered under the appropriate scoring categories in either the hypothyroid or hyperthyroid tables, the results were then statistically analyzed. It was necessary at this point to choose a method that would yield true results because of the skewed ("J") distribution of the scores. The one chosen was the Chi Square Contingency Tables. The computation of Chi Square was made

using the fourfold tables (2 by 2), and the formula:

$$\chi^2 = \frac{N(AD-BC)^2}{(A+B)(C+D)(A+C)(B+D)}$$

In the tables, cell A contained the frequency of the presence of a factor, while cell B indicated the number of protocols in which the factor in question did not appear. Both A and B cells were computed from the hypothyroid population. Cells C and D were computed in the same manner as cells A and B, but the values in this case were obtained from the hyperthyroid group.

However, because there were results in terms of percentages (A%, P%, FK+F+Fc/R%, R(VIII, IX, X)%, sum C, number of responses to each card, rejection of cards, and the average number of responses for the ten cards), it was necessary to use a modified formula in computation of Chi Square:

$$\chi^2 = \frac{p_1 - p_2}{\sqrt{p_1 p_2 \left(\frac{1}{N_1} + \frac{1}{N_2}\right)}},$$

where p_1 represents the percentage of the first population within a particular scoring category, and p_2 the percentage of the second population within the same category. The total number in each population was designated by N_1 and N_2 respectively.

By the above statistical procedures it was now possible to compare the hypothyroid and hyperthyroid groups.

However, it was necessary to compare these two groups to other known disease entities, the neuroses, psychoses, and organics, in order to ascertain the uniqueness of the obtained results.

CHAPTER III

ANALYSIS OF THE RESULTS

In an effort to arrive at a unique picture of the thyroid personality, the results of the two experimental populations were compared quantitatively and qualitatively. It is the aim of this chapter to present these results, and interpret them according to Klopfer's system of Rorschach analysis,[39] and, where necessary, from other sources where the interpretation appears more extensive.

Analysis and Interpretation of the Quantitative Results

In general, a comparison of the quantitative results gathered from the two thyroid groups revealed only minor differences. It was necessary to use the 0.05 level of significance, or higher, in most cases because there were no differential factors to the 0.01 level, and only four appeared at the 0.015 level.

The Determinants, as shown in Table II, revealed no significant differences at either the 0.01 or 0.05 levels. Both hypothyroids and hyperthyroids show close correlation in the production of movement, shading, color, achromatic color, and form responses. However, there was a slight trend for

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[39] B. Klopfer, et al., Developments in the Rorschach Technique, Vol. I, New York, World Book Co., 1954.

Table II

Relative Frequency of Determinants in the Hypothyroid and Hyperthyroid Groups

Determinants	Hypothyroids		Hyperthyroids	
	N:2403	%	N:2603	%
M	198	8.25	323	12.42
FM	431	17.96	440	16.96
m	85	3.54	99	3.81
k	26	1.08	23	0.88
K	38	1.58	17	0.65
FK	59	2.46	28	1.08
F	890	37.08	1144	44.00
Fc	142	5.92	123	4.73
c	79	3.29	29	1.12
C^1	61	2.54	99	3.81
FC	129	5.38	59	2.27
CF	240	10.00	198	7.62
C	25	1.04	21	0.81

the hypothyroids to score more frequent FC responses.

The hypothyroids tended to produce twice the number of Animal Movement (FM) responses in relation to Human Movement, while, in the hyperthyroid protocols, the ratio of M to FM was four to three respectively. In both groups, therefore, there is a tendency to immediate gratification of needs rather than planning for future goals, with the hypothyroids showing a slightly greater need in this area. Abstract Movement (m) received approximately the same minimal recognition in both groups.

The shading responses, k, K, FK, Fc, c, and C[1], also show some moderate intragroup differences. The hypothyroids produced more K in relation to k, while in the other group this ratio was reversed. This is interpreted as meaning that while the hypothyroids show diffuse, free-floating anxiety as a frustration of affectional satisfactions, the hyperthyroids attempt to cover up their anxiety behind an intellectualization and use insight unsuccessfully. The hypothyroids also produced a greater number of c compared to Fc than did the hyperthyroids. This indicates that the individual with an under-functioning thyroid shows a continuation of the early child-like need for tactile affection in his personality integration. As to achromatic color, the hyperthyroid seems to produce more responses in this area, and thus shows a more toned-down, hesitant response to his

environment, than the hypothyroid.

The protocols of both groups show an underproduction of FK and Fc in relation to F. This may be taken largely as meaning that there is a lack of personal involvement in interpersonal relationships.

Color responses (FC, CF, and C) also had different emphasis within each group. While the ratio of FC to CF was almost one to two in the hypothyroids, the hyperthyroids produced almost four times the number of CF in relation to FC. The hyperthyroids, therefore, appear to be slightly more impulsive than the hypothyroids, and when these color dynamics are interpreted in contrast to the M and FM production (above), the interpretation now indicates that both groups show a tendency to overt expression of conscious impulses to immediate gratification.

The production of form (F) responses did not differ significantly in these groups, and it was well within the normal constrictive limits. Comparison of F ratios has been covered in the foregoing paragraphs where necessary.

The Location scores, as shown in Table III, were almost identical for both groups. No significant differences were found in any of the scoring categories (W, D, d, Dd, and S), and slight intragroup variations did not appear worthy of consideration.

There were, however, several noteworthy differences

Table III

Relative Frequency of Location Scores in the Hypothyroid and Hyperthyroid Groups

Locations	Hypothyroids		Hyperthyroids	
	N:2396	%	N:2607	%
W	861	35.88	984	37.85
D	1002	41.75	1132	43.54
d	111	4.63	90	3.46
Dd	396	16.50	384	14.77
S	26	1.08	17	0.65

between the two groups in the variety of Content categories. Table IV shows hypothyroid Anatomy (At) scores to be greater at the 0.015 level of significance, which may be taken to indicate the presence of a hypochondriacal status. There was also a tendency for the same group to provide a greater number of human detail (Hd) responses at the 0.10 level of significance. This may also show a tendency for the hypothyroid personality to attempt to deal with his ineffectual interpersonal relationships in a compulsive manner. Intragroup variations showed some slight difference in the H + A: Hd + Ad ratio. While the hypothyroid ratio was about three to one, the hyperthyroids gave about five to one.

The average number of responses elicited for the ten cards did not differ significantly between the two groups. From Table V it is noted that the hypothyroids gave an average of 21.46 responses, while the hyperthyroids responded at the average rate of 18.42 responses for the entire test. These two groups, therefore, fall at the bottom limits of productivity if the range of normal responsiveness can be taken as between twenty and forty-five; the hyperthyroids being slightly underproductive.

The number of responses to each individual card showed no significant differences. However, an examination of the responses to each card in intragroup comparison shows three significant differences at the 0.05 level. One of these

Table IV

Relative Frequency of Content Scores in the Hypothyroid and Hyperthyroid Groups

Content	Hypothyroids		Hyperthyroids	
	N:2240	%	N:2446	%
H	227	9.46	324	12.46
Hd	164	6.83	72	2.77
A	765	31.88	1041	40.04
Ad	212	8.83	218	8.38
A Obj	128	5.33	123	4.73
At	212	8.83	113	4.35
Obj	211	8.79	203	7.81
Pl	120	5.00	190	7.31
N	64	2.67	110	4.23
Geo	137	5.71	52	2.00

Table V

Relative Frequency of Responses to Each Card of the Hypothyroid and Hyperthyroid Groups

Card	Hypothyroids		Hyperthyroids	
	N:515	%	N:479	%
I	57	11.1	53	11.1
II	56	10.9	42	8,8
III	57	11.1	63	13.2
IV	45	8.7	43	9.0
V	38	7.4	40	8.4
VI	45	8.7	35	7.3
VII	48	9.3	42	8.8
VIII	51	9.9	56	11.7
IX	48	9.3	41	8.6
X	70	13.6	64	13.3

occurred in the hypothyroid population, where the response to Card X was greatest, and the least response was given to Card V. The hyperthyroids responded in the highest ratio to Cards III and X, and least to Card VI. The high productivity of responses on Card X is the usual expectation, where individuals are now faced with many discrete situations and can use more flexibility and spontaneity in their reactions. The greater number of responses of the hyperthyroid on Card III may indicate his ability to adapt to an emotional situation (originally aroused by Card II).

The low number of hypothyroid responses to Card V may be interpreted as a black shock, where it is possible that the individual is unable to deal with feelings of depression. Also, the lack of responsiveness by the hyperthyroid individual to Card VI may be seen as either a reaction to sexual implications or to the various shading nuances.

Frequency of rejections of cards in the hypothyroid and hyperthyroid groups is shown in Table VI. There was significant difference at the 0.05 level, with the hypothyroids rejecting fourteen cards, and the hyperthyroids rejecting a total of twenty-five. Cards IV, VI, and IX were most commonly rejected by hypothyroids, while Cards VI, VII, and IX were refused by the other group. Card IX, rejected by both groups, is commonly refused by people who are emotionally disturbed. Rejection of Card VII by the hyperthyroids may be

Table VI

Frequency of Card Rejections in the Hypothyroid and Hyperthyroid Groups

Card	Hypothyroids N:14	Hyperthyroids N:25
I	1	-
II	-	4
III	-	-
IV	3	1
V	1	3
VI	3	5
VII	-	5
VIII	1	-
IX	3	5
X	2	2

due to the suggested femininity on the card. Interpretation for rejection of Card IV by the hypothyroid may similarly be associated with masculine components. The meaning of rejection of Card VI, discussed above, may also be associated with the sexual implications, or shading nuances.

The remainder of the quantitative factors and ratios on the Rorschach, A%, P%, Sum C, FK + F + Fc/R%, and R(VIII, IX, X), showed no significant differences, and consequently they are not dealt with here since they were well within the limits set for normal functioning individuals.

Analysis and Interpretation of the Qualitative Results

In an attempt to discover further likenesses and differences between the two experimental groups, and because of the paucity of unique quantitative results, it is now necessary to consider the qualitative aspects of the thyroid protocol. More apparent differences were discovered in this analysis, and each qualitative feature as it is presented in the particular thyroid group will be interpreted.

The hypothyroid patients often expressed their inability to put their thoughts into words. Almost all of these patients, after the test, remarked that they could see more things on the cards, but could not verbalize on them, for these card descriptions often included such words as, "weird", "ugly", "eerie", etc., and the responses for these were

extremely vague and undifferentiated. Few words were used in their descriptions. These features appear to be a form of blocking, and may be due to anxiety reactions, and low anxiety tolerance.[40]

These same patients also often express some suspiciousness about the test cards. They commonly turn the card over and carefully scrutinize the backs. Questions about 'correct answers' were also very numerous.

Oral aggressivity is also common content in the hypothyroid response (at the 0.25 level of significance). These contain mostly a chewing, biting or ripping action of the mouth. This may be described as demand in an oral-aggressive dependent orientation.[41] Aggressive activity is also expressed in both human and animal movements, thus indicating an expression of a hostile factor in their interpersonal relationships.

Reactivity to color is also present in this group (at the 0.30 level of significance). The signs of this color disturbance include: prolonged reaction time; lowered productivity; color avoidance; lowered form level of responses on chromatic cards; visible increase of tension (including

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[40] Roy Schafer, The Clinical Application of Psychological Tests, New York, International Universities Press, Inc., 1948, p. 36.

[41] --------, Psychoanalytic Interpretation in Rorschach Testing, New York, Grune and Stratton, 1954, p. 131.

card bending, wringing hands, etc.); and frequent rotation of cards. This manner of reaction, commonly referred to as 'color schock', is often interpreted as indicative of a superficial emotional disturbance, or how a person reacts to emotional stimuli from the environment.[42]

The hypothyroid's responses also contain objects that are in the process of disintegration, such as dying or rotting, dead vegetation, and badly battered things. These were significant at the 0.25 level of significance. Responses referring to deteriorating objects are often taken as subjective expressions of feelings that the subject's own ego is in a similar state.[43]

There is also a predominance of eye-emphasis in the hypothyroid records. This may be taken as meaning that these individuals tend to be suspicious regarding the motives of others,[44] or as sensitivity to opinion of others.[45]

In comparison, the hyperthyroid patient's verbalizations are more extensive, but the contents of responses

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[42] B. Klopfer, et al., Developments in the Rorschach Technique, Vol. I, New York, World Book Co., 1954, p. 276.

[43] Roy Schafer, The Clinical Application of Psychological Tests, New York, International Universities Press, Inc., 1948, p. 320.

[44] L. Phillips, and J. G. Smith, Rorschach Interpretation: Advanced Technique, New York, Grune & Stratton, 1953, p. 145.

[45] Z. A. Piotrowski, Perceptanalysis, New York, MacMillan Co., 1957, p. 345.

are still vague and undifferentiated. He tends to use more words than the hypothyroid, but is still unable to express a clearer concept. This seems due to a confusion of ideation rather than blocking found in the other population.

The thyrotoxic tends also to give passive receptive oral responses (at the 0.30 level of significance). This particular feature may be described as supply in an oral receptive dependent orientation.[46] These are usually characterized by an open mouth waiting for food, emphasized mouth areas, or food or objects in an open unchewing mouth.

This group of patients often looks to the examiner for approval or disapproval, and tends to give the response in the form of a question. These insecure, dependent features are taken as another means of expressing the same oral receptivity in the above paragraph. However, Piotrowski includes this in his check list of organic signs and it is called perplexity (plx). In this instance, it is interpreted as being associated with a distrust of one's own ability, and a need for reassurance from the examiner.[47] This feature occurred at the 0.25 level of significance.

Sexual responses elicited from the hyperthyroids

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[46] Roy Schafer, Psychoanalytic Interpretation in Rorschach Testing, New York, Grune and Stratton, 1954, p. 131.

[47] I. A. Piotrowski, "On the Rorschach Method and its Application in the Organic Disturbances of the Central Nervous System", in the Rorschach Research Exchange, Vol. 1, 1936 - 1937, p. 23-40.

are usually that of sexual role confusion. This feature usually consisted in any of the following: mixing the sexual characteristics in a single human response; ascribing masculine features to the one human figure and feminine features to the other identical figure (as, for example, the human figures on Card III); and seeing one sex performing activities usually done by the opposite sex. Present attitudes of the patient to his sexual role in life are shown in this.[48]

Fantasy responses are also plentiful in the thyrotoxic protocol. Witches, fantasy creatures, cartoon characters, and the like appear often (at the 0.20 level of significance). This may indicate that the individual emphasizes escapist wishes instead of achievement.[49]

There are also two important features found in both hypothyroid and hyperthyroid records. Distantiation, as a means of removing the self from interpersonal involvement,[50] is common to both. The hyperthyroid accomplishes this by means of fantasied creatures, etc., while the hypothyroid 'freezes' the activity of human or animal responses by making

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[48] B. Klopfer, et al., Developments in the Rorschach Technique, Vol. I, New York, World Book Co., 1954, p. 380.

[49] Id., Ibid., p. 304.

[50] Id., Ibid., p. 381 - 382.

them silhouettes or statues. Another feature common to the two populations is overgeneralization in the form of DW responses - or confabulation. This may indicate some weakness in the ties to reality.

It is now possible, from the above presentation of differential and like quantitative and qualitative features found in the records of hypothyroid and hyperthyroid patients, to construct a typical thyroid psychogram and describe the elements which combine to make up the hyperthyroid or hypothyroid personality. Chapter IV will present this, and also, it will now be possible to compare the thyroid protocol to that of the various neurotics, psychotics, and organic patients. This latter attempt will be made in an effort to find out if these elements are unique.

CHAPTER IV

THE TYPICAL THYROID PERSONALITY AND ITS PLACE IN THE FUNCTIONAL DISEASES

From the foregoing analysis of the hypothyroid and hyperthyroid protocols, it is evident that the quantitative differences between the two populations are only minor in nature. Qualitatively, however, there are several features that appear in one group and not the other. It is, therefore, proposed that the quantitative results should be grouped together as typical thyroid psychograms, including the Determinants, Location, and Content scores.. Significant differences, up to the 0.05 level will also be included.

Once the composite and differential features have been compiled, it is then possible to compare them to the neuroses, psychoses, and organic *Rorschach* findings contained in the literature.

The Thyroid Rorschach:

The lack of difference between the average hypothyroid and hyperthyroid protocol now enables us to draw up a typical quantitative picture of the thyroid personality. This will be done by taking the average of the two scores for each test factor in each group. Figure 1 shows the frequency of Determinant scores for the total population.

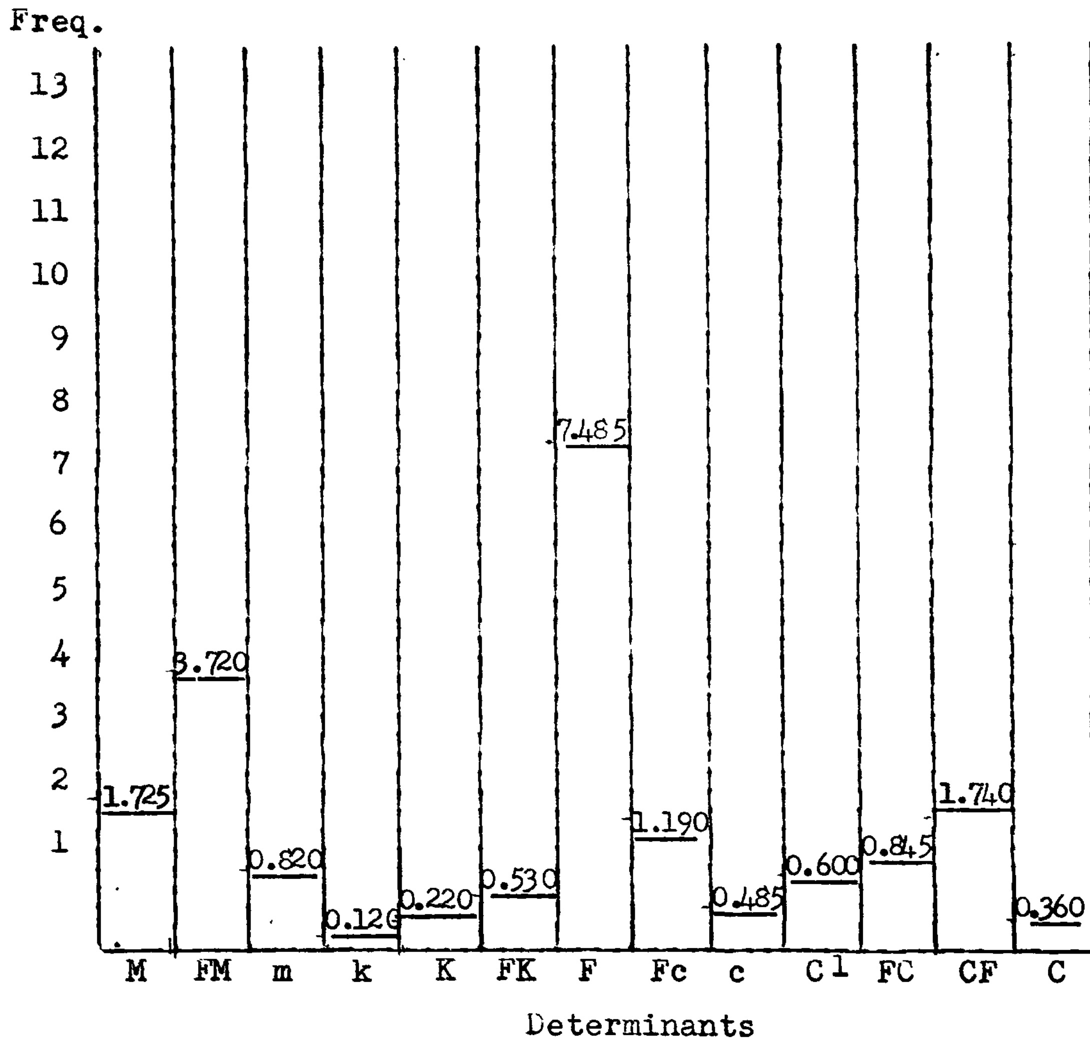

Figure 1: Composite "Thyroid" Profile of Determinants Found in the Total Population Tested; N:50.

Using the relationships among factors in the Individual Record Blank,[51] the relationships among the Determinants indicate several interesting features. The F% is well within normal limits at 37 percent, and the ratio of FK+F+Fc/R% is also within normal limits at 46 percent. However, the vague, undifferentiated responses obtained in both groups resulted in a lowered form level, thus a hypothesis of neurotic construction can be made.[52]

The production of human movement (m) responses was lower than expected for the normal population, indicating the possibility of repressive defences. Animal movement (FM) plus abstract movement (m) is greater than one and one half M, with the ratio approximately one M to 2.5 (FM+m). This may be interpreted as indicating that there is an overabundance of tension present within the individual, which prevents the constructive use of inner resources.[53]

The ratio of (FM+m):(Fc+c+C^1) is approximately 4.5 to 2.3 respectively, or nearly two to one. This suggests

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[51] B. Klopfer, and H. Davidson, The Rorschach Method of Personality Diagnosis: Individual Record Blank, New York, World Book Co., 1942.

[52] B. Klopfer, et al, Developments in the Rorschach Technique, Vol. I, New York, World Book Co., 1954, p. 295.

[53] Ibid., p. 290.

that the thyroid patient tends to move to an introversive concentration. The M: sum C ratio, however, is in proportion of one to one, indicating a basic ambivert status which is expected in the majority of individuals.[54]

Color dynamics in the thyroid patient shows a relationship of FC to CF and C to be in the proportion of one to two and one half respectively. This implies weak emotional controls over overt behavioral expression. However, due to the fact that the sum C proportion is less than three (1.7), this type of individual shows little responsiveness to emotional environmental influences. The percentage of responses to Cards VIII, IX, and X indicates an average sensitivity to emotional stimuli from the environment (i.e. 33 percent).[55]

The organization of affectional need, as shown in the composite psychogram in Figure I, of the ratio FK+Fc to F, respectively, is in the proportion of 1.7 to 7.5. This indicates a basic upset in the organization of affectual needs in the personality organization.[56] However, it is also noted that the ratio of achromatic (Fc, c, C^1) to chromatic (FC, CF, C) responses is in the proportion of 2.9 to 2.3

[54] _Ibid._, p. 372 - 374

[55] _Ibid._, p. 296 - 297

[56] _Ibid._, p. 293

respectively, indicating that there is no undue influence of the affectional needs in emotional situations.[57]

The remainder of the Determinants, including k, K, FK, c, and C^1, in themselves are not represented in adequate number, and in each case, are less than one, An attempt has been made to include these, where possible, in the foregoing proportions and relationship among factors.

The composite Location scores are shown in Figure 2. Variations from the normal expected percentage in each of W, D, and d were slight. The whole (W) responses are slightly above the expected normal range, while large (D) and small (d) usual details are slightly below. In relation to W, since there was vague or indefinite form perception in conjunction with this, and there was an underproduction of D, it appears that thyroid patients have some difficulty in differentiating perceptual experience, and an inability to perceive other than the more global aspects of experience.[58] The score on Dd plus S, however, is quite high (16.5%), with a very small (0.87%) representation of S. This is hypothesized as meaning that there is little concern with the obvious data of experience.

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[57] Ibid., p. 293

[58] Ibid., p. 300

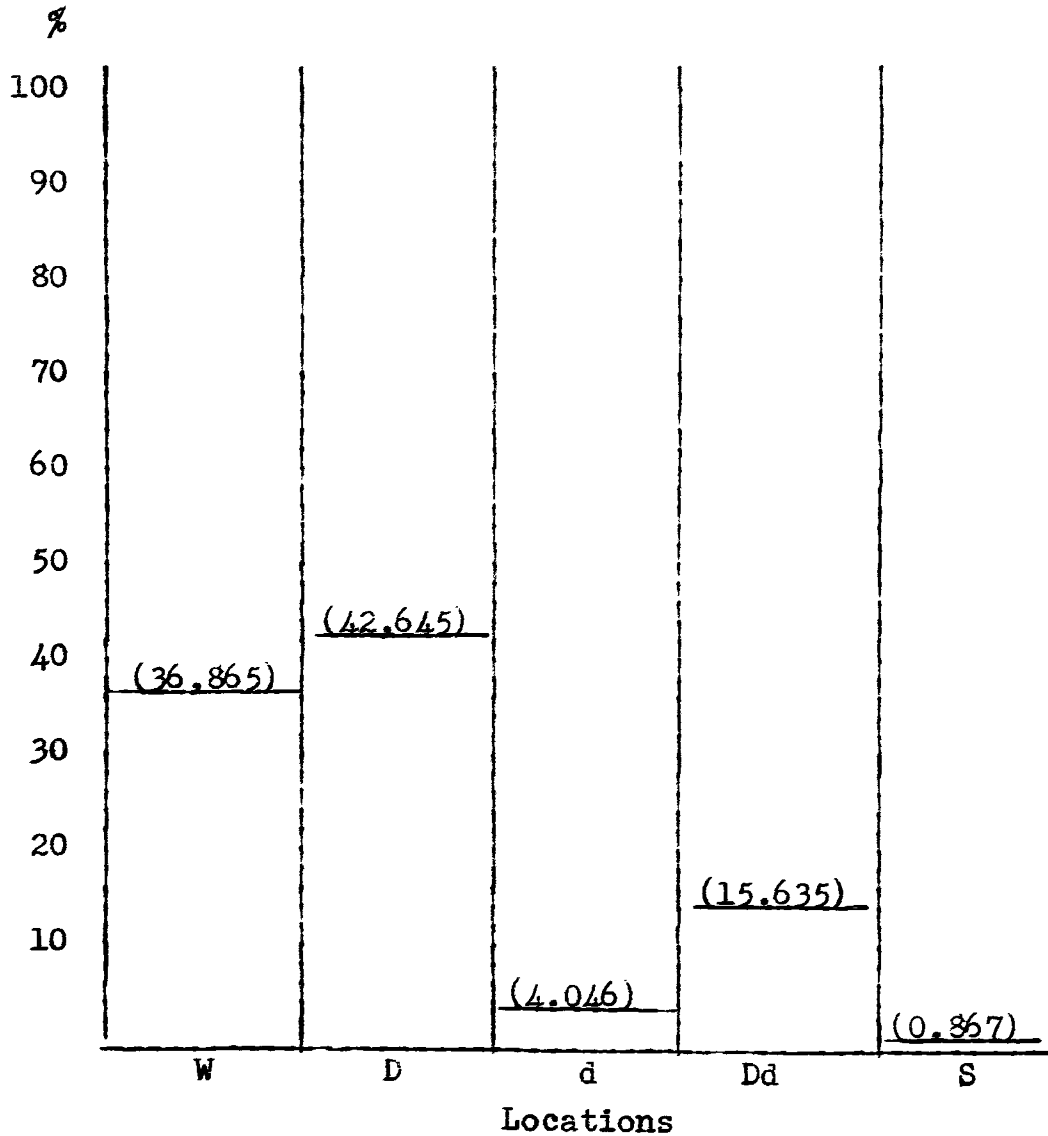

Figure 2: Composite "Thyroid" Profile of Location Scores in the Total Population Tested; N:50

In the combined Content scores, it will be necessary to point out some significant differences (up to the 0.015 level of significance) existing between hypothyroids and hyperthyroids, as each factor is taken up. Figure 3 shows the percentage of Content factors in the total population.

In both groups, the average A percent is 44.57 percent, which is well above the expected range for the normal population (i.e. 20 to 35 percent)[59]. Although fifty percent is considered the lower limit for significant animal content, it may be considered as an index of depressed reactivity and stereotypy.[60]

Anatomy responses, although only given in a moderate number, are significantly higher in the hypothyroid. This may indicate that this type of individual is motivated by destructive impulses, but is unable to express these directly.

The remainder of the Content categories (A. Obj., Obj., Pl., N., and Geo.) appear to be normally represented, and show some narrowing of interests.[61]

The average number of responses contained in the

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[59] B. Klopfer, _Developments in the Rorschach Technique_, Vol. 1, New York, World Book Co., 1954, p. 314.

[60] L. Phillips, and J. Smith, _Rorschach Interpretation: Advanced Technique_, New York, Grune & Stratton, 1953, p. 115

[61] L. Phillips, and J. Smith, Op. Cit., p. 124.

thyroid protocol is 19.94. This is at the lower limits of productivity for the normal individual. There are no significant differences in response production, but some minor differences do exist at the 0.05 level of significance. The hypothyroid respond most to Card X, and least to Card V, while the hyperthyroids have the greater number of responses on Cards III and X, and least on Card VI.

Card rejections also occur on all but Card III. There are differences, at the 0.05 level of significance, in rejection of the various cards.

Qualitatively, there are more apparent differences between the groups. However, where it was possible to compute significance level, there are no significant differences found below the 0.25 level of significance. The differences have already been discussed in the foregoing chapter, and hence will not be covered here. Both groups, nevertheless, show an inability to express clear, concise concepts, resulting in responses that are usually vague and undifferentiated. Oral features are present in both protocols, though of a different variety. Two other features include distantiation, and a tendency to overgeneralize in response to the cards.

Comparison to Other Disease Entities:

Summarizing the above description of the thyroid Rorschach, we find that there are indeed only a moderate number

of features that may be used as a means of comparing the individual with a malfunctioning thyroid with that of the other disease entities. This type of protocol contains: neurotic construction; a lowered M response which may indicate repressive defenses; an M to FM plus m ratio greater than one and one-half, indicating significant tension; a tendency to introversive concentration; weak emotional controls over overt behavioral expression; a lowered responsiveness to the emotional impact from the environment; affectual needs that are underproduced; difficulty in differentiating perceptual experience; some tendency to stereotypy and depressed reactivity; destructive impulses that are not directly expressed; a moderate number of rejections; an inability to express clear concepts; oral features; distantiation; and a need to over-generalize.

The diagnostic category most resembling the thyroid Rorschach appears to be that of the hysteric. The features common to both are the lowered M responses and emotional lability (Although sum C is less than three). Card rejections are also present in these protocols (including Cards VI, VII, and IX). Some free-floating anxiety, and card descriptions, such as, "eerie", "ugly", etc., are also common. Anatomical responses are also present, and suggest

tendencies to conversion symptoms.[62] These features may also be present in the more hysterical neurasthenic patient.

Another category somewhat resembling the thyroid protocol, is the anxiety state. The lowerered number of responses, vague responses, above-average production of whole responses, anatomical content, and an accumulation of CF responses are present in both.[63]

The remainder of the thyroid features can be found in a number of diagnostic categories, and accordingly do not indicate a particular disease entity. Therefore, the "thyroid Rorschach" resembles most closely that of the hysteric, and less, that of the anxiety state. However, the thyroid individual seems to control his impulsivity by insulating himself against emotional onslaught from the environment, and a type of introversive withdrawal.

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62 R. Schafer, The Clinical Application of Psychological Tests, New York, International Universities Press Inc., 1948, p. 35 - 36.

63 Ibid., Op. Cit., p. 44-45.

CONCLUSIONS AND SUGGESTIONS

The hypothesis that the Rorschach Test can be used as an instrument to differentiate between hypothyroid and hyperthyroid patients would not seem to have been sufficiently substantiated by the present investigation. Differences found in the quantitative analysis of results were few and not at all significant. Qualitatively, however, the results appear to contain more comparative features, but the difference is one of degree not kind.

Using the total population of both hypothyroid and hyperthyroid groups, an attempt to establish a unique thyroid protocol resulted in little or no success. There would appear to be a moderate resemblance to both hysteric group and anxiety states, but to a lesser extent in the latter. Most of the thyroid results occur frequently in many of the minor personality maladjustments.

In retrospect, therefore, some plausible reasons may be tendered to account for the apparent lack of unique features that could serve to differentiate between the two thyroid maladjustments and also between the thyroids and other disease entities. What does seem to be called for is a more foolproof screening of patients and greater care in the choice of research populations than has been possible for the present investigation. There appears to be a difference in

individuals within the groups themselves. At least two major reactions, the bland and apathetic, and the hyperactive and tense, seem to be present in both the hypothyroid and hyperthyroid groups. Another possible reason is that the disease, regardless of its genesis, merely serves to exaggerate tendencies already present within the personality structure. This hypothesis would explain the paucity of unique features found in the present investigation.

A third explanation may be that the thyroid malfunction is merely another somatic-sympathetic reaction, and hence only one of a group of symptoms in a hitherto undescribed diagnostic category of personality maladjustments.

It is therefore proposed, working with the aforementioned hypotheses, that further investigations shall be carried out in the thyroid malfunctions. The subdivisions in each of the thyroid groups, an awareness of the possibility of the thyroid reaction as one feature in a complexity of symptomatologies, and *a posteriori* reasoning to premorbid status, should serve as guides for subsequent thyroid studies.

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APPENDIX I

Table I - Frequency of Location Scores in the Hypothyroid and Hyperthyroid Groups.

W -	W +	D -	D +	d -	d +	Dd -	Dd +	S -	S +
2	13	20	4	3		7			
4	3	13	10	1	1	9	3		
12	5	13	14	3	4	9	8		1
10	2	9	5			1	1		
3	6	22	8	3		7	2	1	
6	3	21	5	1	1	9	1		
8	5	12	4	1		2	1		
18	8	1	2			1	1		
7	2	13	8	3	1	9	1		
7	7	9				3			
14	1	5	5	1		1			
3	5	6	4			2	5		
12	8	5	7		1		7		
5	12	16	11	4	4	4	5		1
7	11	1	5				1		
4	7	5	4	1		1	2		
2	5	4	15	1	4	2	12		1
3	7	7	19	2	2	3	3		
2	14	21	5	2		4	3	1	1
7	4	3	14		1	3	2	1	
4	9	6	13	1	1	4			1
4	10	5	25		1	2	1		
7	3	2	4			1	4	1	
5	5	12	4		1	10	3	1	
	6		11				2		
	3		7				6		
156	164	231	213	27	22	94	74	5	5

Table II - Percentage of Location Scores in the Hypothyroid and Hyperthyroid Groups.

W		D		d		Dd		S	
-	+	-	+	-	+	-	+	-	+
6	76	63	24	9		22			
15	18	48	59	4	6	33	18		
32	16	35	44	8	13	24	25		3
50	25	45	63			5	13		
8	38	61	50	8		19	13	3	
16	30	57	50	3	10	24	10		
35	50	52	40	4		8	10		
90	73	5	18			5	9		
22	17	41	67	9	8	28	8		
37	100	47				16			
67	17	24	83	5		5			
27	36	55	29			18	36		
71	35	29	30		4		30		
17	36	55	33	14	12	14	15		3
88	65	12	29				6		
36	54	45	31	9		9	15		
22	14	44	41	11	11	22	32		3
20	23	47	61	13	6	20	10		
7	61	70	22	7		13	13	3	4
50	19	21	67		5	21	10	7	
27	38	40	54	7	4	27			4
36	27	45	68		3	18	3		
64	27	18	36			9	36	9	
18	38	43	31		8	36	23	4	
	32		58				11		
	19		44				38		
861	984	1002	1132	111	90	396	384	26	17

Table III - Frequency of Determinant Scores in the Hypothyroid Group.

M	FM	m	k	K	FK	F	Fc	c	C^1	FC	CF	C
3	5				4	11		1	1	3	4	
3	6					11	4			1	2	
1		2	3	1		17	1	5	1	2	4	
4	1	2				3			4	1	5	
	17				1	11	5				2	
8	8					8	4		2	5	2	
1	5	1				10	1			2		3
1	6	2			1	6	2	2				
4	6	3		1		13	3				1	1
3	5				1	4	2	2		2		
2	4	2		2	1	2		1		1	6	
1	1					8					1	
	6					6	2		1	2		
	3	5	2		1	14				2	2	
	1	1				5			1			
					2	5	1			1	2	
			1	1		3		2		1	1	
3	5				1	4	2					
1	10					10	4			3	2	
1	1			1		6	2				3	
5	3	1				2			1		3	
1	2					4				2	1	1
						9					2	
1	7			1		7	1	4	1		6	
43	102	19	6	7	12	179	34	17	12	28	49	5

Table IV - Frequency of Determinant Scores in the Hyperthyroid Group.

M	FM	m	k	K	FK	F	Fc	c	C^1	FC	CF	C
3	1					7			3		3	
1	3	1				9				1	2	
2	2	1		1	2	13	9	1		1		
1	1	1				5						
7	4	1				2			1	1		
	2					8						
2	1					3	1		1	1	1	
3						5					3	
						10			1			1
3	3					1						
			1			4	1					
4	3					4	2				1	
5	7				1	4	2		2		2	
3	5	1				11	4		2	2	5	
1	5			1	8	8					2	
2	4					6					1	
1	8	5			2	16		1			4	
	5	1	2	1		17			1	1	3	
	1					8		3	5	1	2	3
1	5	3			1	9		1			1	
2	1					15	3		1	2		
1	12	6				11	1			3	3	
3	1					7						
1	3	1			1	5					2	
2	5			1		4	2	1		1	3	
	2	2				8	1		2		1	
48	84	23	3	4	15	200	26	7	19	14	39	4

Table V - Percentage of Determinant Scores in the Hypothyroid Group.

M	FM	m	k	KF	EK	F	Fc	c	C^1	FC	CF	C
9	16				13	34		3	3	9	13	
11	22					41	15			4	7	
3		5	8	3		46	3	14	3	5	11	
20	5	10				15			20	5	25	
	47				3	31	14				6	
22	22					22	11		5	14	5	
4	22	4				43	4			9		13
5	30	10			5	30	10	10				
13	19	9		3		41	9				3	3
16	26				5	21	11	11		11		
10	19	10		10	5	10		5		5	29	
9	9					73					9	
	35					35	12		6	12		
	10	17	7		3	48				7	7	
	13	13				63			13			
					18	45	9			9	18	
			11	11		33		22		11	11	
20	33				7	27	13					
3	33					33	13			10	7	
7	7			7		43	14				21	
33	20	7				13			7		20	
9	18					36				18	9	9
						82					18	
4	25			4		25	4	14	4		21	
198	431	85	26	38	59	890	142	79	61	129	240	25

Table VI - Percentage of Determinant Scores in the Hyperthyroid Group.

M +	FM +	m +	k +	KF +	EK +	F +	Fc +	c +	C^1 +	FC +	CF +	C +
18	6					41			18		18	
6	18	6				53				6	12	
6	6	3		3	6	41	28	3		3		
13	13	13				63						
44	25	6				13			6	6		
	20					80						
20	10					30	10		10	10	10	
27						45					27	
						83			8			8
43	43					14						
			17			67	17					
29	21					29	14				7	
22	30				4	17	9		9		9	
9	15	3				33	12		6	6	15	
6	29			6		47					12	
15	31					46					8	
3	22	14			5	43		3			11	
	16	3	6	3		55			3	3	10	
	4					35		13	22	4	9	13
5	24	14			5	43		5			5	
8	4					63	13		4	8		
3	32	16				30	3			8	8	
27	9					64						
8	23	8			8	38					15	
11	26			5		21	11	5		5	16	
	13	13				50	6		13		6	
323	440	99	23	17	28	1144	123	29	99	59	198	21

Table VII - Frequency of Content Scores in the Hypothyroid and Hyperthyroid Groups

H		Hd		A		Ad		A.Obj.		At		Obj.		Pl		N		Geo.	
-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
2	3	3		10	9	2				2	1	4		2		1	1	5	1
2	1	1		10	6	5	1	1	1			5	1	2	4	1			1
	2	2	2	11	7	1	3	3	1	3	2	3	4		4	3	5	8	1
2	1	3		4	4	1	1		1	4		3	1			1			
	6	1	1	14	7	11	1			1				4		5			
5		6	1	10	7	4	1	1		1		5				1	1	3	
1	2			10	3			2	1	3		3		1	2		1		1
1	3			8	4	1		5		3			1	1	1	1	2		
5	1	9		6	5	3	3	1					2	2					
3	3	2		7	4			1		2		3		1					
2	1	2		4	2	1	1	1	1	3	1	3						1	
1	4	1		2	6	3	1	2	1				1	1	1				
1	4	1	2	12	8		4			2	1	1	1		1		1		
2	3		5	9	9	3	3	1		4		3	6	1	1	1	4	4	
	1			1	6	1	1	1	1		1		2		1		2	5	
	1		1	4	7		1		1	2	1				1			1	
	1		2	4	14		6	1		1		2	4	1	4		2		2
3		3	1	4	7	4	4		1		7		6	1	2		2		
1		1		15	5	6	1	1	1		2	5			1	1			
2	1			5	5		3	1	2			2	1	3	3	1			3
9	2			4	12	1			3		5			1	1				
1	1	2	2	5	14		3		2			1	8		3	1	2		
	3				6					7		1	2						
3	1	2		7	5	1		3				6	1	5	5				1
	1		1		7		2		1				4		2				
					8		3		2		2						1		
46	46	39	18	166	177	48	43	25	20	38	23	50	45	26	37	17	24	27	10

Table VIII - Percentage of Content Scores in the Hypothyroid and Hyperthyroid Groups.

H		Hd		A		Ad		A.Obj.		At		Obj.		Pl		N		Geo.	
-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
6	18	9		31	53	6				6	6	4		6		3	6	16	6
7	6	4		37	35	19	6	4	6			19	6	7	24	4			6
	6	5	6	30	22	3	9	8	3	8	6	8	13		13	8	16	22	3
10	13	15		20	50	5	13		13	20		15	13			5			
	38	3	6	39	44	31	6			3				11		14			
14		16	10	27	70	11	10	3		3		14				3	10	8	
4	20			43	30			9	10	13		13		4	20		10		10
5	27			40	36	5		25		15			9	5	9	5	18		
16	8	28		19	42	19	25	3					17	6					
16	43	11		37	57			5		11		16		5					
10	17	10		19	33	5	17	5	17	14	17	14						5	
9	29	9		18	43	27	7	18	7				7	9	7				
6	17	6	9	71	35		17			12	4	6	4		4		4		
7	9		15	31	27	10	9	3		14		10	18	3	3	3	12	14	
	6			13	35	13	6	13	6		6		12		6		12	63	
	8		8	36	54		8		8	18	8				8			9	
	3		5	44	38		16	11		11		22	11	11	11		5		5
20		20	3	27	23	27	13		3		23		19	7	6		6		
3		3		50	22	20	4	3	4		9	17			4	3			
14	5			36	24		14	7	10			14	5	21	14	7			14
60	8			27	50	7			13		21			7	4				
9	3	18	5	45	38		8		5			9	22		8	9	5		
	27				55					64		9	18						
11	8	7		25	38	4		11				21	8	18	38				8
	5		5		37		11		5				21		11				
					50		19		13		13						6		
227	324	164	72	765	1041	212	218	128	123	212	113	211	203	120	190	64	110	137	52

Table IXa - Various Ratios and Relationships Among Factors in the Hypothyroid Group

$\frac{FK+F+Fc}{R}$%	$\frac{A+Ad}{R}$ = A%	(H+A):	(HD+Ad)	Rejections I	II	III	IV	V	VI	VII	VIII	IX	X	P%	ΣC	M:ΣC		(FM+m):	(Fc+c+c[1])	R(8,9,10)%
47	38	12	5											9	5.5	3	5.5	5	2	28
56	56	12	6											15	2.5	3	2.5	6	4	37
49	32	11	3											3	5.0	1	5.0	2	7	22
47	69	14	12											8	2.0	0	2.0	17	5	25
15	25	6	4											0	5.5	1	5.5	3	4	40
32	38	15	10											14	4.5	8	4.5	8	6	46
48	43	11	0											26	5.5	1	5.5	6	1	35
45	45	9	1											35	0.0	1	0.0	8	4	20
50	28	11	12				1							16	2.5	4	2.5	9	3	47
37	37	10	2											21	1.0	3	1.0	5	4	21
14	24	6	3											24	7.5	2	7.5	6	1	33
73	45	3	4						1					27	1.0	1	1.0	1	0	36
47	71	13	1											35	1.0	0	1.0	6	3	35
52	41	11	3											10	3.0	0	3.0	8	0	38
63	25	1	1						1			1	1	13	0.0	0	0.0	2	1	13
73	36	4	0				1							27	2.5	0	2.5	0	1	36
33	44	4	0	1				1				1		0	1.5	0	1.5	0	2	22
47	53	7	7						1					33	0.0	3	0.0	5	2	20
47	70	16	7											20	3.5	1	3.5	10	4	37
57	36	7	0											21	3.0	1	3.0	1	2	29
13	33	13	1											13	3.0	5	3.0	4	1	40
36	45	6	2				1					1		36	3.5	1	3.5	2	0	27
82	0	0	0								1			0	2.0	0	2.0	0	0	18
29	29	10	3											11	6.0	1	6.0	7	6	39
1092	963	212	87	1	-	-	3	1	3	-	1	3	2	417	71.5	40	71.5	121	63	744

Table IXb - Various Ratios and Relationships Among Factors in the Hyperthyroid Group

$\frac{FK+F+Fc}{R}$ %	$\frac{A+Ad}{R}$ = A%	(H+A): (HD+Ad)		Rejections IIII	III	IV	V	VI	VII	VIII	IX	X	P%	ΣC	M:ΣC		(FM+m): (Fc+c+c1)		R(8,9,10)%
41	53	12	0					1					18	3.0	3	3.0	1	3	41
53	41	7	1										12	2.5	1	2.5	4	0	29
75	31	9	5										16	0.5	2	0.5	3	10	38
63	63	5	1				1		1				38	0.0	1	0.0	2	0	38
13	50	13	2					1					31	0.5	7	0.5	5	1	44
80	80	7	2	1					1		1		20	0.0	0	0.0	2	0	40
40	30	5	0								1		30	1.5	2	1.5	1	2	20
45	36	7	0					1					27	3.0	3	3.0	0	0	36
83	67	6	3	1					1				33	1.5	0	1.5	0	1	33
14	57	7	0						1		1	1	43	0.0	3	0.0	3	0	14
83	50	3	1	1		1	1		1		1	1	33	0.0	0	0.0	0	1	17
43	50	10	1					1					29	1.0	4	1.0	3	2	29
30	52	12	6										17	2.0	5	2.0	7	4	26
45	36	12	8										15	6.0	3	6.0	6	6	45
47	41	7	1					1					24	2.0	1	2.0	5	0	24
46	62	8	2								1		23	1.0	2	1.0	4	0	23
49	54	15	8										11	4.0	1	4.0	13	1	16
55	35	7	5										10	3.5	0	3.5	6	1	32
35	26	5	1										4	7.0	0	7.0	1	8	35
48	38	6	3										10	1.0	1	1.0	8	1	38
75	50	14	0										17	1.0	2	1.0	1	4	38
32	46	15	5										19	4.5	1	4.5	18	1	43
64	55	9	0	1									27	0.0	3	010	1	0	36
46	38	6	0										23	2.0	1	2.0	4	0	38
32	47	8	3										32	3.5	2	3.5	5	3	37
56	69	8	3				1						13	1.0	0	1.0	4	3	31
1293	1257	223	61	- 4	-	1	3	5	5	-	5	2	575	52.0	48	52.9	107	52	841

APPENDIX I

Table X - Frequency of Responses to the Cards in the Hypothyroid and Hyperthyroid Groups

I		II		III		IV		V		VI		VII		VIII		IX		X	
-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
5	1	4	2	4	2	4	1	1	2	2	0	3	2	3	2	4	1	2	4
3	1	4	2	3	4	1	1	2	1	2	2	2	1	3	2	3	1	4	2
5	2	6	1	3	3	5	5	3	2	5	6	2	1	3	5	2	1	3	6
2	0	1	1	2	2	2	1	1	0	3	1	1	0	2	1	3	1	3	1
5	1	4	2	4	2	4	1	3	2	4	0	3	1	4	1	2	2	3	4
5	2	2	0	2	1	1	1	1	1	4	1	5	0	5	1	5	0	7	3
3	2	2	1	2	1	3	1	2	1	2	1	1	1	3	1	2	0	3	1
4	1	1	2	2	1	2	1	2	1	3	0	2	1	1	2	1	1	2	1
1	1	3	0	3	3	0	2	1	1	2	1	7	0	2	1	4	1	9	2
2	1	2	1	5	1	2	1	1	1	1	1	2	0	1	1	1	0	2	0
2	2	3	0	3	2	1	0	1	0	2	1	2	0	2	1	4	0	1	0
2	2	1	1	1	2	1	1	1	1	0	0	1	3	2	1	2	1	0	2
1	4	2	2	1	2	1	1	3	3	2	3	1	2	1	2	2	3	3	1
3	2	3	1	2	1	3	4	2	5	2	2	3	3	4	6	2	4	5	5
1	3	2	2	1	3	1	2	1	1	0	0	1	2	1	2	0	1	0	1
1	1	1	1	2	3	0	2	1	1	1	1	1	1	2	2	1	0	1	1
0	6	2	5	1	5	2	4	0	5	1	2	1	4	1	3	0	1	1	2
1	2	1	5	4	5	2	3	3	1	0	3	1	2	1	3	1	3	1	4
3	3	3	2	3	2	4	3	2	2	2	2	2	1	2	3	2	2	7	3
2	2	1	2	2	3	2	1	1	2	1	1	1	2	2	2	1	2	1	4
1	3	1	3	1	2	1	1	2	2	2	1	1	3	1	3	2	3	3	3
1	4	2	1	2	7	0	1	1	2	1	2	1	4	1	4	0	5	2	7
1	2	2	0	2	1	1	1	1	1	1	1	1	1	0	1	1	2	1	1
3	1	3	2	2	1	2	1	2	1	2	1	3	1	4	2	3	1	4	2
	2		2		2		1		0		1		4		2		2		1
57	53	56	42	57	63	45	43	38	40	45	35	48	42	51	56	48	41	68	63

APPENDIX 2

ABSTRACT OF

The Personality Structure of Thyroid Patients on the Rorschach Test[1]

Personality changes in thyroid dysfunction have long been recognized as a problem, but there has been no attempt to compare the hypothyroid and hyperthyroid patients, nor has there been any collection and systematization of available pertinent studies on this subject. The first part of the present investigation has tried to remedy both deficiencies.

A population of twenty-four hypothyroids and twenty-six hyperthyroids has been for the most part randomly selected though certain restrictions were imposed, and the two groups have been subjected to the Rorschach Test. Both quantitative and qualitative results have then been summarized and "typical" hypothyroid and hyperthyroid protocols drawn up. The results have been compared statistically by means of the Chi Square Contingency Tables.

The paucity of significant differences between the two research populations has led to a further attempt to establish unique thyroid factors by comparing the total population of hypothyroids and hyperthyroids to other disease

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[1] Arthur M. Bolle, doctoral thesis presented to the School of Psychology of the University of Ottawa, Ottawa, 1959, vii - p. 69.

entities. Although there appeared to be some superficial resemblance to hysterics and anxiety states, it has been pointed out that the obtained thyroid features are common in many of the personality maladjustments.

The basic hypothesis that the _Rorschach Test_ would serve as an instrument to differentiate between hypothyroids and hyperthyroids was not, in fact, substantiated, and suggestions have therefore been made regarding possible lines of future research.