AN EVALUATION OF THREE PSYCHOLOGICAL VARIABLES IN TONIC AND CLONIC STUTTERERS AND IN NONSTUTTERERS

> Thesis for the Degree of Ph. D. MICHIGAN STATE UNIVERSITY Lonnie L. Emerick 1966





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#### ABSTRACT

#### AN EVALUATION OF THREE PSYCHOLOGICAL VARIABLES IN TONIC AND CLONIC STUTTERERS AND IN NONSTUTTERERS

by Lonnie L. Emerick

The general purpose of this investigation was to determine if the observable speech behavior of stutterers is associated with underlying psychological correlates. More specifically, the present study was designed to compare predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals with respect to three psychological variables: response to frustration, level of aspiration, and verbal intelligence.

There were sixty subjects employed. Twenty predominantly clonic stutterers, twenty predominantly tonic stutterers, and twenty normal speaking individuals were utilized. A number of criteria were employed to screen prospective subjects prior to the tonic-clonic classification. In order to be included in this research, the stutterers had to be fifteen years of age or older, free from speech defects other than stuttering, free from gross physical anomalies, and possess no academic training in clinical speech. While the prospective subject read aloud and gave a brief impromptu discussion, the investigator and two judges with training in speech pathology monitored the performance, categorizing moments of stuttering as tonic or clonic on the basis of the following descriptive definitions:

- Tonic stuttering--speech dysfluency characterized by stoppages or fixations of the speech musculature. The fixations are attended by tensions that are visible. The audible characteristics are limited to silent intervals, prolongations of sounds (both phonemic and nonphonemic) or other indices of tension in the respiratory-phonatory-articulatory apparatus.
- Clonic stuttering--speech dysfluency characterized by cyclic repetitions of sounds, syllables and words. The visual concomitants are tremors (oscillations) of the speech muscles prior to or during the repetitions.

In order for a subject to be included in the predominantly tonic or predominantly clonic categories, the writer and two judges, acting independently, had to classify unanimously seventy per cent or more of the individual's speech dysfluency as either tonic or clonic. The twenty tonic stutterers, fifteen males and five females, ranged in age from 15 to 22 years with a median age of 16 years; seven individuals in this group were college students. The clonic group consisted of eighteen males and two females, ranging in age from 15 to 47 years with a median age of 19.5 years; three subjects in this group were college students. The normal speaking group was matched to the population characteristics (age, sex, and college status) of the combined groups of stutterers.

The subjects were tested with three psychological instruments. The <u>Rosenzweig Picture-Frustration Study</u>

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was utilized to assess responses to frustration. The <u>Cassel</u> <u>Group Level of Aspiration Test</u> was employed to determine the subjects' goal-setting behavior. The <u>Peabody Picture</u> <u>Vocabulary Test</u> was used to measure the verbal intelligence of the subject groups.

Eight comparisons were made by utilizing a nonparametric procedure, the Kruskal-Wallis analysis of variance by ranks. The results indicated no significant differences among the predominantly tonic stutterers, predominantly clonic stutterers, and the normal speaking individuals for any of the six dimensions of reactions to frustration as measured by the P-F Study. It was also shown that stutterers, regardless of symptom category, did not differ significantly from normal speaking persons with respect to level of aspiration. A significant difference was obtained, however, among predominantly tonic stutterers, predominantly clonic stutterers, and the normal speaking individuals with regard to verbal intelligence: the normal speaking group was superior to the two groups of stutterers in intelligence as measured by the <u>Peabody Picture Vocabulary Test</u>.

The major findings of this study were: (1) that predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals do not differ in their responses to frustration; (2) that predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals do not differ in level of aspiration; and, (3) that normal speaking individuals tend to be more intelligent than predominantly clonic stutterers and predominantly tonic stutterers.

# AN EVALUATION OF THREE PSYCHOLOGICAL VARIABLES IN TONIC AND CLONIC STUTTERERS

# AND IN NONSTUTTERERS

Ву

Lonnie L. Emerick

#### A THESIS

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

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#### CHAPTER I

#### INTRODUCTION

The search for meaningful psychological differences between stutterers and nonstutterers has produced an extensive, confusing, and conflicting literature. Perhaps one reason for the inconclusive and contradictory results of the research in this area is the implicit assumption that stuttering is a single disorder. The diagnostic label stuttering, in other words, imparts a linguistic unity to a disorder that may encompass several disparate types of fluency disturbances.

Very little definitive research has been directed toward the scrutiny of differences among stutterers. Yet it seems obvious that the discovery of significant differences within the stuttering group would not only enhance understanding of the disorder but also modify clinical procedures. Both Dr. Leonard Goodstein,<sup>1</sup> after an extensive review of the literature, and the subcommittee on the Problem of Stuttering and the Problems of Rate and Fluency of the American Speech and Hearing Association<sup>2</sup>

lL. Goodstein, "Functional Speech Disorders and Personality: Methodological and Theoretical Considerations," Journal of Speech and Hearing Research, 1 (1958), pp. 377-382.

<sup>&</sup>lt;sup>2</sup>G. Wischner (Chairman), "III. Report of the Subcommittee on the Problem of Stuttering and the Problems of Rate and Fluency," <u>Journal of Speech and Hearing Disorders</u>, Monograph Supplement 5 (September, 1959), pp. 26-30.

have endorsed research utilizing within-group comparisons and differential diagnosis.

#### Purpose of the Study

The purpose of this research was to determine if the observable speech behavior of stutterers contains important clues to the understanding of underlying personality dynamics. That is, does the manner in which an individual performs his moments of stuttering have dynamic psychological correlates? More specifically, this study compared <u>clonic</u> (moments of stuttering characterized by a preponderance of repetitious phenomena) and <u>tonic</u> (moments of stuttering characterized by a preponderance of stoppages or fixations) stutterers with regard to their typical responses to frustration, levels of aspiration, and intelligence. The following questions were posed:

- Do clonic stutterers as a group differ from tonic stutterers in their responses to frustration? Do clonic and tonic stutterers differ in this regard from a normal speaking group of people of the same age, sex, and general level of education?
- 2. Do clonic stutterers as a group differ from tonic stutterers in their level of aspiration behavior? Do tonic and clonic stutterers differ in this regard from a normal speaking group of people of the same age, sex, and general level of education?
- 3. Do clonic stutterers as a group differ from tonic stutterers in intelligence? Do tonic and clonic stutterers differ in this regard from a normal speaking group of people of the same age, sex, and general level of education?

The writer views this study as the first in a series of researches attempting to delineate relationships between the phenomenology of stuttering (the overt or phenotypic speech characteristics) and covert or genotypic variables.

#### Importance of the Study

Although a vast amount of research has dealt with the moment of stuttering, there is a paucity of data relative to subtypes of stuttering or the dynamic relationship between "styles" of stuttering and psychological variables. Yet the stuttering population tends to be heterogeneous in terms of responses to psychological test instruments, and significant relationships do obtain between overt speech behavior and underlying personality makeup.<sup>3</sup> Despite these findings, researchers have continued to treat stuttering as a single disorder, utilizing unselected subjects, thus making conclusions from their data difficult to interpret. It seems apparent that the existence of several types of stuttering would carry important implications for therapeutic management.

Researchers in other areas of speech pathology, notably articulation disorders and aphasia, have delineated several specific subtypes of these problems, thus enhancing scientific understanding and leading to more effective therapeutic management. In the present study, an attempt was made to identify certain psychological characteristics associated with two types of stuttering--predominantly

<sup>&</sup>lt;sup>3</sup>M. Diamond, "An Investigation of Some Personality Differences between Predominantly Tonic and Predominantly Clonic Stutterers" (unpublished Ph.D. dissertation, Syracuse University, 1953).

clonic and predominantly tonic.

Historically, the terms clonic and tonic have been used to dichotomize the abnormal speech phenomena found in the problem of stuttering. These terms refer to the two basic types of speech dysfluency common to all stutterers, repetitions (clonic) and fixations (tonic). It would seem appropriate, therefore, that research into the relationships between observable speech behavior and underlying characteristics commence with scrutiny of the concepts of tonic and clonic stuttering.

In his clinical work with adult stutterers, the writer has noted personality differences between predominantly clonic and predominantly tonic stutterers disparate enough to require differing modes of treatment. An individual's manner of stuttering, the style of speech interruptions he "chooses," may reveal considerable clinically significant data.

The preceding discussion can be summarized in the following manner. Stuttering is a generic term that probably includes several distinct fluency disorders. Two basic types of abnormal speech, clonic and tonic blocks, appear to be core constituents. It is the thesis of this study that individuals manifesting predominantly clonic stuttering differ from predominantly tonic stutterers with respect to several psychological variables. The differences are felt to be significant enough to alter sampling procedures in research studies dealing with stuttering and

to necessitate distinct therapeutic management.

#### Limitations of the Study

This research was limited to assessing the responses of a group of predominantly clonic and a group of predominantly tonic stutterers with respect to three psychological variables. It was anticipated that other subtypes of stuttering exist within the total population of stutterers, but these groups did not come under scrutiny. Neither did this investigation deal with other variables, psychological, physiological, or sociological that were presumed to have a relationship to type of stuttering.

The present study did not attempt to answer the teleological question of cause and effect. With particular reference to reactions to frustration and level of aspiration, it was not within the limits of this research to ascertain whether a stutterer's modal responses arose prior to or following the onset of stuttering.

#### Organization of the Report

Chapter I was organized to provide an introduction to the problem regarding subtypes of stuttering. The problem was defined, its importance was cited, and certain limitations were promulgated.

Chapter II consists of a comprehensive review of the literature pertaining to tonic and clonic stuttering; the research concerning frustration, level of aspiration, and intelligence as these areas relate to stuttering is also reviewed.

Chapter III is concerned with the procedure of the research study. Here the subjects are described, the stimulus materials are discussed, and the data collection procedures delineated.

Chapter IV consists of the presentation, discussion, and interpretation of the results of the comparisons between tonic and clonic stutterers relative to their responses to frustration, level of aspiration behavior, and intelligence test scores.

Chapter V is organized to present a summary of the research, delineation of the conclusions, and an enumeration of the recommendations for further research.

#### CHAPTER II

#### REVIEW OF THE PERTINENT LITERATURE

#### Concepts of Tonic and Clonic Stuttering

The literature on stuttering contains many references to the concepts of tonicity and clonicity. For the most part, however, writers have been concerned with two aspects of these concepts: (1) definitions and descriptions of tonic and clonic stuttering; and, (2) the development of the disorder as it progresses (according to some clinicians) from clonic to tonic symptoms in the more advanced stages. There has been almost no attention focused upon possible relationships between mode of stuttering and personality factors.

#### Definitions and Descriptions

Clonicity and tonicity are the classical descriptive terms that have been applied to abnormal speech phenomena associated with stuttering. Several early writers offered definitions of the terms, and the ones suggested by Bluemel<sup>4</sup> appear representative. He defined a clonus as an interrupted spasm in which there is an involuntary movement as the

<sup>&</sup>lt;sup>4</sup>C. Bluemel, <u>Stammering and Cognate Defects of</u> <u>Speech</u> (New York: G. E. Stechert and Co., 1913), p. 14.

muscles pass rapidly from contraction to relaxation. A tonic spasm was characterized as a sustained, involuntary fixation of the speech musculature. In other words, repetitive dysfluency in which sounds, syllables, and words are reiterated is typically designated clonic stuttering. Tonic stuttering, on the other hand, refers to hesitations, stoppages, and fixations in the flow of speech.

Recently, the notion that tonic and clonic blocks are the two basic types of abnormal speech phenomena common to all problems of stuttering has appeared in the literature. Sheehan,<sup>5</sup> for instance, pointed out that repetitions and prolongations (the fixation of a sound or oral posture) are the only two behaviors common to a group of adult stutterers. Brain<sup>6</sup> wrote that the essential features of stuttering are the reiteration of syllables and the tense, prolonged articulation of sounds. Wingate<sup>7</sup> suggested that the kernel aspects of stuttering behavior are audible or silent repetitions of speech elements and audible or silent extension of speech elements. Van Riper, discussing the essential characteristics of the problem of stuttering, presented the following point of view:

<sup>5</sup>J. Sheehan, "Conflict Theory of Stuttering," <u>Stuttering: A Symposium</u>, ed. J. Eisenson (New York: Harper and Bros., 1958), Chap. 3, p. 128.

<sup>6</sup>R. Brain, <u>Speech Disorders</u> (Washington: Buttersworth and Co., 1961), p. 141.

<sup>7</sup>M. Wingate, "A Standard Definition of Stuttering," <u>Journal of Speech and Hearing Disorders</u>, 29 (1964), pp. 484-489.



Most of the variation consists of different habitual reactions of avoidance, struggle, or escape. Since different individuals avoid in different ways, struggle differently and use different methods for escaping from their sound fixations and syllabic oscillations, it is not surprising that we find such a variety of stuttering pictures. But the lowest common denominators seem to be these moments when the flow of speech is interrupted by a fixation (prolongation) or oscillation (repetition) in some of the structures used in speech.<sup>8</sup>

Thus, even though writers have used slightly different terminology, a consensus emerges from the contemporary literature concerning the speech behavior common to the problem of stuttering. The two basic features of the disorder are repetitions or clonic blocks and fixations or tonic blocks. In spite of the agreement concerning the central features of the symptomatology of stuttering, very few investigators have scrutinized tonic and clonic stutterers.

A comprehensive treatment of tonic and clonic stuttering was found in the study by Diamond.<sup>9</sup> Tonic stuttering was defined as blocking characterized by stoppages in speech accompanied by physical tension, silent intervals, and prolongations of phonemes or other sounds. He defined clonic stuttering as rapid, repetitive speech in which sounds, syllables, and words are repeated without prolongations, silent intervals, or fixations. Diamond demonstrated that it was possible to categorize subjects with regard to

<sup>&</sup>lt;sup>8</sup>C. Van Riper, <u>Speech Correction: Principles and</u> <u>Methods</u> (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963), p. 307.

<sup>&</sup>lt;sup>9</sup>M. Diamond, <u>op. cit</u>.

the designata of predominantly tonic and predominantly clonic stuttering.

Douglass and Quarrington<sup>10</sup> utilized different descriptive categories in distinguishing stutterers with respect to their patterns of speech dysfluency. They made a distinction between stutterers who are able to cover up or hide their speech difficulty, whom they termed interiorized stutterers, and individuals who cannot or will not conceal their speech difficulty, whom they termed exteriorized stutterers. The interiorized stutterer guards against revealing his problem by using natural gestures to disguise and conceal speech interruptions or by avoiding speech entirely. The exteriorized stutterer, on the other hand, is unable or unwilling to inhibit the visual and audible characteristics of his difficulty.

In a more recent publication, Quarrington and Douglass<sup>11</sup> contended that untreated stutterers can be categorized as showing either predominantly vocalized or predominantly nonvocalized patterns of stuttering. Vocalized stuttering, according to their paradigm, is characterized by repetitions and prolonged phonation of speech sounds; while there may be visible struggle behavior,

<sup>10</sup>E. Douglass and B. Quarrington, "The Differentiation of Interiorized and Exteriorized Secondary Stuttering," <u>Journal of Speech and Hearing Disorders</u>, 17 (1952), pp. 377-385.

<sup>11</sup>B. Quarrington and E. Douglass, "Audibility Avoidance in Nonvocalized Stutterers," <u>Journal of Speech and</u> <u>Hearing Disorders</u>, 25 (1960); pp. 358-365.

by and large the blockings are audible. Nonvocalized stuttering is characterized by a period of spasm during which phonation is suspended; the blockings are accompanied by struggle behavior, and hence are predominantly a visually perceived abnormality.

The authors' rather ambiguous characterization of their symptomalogical categories makes it somewhat difficult not only to identify the categories but also to relate them to the concepts of tonic and clonic stuttering. While the terms are far from isomorphic, exteriorized and vocalized stuttering are similar to clonic stuttering; interiorized and nonvocalized stuttering do resemble tonic stuttering. It can be seen that the categories do allow some intercomparisons.

On the basis of this review of the literature, the writer would suggest the following descriptive definitions of the terms tonic and clonic stuttering.

- 1. Tonic stuttering involves stoppages or fixations of the flow of speech, usually accompanied by tensions in the respiratory-phonatory-articulatory musculature. Although there are auditory characteristics--silent intervals and prolongations of phonemic and nonphonemic sounds--the predominant modality of judgment regarding the presence of this type of stuttering is the visual modality.
- 2. Clonic stuttering involves some type of repetitive speech phenomena, i.e., cyclic repetitions of sounds, syllables and words. Although there are visual concomitants--oscillations of the speech muscles prior to and accompanying the repetitions-the predominant modality of judgment regarding the presence of these phenomena is the auditory modality.

Development of Stuttering Symptoms

The familiar theory of primary and secondary stuttering states that the disorder, in its more advanced (secondary) stages, develops as a reaction to repetitions (primary) Bluemel<sup>12</sup> and common to the speech of many young children. Froeschels, <sup>13</sup> for instance, felt that the early manifestations of stuttering are simple repetitive or clonic speech interruptions. Soon, however, social prohibitions convince the child that he should attempt to avoid these interruptions; and thus he enters the secondary stage of stuttering characterized by complete stoppages or tonic blocks. Bryngelson shared the view that tonic stuttering is characteristic of the secondary phase, "occurring after the child has been exposed to maladaptive stimuli in his environment."14 According to some clinicians, therefore, stuttering symptoms tend to progress from clonic to tonic in the more chronic stages of the disorder. Van Riper suggested that there is a positive relationship between communicative stress and the deterioration of speech:

With minor stress, repetitions of sentences or phrases occurs; with more stress, words are repeated; with

<sup>12</sup>C. Bluemel, "Primary and Secondary Stammering," Quarterly Journal of Speech, 18 (1932), pp. 187-200.

<sup>13</sup>E. Froeschels, "Pathology and Therapy in Stuttering," Nervous Child, 2 (1943), pp. 148-161.

<sup>14</sup>B. Bryngelson, "Theoretic and Therapeutic Considerations of Dysphemia and Its Symptom, Stuttering," <u>Stuttering: Significant Theories and Therapies</u>, ed. E. Hahn (Palo Alto, Calif.: Stanford University Press, 1943), p. 19.

even more pressure, the oscillating occurs on syllables. When complete disruption occurs but the urge to speak still remains, first prolongations of an audible sound (mmmmmother) are shown and finally even this breaks down to a silent posture.<sup>15</sup>

Bloodstein<sup>16</sup> pointed out, however, that tonic elements were the most common and typical feature in the speech of his group of young stutterers. He further reported that the parents of the young stutterers had observed tonic blocks in the speech of their children from the onset of the problem. This issue awaits further clinical observation and empirical investigation. At the present time there are neither normative studies describing the stuttering population in terms of symptomatology nor are there sufficient empirical data relative to patterns of change in symptoms over time.

#### Personality Characteristics

Researchers have virtually ignored the psychodynamic correlates of tonic and clonic stuttering. Influenced by the developmental processes involved in the notions of primary and secondary stuttering, some writers have suggested that a predominance of clonic blocking persisting into adulthood is associated with a relatively less complicated personality problem. Despert's views are typical in

<sup>&</sup>lt;sup>15</sup>C. Van Riper, <u>op. cit</u>., p. 320.

<sup>&</sup>lt;sup>16</sup>O. Bloodstein, "The Development of Stuttering: I. Changes in Nine Basic Features," <u>Journal of Speech and</u> <u>Hearing Disorders</u>, 25 (1960), pp. 219-237.

this regard, for she stated that "a predominantly clonic disorder is a lesser social handicap than a predominantly tonic one and therefore is more likely to be ignored."<sup>17</sup>

Bender, citing the work of Matha, <sup>18</sup> wrote:

. . . Matha reported that severe stutterers attending a Paris clinic fell into two distinct classifications: those with predominantly tonic spasms of speech; and those in which the speech spasms were predominantly clonic. Further, she found that the former were, as a group, timid, retiring, quiet, proud and sensitive. The latter group (clonic) was identified by different personality traits. They were on the whole careless, unstable, vain, talkative and distractable.<sup>19</sup>

Despert and her co-workers<sup>20</sup> performed an extensive psychosomatic study of tonic and clonic stutterers. A total of 50 subjects, five nonstutterers, twenty predominantly tonic stutterers, fifteen predominantly clonic stutterers, and ten mixed (tonic and clonic) stutterers, ranging in age from six to fifteen years, were tested with a variety of instruments. The mean chronological age was eleven years, seven months. It was revealed that tonic stutterers as a group tended to be more rigid, more constricted in their relationships to others and, in general, more neurotic than

<sup>&</sup>lt;sup>17</sup>J. L. Despert, "A Therapeutic Approach to the Problem of Stuttering in Children," <u>Nervous Child</u>, 2 (1943), p. 143.

<sup>&</sup>lt;sup>18</sup>L. Matha, "Demonstration de Technique Reeducation des Troubles Psycho-neuro-moteurs du type Begaiement Tonique," <u>Revue Francaise de Phoniatre</u>, 22 (1938), pp. 99-126.

<sup>&</sup>lt;sup>19</sup>J. Bender, <u>The Personality Structure of Stuttering</u> (New York: Pitman, 1939), p. 189.

<sup>&</sup>lt;sup>20</sup>J. L. Despert, "Psychosomatic Study of Fifty Stuttering Children: Round Table 1. Social, Physical and Psychiatric Findings," <u>American Journal of Orthopsychiatry</u>, 16 (1946), pp. 100-113.



the clonic stutterers. These data are difficult to interpret since no criteria were presented for designating their stutterers as clonic or tonic, nor did the authors utilize a control group of normal speaking persons. The stutterers were matched with fifty problem children selected from a child guidance clinic, but it is obvious that comparisons to this group must be viewed with caution.

In a descriptive article, Douglass and Quarrington<sup>21</sup> discussed certain observed psychological differences between interiorized and exteriorized stutterers. Interiorized stutterers, in addition to their propensity toward concealment of their disorder, were characterized by fewer outwardly aggressive impulses but more anxiety, a tendency to hold themselves to higher standards, a more marked social sensitivity (especially as regards matters of status), and a greater proclivity to be retiring and conforming. In a more recent publication, the same authors<sup>22</sup> compared vocalized and nonvocalized stutterers. Vocalized stutterers, they pointed out, tend to manifest a greater degree of emotional acceptance of their difficulty; they are willing to admit their problem more readily to others and experience less difficulty achieving the therapeutic goals of maintaining eye contact and stuttering openly. Nonvocalized stutterers, on the other hand, have more interpersonal difficulties and are more insecure in this regard; they tend to regard overt

<sup>21</sup>Douglass and Quarrington, <u>op. cit</u>., p. 380.

<sup>22</sup>Quarrington and Douglass, <u>op. cit</u>., p. 359.



or audible stuttering as distasteful, and they resist such therapy procedures as the "bounce" technique and others which attempt to bring the problem out in the open. Unfortunately the authors did not reveal their specific criteria for designating a given subject into the symptomalogical categories. Their subjective and somewhat ambiguous characterization of the types of stuttering discussed makes it difficult to identify them accurately and hence makes their observations difficult to interpret.

Diamond<sup>23</sup> tested twenty-five predominantly tonic and twenty-five predominantly clonic stutterers with the Rorschach, the Thematic Apperception Test, and the Einstellung Test of Rigidity. His subjects ranged in age from thirteen to eighteen years with a mean of 15.1 years for the tonic group and 15.3 years for the clonic group; they were all of normal intelligence. It was demonstrated that tonic stutterers, as a group, tend to be more insecure, more immature, and more rigid than do clonic stutterers. More specifically, tonic stutterers indicated a limited adaptability and responsiveness to changes in their environment; their test results showed them to be overly cautious and guarded in their approach to problems. Finally, tonic stutterers manifested a "flattened" or repressed affect. The clonic stutterers performed much more like normal speaking individuals in their responses to the psychological tests. When compared

<sup>23</sup> Diamond, op. cit.



to the tonic group, they were more flexible and adaptable, relating more readily to their environment; they did not repress their affect, and they tended to attack barriers to goal achievement in a frontal manner. A weakness of the Diamond study is that, instead of using a control group of normal speaking individuals drawn from the same general population as the experimental groups, he made comparisons by means of the published norms for the three psychological measuring devices. His judging procedures, whereby stutterers were classified as predominantly clonic and predominantly tonic, were also inadequate. Although he utilized adequate criteria of tonic and clonic, Diamond neglected either to have independent judges (he was the only judge except in a few instances) applying the criteria or to set forth a clear designation of what he meant by predominant.

In summary, it appears that there may be some meaningful psychological differences between predominantly clonic and predominantly tonic stutterers. The studies reviewed, however, were accomplished without control groups, with vague and subjective criteria regarding symptom patterns or with inadequate procedures for making judgments relative to designating subjects into the two symptom categories. Recognizing these limitations, the writer would postulate the following generalizations with respect to the differences between clonic and tonic stutterers:

 Tonic stutterers typically hide or disguise their speech difficulty, especially the audible aspects of it. Their conflicts are resolved typically by inhibition of verbal communication.


They tend to be socially sensitive and withdrawn-possibly in an effort to keep a rigid security check on their verbal output. They seem to flatten their affect purposefully and resist expressions of emotion in order to maintain a level of integration which, although below their potential, allows them to conceal their difficulty.

2. Clonic stutterers, on the other hand (because they will not or cannot disguise their stuttering to the extent of the tonic stutterers), are not as socially inhibited or emotionally constricted; their conflict is more open and is expressed more directly, that is, in continued attempts at verbal communication. They are not as withdrawn or insecure as the tonic stutterers.

#### Frustration and Stuttering

A fundamental dimension of an individual's psychological adjustment is his typical response to frustration.<sup>24</sup> Since behavior is goal-directed, and since most, if not all, goals have barriers to attainment, the adjustments and resolutions that occur when direct satisfaction is impossible tend to define the social and personal adequacy of a person's adjustment.<sup>25</sup>

Frustration is an emotional and motivational state that arises when a person's goal-oriented behavior is blocked. The manner in which the individual handles the anger and aggression provoked by the interference may take many forms. He may, for example, exacerbate his efforts, select substitute

<sup>&</sup>lt;sup>24</sup>G. Thompson, <u>Child Psychology</u> (New York: Houghton-Mifflin Co., 1952), p. 174.

<sup>&</sup>lt;sup>25</sup>B. Berelson and G. Steiner, <u>Human Behavior: An</u> <u>Inventory of Scientific Findings</u> (New York: Harcourt, Brace and World, Inc., 1964), p. 267.

goals, or, especially if frustration is intense and/or prolonged, resort to less adaptive behavior such as displaced aggression, withdrawal, or regression.<sup>26</sup> The concept of frustration, first systematically formulated by Dollard <u>et al</u>.<sup>27</sup> and explicated in more recent publications by Yates<sup>28</sup> and Buss,<sup>29</sup> has been the subject of intensive psychological research. However, a general review of this literature is not within the scope of the present study.

The relationships between frustration--and its resolution--and stuttering are not clear. Many clinicians think that the act of stuttering itself is severely frustrating since it interferes with the important human need of communication.<sup>30</sup> Sheehan, however, on the basis of data obtained from a sentence completion test, found that "for many stutterers the handicap seems to be chiefly a source of frustration, while in certain stutterers it does appear to serve a defensive function."<sup>31</sup> Psychoanalytic theorists have taken the point of view that stuttering is the result

<sup>30</sup>Van Riper, <u>op. cit</u>., p. 313.
<sup>31</sup>Sheehan, <u>op. cit</u>., p. 138.

<sup>&</sup>lt;sup>26</sup>D. Krech, R. Crutchfield and E. Ballachey, <u>Individual In Society</u> (New York: McGraw-Hill Book Co., 1962), p. 178.

<sup>&</sup>lt;sup>27</sup>J. Dollard <u>et al</u>., <u>Frustration and Aggression</u> (New Haven: Yale University Press, 1939).

<sup>&</sup>lt;sup>28</sup>A. Yates, <u>Frustration and Conflict</u> (London: Methuen and Co., 1962).

<sup>&</sup>lt;sup>29</sup>A. Buss, <u>The Psychology of Aggression</u> (New York: John Wiley and Sons, 1961).



of a tendency to repress the verbal expression of aggression.<sup>32</sup> That is, the stutterer is assumed to have deep feelings of hostility and aggression which are continually striving for release in the form of verbal behavior. In order to prevent this, speech is inhibited or blocked.

The most definitive research concerning stutterers' responses to frustration has been accomplished with the Rosenzweig Picture-Frustration Study.<sup>33</sup> This test attempts to evaluate the way a person handles feelings of hostility or aggression aroused by common frustrating situations. From a subject's responses to this projective instrument, it is possible to determine whether he characteristically directs hostility outwardly (extrapunitive) or inwardly against himself (intropunitive), or he minimizes or denies the frustrating aspects of the situation (impunitive). Ιt is also possible to evaluate the type of reactions an individual utilizes in confronting barriers or obstacles according to Rosenzweig's schema: (1) obstacle-dominance, in which the barrier is emphasized; (2) ego-defensive, in which protection of self is the major concern; and, (3) needpersistence, in which the solution of the frustrating situation stands out.

<sup>32</sup> O. Fenichel, <u>The Psychoanalytic Theory of Neurosis</u> (New York: Norton, 1945).

<sup>&</sup>lt;sup>33</sup>S. Rosenzweig, E. Fleming and H. Clark, "Revised Scoring Manual for the Rosenzweig Picture-Frustration Study," Journal of Psychology, 24 (1947), pp. 165-208.

Madison and Norman<sup>34</sup> administered the <u>Rosenzweig</u> <u>Picture-Frustration Study</u> to twenty-five stutterers ranging in age from 14 to 59 years (mean age of 23.3). As a group, the subjects revealed significantly greater intropunitiveness, less extrapunitiveness, and greater need-persistence than had been found in subjects comprising the published norms. The authors concluded that the obtained data support a psychoanalytic interpretation of stuttering: stuttering is an anal-sadistic, compulsive neurosis in which the aggression is turned inward. The stutterer, they theorized, wants to utter "bad" words, but his dysfluency blocks it and thus acts as a punishment for the predilection.

Quarrington's<sup>35</sup> subjects (thirty stutterers with a mean age of 30.4 years) failed to confirm the findings of the prior study in their responses to the same test. No significant differences were found between the stutterers' reactions and the published test norms<sup>36</sup> for the Rosenzweig instrument. Research procedures in this investigation were more refined since trained psychologists not familiar with the purpose of the experiment were utilized to score the

<sup>34</sup> L. Madison and R. Norman, "A Comparison of the Performances of Stutterers and Nonstutterers on the Rosenzweig Picture-Frustration Test," <u>Journal of Clinical Psychology</u>, 8 (1952), pp. 179-183.

<sup>&</sup>lt;sup>35</sup>B. Quarrington, "The Performance of Stutterers on the Rosenzweig Picture-Frustration Test," <u>Journal of Clinical</u> <u>Psychology</u>, 9 (1953), pp. 189-192.

<sup>&</sup>lt;sup>36</sup>S. Rosenzweig, "Revised Norms for the Adult Form of the Rosenzweig Picture-Frustration Study," <u>Journal of</u> <u>Personality</u>, 18 (1950), pp. 344-346.

test protocols. Quarrington pointed out that the Madison-Norman data were contaminated because the latter study included young adolescents and yet comparisons were made to Rosenzweig's adult test norms; the normative group consisted of 460 adults ranging in age from twenty to twenty-six years.<sup>37</sup> Both the Madison-Norman and Quarrington studies have been criticized by Goodstein<sup>38</sup> and Sheehan<sup>39</sup> for the use of published test norms instead of a control group.

Lowinger<sup>40</sup> found no significant differences between a group of stuttering children and a matched control group of normal speaking children with regard to their responses on the <u>Rosenzweig Picture-Frustration Study</u>. Seaman<sup>41</sup> and Hirsh<sup>42</sup> also failed to obtain significant differences between stuttering and nonstuttering subjects on the same test.

<sup>38</sup>L. Goodstein, "Functional Speech Disorders and Personality: A Survey of the Research," <u>Journal of Speech</u> and <u>Hearing Research</u>, 1 (1958), pp. 359-376.

<sup>39</sup>J. Sheehan, "Projective Studies of Stuttering," Journal of Speech and Hearing Disorders, 23 (1958), pp. 18-25.

<sup>40</sup>L. Lowinger, "The Psychodynamics of Stuttering: An Evaluation of the Factors of Aggression and Guilt Feelings in a Group of Institutionalized Children" (unpublished Ph.D. dissertation, New York University, 1952).

<sup>41</sup>R. Seaman, "A Study of the Responses of Stutterers to the Items of the Rosenzweig Picture-Frustration Study" (unpublished Master's thesis, Brooklyn College, 1956).

<sup>42</sup>B. Hirsh, "A Study of the Responses of Stutterers and Nonstutterers to Two Kinds of Personality Tests" (unpublished Master's thesis, Fordham University, 1950).

<sup>&</sup>lt;sup>37</sup><u>Ibid</u>.

Interestingly, stutterers tested by Murphy<sup>43</sup> showed responses to frustration distinctly different and in many respects conflicting to those given by subjects of the Madison-Norman<sup>44</sup> study. His subjects were significantly more extrapunitive, significantly less intropunitive, and more ego-defensive than a control group of normal speaking individuals.

In summary, research concerning the relationships between frustration and stuttering have produced disparate and, for the most part, inconclusive results. The studies conducted to date reveal inadequacies regarding experimental procedures, especially the absence of control groups and the disregard of efforts to eliminate bias error in the scoring of the projective test protocols. Another possible reason for unclear results was the utilization of unselected subjects in the studies. If, as several previously cited studies have demonstrated, stutterers exhibit differences among themselves vivid enough to be categorized by judges, it might logically follow that such categorization ought to be performed before selecting stutterers for research in frustration.

It is the thesis of the present study that symptomalogical differences among stutterers are associated with unique psychodynamic correlates. More specifically, it is

<sup>&</sup>lt;sup>43</sup>A. Murphy, "An Electroencephalographic Study of Frustration in Stutterers" (unpublished Ph.D. dissertation, University of Southern California, 1952).

<sup>&</sup>lt;sup>44</sup>Madison and Norman, <u>op. cit</u>., p. 190.

anticipated that predominantly clonic stutterers differ from predominantly tonic stutterers in regard to certain dimensions of personality adjustment, for example, in their responses to frustration. There is evidence<sup>45</sup> indicating that predominantly clonic stutterers tend to attack barriers directly, whereas predominantly tonic stutterers withdraw or retreat from obstacles. Research into the relationships between frustration and stuttering, therefore, must take into account the differences between tonic and clonic stutterers. The present study attempted to delineate responses of tonic and clonic stutterers to frustration with the Rosenzweig Picture-Frustration Study.

# Level of Aspiration and Stuttering

In the psychological literature, the concept of level of aspiration is characterized broadly as the manner in which individuals designate and move toward goals. More specifically, this concept refers to the way an individual sets his goals, strives to seek success and avoid failure, and typically responds to achievement and nonachievement. <sup>46</sup> A definition of aspiration promulgated by Frank has guided most of the research in this area as well as the construction of measurement devices:

<sup>&</sup>lt;sup>45</sup>Diamond, <u>op. cit</u>., p. 97.

<sup>46</sup> K. Lewin <u>et al</u>., "Level of Aspiration," Vol. 1. <u>Personality and Behavior Disorders</u>, ed. J. Hunt (New York: Ronald Press, 1944), pp. 333-378.



The level of future performance in a familiar task which an individual, knowing his level of past performance in that task, explicitly undertakes to reach.<sup>47</sup>

Typically, the measurement of an individual's level of aspiration is obtained in the manner described by Rotter:

A subject is confronted with some task and, either before or after practice, he is asked to make a statement of how well he will do in the task. After failure or success in reaching this explicitly stated goal, he is asked to make another estimate.<sup>48</sup>

The kinds of goals an individual sets in relation to his performance and the adjustments he makes after success and failure have been interpreted as representing his habitual style of aspiration and attainment. As Rotter stated, "Through this procedure it is possible to study, fairly objectively, the effect of success and failure on the explicitly set goals of an individual, where success and failure are defined as reaching or not reaching previously set goals."<sup>49</sup>

This procedure yields several measures, the most important of which is termed the goal discrepancy or simply "D" score. This measure is the average of the difference between performance and subsequent aspiration for all test

<sup>&</sup>lt;sup>47</sup>J. Frank, "Individual Differences in Certain Aspects of Level of Aspiration," <u>American Journal of Psychology</u>, 47 (1935), p. 119.

<sup>&</sup>lt;sup>48</sup>J. Rotter, <u>Social Learning and Clinical Psychology</u> (New York: Prentice-Hall, Inc., 1954), p. 313.

<sup>&</sup>lt;sup>49</sup>J. Rotter, "Level of Aspiration as a Method of Studying Personality: 1. A Critical Review of Methodology," Psychological Review, 49 (1942), p. 464.

trials. Normal individuals tend to have slightly positive discrepancy scores, balancing their idealistic aspirations against realistic expectations of attainment.<sup>50</sup> As a group, maladjusted or handicapped individuals, as well as persons with a long history of failure, manifest "D" scores that are lower than those obtained from normal groups.<sup>51</sup> It is interesting to note that the former, in their responses on specific aspiration test items, frequently react to failure with very high or very low shifts in terms of goal setting. By setting high goals they obtain praise for their drive and understanding for their failure. If they set low goals, they feel safe; and when the avowed aspirations are exceeded, a measure of success is achieved.<sup>52</sup>

Studies comparing stutterers and nonstutterers with respect to level of aspiration have yielded remarkably consistent results. Stutterers, as a group, tend to have lower goal discrepancy scores.<sup>53</sup> Sheehan and Zelen<sup>54</sup> compared twenty stutterers and twenty nonstutterers with respect to their responses on the <u>Rotter Board</u> (a modified pinball device). No significant differences were obtained, but the stutterers did show a trend toward lower levels of

<sup>51</sup><u>Ibid</u>., p. 318. <sup>53</sup>J. Sheehan, "Projective Studies in Stuttering," <u>Journal of Speech and Hearing Disorders</u>, 23 (1958), pp. 18-25. 54

<sup>&</sup>lt;sup>50</sup>J. Rotter, <u>Social Learning and Clinical Psychology</u> (New York: Prentice-Hall, Inc., 1954), p. 319.

<sup>&</sup>lt;sup>54</sup>J. Sheehan and S. Zelen, "A Level of Aspiration Study of Stutterers," <u>American Psychologist</u>, 6 (1951), p. 500.



aspiration than the controls. In a follow-up study, Sheehan and Zelen<sup>55</sup> tested forty adult stutterers and sixty normal speaking persons with the <u>Rotter Board</u>. They found that the stutterers as a group avoided the threat of failure by predicting more modest achievement. Compared to the normal speakers, the stutterers stayed within the success area of goal setting and in general manifested lower levels of aspiration. The researchers concluded that the stutterers showed greater defensiveness in their efforts to avoid failure.

Mast,<sup>56</sup> using an alternate measure of level of aspiration (the Carl Hollow Square, a type of jig-saw or form board), tested stutterers attending a speech camp. Only subjects free from physical involvement and considered "best adjusted" to the camp situation were included. When their scores were compared to the norms for the test, it was revealed that the stutterers had significantly lower discrepancy scores. This was interpreted as indicating that the stutterers were more than normally cautious in their attempts to avoid failure.

Lerea<sup>57</sup> examined the effect of success and failure in

<sup>55</sup>J. Sheehan and S. Zelen, "Levels of Aspiration in Stutterers and Nonstutterers," <u>Journal of Abnormal and Social</u> <u>Psychology</u>, 51 (1955), pp. 83-86.

<sup>56</sup>V. Mast, "Level of Aspiration as a Method of Studying the Personality of Adult Stutterers" (unpublished Master's thesis, University of Michigan, 1951).

<sup>57</sup>L. Lerea, "An Exploratory Study of the Effects of Experimentally Induced Success and Failure Upon the Reading Performance and Levels of Aspiration of Stutterers" (unpublished Ph.D. dissertation, University of Pittsburgh, 1954).



a motor task on the oral reading of stutterers. He found that success in the motor task tended to reduce the frequency of stuttering immediately following goal-attainment. The subjects responded in a less definitive manner under conditions of failure. Mild stutterers tended to manifest greater speech difficulty after failure; severe stutterers, on the hand, experienced a reduction of stuttering in oral reading immediately following failure in the motor task. It was interesting to note that the severity of the subjects' stuttering did not appear to be related to their goalsetting behavior.

Trombly's<sup>58</sup> research confirmed the finding that severity of stuttering is unrelated to goal-setting behavior. She found, however, contrary to Lerea's study,<sup>59</sup> that her subjects stuttered more following success than failure. This was especially noted in those subjects whose overt speech difficulty was mild. Thus, although severity <u>per se</u> does not appear to be related to <u>goal-setting</u> behavior, success in terms of <u>goal-attainment</u> does seem to have a disparate effect relative to severity of stuttering.

It would appear on the basis of a review of the literature that stutterers do differ from nonstutterers with respect to measures obtained on tests of level of

<sup>&</sup>lt;sup>58</sup>T. Trombly, "A Comparative Study of Stutterers' Levels of Aspiration for Speech and Nonspeech Performances" (unpublished Ph.D. dissertation, University of Missouri, 1958).

<sup>&</sup>lt;sup>59</sup>Lerea, <u>op. cit</u>., p. 102.

aspiration. As a group, stutterers tend to set goals somewhat below their actual performance capacity; and, in general, stutterers tend to be discouraged about their achievements and potential for achievement. This tendency of stutterers to be discouraged and set lower goals has been confirmed by experimenters with a variety of measurement devices, including the <u>Minnesota Multiphasic Personality</u> <u>Inventory</u>, <sup>60</sup> the <u>Q-Technique</u><sup>61</sup> and a battery of vocational testing instruments.<sup>62</sup>

The question arises as to the ontogeny of this tendency toward discouraged and defensive behavior among stutterers as demonstrated by tests of level of aspiration. Do stutterers set their goals lower because they stutter or is their behavior in this regard one of the factors that originally precipitated stuttering? Johnson's<sup>63</sup> views appear to be representative in response to this question. He suggested that a lowered aspiration level is essentially a "normal" reaction to the barriers presented by stuttering.

<sup>&</sup>lt;sup>60</sup>F. Walnut, "Personality Inventory Item Analysis of Individuals Who Stutter and Individuals Who Have Other Handicaps," <u>Journal of Speech and Hearing Disorders</u>, 19 (1954), pp. 220-227.

<sup>&</sup>lt;sup>61</sup>V. Wallen, "A Q-Technique Study of the Self Concepts of Adolescent Stutterers and Nonstutterers" (unpublished Ed.D. dissertation, Boston University, 1959).

<sup>&</sup>lt;sup>62</sup>R. Wahl, "A Study of Vocational Aspirations of Stutterers as Compared to a Matched Group of Nonstutterers" (unpublished Master's thesis, University of Arizona, 1964).

<sup>&</sup>lt;sup>63</sup>W. Johnson <u>et al</u>., <u>Stuttering In Children and</u> <u>Adults</u> (Minneapolis: Minnesota Press, 1955), p. 12.



Perkins<sup>64</sup> hypothesized that stutterers' awareness that their impact as persons was diminished because they stutter tended to make them devalue their actual achievement. Sheehan discussed it this way:

The lower level of aspiration of stutterers is probably a manifestation of their defensiveness and efforts to avert the danger of failure. The lowered aspirations of the stutterer appear to stem from the ego-protective level of conflict, but may also be interpreted as reactions secondary to the handicap.<sup>65</sup>

However, none of the reported studies scrutinized differences in goal-setting behavior among stutterers. More specifically, there has been no research relative to differences between clonic and tonic stutterers on measures of level of aspiration. Yet, there is some evidence indicating significant psychodynamic differences between representatives of these symptomalogical categories.<sup>66</sup> Clonic stutterers tend to be more flexible, outgoing, and responsive to their environment than tonic stutterers. It is anticipated, therefore, that clonic stutterers as a group will show level of aspiration behavior with greater similarity to that of normal speaking individuals than the more rigid and withdrawn tonic stutterers.

<sup>65</sup>J. Sheehan, "Projective Studies in Stuttering," Journal of Speech and Hearing Disorders, 23 (1958), p. 23.

66 Diamond, op. cit., p. 95.

<sup>&</sup>lt;sup>64</sup>W. Perkins, "Stuttering: Some Common Denominators," <u>New Directions In Stuttering</u>, ed. D. Barbara (Springfield, Ill.: C. C. Thomas, 1965), Chap. 2, p. 21.

## Intelligence and Stuttering

One area of consensus within the extensive corpus of literature on stuttering concerns the relationship of intelligence to stuttering. Most authorities agree that stuttering and intelligence are not related; stutterers do not appear to differ from nonstutterers with respect to intellectual endowment.<sup>67</sup> The early study by McDowell<sup>68</sup> and the more recent research conducted by Darley<sup>69</sup> demonstrated the essential similarity of stutterers and nonstutterers in terms of their responses to standard measures of intelligence. A monograph published in England presented some conflicting evidence. Andrews and Harris<sup>70</sup> compared eighty stuttering and eighty nonstuttering preadolescent children with respect to their responses to the Wechsler Intelligence Scale for Children. The stutterers were found to have a significantly lower mean intelligence (94.7) than the nonstutterers (101.8). It should be pointed out, however, that the researchers obtained their sample of stutterers

<sup>69</sup>F. Darley, "The Relationship of Parental Attitudes and Adjustments to the Development of Stuttering," <u>Stuttering</u> <u>In Children and Adults</u>, ed. W. Johnson (Minneapolis: Minnesota Press, 1955), Chap. 4.

<sup>70</sup>G. Andrews and M. Harris, "The Syndrome of Stuttering," <u>Clinics In Developmental Medicine</u>, Number 17 (Suffolk, England: Lavenham Press, 1964), p. 97.

<sup>&</sup>lt;sup>67</sup>H. Luper and R. Mulder, <u>Stuttering Therapy for</u> <u>Children</u> (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1964).

<sup>&</sup>lt;sup>68</sup>E. D. McDowell, "Educational and Emotional Adjustments of Stuttering Children," <u>Teachers College Contri-</u> <u>butions to Education</u> 314 (New York: Columbia University, 1928).



solely on the basis of referrals from classroom teachers rather than through diagnostic interviews by trained speech pathologists. Thus, with this exception, the preponderance of data tends to support Johnson's statement:

In general relevant data have strongly indicated that unselected samples of stutterers and non-stutterers are essentially similar with respect to measures of intelligence.<sup>71</sup>

There is some evidence, however, that college stutterers tend to be slightly intellectually superior to their nonstuttering peers. Studies by Schultz,<sup>72</sup> Steer,<sup>73</sup> and Johnson<sup>74</sup> demonstrated that college stutterers as a group score higher on intelligence tests than control groups of normal speaking college students. College stutterers are probably not, however, representative of the whole population of stutterers. In general, more intelligent individuals go to college; a person who stutters would have to be brighter than even the average collegian to force himself to cope with the verbal competition of college life. Average or below average stutterers probably tend to discontinue their schooling either before or after completing

<sup>71</sup>W. Johnson <u>et al</u>., <u>The Onset of Stuttering</u> (Minneapolis: Minnesota Press, 1959), p. 22.

<sup>72</sup>D. Schultz, "A Study of Nondirective Counseling as Applied to Adult Stutterers," <u>Journal of Speech Disorders</u>, 12 (1947), pp. 421-427.

<sup>73</sup>M. Steer, "The General Intelligence of College Stutterers," <u>School and Society</u>, 44 (1936), pp. 826-864.

<sup>74</sup>W. Johnson, "Influence of Stuttering on the Attitudes and Adaptations of the Stutterer," <u>Journal of Social</u> Psychology, 5 (1934), pp. 415-420.

high school. It is a tenable generalization, therefore, that intelligence is normally distributed throughout the stuttering population.

It is interesting to note, however, that a higher incidence of stuttering has been observed in the mentally retarded population.<sup>75</sup> In terms of symptomatology, the speech behavior manifested by this group is typically repetitive or clonic.<sup>76</sup> The fluency disorder observed among the mentally retarded may be (1) a specific subtype of the stuttering syndrome, perhaps with an organic basis<sup>77</sup> and/or (2) an "earlier" version of stuttering as manifested by the normal population. The implication is that because of their limited intelligence the mentally retarded cannot learn the more elaborate patterns of disguise or interiorization.

Since it has been demonstrated that people react to clonic dysfluency (repetitions) as stuttering much more frequently than tonic interruptions, <sup>78</sup> it is suggested that predominantly clonic stutterers will tend to be slightly inferior to predominantly tonic stutterers in intelligence.

<sup>&</sup>lt;sup>75</sup>B. Schlanger and R. Gottsleber, "Analysis of Speech Defects Among the Institutionalized Mentally Retarded," <u>Journal of Speech and Hearing Disorders</u>, 22 (1957), pp. 98-103.

<sup>76&</sup>lt;u>Ibid</u>., p. 101.

<sup>&</sup>lt;sup>77</sup>J. Lerman, G. Powers, and S. Rigrodsky, "Stuttering Patterns Observed in a Sample of Mentally Retarded Individuals," <u>Training School Bulletin</u>, 62 (1965), pp. 27-32.

<sup>&</sup>lt;sup>78</sup>D. Williams, M. Wark, and F. Minifie, "Ratings of Stuttering by Audio, Visual and Audiovisual Cues," <u>Journal</u> <u>of Speech and Hearing Research</u>, 6 (1963), pp. 91-100.



In other words, tonic stutterers may be postulated to be a little brighter (and more sensitive to social reactions) than clonic stutterers and thus attempt to modify their speech toward a pattern not as readily considered to be "stuttering."

#### Summary

The problem of stuttering is characterized by two basic types of abnormal speech phenomena: repetitions (or clonic blocks) and fixations (or tonic blocks). Although few individuals manifest one type exclusively, it is possible to categorize stutterers as either predominantly tonic or predominantly clonic. There is some evidence that tonic and clonic stutterers differ with respect to several psychological variables. Research concerned with the reactions to frustration among stutterers has yielded inconclusive results but has revealed a tendency for clonic stutterers to attack barriers and for tonic stutterers to withdraw from frustrating situations. When unclassified stutterers have been tested for level of aspiration, they have been found, as a group, to have lower aspiration levels than normal speakers. Results from intelligence studies of uncategorized stutterers have indicated that no differences exist between stutterers and nonstutterers. Much, if not all, of the available research dealing with personality has been directed toward differences between stutterers as a group and normal speaking controls. In a broad sense, the present study was concerned



with differences within the stuttering population. More specifically, it was the author's thesis that when stutterers are tested, not as a homogeneous group, but in symptomalogical categories, there will be found significant differences between clonic and tonic stutterers with respect to frustration reactions, levels of aspiration, and intelligence.



### CHAPTER III

# SUBJECTS, MATERIALS, AND PROCEDURE

The purpose of this study was to compare predominantly clonic stutterers with predominantly tonic stutterers in regard to their responses to frustration, levels of aspiration, and verbal intelligence. In this chapter the methodology employed in accomplishing the purpose of the research is outlined in terms of two basic areas. First, the criteria for the selection of subjects comprising the stuttering and normal speaking groups are presented, and the characteristics of the obtained populations are delineated. Second, the three psychological tests utilized in the study and the procedures followed in administering the instruments are described.

## Subjects

To meet the purpose of the study it was necessary to obtain subjects in order to establish two distinct groups-predominantly clonic and predominantly tonic stutterers. The decision was made to include, for comparative purposes, a sample of normal speaking individuals matched to the groups of stutterers with respect to age, sex, and educational status. A total of sixty subjects, twenty predominantly clonic stutterers, twenty predominantly tonic stutterers,

and twenty normal speaking persons participated in this research.

Selection of the Groups of Stutterers

The forty subjects comprising the groups of stutterers were selected from nine public and parochial high schools and two universities in Michigan. They were all diagnosed as stutterers who were currently receiving therapy or had received clinical assistance in the recent past. The writer discussed the general nature of the investigation with public school clinicians, requesting referrals of stutterers from their caseloads. The clinicians consulted the parents and obtained their cooperation. Several directors of speech clinics were contacted by mail and their cooperation requested in obtaining subjects for the study.

The nature of the research was not revealed to the subjects. They were told that their assistance would contribute to the understanding of the problem of stuttering and provide a better basis for the treatment of the disorder. All but seven of the subjects were volunteers who performed the tasks without remuneration. The seven stutterers obtained at the University of Michigan were volunteers who were paid at the hourly University rate. All subjects were assured that the research project was concerned with statistical analysis of group trends and that consequently their anonymity would be preserved.

#### Preliminary Criteria

The decision was made to employ a number of criteria to screen prospective subjects preliminary to their categorization as predominantly tonic or predominantly clonic:

- Since the focus of this study was on confirmed adult stutterers, only persons fifteen years of age or older were included as subjects. The rationale for the age limit was to ensure stability of the stuttering patterns and obtain less fluctuation or variability to confound the classification process.
- 2. Stutterers who were speech clinicians or who were in training to be speech clinicians were not included as subjects. This was done to eliminate bias error since it was anticipated that speech clinicians or speech clinicians in training would (a) not be characteristic of stutterers in general; and (b) possess knowledge of the role of frustration and level of aspiration relative to the problem of stuttering.
- 3. Stutterers presenting a speech defect other than their fluency problem were not included. This was done to eliminate bias error since it was anticipated that stutterers with speech defects in addition to their fluency disorder might present personality patterns significantly different from individuals whose only speech disorder was stuttering.
- 4. Stutterers presenting gross physical abnormality, such as crippling, scarring, and so forth were not included. Again, this criterion was employed to reduce bias error from contaminating the variable of stuttering.

In order to make maximum utilization of the time of the judges participating in the tonic-clonic classification, the writer delineated these preliminary criteria in conferences with the public school clinicians and in his communications with the directors of the speech clinics. This assisted in ensuring that all prospective subjects



had been scrutinized in terms of the criteria prior to the classification procedure. In only one instance was a subject rejected on the basis of these factors (the individual possessed an articulation defect).

#### Designation of Tonic and Clonic Stuttering

The problem of reliable classification of the prospective subjects in terms of tonic and clonic stuttering was recognized as a crucial one for this investigation. On the basis of a review of the available literature, as well as discussions and personal communications with speech pathologists, the writer drew up descriptive definitions of tonic and clonic stuttering. Utilizing these definitions, the writer and two judges independently classified each prospective subject in terms of predominantly clonic and predominantly tonic stuttering characteristics.

# Descriptive Definitions of Tonic and Clonic Stuttering

Stutterers, with rare exceptions, are seldom totally tonic or clonic; it is the writer's impression, however, that a given individual will tend to exhibit a predominance of one type of stuttering. It was in this sense, then, that the terms tonic and clonic were used in this study. The following descriptive definitions were utilized as criteria for the classification procedure:

 Tonic stuttering--speech dysfluency characterized by stoppages or fixations of the speech musculature. The fixations are attended by tensions that



are visible. The audible characteristics are limited to silent intervals, prolongations of sounds (both phonemic and nonphonemic) or other indices of tension in the respiratory-phonatoryarticulatory apparatus.

 Clonic stuttering--speech dysfluency characterized by cyclic repetitions of sounds, syllables, and words. The visual concomitants are tremors (oscillations) of the speech muscles prior to or during the repetitions.

## The Judges

A total of fifteen trained speech clinicians, possessing a minimum of the baccalaureate degree in speech pathology, served as judges for this research. Twelve of the judges held or were working toward a master's degree in speech pathology. All of the persons serving as judges volunteered their time.

## Procedures Utilized in Judging

A four-page mimeographed booklet entitled "Instructions for Judges" was prepared (Appendix A). This booklet contained the following items: (1) the descriptive definitions of tonic and clonic stuttering; (2) the preliminary criteria for screening prospective stutterers; (3) criteria and procedures for classifying subjects as predominantly tonic or predominantly clonic; (4) a triplespaced copy of the <u>My Grandfather</u> reading passage; and, (5) a page for enumerating moments of stuttering during the self-formulated speech task. Prior to the actual judging process, the investigator went over the instructions with the judges and permitted them to ask questions. The

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investigator and two judges then met with each stutterer to classify his speech interruptions with regard to the designata of clonic and tonic.

The subject performed two speech tasks. First, he read the <u>My Grandfather</u> passage aloud. Then he related orally his autobiography chronologically. The writer introduced these two tasks with the following instructions:

This is a research study concerned with the problem of stuttering. Your assistance will add to our understanding of the problem and help us find better ways of helping persons with this speech difficulty. We are going to ask you to do two things. First, read a written passage aloud. Read it the way you usually would. We will be following along on a copy but pay Then, after you are through no attention to this. reading, we would like you to tell something about yourself. Specifically, we would like to hear about your history of stuttering, when you first became aware of it, how it has changed, things that make it worse or better and so forth. Any questions? O.K., you may begin reading when I say go.

As the subject read aloud, the researcher and the two judges monitored his performance on separate copies of the passage contained in the "Instructions for Judges" booklet. For each perceived moment of stuttering, a C (for clonic) or a T (for tonic) was recorded over the word on which the subject stuttered. If the judges believed that a given stuttering was not clearly clonic or tonic, or if it was a mixture with neither being predominant, it was recorded with an N (not clear) above the word on which it occurred. After a brief respite--during which the investigator and the two judges independently computed percentages of tonic and clonic blocks according to procedures presented below--the subject orally related his autobicgraphy



of stuttering chronologically. Again, the investigator and the two judges monitored the subject's speech performance. In this instance, however, moments of stuttering were simply enumerated under the categories of tonic, clonic, or N (not clearly tonic or clonic).

#### Computation of Percentages of Tonic and Clonic

The prospective subjects were requested to wait while the researcher and the two judges determined the percentages of tonic and clonic blocks recorded during the impromptu speaking task. The decision was made that there must be at least ten stutterings recorded by each of the three judges on each task before computations could proceed further. It was postulated that ten moments of stuttering represented a minimum for determining the appropriate categorization of stuttering. Prospective subjects stuttering less than ten times (on each task) as perceived by the three recorders were not included for participation in this investigation. A total of seven stutterers were rejected as subjects on this basis.

Percentages of tonic and clonic blocks were computed separately for each speech task utilizing the following formula:

# number of clonic stutterings = percentage of clonic total number of stutterings

A stutterer was included in this study only if the two judges and the investigator were unanimous in obtaining



seventy per cent or greater in either classification, clonic or tonic. The figure of seventy percent was utilized as an operational definition of "predominance" with regard to the symptomalogical categories since it represented a definitive majority. It was anticipated that this procedure would tend to rule out random fluctuations and would give the terms of predominantly tonic or predominantly clonic a clear delineation. A total of four stutterers were not classifiable as predominantly tonic or predominantly clonic as required by the procedures and hence were not included as subjects in this investigation.

# Description of Subjects Comprising The Group of Stutterers

The population data for the forty subjects comprising the groups of stutterers, twenty predominantly tonic stutterers and twenty predominantly clonic stutterers, are satistically summarized in Table 1. Distributions according to age, sex, and college status--whether the subject currently attended a college or university as a full-time student-are presented. The clonic group consisted of eighteen males and two females. The age range for this group was 15 to 47 years with a mean chronological age of 23.4 years and a median of 19.5 years. The tonic group consisted of fifteen males and five females. The age range for this group was 15 to 22 years with a mean chronological age of 16.6 years and a median of 16 years. Seven of the predominantly clonic stutterers were college students and three



	Clo	onic Stut	terers	Ton	ic Stutte:	rers
Age	Male	Female	College <sup>a</sup>	Male	Female	College
15 16	2 2			4 1	5	
17 18 19	2	1	1 2	4 4 1		1
20 21	1 2	l	2 2 1	Ť		T
22 33 25	2 1		1	1		1
35 37 38	1 1					
47	ī				*****	
Total	18	2	7	15	5	3
	Mean Age: 23.4 <sup>b</sup> Median Age: 19.5			Mean Age: 16.6 Median Age: 16		

Table 1. Summary of predominantly clonic group and predominantly tonic group according to age, sex, and college status.

<sup>a</sup>Indicates number of subjects attending an institution of higher learning as a full-time student.

<sup>b</sup>When the predominantly clonic stutterers and predominantly tonic stutterers were considered as one group, a mean age of 20 and a median age of 17 were obtained.

#### Selection of the Normal Speaking Group

The decision was made that a group of twenty normal speaking individuals matched to the population characteristics of the combined groups of clonic and tonic stutterers, would provide a better basis for comparison than the published norms for the various psychological testing instruments. The attempt was made to maintain the same distribution of

of the predominantly tonic stutterers were college students.



age, sex, and college attendance as exhibited in the combined groups of stutterers. Prospective subjects for the normal speaking group were also screened with respect to several restrictive criteria:

- No individuals who felt they were or ever had been stutterers were included as subjects.
- No persons with gross physical abnormality, such as crippling, scarring and so forth were selected as subjects.
- No persons with speech and/or hearing disorders as determined by screening procedures were included as subjects.
- No individuals with training in speech pathology were included as subjects.

The twenty subjects comprising the normal speaking group were selected from the Marquette (Michigan) Senior High School, the student body of Northern Michigan University, and residents of the city of Marquette. The nature of the investigation was not revealed to the normal speaking subjects. They were told only that the investigator needed the responses of a sample of normal speaking people so that comparisons could be drawn to a speech defective group. Because of the nature of the psychometric instruments, they were assured that the research project was concerned only with statistical analysis of group trends and that their anonymity would be preserved.

# Description of the Subjects Comprising The Normal Speaking Group

The population data for the twenty subjects comprising the normal speaking group are summarized statistically



in Table 2. Distributions according to age, sex, and college status are presented. The normal speaking group consisted of three females and seventeen males. The combined group of clonic and tonic stutterers had seven or 17.5 per cent females and thirty-three or 82.5 per cent males; the normal speaking group was comparable with 15 per cent females and 85 per cent males. The age range of the normal speaking group was 15 to 42 years with a mean chronological age of 20 years and a median of 17 years; the combined group of clonic and tonic stutterers ranged in age from 15 to 47 years with a mean chronological age of 20 years and a median of 17 years. In terms of age, therefore, the groups of stutterers and the normal speakers were comparable. Five of the subjects making up the normal speaking group were college students. The combined groups of stutterers had ten or 25 per cent college students; the normal speakers, with five or 25 per cent college students, were similar in this respect.

#### Materials

To meet the purpose of the study, it was necessary to elicit the subjects' reaction-patterns to frustration, evaluate their goal-setting behavior, and obtain a measure of their intelligence. Three psychological instruments were selected; in the order in which they were administered, the tests were the <u>Rosenzweig Picture-Frustration Study</u>,<sup>79</sup>

<sup>79</sup>Rosenzweig, Fleming and Clark, <u>op. cit</u>.



Age	Male	Female	College <sup>a</sup>
15	5		
16	2		
17	3		
18	1	1	2
19	2		1
20	1		1
21	1		
22	1		1
32		1	
38		1	
42	1		
Total	17	3	5
	Mean Age	: 20 Media	an Age: 17

Table 2. Summary of the normal speaking group participating in the study according to age, sex, and college status.

<sup>a</sup>Indicates number of subjects attending an institution of higher learning as a full-time student.

the <u>Cassel Group Level of Aspiration Test</u>,<sup>80</sup> and the <u>Peabody Picture Vocabulary Test</u>.<sup>81</sup> The writer prepared a booklet entitled "Experimental Protocol" (Appendix B) to be utilized for the testing of each subject. This booklet consisted of a cover sheet for recording relevant identifying data followed by printed forms of each of the three tests. All of the tests were administered individually by the investigator in conference or therapy rocms provided by the participating schools. The total testing procedure

<sup>&</sup>lt;sup>80</sup>R. Cassel, <u>The Cassel Group Level of Aspiration</u> <u>Test</u> (Beverly Hills, Calif.: Western Psychological Service, 1957).

<sup>&</sup>lt;sup>81</sup>L. Dunn, <u>The Peabody Picture Vocabulary Test</u> (Minneapolis: American Guidance Service, 1958).



took between fifty and sixty minutes for each subject.

Rosenzweig Picture-Frustration Study

The <u>Rosenzweig Picture-Frustration Study</u> (hereafter designated as the P-F Study) was selected to disclose the subjects' patterns of response to frustration for several important reasons: (1) it seems to be the most efficient and sensitive test for measuring this type of behavior;<sup>82</sup> (2) it is relatively easy to administer; (3) it presents the subjects with social situations which are often crucial to stutterers; and (4) it elicits responses which are classifiable according to a well developed schema and yields data that are readily amenable to statistical analysis.

The P-F Study is a limited projective test that assesses an individual's characteristic modes of responding to frustration. It is limited in that it consists of a series of rather specific situations that are designed to yield a small number of anticipated responses. It is projective since the situations prompt the subject to reveal covert or underlying personality traits by unconscious identification with the frustrated individual.

The P-F Study is an eight-page booklet consisting of 24 cartoon-like drawings each depicting two persons involved in a frustrating situation of common occurrence. One

<sup>&</sup>lt;sup>82</sup>A. Bjerstedt, "A Review of the Rosenzweig Picture-Frustration Study," <u>The Sixth Mental Measurements Yearbook</u>, ed. O. Buros (Highland Park, N. Jersey: Gryphon Press, 1965), pp. 511-516.



individual, always pictured on the left, is shown saying something either directly frustrating to the second person or making a comment which points out the latter's frustration. The facial features are purposely left vague in the drawings in order to facilitate spontaneous responses. The testee is requested to examine the drawings one at a time and write into the empty caption box over the frustrated individual's head the very first words that the latter might say in that circumstance. It is assumed that the subject identifies with the frustrated individual, and thus his responses reflect his prevailing modes of handling frustration and aggression.

A subject's written response to each of the 24 situations is scored for <u>direction</u> of aggression and <u>type</u> of reaction according to the schema developed by Rosenzweig.<sup>83</sup> In terms of direction of aggression, responses are classified as extrapunitive, intropunitive, and impunitive:

- Extrapunitive--the individual tends to express aggression outwardly. He blames the external world for his frustration. Thus, high scores in this category are interpreted as indicating a tendency to direct blame or anger toward others under conditions of frustration.
- Intropunitive--the individual tends to assume the blame or is self punishing under conditions of frustration. Rather than anger or resentment, the individual reacts with feelings of guilt and remorse. High scores in this category are interpreted as indicating prevailing tendencies to direct aggression inwardly.

<sup>&</sup>lt;sup>83</sup>Rosenzweig, Fleming and Clark, <u>op. cit</u>., p. 166.



3. Impunitive--the individual tends to pass over frustrating situations lightly, as if they represented unavoidable accidents for which no one was to blame. High scores in this category are interpreted as indicating prevailing tendencies to minimize or deny frustration.

Three types of aggressive reactions are recognized:

- 1. Obstacle-dominance--the response is concentrated on the barrier occasioning the frustration. In other words, an individual manifesting this type of reaction to frustration insistently points to the obstacle blocking his goal attainment.
- Ego-defensive--the response is protective of the individual's self esteem. In this case, the person's reaction to a frustrating situation is characterized by an attempt to defend or protect his ego from loss of esteem.
- 3. Need-persistence--the response is directed toward solution of the problem. That is, the subject's reaction to frustration is characterized by persistent attempts to solve the barrier situation.

There are nine basic factors utilized in scoring a completed P-F Study protocol. Extrapunitive responses are categorized according to type, that is, obstacle-dominance (E'), ego-defensive (E), or need-persistence (e). In a similar fashion, intropunitive and impunitive responses are classified as obstacle-dominant (I' and M'), ego-defensive (I and M), or need-persistent (i and m). To assist in the categorization of the obtained responses, Rosenzweig<sup>84</sup> has prepared elaborate scoring samples for each of the 24 situations. A record blank (Appendix B) is provided for the classification of responses. Each item is scored separately by indicating in the appropriate place on the scoring sheet if the response indicates E, I, M, O-D, etc. In the upper

<sup>84</sup>Ibid., pp. 172-200.



right hand section of the record blank the frequency of occurrence of each of the factors and the percentage for each factor are entered.

### Procedures Followed in Administering and Scoring the P-F Study

For each subject the testing commenced with the P-F Study. This procedure was followed to prevent the contamination of the projective instrument by fatigue and frustration occasioned by the other two psychological tests. The subject was seated at a table or desk in a well lighted, quiet room and provided with a pencil. He was given a copy of the P-F Study and directed to read the instructions on the front of the test booklet and to commence with the When a subject asked a question about the test, the test. investigator repeated the instructions. While the subject moved through the test booklet, the investigator occupied himself with reading material. Upon completion of the test, the investigator went through the booklet requesting that the subject clarify those responses that were either illegible or obscure in meaning. Although the P-F Study has no time limit, the subjects usually completed the captions in fifteen to twenty minutes.

The scoring of the protocols was accomplished by a psychologist--holding certification with the American Psychological Association--who was unfamiliar with the nature of the research project.<sup>85</sup> The P-F Study booklets

<sup>&</sup>lt;sup>85</sup>The sixty P-F Study protocols were scored by Dr. William Ratigan, Senior Extension Lecturer in Psychology for Michigan State University at Charlevoix, Michigan.

were coded by the writer for proper identification prior to the scoring; the psychologist, however, performed a "blind" analysis of the protocols as regards the stuttering and normal speaking subjects. This procedure was indicated since, unlike the other two instruments employed in the investigation, scoring of the P-F Study is dependent to a large extent upon the judgment of the scorer. It was anticipated that if the writer scored the protocols, his judgment would be influenced by his familiarity with the subjects' responses and his hypothetical expectations relative to the subject population.

#### Cassel Group Level of Aspiration Test

The <u>Cassel Group Level of Aspiration Test</u> (hereafter designated as CGLA) was selected to study the subjects' goal-setting behavior for four reasons: (1) it is simple to administer, requiring no materials other than a stop watch, test booklet, and pencil; (2) it is an intrinsically interesting and challenging task; (3) it masks the purpose of the test since it is seemingly a measure of manual dexterity; and (4) it is scored in an objective manner and it yields data amenable to statistical analysis.

The CGLA measures goal-setting behavior by means of a graphomotor task. The four-page test booklet (Appendix B) consists of eight units. Each unit contains three rows of twenty small circles. Within a specified time limit--thirty seconds--a subject draws squares around the circles as



swiftly as possible. Prior to each trial, the subject must estimate or predict the number he will be able to complete in thirty seconds.

The CGLA yields several measures, the most important of which is the goal-discrepancy or "D" score. The "D" score is the average of the difference between performance and subsequent aspiration bid for test units three through six. In other words, the difference between the number of circles the subject actually enclosed on a given trial is subtracted from the number of circles he predicts he can enclose on the next trial. The differences are summed and divided by the total number of trials. The obtained score represents the mean discrepancy between aim and accomplishment. When a subject consistently bids higher than his previous performance, his "D" score is positive. When the subject bids lower than his previous performance, his "D"

### Procedures Followed in Administering and Scoring the CGLA

The subjects were given a brief respite following completion of the P-F Study. Following this, the investigator presented the CGLA test booklet and a fresh pencil. The printed instructions provided on the first page of the test were shortened and read to the subject:

This is not a problem solving test. All you have to do is draw squares around each of the circles. There are eight parts and each has three lines of small circles. You will have exactly thirty seconds, timed with a stopwatch, to work each part. We will



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pause for two minutes between each part so that you can rest your fingers. Now, there are four rules that you must follow: (1) you must always bid the number of squares you expect to complete in the trial and mark it in the correct space; (2) you never get credit for more than you bid. For example, if you bid 18 and actually complete 20, your score will be 18; (3) you will be penalized if you do not make your bid. For example, if you bid 18 and you actually do 16, you will get two points off your score for each one you did not make, so your score would be 12; and (4) the squares that you make must have at least three corners or they will not be counted. Now, turn to part I and let's begin. Write in the number of squares you expect to do. Ready? (When the thirty seconds had elapsed, the subject Go! was instructed to count the squares he had completed, mark it in the appropriate place and move to the next unit.)

The administration of the CGLA consumed about twenty to twenty-two minutes. The completed test booklets were scored by the investigator following the standard procedures for obtaining measures of goal-discrepancy. The manual for the CGLA recommends using units three through six for computing the "D" score because the first two units are believed to be contaminated by initial experimentation; the last two units, numbers seven and eight, are contaminated by experimentally induced failure (the subject is unknowingly allowed only twenty-seven seconds on unit number seven).<sup>86</sup>

## Peabody Picture Vocabulary Test

The <u>Peabody Picture Vocabulary Test</u> (hereafter designated PPVT) was chosen as a measure of the subjects' intelligence. This test is easy and rapid to score; it maintains a high level of subject interest; the responses

<sup>&</sup>lt;sup>86</sup>Cassel, <u>op. cit</u>., pp. 7-10.



are non-oral and thus the instrument does not discriminate against the speech handicapped. Dunn and Harley<sup>87</sup> and Moed <u>et al</u>.<sup>88</sup> have shown that the PPVT correlates highly with more comprehensive measures of intelligence. Borgatta and Corsini<sup>89</sup> conclude that, for a brief but valid appraisal of intelligence, the best single indicator of mental ability is the understanding of the meanings of words. It can be seen, therefore, that when a brief but valid instrument to measure intelligence is needed, the PPVT is a good choice.<sup>90</sup>

The PPVT determines an individual's verbal intelligence by measuring his recognition vocabulary. The test consists of 150 plates of four numbered pictures per plate arranged in an ascending order of difficulty. The subject is told to point to one picture of the four on a given plate that best illustrates the stimulus word uttered by the examiner. A score sheet which gives the stimulus words, the correct answers, and a space for recording the subject's responses is provided (Appendix B). From the starting point--the manual provides guidelines to determine where to commence the test for various age levels--the testing moves forward

<sup>87</sup>L. Dunn and R. Harley, "Comparability of Peabody, Ammons, Van Alstyne and Columbia Test Scores with Cerebral Palsy Children," <u>Exceptional Children</u>, 26 (1959), pp. 70-74.

<sup>88</sup>G. Moed, B. Wright, and P. James, "Intertest Correlation of the Wechsler Intelligence Scale for Children and Two Picture Vocabulary Tests," <u>Educational and Psychological Measurement</u>, 29 (1963), pp. 359-363.

<sup>89</sup>E. Borgatta and R. Corsini, "The Quick Word Test," Journal of Educational Research, 54 (1960), pp. 15-19.

<sup>&</sup>lt;sup>90</sup>J. Taylor, "Screening Intelligence," <u>Journal of</u> <u>Speech and Hearing Disorders</u>, 28 (1963), pp. 90-91.



until the subject makes his first error. If he has not made eight consecutively correct responses prior to the first error, the examiner drops back to the starting point and works backward until the subject does get eight consecutive correct answers. This is termed the basal level. The test is terminated when the subject misses six of any eight consecutive items beyond the basal level. This is termed the ceiling. A subject's raw score is determined by subtracting the number of plates missed from the ceiling. Tables of percentiles and intelligence quotients are provided.<sup>91</sup>

## <u>Procedures Followed in Administration</u> and Scoring of the PPVT

The subjects were given a brief respite following completion of the CGLA. The investigator then opened the booklet of plates to the numbers suggested in the manual for the various age intervals. The following instructions were then read to the subjects:

I want to find out how large your vocabulary is. See, there are four pictures on this page. Each of them is numbered. I will say a word, then I want you to point to the picture which best tells me the meaning of the word. As we advance through the book you may not be sure you know the meaning of some of the words, but I want you to look carefully at all the pictures anyway and choose the one you think is right.

There is no time limit in this test, but most of the subjects completed the task in ten to fifteen minutes.

The investigator computed the raw scores and, using the tables in the manual, found the appropriate intelligence

<sup>91</sup>Dunn, <u>op. cit</u>., 13-24.



quotient. While the PPVT does not provide tables for intelligence quotients for persons beyond eighteen years of age, it is suggested in the manual, however, that the eighteen year old norms may be utilized until normative data above the eighteen year level are secured.<sup>92</sup>

<sup>92</sup><u>Ibid</u>., p. 10.



#### CHAPTER IV

#### RESULTS AND DISCUSSION

This chapter is divided into four sections. The first three sections are devoted to the presentation of the results of the investigation relative to the hypotheses tested. The fourth section consists of a discussion and interpretation of the results.

# Differences in Responses to Frustration Among Predominantly Clonic Stutterers, Predominantly Tonic Stutterers, and Normal Speaking Individuals

The data derived from the <u>Rosenzweig Picture</u>-<u>Frustration Study</u> consist of percentages representing a subject's reaction pattern to the six scoring categories. Responses are scored for the <u>direction</u> in which aggressive reactions are made and for the <u>type</u> of reaction manifested. In scoring a given response, it is necessary to decide whether aggression was expressed outwardly toward the environment (extrapunitive), turned inward upon the self (intropunitive), or suppressed or ignored (impunitive). Responses are also scored as obstacle-dominant (the barrier producing the frustration was the dominant feature), egodefensive (the major attempt was to preserve self esteem), or need-persistent (the solution to the problem was paramount).

Thus, each subject had six scores (percentages) representing his tendencies with respect to these six test categories. Since the data were ordinal, the appropriate tests for statistical analysis were nonparametric.

#### Direction of Aggression

Interest was focused on determining whether the predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals differed in percentage scores on each of the three "direction of aggression" categories of the P-F Study. For each dimension of directionality of aggression, an analysis was performed to determine whether the three groups were drawn from the same population. The criterion measures utilized for these comparisons were the percentages of the test items designated as <u>extrapunitive</u>, <u>intropunitive</u>, and <u>impunitive</u>. The intergroup differences were evaluated by the Kruskal-Wallis oneway analysis of variance by ranks, following the procedures cutlined by Siegel.<sup>93</sup> The following hypotheses were tested at the .05 level of significance:

- H<sub>o</sub>: there are no significant differences among the averaged ranked scores for measures of extrapunitiveness of the predominantly clonic stutterers, predominantly tonic stutterers and the normal speaking group.
- H<sub>o</sub>: there are no significant differences among the averaged ranked scores for measures of intropunitiveness of the predominantly clonic stutterers, predominantly tonic stutterers and the normal speaking group.

<sup>&</sup>lt;sup>93</sup>S. Seigel, <u>Nonparametric Statistics</u> (New York: McGraw-Hill Book Co., 1956), pp. 185-192.


H: there are no significant differences among the averaged ranked scores for measures of impunitiveness of the predominantly clonic stutterers, predominantly tonic stutterers and the normal speaking group.

The alternate hypothesis in each case was that such a difference did exist.

The Kruskal-Wallis was selected to test the above hypotheses because it appeared to be the most efficient nonparametric test for comparing three or more independent samples.<sup>94</sup> This statistical procedure determined whether the three sample groups, predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals, were drawn from the same population by comparing the summed ranks for each category of "direction of aggression." The raw scores--separately within each category, extrapunitive, intropunitive, and impunitive--for all subjects were transformed into a single series of ranks without regard to their group affiliation. The lowest score was replaced by a rank of one, the next smallest by a rank of two, and so on, with the largest score receiving a rank of N, which was sixty. The ranked scores for each of the three subject groups were then summed. If the sample populations were identical with regard to extrapunitiveness (intropunitiveness and impunitiveness), the total sums of ranks would be divided equally among the samples. In other words, the Kruskal-Wallis procedure determines whether the sums of ranks are so disparate that they were not likely to have

<sup>94</sup><u>Ibid</u>., p. 194.



been drawn from the same population. A statistic, H, was computed according to the following formula:<sup>95</sup>

$$H \frac{12}{N(N+1)} \qquad \frac{R_{j}}{n_{j}} - 3(N+1)$$

2

where k equals the number of samples  $n_j$  equals the number of cases in the jth sample N equals the number of cases in all samples combined  $R_j$  equals the sum of ranks in the jth sample k  $\Sigma$  directs one to sum over the k samples j=1

When there are more than five cases (subjects) in each category, the sampling distribution of H is approximately chi square. In order to determine the probability associated with a particular observed H, reference was made to a table of critical values for chi square.

Tables 3, 4, and 5 present a summary of the results of the analyses for the "direction of aggression" categories of extrapunitiveness, intropunitiveness, and impunitiveness. The results show that none of the comparisons was significant at the .05 level. With respect to the three scoring categories, extrapunitive, intropunitive, and impunitive, the obtained H values were 1.6, .2, and 1.1 respectively. With two degrees of freedom, a  $X^2$  value of 5.99 or larger is required for significance at the .05 level. Thus, on the basis of the statistical analyses, it was not possible to reject the null hypothesis of "no difference" for measures of extrapunitiveness, intropunitiveness, and impunitiveness among the predominantly clonic stutterers, predominantly tonic

<sup>95</sup><u>Ibid</u>., p. 185.



Predominantly Clonic		Predominantly Tonic		Normal Speakers	
Score	Rank	Score	Rank	Score	Rank
56.2	44	33.3	10.5	52	40
50	38.5	47.2	32	69.6	54
60.9	52	30.4	8	26.9	5
43.8	23.5	37	14	43.8	23.5
28.2	6	75	56	39.6	19.5
81.8	58	58.3	47	58.7	49
45.4	26	58.3	47	47.9	35.5
45.8	29	37.5	17	47.9	35.5
54.2	43	37	14	37.5	17
31.3	9	41.7	21.5	60.4	50.5
41.7	21.5	30	7	45.8	29
33.3	10.5	20.8	2	60.4	50.5
47.7	33	50	38.5	91.7	59
66.7	53	52.1	41.5	45.2	25
56.5	45	47.9	35.5	75	56
21.7	3	47.9	35.5	97.9	60
45.8	29	39.6	19.5	37.5	17
25	4	75	56	37	14
58.3	47	18.2	1	36.4	12
45.8	29	52.1	41.5	45.8	29
Sums <sup>a</sup> R <sub>l</sub> =604		R <sub>2</sub> =545		R <sub>3</sub> =681	

Table 3. Summary of the Kruskal-Wallis test performed for scores (percentages) of extrapunitiveness testing the hypothesis of no difference among predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.

<sup>a</sup>H=1.6 (with two degrees of freedom, an  $x^2$  value of 5.99 or larger is required for significance at the .05 level.)



Table 4. Summary of the Kruskal-Wallis test performed for scores (percentages) of intropunitiveness testing the hypothesis of no difference among predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.

Predominantly Clonic		Predominantly Tonic		Normal Speakers	
Score	Rank	Score	Rank	Score	Rank
16.7 25 34.8 29.2 28.2 11.3 27.3 12.5 6.2 33.3 33.3 29.2 29.5 25 30.4 34.8 35.4 33.3	11 20 53 35 31 6 29 7 3 48 48 48 48 35 39 20 41 53 55 48	$\begin{array}{c} 45.8\\ 26.9\\ 52.2\\ 32.6\\ 14.6\\ 27.1\\ 29.2\\ 33.3\\ 41\\ 33.3\\ 26\\ 29.2\\ 28\\ 27.1\\ 25\\ 22.9\\ 16.6\\ 8.3 \end{array}$	59 24 60 44 8 27 35 48 58 48 23 35 30 27 20 15 9 4	31.3 17.4 30 27 37.5 23.9 25 16.7 16.7 29.2 25 27.1 0 34.8 10.4 0 33.3 23.9	42 13 40 25 56 16.5 20 11 11 35 20 27 1.5 53 5 1.5 48 16.5
29.2 29.2	35 35	31.8 20.8	43 14	40.9 33.3	57 48
a Sums	R <sub>1</sub> =652	R <sub>2</sub> =0	631	R <sub>3</sub> =542	

 $a_{H=.2}$  (with two degrees of freedom, an  $x^2$  value of 5.99 or larger is required for significance at the .05 level.)

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Table 5.	Summary of the Kruskal-Wallis test performed for
	scores (percentages) of impunitiveness testing
	the hypothesis of no difference among predominant-
	ly clonic stutterers, predominantly tonic stutterers,
	and normal speaking individuals.

Predominantly		Predominantly		Normal	
Clonic		Tonic		Speakers	
Score	Rank	Score	Rank	Score	Rank
27.1	36.5	20.8	$\begin{array}{c} 22\\ 33\\ 17.5\\ 45\\ 5\\ 13.5\\ 9\\ 42\\ 24\\ 30.5\\ 53.5\\ 59.5\\ 25\\ 22\\ 36.5\\ 42\\ 57\\ 15.5\\ 59.5\\ 36.5\\ 36.5\\ \end{array}$	16.7	15.5
25	30.5	26.9		13	11.5
4.3	2	17.4		43	53.5
27	34	30.4		29.2	42
43.5	55.5	8.3		22.9	28
6.8	3	14.6		17.4	17.5
27.3	39	12.5		27.1	36.5
41.7	51.5	29.2		35.4	46.5
39.6	50	21.7		45.8	58
35.4	46.5	25		10.4	7
25	30.5	43		29.2	42
37.5	48	50		12.5	9
22.7	26.5	22		8.3	5
8.3	5	20.8		19.6	20
13	11.5	27.1		14.6	13.5
43.5	55.5	29.2		2.1	1
18.8	19	43.8		29.2	42
41.7	51.5	16.7		39.1	49
12.5	9	50		22.7	26.5
25	30.5	27.1		20.8	22
Sums <sup>a</sup>	R <sub>l</sub> =635.5	R <sub>2</sub> =	648.5	R <sub>3</sub> =546	

 $a_{H=1.1}$  (with two degrees of freedom, an  $x^2$  value of 5.99 or larger is required for significance at the .05 level.)



stutterers, and normal speaking individuals. In other words, the three subject groups did not differ in any meaningful manner with respect to their responses to the "direction of aggression" dimension of the P-F Study.

The data contained in Tables 3, 4, and 5 are presented graphically in Figure 1. The mean summed ranks for measures of extrapunitiveness, intropunitiveness, and impunitiveness of the predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals were obtained by dividing the summer ranks for each group by the number (twenty) in the group. The data contained in Figure 1, while not presenting any new information, provide visual evidence of the statistical findings discussed earlier. It can be seen that the three groups were essentially similar with respect to their responses to the "direction of aggression" dimension of the P-F Study.

## Type of Aggressive Reaction

Interest was also focused on determining whether the predominantly clonic stutterers, predominantly tonic stutterers, and the normal speaking individuals differed in percentage scores on each of the three "type of aggressive reaction" categories of the P-F Study. For each dimension of type of aggression, an analysis was performed to determine whether the groups were drawn from the same population. The criterion measures utilized for these

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Figure 1. Mean summed ranks for measures of extrapunitiveness, intropunitiveness, and impunitiveness for predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.



comparisons were the percentages of the test items designated as <u>obstacle-dominance</u>, <u>eqo-defensive</u>, and <u>need-persistence</u>. The following hypotheses were tested by means of the Kruskal-Wallis statistical analysis at the .05 level of significance:

- H: there are no significant differences among the averaged ranked scores for measures of obstacledominance among the predominantly clonic stutterers, predominantly tonic stutterers, and the normal speaking group.
- H<sub>o</sub>: there are no significant differences among the averaged ranked scores for measures of ego-defensiveness among the predominantly clonic stutterers, predominantly tonic stutterers, and the normal speaking group.
- H: there are no significant differences among the averaged ranked scores for measures of needpersistence among the predominantly clonic stutterers, predominantly tonic stutterers, and the normal speaking group.

The alternate hypothesis in each case was that such a difference did exist.

Tables 6, 7, and 8 summarize the results of the Kruskal-Wallis tests performed for the three "type of reaction" categories of obstacle-dominance, ego-defensiveness, and need-persistence. The results show that none of the comparisons was significant at the .05 level. An inspection of Tables 6, 7, and 8 reveals that the statistical analysis of the obtained data from the three populations tested did not permit rejection of the null hypothesis of "no difference" for measures of obstacle-dominance (H=4.7), ego-defensiveness, (H=.72) and need-persistence (H=.47). With two degrees of freedom, a  $X^2$  value of 5.99 or larger is required for significance at the .05 level.



Table 6. Summary of the Kruskal-Wallis test performed for scores (percentages) of obstacle-dominance testing the hypothesis of no difference among predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.

Predominantly Clonic		Predomin Ton:	Predominantly Tonic		Normal Speakers	
Score	Rank	Score	Rank	Score	Rank	
10.4	12.5	20.8	33 54	20.8 15.2	33 19	
8.7	20	8.7	7	34.8	59	
10.4	12.5	8.7	, 7	31	55	
19.6	29	31.3	56.5	6.2	3	
2.3	1	29.2	52.5	23.9	43	
34.1	58	22.9	40.5	12.5	16	
25	45	16.7	23	16.7	23	
10.4	12.5	26.9	49.5	37.5	60	
20.8	33	16.7	23	16.7	23	
25	45	26	47.5	29.2	52.5	
10.4	12.5	20.8	33	20.8	33	
9.1	9	26	47.5	4.2	2	
16.6	20	20.8	33	26.9	49.5	
21.7	37.5	22.9	40.5	14.6	17.5	
21.7	37.5	22.9	40.5	10.4	12.5	
14.6	17.5	31.3	56.5	8.3	4.5	
20.8	33	8.3	4.5	17.4	26	
10.4	12.5	27.2	51	18.2	27	
25	45	22.9	40.5	16.7	23	
Sums <sup>a</sup>	R <sub>1</sub> =508	R <sub>2</sub> =740.5		R <sub>3</sub> =	581.5	

 $^{\rm a}{\rm H}{=}4.7$  (with two degrees of freedom, an  $x^2$  value of 5.99 or larger is required for significance at the .05 level).



Table 7. Summary of the Kruskal-Wallis test performed for scores (percentages) of ego-defensiveness testing the hypothesis of no difference among predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.

Predominantly		Predominantly		Normal	
Clonic		Tonic		Speakers	
Score	Rank	Score	Rank	Score	Rank
72.9	55	35.4	3	66.7	51.5
52	20	65.3	50	67.4	53
69.6	54	19.6	1	37	5
56.2	32.5	54.3	29	37.5	6
47.8	14	60.4	41	66.7	51.5
97.7	60	54.2	27	52.2	23.5
52.3	25	54.2	27	47.9	16
62.5	45.5	62.5	45。5	62.5	45.5
52.1	21.5	47.2	13	20.8	2
52.1	21.5	47.9	16	56.2	32.5
45.8	11.5	43	9	41.6	8
50	18.5	54.2	27	62.5	45.5
54.5	30.5	57	34	89.6	59
64.6	49	62.5	45.5	41	7
58.7	39	58.3	36.5	75	56
52.2	23.5	43.8	10	85.4	57
58.3	36.5	60.4	41	45.8	11.5
47.9	16	87.5	58	50	18.5
60.4	41	36.4	4	54.5	30.5
58.3	36.5	62.5	45,5	58.3	36.5
Sums <sup>a</sup>	R <sub>1</sub> =651	R <sub>2</sub> =563 R <sub>3</sub> =		616	

 $^{a}\mathrm{H}=.72$  (with two degrees of freedom, an  $x^{2}$  value of 5.99 or larger is required for significance at the .05 level).



Table 8. Summary of the Kruskal-Wallis test performed for scores (percentages) of need-persistence testing the hypothesis of no difference among predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.

Predominantly		Predominantly		Normal	
Clonic		Tonic		Speakers	
Score	Rank	Score	Rank	Score	Rank
16.7	15.5	43.8	58	12.5 $17.4$ $28.2$ $31$ $27.1$ $23.9$ $39.6$ $20.8$ $41.7$ $27.1$ $29.2$ $16.7$ $6.2$ $32$ $10.4$ $4.2$ $45.8$ $32.6$	9.5
29.2	39.5	4.3	4		19
21.7	25	71.7	60		37
33.3	48.5	37	53		43
32.6	46.5	8.3	6.5		33.5
0	1	16.6	13		27
13.6	11	22.9	26		55.5
12.5	9.5	20.8	23.5		23.5
37.5	54	26.9	31		57
27.1	33.5	35.4	50		33.5
29.2	39.5	30	42		39.5
39.6	55.5	25	28.5		15.5
36.4	51.5	17	18		5
18.8	20.5	16.7	15.5		45
19.6	22	18.8	20.5		8
26	30	33.3	48.5		2.5
27.1	33.5	8.3	6.5		59
31.3	44	4.2	2.5		46.5
29.2	39.5	36.4	51.5	27.3	36
16 <b>.7</b>	15.5	14.6	12	25	28.5
Sums <sup>a</sup>	R <sub>1</sub> =635.5	R <sub>2</sub> =	R <sub>2</sub> =570.5 R <sub>3</sub> =624		624

 $^{\rm a}{\rm H}\text{=}.47$  (with two degrees of freedom, an  $X^2$  value of 5.99 or larger is required for significance at the .05 level).



It will be noted that comparisons of the subjects' responses for the aggression-type category of obstacledominance approached significance (H=4.7, two degrees of freedom). Examination of the summed ranks (Table 6) for this category shows that the predominantly tonic stutterers obtained the highest total with 740.5, exceeding the normal speaking individuals (581.5) and the predominantly clonic stutterers (508) by a considerable, although not significant, margin. This was interpreted as indicating that the predominantly tonic stutterers tended to emphasize the barrier in a frustrating circumstance more often than did predominantly clonic stutterers or the normal speaking individuals.

A graphic portrayal of the data contained in Tables 6, 7, and 8 is found in Figure 2. The bar graph depicts visually the relative value of the mean summed ranks for measures of obstacle-dominance, ego-defensiveness, and need-persistence of the predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals. As noted in the statistical findings, the trend for predominantly tonic stutterers to manifest more obstacle-dominance responses to frustration than the other two groups can also be observed in the graph.

In conclusion, the results of this phase of the investigation failed to reveal significant differences among the predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals with respect to any aspect of their responses to frustration as measured by the P-F Study.

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Figure 2. Mean summed ranks for measures of obstacledominance, ego-defensiveness and need-persistence for predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.



## Differences in Level of Aspiration Among Predominantly Clonic Stutterers, Predominantly Tonic Stutterers, and Normal Speaking Individuals

The second phase of this investigation compared responses of the predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals with respect to a measure of goal-setting behavior. The data derived from the <u>Cassel Group Level of Aspiration Test</u> consist of signed scores representing mean goal-discrepancy. A subject's goal-discrepancy or "D" score was the average of the difference between his performance and his subsequent estimate for each test unit. The data were ordinal or ranking in nature, and thus the appropriate tests for statistical analysis were nonparametric.

Since some evidence had been published indicating that stutterers differ in level of aspiration from normal speaking subjects, and that predominantly clonic stutterers might differ from predominantly tonic stutterers, the assumption was made that the goal-discrepancy scores for the predominantly tonic stutterers would be lower than those obtained from the predominantly clonic stutterers; it was further assumed that the goal-discrepancy scores from the predominantly clonic stutterers would be lower than those obtained from the predominantly clonic stutterers; it was

The criterion measure utilized in the analysis was the goal-discrepancy or "D" score. A Kruskal-Wallis test was performed testing the following hypothesis at the .05 level of significance:



- H: there is no significant difference among the averaged ranked scores for measures of goaldiscrepancy of the predominantly clonic stutterers, predominantly tonic stutterers, and the normal speaking individuals.
- H<sub>1</sub>: the predominantly tonic stutterers have lower averaged ranked scores for measures of goaldiscrepancy than predominantly clonic stutterers; the predominantly clonic stutterers have lower averaged ranked scores for measures of goaldiscrepancy than the normal speaking individuals.

The results of the Kruskal-Wallis test are summarized in Table 9. Inspection of the table reveals that the statistical analysis of the obtained data did not permit rejection of the null hypothesis of "no difference" for measures of goal-discrepancy among the predominantly clonic stutterers, predominantly tonic stutterers, and the normal speaking Referring to a table of critical values for chi group. square, it was seen that for two degrees of freedom, a value of 5.99 or larger was needed in order to obtain significance at the .05 level. Since an H of 4.54 was obtained, the decision was made to reject the null hypothesis at the .05 level. The three population samples do not differ significantly among themselves with respect to goal-setting behavior.

It is interesting to note, however, that the data reveal a trend in the predicted direction. Examination of the summed ranks (Table 9) representing measures of goaldiscrepancy shows that the predominantly tonic stutterers had the lowest value (522.5), then predominantly clonic stutterers (565), and the normal speaking group with the largest value (742.5). This indicates a tendency, although



Table 9. Summary of the Kruskal-Wallis test performed for goal-discrepancy scores testing the hypothesis of no difference among predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.

Predominantly Clonic		Predominantly Tonic		Normal Speakers	
Score	Rank	Score	Rank	Score	Rank
50 75 -1.5 3.5 1.0 .25 4.25 2.0 .75 0 25 -1.5 0 25 55 25 55 	17.5 15 9 56 41.5 31 58.5 50 37 24.5 19.5 9 24.5 2 45.5 6 53 15 41.5	$\begin{array}{c} 0\\ 0\\ -3.0\\ 3.5\\ 1.5\\ 1.75\\ -1.25\\ -1.5\\ -3.25\\ 0\\ 4.75\\ 1.25\\ -1.5\\ -1.5\\ -1.0\\ -7.25\\ .75\\ 1.0\\ -7.25\\ .75\\ 1.0\\75\\25\\ \end{array}$	24.5 24.5 5 56 48 49 12 9 4 24.5 60 45.5 9 13 1 37 41.5 15 19.5	$\begin{array}{r} 4.25 \\ .75 \\ .75 \\ 0 \\ .25 \\ .75 \\50 \\ 1.25 \\ 3.0 \\ 2.25 \\ 1.25 \\ 3.0 \\ 3.5 \\ .50 \\ -3.75 \\ .25 \\ 1.0 \\ .25 \\ 1.0 \\ .25 \\ .25 \end{array}$	58.5 37 37 24.5 31 37 17.5 45.5 53 51 45.5 53 56 34 31 41.5 31 31
Sum <b>s</b> <sup>a</sup>	R <sub>1</sub> =565	R <sub>2</sub> =522.5		R <sub>3</sub> =7	742.5

 $^{a}\mathrm{H=4.54}$  (with two degrees of freedom, an  $x^{2}$  value of 5.99 or larger is required for significance at the .05 level.)



not significant at the .05 level, for predominantly tonic stutterers to be more cautious in their goal-setting behavior than either of the other two groups, but especially the normal speaking group.

The data contained in Table 9 are presented graphically in Figure 3. The relative numerical value of the mean summed ranks for measures of goal-discrepancy for the predominantly clonic stutterers, predominantly tonic stutterers, and normal speakers is portrayed visually. As noted in the statistical findings, the trend for predominantly tonic stutterers and predominantly clonic stutterers to be more cautious in terms of goal-setting than normal speaking individuals can also be observed in the graph.

In conclusion, the results of this phase of the investigation failed to reveal significant differences among the predominantly clonic stutterers, predominantly tonic stutterers, and the normal speaking individuals with respect to their responses to the <u>Cassel Group Level of</u> <u>Aspiration Test</u>.

## Differences in Verbal Intelligence Among Predominantly Clonic Stutterers, Predominantly Tonic Stutterers, and Normal Speaking Individuals

The final concern of this investigation was determining whether predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals differed with respect to verbal intelligence. The data derived from the <u>Peabody Picture Vocabulary Test</u> consisted of scores

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Figure 3. Mean summed ranks for measures of goaldiscrepancy for predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.



representing intelligence quotients. The data were ordinal, and the appropriate tests for statistical analysis were nonparametric.

A Kruskal-Wallis test was performed to determine whether the three groups were drawn from the same population with respect to verbal intelligence. The criterion measure utilized in this analysis was a subject's intelligence quotient obtained by referring the raw score to the table of derived IQs in the test manual.<sup>96</sup> The following hypothesis was tested at the .05 level of significance:

- H: there is no significant difference among the averaged ranked scores for measures of verbal intelligence of the predominantly clonic stutterers, predominantly tonic stutterers, and the normal speaking individuals.
- H<sub>1</sub>: the three groups are not the same in their averaged ranked scores for measures of verbal intelligence.

The results of the Kruskal-Wallis test are summarized in Table 10. Inspection of the table reveals that the null hypothesis of "no difference" for measures of verbal intelligence of predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals was rejected at the .05 level of significance. The obtained H of 6.18, with two degrees of freedom, was significant at the .05 level. Examination of the summed ranks (Table 10) of measures representing verbal intelligence shows the predominantly clonic stutterers with the lowest value (508),

<sup>&</sup>lt;sup>96</sup>L. Dunn, <u>The Peabody Picture Vocabulary Test</u> (Minneapolis: American Guidance Service, 1958), pp. 13-24.


Table 10. Summary of the Kruskal-Wallis test performed for verbal intelligence scores testing the hypothesis of no difference among predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.

Predominantly		Predominantly		Normal		
Clonic		Tonic		Speakers		
Score	Rank	Score	Rank	Score	Rank	
92	7.5	99	20	99	$\begin{array}{c} 22\\ 29.5\\ 41.5\\ 11.5\\ 37\\ 37\\ 47\\ 54\\ 37\\ 57\\ 29.5\\ 45\\ 26.5\\ 51\\ 37\\ 33\\ 20\\ 55\\ 49.5 \end{array}$	
105	41.5	100	23.5	102		
98	17	105	41.5	105		
96	13.5	98	17	95		
91	3.5	91	3.5	104		
105	41.5	92	7.5	104		
91	3.5	112	47	112		
96	13.5	125	56	119		
100	23.5	102	29.5	104		
91	3.5	129	58	127		
104	3.5	95	11.5	102		
91	3.5	91	3.5	110		
97	15	100	23.5	101		
94	9.5	108	44	116		
100	23.5	101	26.5	104		
115	49.5	103	33	103		
102	29.5	98	17	99		
135	60	103	33	121		
118	53	94	9.5	115		
134 a Sums <sup>a</sup>	R <sub>1</sub> =508	R <sub>2</sub> =557		R <sub>3</sub> =	R <sub>3</sub> =742.5	

 $^{a}\mathrm{H=6.18}$  (with two degrees of freedom, an  $x^{2}$  value of 5.99 or larger is required for significance at the .05 level).



next predominantly tonic stutterers (557), and then the normal speaking individuals with the largest value (765).

A graphic portrayal of the data contained in Table 10 is presented in Figure 4. The bar graph depicts visually the relative numerical value of the mean summed ranks for measures of verbal intelligence for the predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals. It was shown statistically that the normal speakers were significantly superior with respect to verbal intelligence to the two stuttering groups, and this can also be observed in the relative heights for mean summed ranks presented in the graph.

Thus the three groups were apparently not drawn from the same population with respect to verbal intelligence. The data would further appear to suggest that the normal speaking individuals were, on the average, more intelligent than the two stuttering groups.

## Discussion

Several questions were posed at the outset of this investigation and have been enumerated in detail in Chapter I. The purpose of this discussion is to evaluate the research results in terms of those questions.

## Responses to Frustration

The first area of concern was whether predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals differed with respect to

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Figure 4. Mean summed ranks for measures of verbal intelligence for predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals.



measures of frustration. This phase of the investigation failed to delineate any meaningful relationships between stuttering symptomatology and categories of frustration utilized by the P-F Study. Statistical comparisons of the subjects' responses to the P-F Study indicated that the three sample groups did not differ significantly among themselves on any scoring category of this projective instrument. On one scoring factor, obstacle-dominance, however, the analysis yielded a fiqure approaching significance. An inspection of the summed ranks of measures representing obstacle-dominance revealed a trend for predominantly tonic stutterers to emphasize the barrier occasioning the frustration in their responses to the items of the P-F Study more often than did either predominantly clonic stutterers or normal speaking individuals.

A number of factors relevant to the participants and the measure of frustration employed may have been instrumental in limiting the significance of the results of this phase of the investigation.

A review of published research reveals that random sampling procedures are seldom employed in obtaining subjects for studies dealing with stuttering. Generally, researchers simply take the first available stutterers who meet certain criteria. Thus, the question arises, as it does in the present study, whether the subjects utilized were characteristic of stutterers in general. The question seems especially pertinent in view of the finding--contrary



to most research findings--that the stuttering groups and the normal speaking individuals were apparently not drawn from the same population with respect to intelligence.

There was another confounding factor concerning the subjects which may have influenced the results: all the stutterers included in this study were receiving or had received clinical speech assistance. It may be suggested that the counseling and psychotherapy inherent in speech therapy with stutterers, as well as the relief of lessened stuttering, had altered the subjects with respect to their typical responses to frustration.

Although several safeguards were taken to encourage valid participation by the subjects, it is the author's impression that two aspects concerning the P-F Study may have militated against realistic performances. First, despite the instructions to work rapidly and write in his first responses, a subject may have monitored his performance when reacting to the test items. He may have perceived, for example, that his responses were all of one type and thus tempered his first impulse on subsequent items in order to present a more balanced image of himself. The second aspect involved the testing conditions. Most of the data were collected within school settings; the majority of the subjects were referred to the investigator by sanctioned authority figures responsible for the student's educational welfare. Despite the investigator's guarantee of anonymity, it is possible that the subjects monitored



their responses, writing in those comments they thought prudent.

In conclusion, the results of the present study suggest that stutterers and nonstutterers are essentially similar in their responses to frustration. Further, there is no evidence indicating a difference between predominantly clonic stutterers and predominantly tonic stutterers in this respect. A tenable conclusion from these results is that stutterers and nonstutterers do not differ on this psychological dimension and, in addition, that patterns of response to frustration are not related to stuttering symptomatology. Although the present study presents no direct evidence to support this speculation, it may be that a person acquires patterns of behavior to barrier situations prior to the onset of stuttering and that his "style" of response to frustration remains relatively independent of his pattern It may be that a stutterer responds to speech of speech. frustration in one manner and to more general barrier situations in a distinctly different way.

# Level of Aspiration

The second portion of the investigation was designed to determine whether predominantly clonic stutterers, predominantly tonic stutterers, and normal speakers differed with respect to level of aspiration. The results of the comparisons among the three groups indicated no significant differences in measures of goal-discrepancy as defined by



the Cassel Group Level of Aspiration Test. An inspection of the data, however, does indicate a trend in the predicted There was a tendency for the predominantly tonic direction. stutterers to be more cautious in setting their goals, to restrict their predictions of success at or below their achievement more often than did predominantly clonic stutterers and normal speaking individuals. Most of the discrepancy between the groups which produced this trend, however, may be accounted for by the rather large difference in summed ranks (Table 9) for measures of goal-discrepancy between the normal speakers (742.5) and both predominantly tonic (522.5) and predominantly clonic (565) stutterers. In other words, the trend was for both symptom groups, but especially for predominantly tonic stutterers, to restrict themselves with respect to goal-setting as compared to the normal speaking group.

The results of this phase of the study do not conform to the general findings (cited in Chapter II) that stutterers have lower levels of aspiration than nonstutterers. As indicated in the previous section, the limited findings may have been an artifact of the particular sample of stutterers utilized or the measurement device employed. Although significant results have been obtained with graphomotor tasks of level of aspiration, <sup>97</sup> it may be that for some subjects the Cassel instrument did not engender the

<sup>&</sup>lt;sup>97</sup>Trombly, <u>op. cit.</u>, p. 120.



necessary ego-involvement to produce realistic goal-setting behavior.

In conclusion, the findings of this phase of the investigation present no evidence that predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals are significantly different with respect to level of aspiration.

### Intelligence

The final phase of this investigation was the assessment of verbal intelligence in predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals. Statistical comparison of the subjects' responses to the Peabody Picture Vocabulary Test indicated that the sample populations were not drawn from the same continuous distribution. An inspection of the data (Table 10) reveals that, in terms of the summed ranks for measures of verbal intelligence, the normal speaking individuals had the highest figure (765), then predominantly tonic stutterers (557), and finally predominantly clonic stutterers with the lowest value (508). It seems apparent that the large difference between the normal speaking group and the two stuttering groups accounted for the statistically significant results. The findings of the present study tend to confirm the results of the Andrews and Harris<sup>98</sup> research cited in the review of the literature.

<sup>98</sup>Andrews and Harris, <u>op. cit</u>., p. 97.



This finding is difficult to interpret; it can be explained only as an artifact of the particular population tested. Most of the studies comparing intelligence of stutterers and nonstutterers have demonstrated that the two groups are essentially similar. The results of this phase of the investigation are not interpreted as indicating that the stuttering groups were mentally subnormal. Measures of dispersion (range: predominantly clonic stutterers, 91-135; predominantly tonic stutterers, 91-129; normal speaking individuals, 95-127), and central tendency (means: predominantly clonic stutterers, 102.7; predominantly tonic stutterers, 103.1; normal speaking individuals, 107.7) revealed that all groups were within the normal range with respect to intelligence. Thus, the most plausible interpretation of the finding is that the sample of normal speaking individuals included in this study were slightly--and significantly--more intelligent than the stuttering groups. The predominantly clonic stutterers and predominantly tonic stutterers were so similar in terms of their summed ranks (508 and 557 respectively) that conclusions with respect to possible differences between them are not tenable.

In conclusion, the results of this phase of the investigation indicate that normal speaking individuals tend to be superior to predominantly tonic and predominantly clonic stutterers with respect to verbal intelligence.



#### CHAPTER V

# SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH

The purpose of this investigation was to compare predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals with respect to three psychological variables, response to frustration, level of aspiration, and verbal intelligence.

## Summary

A total of sixty subjects, twenty predominantly clonic stutterers, twenty predominantly tonic stutterers, and twenty normal speaking individuals were tested with three psychological instruments. The stutterers were classified as predominantly clonic or predominantly tonic when seventy per cent of their speech interruptions (as they performed two speech tasks) were judged, by the investigator and two trained speech clinicians acting independently, to be of either category. The following descriptive definitions of tonic and clonic stuttering were employed as criteria for the classification procedure:

 Tonic stuttering--speech dysfluency characterized by stoppages or fixations of the speech musculature. The fixations are attended by tensions that are visible. The audible characteristics are limited to silent intervals, prolongations of sounds (both



phonemic and nonphonemic) or other indices of tension in the respiratory-phonatory-articulatory apparatus.

 Clonic stuttering--speech dysfluency characterized by cyclic repetition of sounds, syllables, and words. The visible concomitants are tremors (oscillations) of the speech muscles prior to or during the repetitions.

It was necessary for the two judges and the investigator to agree unanimously with regard to the symptomalogical classification (on each task) before a subject could be included in the study. The twenty normal speaking individuals were matched to the combined groups of stutterers with respect to the variables of age, sex, and educational status.

The subjects were tested with three psychological instruments, the <u>Rosenzweig Picture-Frustration Study</u>, the <u>Cassel Group Level of Aspiration Test</u>, and the <u>Peabody Picture</u> <u>Vocabulary Test</u>. These instruments were utilized to determine if differences existed among the groups with regard to their responses to frustration, goal-setting behavior, and verbal intelligence.

The results indicated that the predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals did not differ significantly with respect to any dimension of response to frustration as measured by the P-F Study. There was a trend, though below the level of significance, for predominantly tonic stutterers in their responses to the Rosenzweig Test items to be more concerned than were the other two groups with barriers producing frustration. No significant differences were obtained in comparing level of aspiration for the three groups. Again,



there was a trend for predominantly tonic stutterers to be more cautious in their goal-setting behavior than predominantly clonic stutterers or the normal speaking individuals. Finally, the results indicated that predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals differed significantly with respect to verbal intelligence. The normal speaking subjects were, on the average, more intelligent than either predominantly tonic stutterers or the predominantly clonic stutterers.

## Conclusions

Within the limits imposed by the testing instruments employed and the population sampled, the following conclusions appear warranted:

1. Predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals do not differ significantly with respect to their responses to frustration. There is a trend, however, for predominantly tonic stutterers to emphasize the barrier or obstacle producing the frustration more often than predominantly clonic stutterers and normal speaking individuals.

2. Predominantly clonic stutterers, predominantly tonic stutterers, and normal speaking individuals do not differ significantly with respect to level of aspiration. There is a trend, however, for predominantly tonic stutterers to be more cautious and guarded in their goal-setting behavior than predominantly clonic stutterers; predominantly clonic



stutterers tend to be more cautious in terms of goal-setting than normal speaking individuals.

3. Normal speaking individuals tend to be more intelligent than predominantly tonic stutterers and/or predominantly clonic stutterers. In this investigation, although the normal speakers were significantly superior, all groups were within the normal limits for verbal intelligence.

## Recommendations for Further Research

The reserach summarized in this report represented an initial investigation in a program of studies attempting to delineate subtypes within the stuttering population and to draw relationships between stuttering symptomatology and psychodynamic variables. The following suggestions are made relative to such a research program.

The writer suggests that the present study be replicated with several modifications relative to the selection of subjects and data collection procedures. It is recommended that a larger sample of stutterers, Belected on the basis of random procedures, be utilized. An interesting variation would involve the inclusion of stutterers as subjects who have not received speech therapy. Additional symptomalogical categories appear warranted, and two are suggested: (1) a <u>clonic-tonic</u> designation when neither feature is predominant; and (2) a category of <u>predominantly</u> <u>avoidance</u> when the dominant feature is avoidance behavior. In order to elicit more realistic responses to frustration,



inter-personal situations could be experimentally devised whereby the subject is blocked or thwarted within a social context.

The major portion of the proposed research program would be concerned with assessing the relationship of other dependent variables, psychological, biological, and sociological, to subtypes within the stuttering population. For instance, stutterers categorized into various empirically defined symptom classifications could be scrutinized with regard to the psychological dimensions of self-concept, dependency-independency, introversion-extroversion, etc. Basic biological parameters such as blood chemistry, autonomic responses to stress, and neurophysiology, could profitably be re-examined within the context of categorized stutterers. Since the etiology of stuttering seems in some measure a social event--and certainly the individual's subsequent adjustment is directly dependent on his social environment--certain sociological variables such as roletaking ability, response to group pressure, etc., could also be studied as they relate to subtypes within the stuttering population.

A final phase of the total research program would attempt to relate listener responses to stuttering symptomatology. Interest would be focused upon determining whether listeners respond in different ways to different "types" of stuttering. Normal speaking individuals have been shown to regard audible, repetitious phenomena as stuttering; it



seems plausible that persons react differentially when confronted with dysfluent speech characterized by fixations, long silent intervals, or pronounced avoidance behavior than they do when hearing what they consider "stuttering."

In their seeming haste to testify empirically that stutterers and nonstutterers were essentially similar, early experimenters, in the writer's view, may have overlooked data suggesting significant differences <u>within</u> the stuttering population. It is the purpose of this program of research to re-examine this population in an attempt to delineate such differences.



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APPENDICES



APPENDIX A

INSTRUCTIONS FOR JUDGES



# Instructions For Judges

# I. Introduction:

In this study we are trying to place stutterers into one of two designata, tonic and clonic, on the basis of their predominant pattern of speech interruption. You will be asked to classify a prospective subject (stutterer) relative to the tonic or clonic categories as defined below;

- A. <u>Tonic</u>: the individual's speech dysfluency is characterized by stoppages or fixations of the speech musculature. The fixations are attended by tension which is more or less visible. The audible characteristics are limited to silent intervals, prolongations of sounds (both phonemic and nonphonemic) or other indices of tension in the respiratory-phonatoryarticulatory apparatus.
- B. <u>Clonic</u>: the individual's speech dysfluency is characterized by cyclic repetitions of sounds, syllables and words. The visual concomitants are tremors (oscillations) of the speech muscles prior to or during the repetitions.

## II. Procedure:

- A. Criteria for selection of prospective subjects:
  - Since the focus of the research is upon confirmed adult stutterers, individuals under the age of 15 will not be included.
  - Stutterers who are speech clinicians, or who are in training to be speech clinicians, will not be included.
  - Stutterers who manifest a speech problem in addition to dysfluency will not be included.
  - Stutterers who present gross abnormalities, such as crippling, scarring and so forth, will not be included.
- B. Criteria for designating prospective subjects as <u>tonic</u> or <u>clonic</u>:



- 1. We will ask the stutterer to perform two speaking tasks:
  - a) Read the <u>My Grandfather</u> passage (see copy attached below) aloud. As he reads <u>mark a</u> <u>C or T over words on which the subject</u> <u>stutters, C for Clonic and T for Tonic</u>. If you feel that a given "stuttering" is not clearly tonic or clonic, or is a mixture with neither being predominant, mark it N.
  - b) Relate a chronological autobiography orally, especially his experiences with stuttering. We will give him a few minutes to prepare himself for this task. Enumerate tonic and clonic blocks as indicated on the sheet titled Chronological Oral Autobiography.
- A score of 70 per cent or greater will be used as the criterion for designation of a subject as tonic or clonic.
  - a) There must be at least 10 interruptions (stutterings) noted in order to score the papers.
  - b) To score, the total N stutterings is divided into the C or T subtotals; this will determine the percentage of clonic and tonic stutterings, e.g.,

 $\frac{\text{Clonic}}{N}$  equals Clonic per cent

3. We will ask the prospective subject to wait while we independently compute percentages for each task. A stutterer will be tested further by the investigator only if all three judgments are unanimous (both tasks, 70 per cent or greater tonic or clonic). The investigator will make an appointment with the stutterer for further testing in this instance. MARK <u>C</u> (CLONIC) OR <u>T</u> (TONIC) OVER WORDS ON WHICH THE SUBJECT STUTTERS AS HE READS THIS PASSAGE ORALLY. MARK <u>N</u> IF THE STUTTERING IS NOT CLEARLY CLONIC OR TONIC.

## MY GRANDFATHER

You wished to know all about my grandfather. Well, he is nearly ninety-three years old; he dresses himself in an ancient black frock coat, usually minus several buttons; yet he still thinks as swiftly as ever. A long, flowing beard clings to his chin, giving those who observe him a pronounced feeling of utmost respect. When he speaks, his voice is just a bit cracked and quivers a trifle. Twice each day he plays skillfully and with zest upon our small organ. Except in winter when the ooze or snow or ice prevents, he slowly takes a short walk in the open air each day. We have often urged him to walk more and smoke less, but he always answers, "Banana oil!" Grandfather likes to be modern in his language.

CLONIC: \_\_\_\_\_ per cent
TONIC: \_\_\_\_\_ per cent

CHRONOLOGICAL ORAL AUTOBIOGRAPHY

ENUMERATE BLOCKS AS , ETC.

CLONIC BLOCKS:

TONIC BLOCKS:

<u>N</u> (NOT CLEARLY CLONIC OR TONIC):

Ν	(TOTAL)	5:		
				no.
CI	LONIC:	no.	per o	cent
тс	DNIC:			
	1	no.	per o	cent



APPENDIX B

EXPERIMENTAL PROTOCOL



(de**s**ignata)

# Experimental Protocol (cover sheet)

subject no. \_\_\_\_ age \_\_\_\_ sex \_\_\_\_ date \_\_\_\_\_ place \_\_\_\_\_ observations:

	My	Grand	lfather		CO	Ą
Judge l	per	cent	designata	per	cent	designata
Judge 2	per	cent	designata	per	cent	de <b>s</b> ignata
Investigator	per	cent	designata	per	cent	designata
Results:						
PPVT						
Cassel						

P-F Study (1) (2)



Name	AgeBirthday
Address	Education
Institution	Present Date

ROSENZWEIG P-F STUDY

(Revised Form for Adults)

# Instructions

In each of the pictures in this leaflet two people are shown talking to each other. The words said by one person are always given. Imagine what the other person in the picture would answer and write in the blank box the very <u>first</u> reply that comes into your mind. Work as fast as you can.

Copyright, 1948, by Saul Rosenzweig

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				110		
RECORD	BLANK	FOR	THE	ROSENZWEIG	P-F	STUDY

Name of Subject\_\_\_\_\_ Date of Test \_\_\_\_\_

Sex\_\_\_\_\_ Duration of Test\_\_\_\_\_

Name of Examiner

er	
ofiles	
N-P Total %	%
) () ()	
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Trends	
Comments	
<u>Comments</u>	



# THE CASSEL GROUP LEVEL OF ASPIRATION TEST

111

(Revised 1957)

#### - By -

RUSSELL N. CASSEL, Ed. D.

Published by

<u>w</u>	WESTERN PSYCHOLOGICAL SERVI	CES
W L D	PUBLISHERS • DISTRIBUT	ORS
Established 1948	BOX 775, BEVERLY HILLS, CALIFOR	NIA

Name	Age	M-F	Date	
School or Organization	Ed.	Exa	miner	

# SCORES

Aspiration "D" Score	_Unstructured First Goal	Hausmann Score
Clinical "D" Score	. Psychological Response to Failu	ure
Physiological Response to Failure	L. A. Q. Score	

# **GENERAL DIRECTIONS**

This test is concerned with measuring the "level of aspiration" of an individual and deals largely with that aspect of the personality. It is different from most tests in that it does not ask you to solve problems, or to indicate how you should react to certain situations. The only thing that you are asked to do in this test is to draw a four cornered figure around each of the small circles provided. There are eight different parts to the test, and each one is made-up of three lines of small circles like the ones in the example below. You are given enough time between parts of the test to rest your fingers and to get ready for the next part. The test is very accurately timed with a stop watch, and exactly 30 seconds of time are allowed to work on each of the eight parts. You must pay strict attention to the instructions for starting and stopping if your test is to have value.

There are five rules you must follow in taking the test: RULE ONE states that you must always indicate in the space marked "number of squares you expect to do" at the bottom of each part the number of square you expect to draw in the 30 seconds allowed. RULE TWO states that you never get credit for more squares than you indicate that you expect to do; for example, if you say you expect to do 20 squares and actually do 22, you get credit only for the 20 you bid, and no more. RULE THREE states that if you bid too many or too high, you get two points taken off of what you actually do for each point you are short, for example, if you bid 20 and get only 18, you are 2 points short of your bid; 2 times the 2 points short equals 4; substract 4 from the 18 you completed and your score is 14. If you bid too high you get penalized, and if you don't bid high enough you don't get credit. Therefore, you can see that it is to your advantage to bid as nearly to what you really believe you can make as it is possible for you to do. RULE FIVE states that every square drawn must have at least three corners or it will not be counted. Now, finish drawing the squares for the remaining circles in the examples, like those indicated:

EXAMPLE: 0	0	0	0	0	ο	ο	0	ο	ο	0	ο	0	ο	ο	ο	ο
------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Now turn to PART I and write the number of squares you expect to do for this part in the space provided. READY! BEGIN! (after 30 seconds) STOP! Mark the number of squares you have done in the space provided. (and so on for each part).

Page	2
------	---

D	π	D	T	·Τ
г.	n	-n		- 1

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(20)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ο	0	0	0	0	(40)
0	0	0	0	0	0	o	o	o	o	o	0	ο	0	o	o	0	o	0	0	(60)
Nur	Number of squares Number of squares you																			
У	ou ez	pect	to do				ha	ve co	omple	ted fo	or this	part					Score.	- 200		
										PAI	RT II									
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(20)
0	0	0	0	0	0	0	0	0	0	0	0	ο	0	0	0	0	0	0	0	(40)
0	0	0	0	0	0	0	o	o	0	0	o	0	0	0	0	0	0	0	0	(60)
Nur	nber	of squ	ares			1	Numb	er of	squa	res y	ou									
У	ou ex	pect	to do				hα	ve co	mple	ted fo	or this	part					Score.			
										PAF	T III	[								
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(20)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(40)
0	0	ο	ο	0	0	0	0	o	0	0	o	0	0	0	ο	0	o	0	0	(60)
														"D"-	Score				# 1	
Nun	nber	of squ	ares			1	Numb	er of	squa	res ye	ou						2.1			
Y	ou ex	pect	το αο				hα	ve co	mple	ted to	r this	part_					(Hauss	mann	#1)	
										PAF	T IV									
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(20)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	٥	0	0	0	0	0	(40)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(60)
														"D"-	Score			3.19	# 2	
Nun	nber	of squ	ares			1	Numb	er of	squa	res ye	ou									
y	ou ex	pect	to do				hα	ve co	mple	ted fo	r this	part_					Score_	nann	# 2)	
																	(AAGAGIDI		TT =/	

PLEASE TURN TO PAGE 3 AND WRITE IN THE NUMBER YOU EXPECT TO DO IN PART 5.

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														"D"—	Score	9			# 3	
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У	ouex	rpect	10 00	)		-	na	ve co	mpie		Pr uns (Ph	ysiolog	ical)			é	(Haus	mann	# 3)	
										PAF	T VI	[								
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														"D"—	-Score				#4	
Nur	nber	of squ	uares			]	Numb	er of	squa	res y	ou									
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you expect to do						have completed for this part (Psychological)							1	Score						
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										PAR	T VI	Ι								
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ο	ο	ο	ο	ο	ο	ο	ο	ο	ο	ο	ο	0	ο	0	ο	ο	ο	ο	0	(60
Nu1 Y	mber ou ex	of squ cpect	uares to do	)		-	Numb ha	er of ve co	squa omple	res y eted fo	ou or this	part				:	Score.			
			(Psych	ologico	al)				_		(	Physio	logical)							
		P	LEAS	E TU	RN D	VY V	UR B	OOK	LET 1	AS SC	DON	AS R	EQUE	STED	•	THA	NK Y	OU.		

### LEVEL OF ASPIRATION PROFILE

Т-	SCORES FROM The Cassel Group Level of Aspiration Test										
Score	Level of Aspiration Quotient	Clinical "D" - Score	Aspiration ''D'' - Score	First Goal Score	Hausmann Score	Score					
75						75					
70						70					
65						65					
60						60					
55						55					
50						50					
45						45					
40						40					
35						35					
30						30					
25						25					
20						20					

Typical Norm

Delinquent Norm

Latin Descent Norm
## PEABODY PICTURE VOCABULARY TEST Δ Individual Test Record Sex: M F Name \_ Grade (First) (Initial) (Last) (circle) Teacher School \_\_\_\_ (or address) (or parent or phone) Calculation Year Month Day DERIVED SCORES Mental Age (M. A.)\_\_\_\_\_ Date \_\_\_\_\_ Ceiling item Intelligence quotient (L.Q.) Errors Born Percentile (%ile)\_\_\_ Age \_\_\_\_ Raw score \_ \_ Examiner Time Code JAN. 1 FEB. 2 MARCH 3 APRIL 4 MAY 5 JUNE 6 JULY 7 AUG. 8 SEPT. 9 OCT. 10 NOV. 11 DEC. 12 TEST BEHAVIOR Examples needed: \_\_\_\_only 1 \_\_\_\_2 or 3 over 3 Type of response: Subject pointed S. called numbers Examiner pointed Rapport: \_\_\_easily attained \_\_slowly attained \_\_\_\_poor rapport Guessing: prone to guess guessed when asked \_resisted guessing fast Speed of response: \_\_\_\_average \_\_slow talkative Verbalization: \_\_\_\_average taciturn distractible Attention span: average \_\_\_\_very attentive \_\_\_\_\_none\_noted Perseveration: \_\_\_\_some frequent Need for praise: \_\_\_\_little needed \_\_\_\_some needed \_\_\_\_much needed Other test behavior: PHYSICAL CHARACTERISTICS Motor activity: hyperactive average \_\_\_\_hypoactive Sedation: none \_\_\_\_slight heavy Ambulation: \_\_\_normal \_\_\_walks with support none Sneech: \_\_\_\_intelligible \_\_\_\_fairly intelligible unintelligible Hearing: necessity to repeat seldom stimulus words never \_\_often \_\_\_\_S. wore hearing aid \_\_\_\_S. watched examiner's lips and face closely. Vision: distance of eyes from page under 8" \_average (8"-20") \_\_\_\_over 20" S. wore glasses S, owned but did not wear glasses during test. Other physical characteristics:

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OTHER INFORMATION (previous tests, dates, scores etc.; teacher estimates of vocabulary, intelligence, achievement; school or work record)

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American Guidance Service, inc. 720 Washington Avenue, S.E. Minurapolis, Minuesota 5511

Name\_\_\_\_

Form A

Item	Resp. Key	Word
1 .	(4)	car
2 .	(3)	cow
3 .	(1)	baby
4.	(2)	girl
5.	(1)	ball
6.	(3)	block
7.	(2)	clown
8.	(1)	key
9.	(4)	can
10 .	(2)	chicken
11 .	(4)	blowing
12 .	(2)	fan
13	(1)	digging
14 .	(1)	skirt
15	(4)	catching
16	(1)	drum
17	(3)	leaf
18	(4)	tying
19	(1)	fence
20	(2)	bat
21	(4)	bee
22	(3)	bush
23	(1)	pouring
24	(1)	sewing
25	(4)	wiener
26	(2)	teacher
27	(3)	building
28	(3)	arrow
29	(2)	kangaroo
30	(3)	accident
31	(3)	nest
32	(4)	caboose
33	(1)	envelope
34	(2)	picking
35	(1)	badge
36	(3)	goggles
37	(2)	peacock
38	(3)	queen
39	(4)	coach
40	(1)	whip
41	(4)	net
42	(4)	freckle
43	(3)	eagle
44	(2)	twist
45	(4)	shining
46	(2)	dial
47	(2)	yawning
48	(2)	tumble
49	(1)	signal
50	(1)	capsule

Item	Resp. Ke	y Word
51 _		submarine
52 _		thermos
53 _	(3)	projector
54 _	(4)	group
55	(3)	tackling
56	(1)	transportation
57 _	(1)	counter
58 _	(2)	ceremony
59	(3)	pod
60 _	(4)	bronco
61	(3)	directing
62	(4)	funnel
63	(2)	delight
64	(3)	lecturer
65	(2)	communication
66	(4)	archer
67	(1)	etadium
68	(1)	avaguate
60	(1)	excavate
	(1)	assaulting
70 _	(1)	maningua
71 _	(1)	meringue
14 -	(3,	appliance
73 -	(4)	chemist
74 -	(3	arctic
75 -	(4)	destruction
76 _	(3)	porter
11 -	(2	coast
78 -	(4,	noisting
79 -	(1)	) wailing
80 -	(2	0 CO11
81 -		) кауак
82 _	(2	) sentry
83 .	(4	) furrow
84 -	(1	) beam
85 _	(3)	) fragment
86 .	(2	) hovering
87 -	(3	) bereavement
88 -	(4)	) crag
89 _	(2	) tantrum
90 .	(1)	) submerge
91 _	(3	) descend
92 _	(2	) hassock
93 .	(1	) canine
94 .	(1	) probing
95 .	(1)	) angling
96 .	(3	) appraising
97 .	(4	) confining
98 .	(4	) precipitation
99 .	(1	) gable
100 .	(1	) amphibian

101  (3) graduated    102  (2) hieroglyphe    103  (1) orate    104  (3) cascade    105  (1) nape    106  (1) nape    107  (2) genealogiat    108  (2) encumbered    110  (2) encumbered    111  (4) mercantile    112  (3) concentric    113  (3) vitreous    114  (1) sbling    115  (2) machete    116  (4) waif    118  (3) timerous    119  (1) fettered    120  (2) tartan    121  (3) sulky    122  (4) obelisk    123  (2) entomology    124  (2) entomology    125  (4) consternation    129  (3) obese    131  (1) inclement    132  (1) copilerate    133  (2) oblitreate    134  (3) burnishing    135  (1) bovine    136  (4) raze    141  (2) ambulation	Item	Resp.	Key	Word
102  (2) hicroglyphic    103  (1) orate    104  (3) cascade    105  (4) illumination    106  (2) genealogist    108  (2) embossed    109  (4) illumination    100  (2) embossed    101  (2) embossed    110  (2) encumbered    111  (4) entice    112  (3) outneous    113  (3) outneous    114  (1) sibling    115  (2) machete    116  (4) waif    117  (1) cornice    118  (3) uitneous    120  (2) tartan    121  (3) usuky    122  (4) obelisk    123  (2) ellipse    124  (2) entomology    125  (4) consternation    126  (2) dorner    127  (2) conferous    131  (1) inclement    132  (1) cupola    133  (2) obliterate    134  (3) burnishing    135  (1) bovine	101		(3)	graduated
103  (1) orate    104  (3) cascade    105  (4) illumination    106  (1) nape    107  (2) genealogist    108  (2) embossed    109  (4) mercantile    110  (2) encoundered    111  (4) entice    112  (3) concentric    113  (3) vitreous    114  (1) sibling    115  (2) machete    116  (4) waif    117  (1) cornice    118  (3) timrous    119  (1) fettered    120  (2) atrian    121  (3) subly    122  (4) obelisk    123  (2) ellipse    124  (2) entomology    125  (4) bumptious    126  (2) coniferous    138  (4) consternation    130  (4) gauntlet    131  (1) inclement    132  (1) coylea    133  (2) obliterate    134  (3) burnishing    135  (1) bovine <th>102 _</th> <th></th> <th>(2)</th> <th>hieroglyphic</th>	102 _		(2)	hieroglyphic
104    (3) cascade      105    (4) illumination      106    (1) nape      107    (2) genealogiat      108    (2) embosed      109    (4) mercantile      110    (2) encumbered      111    (4) mercantile      112    (3) concentric      113    (3) vitreous      114    (1) sbling      115    (2) machete      116    (4) waif      117    (1) cornice      118    (3) timorous      119    (1) fettered      120    (2) tartan      121    (3) sulky      122    (4) obeliak      123    (2) elitomology      124    (2) entomology      125    (4) consternation      129    (3) obese      131    (1) inclement      132    (1) uopida      133    (2) oblifterate      134    (3) burnishing      135    (1) bovine      136    (4) raze	103		(1)	orate
106	104		(3)	cascade
106 (1) nape    107 (2) penealogist    108 (2) embossed    109 (4) mercantile    110 (2) embossed    111 (4) entice    112 (3) concentric    113 (3) vitreous    114 (1) sibling    115 (2) machete    116 (4) waif    117 (1) cornice    118 (2) timorous    119 (1) fettered    120 (2) entomology    121 (2) coniferous    122 (4) bumptious    123 (2) coniferous    124 (2) coniferous    125 (4) bumptious    126 (2) coniferous    128 (4) consternation    129 (3) obese    130 (4) gauntet    131 (1) inclement    132 (1) coupla    133 (2) obliterate    134 (3) burnishing    135 (1) bovine    136 <th>105 _</th> <th></th> <th>(4)</th> <th>illumination</th>	105 _		(4)	illumination
107    (2) genealogist      108    (2) encumbered      110    (2) encumbered      111    (4) mercantile      112    (3) concentric      113    (3) vitreous      114    (1) sbling      115    (2) machete      116    (4) waif      117    (1) cornice      118    (3) timrous      119    (1) fettered      120    (2) tartan      121    (3) sulky      122    (4) obelisk      123    (2) entomology      124    (2) entomology      125    (4) bumptious      126    (2) conferous      127    (2) conferous      128    (4) consternation      131    (1) inclement      132    (1) upola      133    (2) obliterate      134    (3) burnishing      135    (1) bovine      136    (4) englence      137    (2) delterious      138    (4) raze	106 _		(1)	nape
108    (2) embosed      109    (4) mercantile      110    (2) encumbered      111    (4) mercantile      112    (3) concentrice      113    (3) otherous      114    (1) sibling      115    (2) machete      116    (4) waif      117    (1) cornice      118    (3) timorous      119    (1) fettered      120    (2) tartan      121    (3) sulky      122    (4) obelisk      123    (2) ellipse      124    (2) entomology      125    (4) bumptious      126    (2) conferous      131    (1) inclement      132    (1) cupola      133    (2) obliterate      134    (3) burnishing      135    (1) bovine      136    (4) senile      138    (4) senile      139    (2) deleterious      140    (2) impala      141    (2) ambulation	107		(2)	genealogist
109    (4) mercantile      110    (2) encumbered      111    (3) concentric      112    (3) concentric      113    (3) vitreous      114    (1) shbling      115    (2) machete      116    (4) waif      117    (1) cornice      118    (3) timorous      119    (1) fettered      120    (2) tartan      121    (2) entomology      122    (4) bumptious      124    (2) conferous      125    (4) bumptious      126    (2) conferous      128    (4) consternation      129    (3) obese      130    (4) gauntet      131    (1) inclement      132    (2) coliterate      133    (2) obliterate      134    (3) burnishing      135    (1) bovine      136    (4) enninece      137    (2) deleterious      140    (4) raze      141    (2) imbulation	108 _		(2)	embossed
110    (2) encumbered      111    (4) entice      112    (3) concentric      113    (3) vitreous      114    (1) sbling      115    (2) machete      116    (4) waif      117    (1) cornice      118    (3) timorous      119    (1) fettered      120    (2) tartan      121    (3) ulky      122    (4) obelisk      123    (2) entomology      124    (2) entomology      125    (4) bumptious      126    (2) coniferous      127    (2) coniferous      138    (4) consternation      130    (4) consternation      131    (1) inclement      132    (1) uopila      133    (2) obliterate      134    (3) burnishing      135    (1) bovine      138    (4) senile      139    (2) deleterious      140    (2) ambulation      142    (1) creation	109 _		(4)	mercantile
111  (4) entice    112  (3) concentric    113  (3) vitreous    114  (1) sibling    115  (2) marchete    116  (4) waif    117  (1) cornice    118  (3) tinrorous    119  (1) fettered    120  (2) tartan    121  (3) uulky    122  (4) obelisk    123  (2) ellipse    124  (2) entomology    125  (4) bumptious    126  (2) conferous    128  (4) consternation    129  (3) obese    130  (4) senile    131  (1) inclement    132  (1) cupola    133  (2) obliterate    134  (3) burnishing    135  (1) bovine    136  (4) senile    138  (4) senile    139  (2) deleterious    140  (4) raze    138  (2) impale    140  (3) preatary    141  (2) imblue	110		(2)	encumbered
112  (3) concentric    113  (3) vitreous    114  (1) shbling    115  (2) machete    116  (4) walf    117  (1) cornice    118  (3) timorous    119  (1) fettered    120  (2) tattan    121  (3) sulky    122  (4) obelisk    123  (2) ellipse    124  (2) entomology    125  (4) bumptious    126  (2) conferous    128  (4) consternation    129  (3) obsec    130  (4) gauntiet    131  (1) inclement    132  (2) obliterate    133  (2) obliterate    134  (3) burnishing    135  (1) bovine    138  (4) sanile    139  (2) deleterious    140  (4) raze    141  (2) impulation    142  (1) cravat    143  (3) predatory    144  (4) cryptogam    145  (3) brunishing <th>111 _</th> <th></th> <th>(4)</th> <th>entice</th>	111 _		(4)	entice
113  (3) vitreous    114  (1) sibling    115  (2) machete    116  (4) waif    117  (1) cornice    118  (3) timorous    119  (1) fettered    120  (2) tartan    121  (3) sulky    122  (4) obelisk    123  (2) entomology    124  (2) entomology    125  (4) bumptous    126  (2) coniferous    127  (2) coniferous    138  (4) consternation    139  (3) obese    130  (4) gauntlet    131  (1) inclement    132  (1) cupola    133  (2) obliterate    134  (3) burnishing    135  (1) bovine    138  (4) senile    139  (2) deleterious    140  (2) ambulation    141  (2) ambulation    142  (1) creatatery    143  (2) imbibe    144  (4) marsupial    145  (3) preatate	112 _		(3)	concentric
114  (1) sibling    115  (2) machete    116  (4) waif    117  (1) cornice    118  (3) timorous    119  (1) fettered    120  (2) tartan    121  (3) sulky    122  (4) obelisk    123  (2) ellipse    124  (2) entomology    125  (4) bumptious    126  (2) conferous    128  (4) consternation    129  (3) obese    130  (4) gauntet    132  (1) inclement    133  (2) obliterate    134  (3) burnishing    135  (1) bovine    136  (4) senile    137  (2) deleterious    140  (2) ambulation    141  (2) ambulation    142  (1) cravat    143  (2) impale    144  (4) marsupial    145  (3) predatory    146  (1) monucutus    149  (4) cryptogam	113 _		(3)	vitreous
115  (2) machete    116  (4) waif    117  (1) cornice    118  (3) timorous    119  (1) fettered    120  (2) tartan    121  (3) sulky    122  (4) obelisk    123  (2) ellipse    124  (2) ellipse    125  (4) bumptious    126  (2) conferous    128  (4) consternation    129  (3) obese    130  (4) gauntiet    131  (1) inclement    132  (2) oblinatication    133  (2) oblinatication    134  (3) burnishing    135  (1) bovine    136  (4) enlinecc    137  (3) legume    138  (4) araze    141  (2) ambulation    142  (1) cravat    143  (2) impide    144  (4) marsupial    145  (3) predatory    146  (3) bornicutus    149  (4) eryptogam	114 _		.(1)	sibling
116  (4) waif    117  (1) cornice    118  (3) timorous    119  (1) fettered    120  (2) tartan    121  (3) suky    122  (4) obelisk    123  (2) eltipae    124  (2) entomology    125  (4) bumptious    126  (2) conferous    127  (2) conferous    128  (4) consternation    129  (3) obese    130  (4) gauntlet    131  (1) inclement    132  (1) outplaa    133  (2) obliterate    134  (3) burnishing    135  (1) bovine    138  (4) eminence    137  (2) delterious    140  (2) ambulation    141  (2) ambulation    142  (1) creatate    143  (2) implae    144  (4) marsupial    145  (3) predatory    146  (3) bornibue    147  (2) imbibe    148  (3) bornibue <th>115 _</th> <th></th> <th>(2)</th> <th>machete</th>	115 _		(2)	machete
117  (1) cornice    118  (3) timorous    119  (1) fettered    120  (2) tartan    121  (3) sulky    122  (4) obelisk    123  (2) ellipse    124  (2) entomology    125  (4) bumptious    126  (2) contreration    129  (3) obese    130  (4) gauntiet    132  (1) inclement    133  (2) obliterate    134  (3) burnishing    135  (1) sovine    138  (4) senile    139  (2) deleterious    140  (2) impulae    141  (2) ambulation    142  (1) cravat    143  (2) impulae    144  (2) impulae    145  (3) predatory    146  (1) imbue    148  (3) imbue    149  (4) eryptogam	116 _		.(4)	waif
118  (3) timorous    119  (1) fettered    120  (2) tartan    121  (3) sulky    122  (4) obelisk    123  (2) ellipse    124  (2) ellipse    125  (4) bumptious    126  (2) conferous    128  (4) consternation    129  (3) obese    130  (4) gauntlet    131  (1) inclement    132  (2) obliveriate    134  (3) burnishing    135  (4) source    136  (4) enninece    137  (3) legume    138  (4) araze    140  (4) raze    141  (2) impulse    142  (1) creatary    143  (3) predatory    144  (4) minuculus    145  (3) biobine    146  (1) incertitude    147  (2) imbibe    148  (4) orzytoram	117 _		(1)	cornice
119  (1) fettered    120  (2) tartan    121  (3) sulky    122  (4) obelisk    123  (2) ellipse    124  (2) ellipse    125  (4) bumptious    126  (2) conferous    127  (2) conferous    128  (4) consternation    129  (3) obese    130  (4) gauntlet    131  (1) inclement    132  (1) outpla    133  (2) obliterate    134  (3) burnishing    135  (1) bovine    136  (4) eminence    137  (2) leptume    138  (4) arate    140  (2) ambulation    142  (1) cravat    143  (2) impale    144  (4) marsupial    145  (3) predatory    146  (3) bionibibe    148  (3) biobibe    149  (4) eryptogam	118 _		(3)	timorous
120    (2) tartan      121    (3) sulky      122    (4) obelisk      123    (2) ellipse      124    (2) entomology      125    (4) bumptious      126    (2) dormer      127    (2) contiferous      128    (4) consternation      129    (3) obese      130    (4) gauntiet      132    (1) inclement      133    (2) obliterate      134    (3) burnishing      135    (1) bovine      138    (4) senile      139    (2) deleterious      140    (4) raze      141    (2) ambulation      142    (1) cravat      143    (4) marsupial      144    (4) marsupial      145    (3) predatory      146    (1) incertitude      147    (2) imbibe      148    (3) bommucutus      149    (4) eryptogam	119 _		(1)	fettered
121  (3) sulky    122  (4) obeliak    123  (2) ellipse    124  (2) ellipse    124  (2) ellipse    124  (2) entomology    125  (2) conferous    126  (2) conferous    127  (2) conferous    128  (4) consternation    129  (3) obese    130  (4) gauntet    131  (1) inclement    132  (2) obliverate    133  (2) obliverate    134  (3) burnishing    135  (2) obliverate    136  (4) enninece    137  (3) legume    138  (4) raze    140  (2) impule    141  (2) impule    142  (1) cavat    143  (2) impule    144  (4) marsupial    145  (3) breatacry    146  (1) incertitude    147  (2) imbibe    148  (3) brentulus    149  (4) eryptogam	120 _		.(2)	tartan
122  (4) obelisk    123  (2) eltimology    124  (2) entomology    125  (4) bumptious    126  (2) conference    127  (2) conferences    128  (4) consternation    129  (3) obese    130  (4) gauntlet    131  (1) inclement    132  (1) cupola    133  (2) obliterate    134  (3) burnishing    135  (1) bovine    138  (4) eminence    137  (2) deleterious    140  (2) ambulation    142  (2) ambulation    143  (2) impale    144  (4) marsupial    145  (3) predatory    146  (3) brinkibe    147  (2) imbibe    148  (3) brinkibie    149  (4) eryptoram	121 _		(3)	sulky
123  (2) ellipse    124  (2) entomology    125  (4) bumptious    126  (2) contrenuiton    127  (2) contiferous    128  (4) consternation    129  (3) obese    130  (4) gauntiet    131  (1) inclement    132  (1) cupola    133  (2) obiliterate    134  (3) burnishing    135  (1) bovine    138  (4) senile    139  (2) deleterious    140  (2) ambulation    141  (2) ambulation    142  (1) cravat    143  (2) inbube    144  (2) inbube    145  (3) predatory    146  (3) inbube    147  (2) imbube    148  (3) inbube    149  (4) cryptogam	122 _		(4)	obelisk
124    (2) entomology      125    (4) bumptious      126    (2) dormer      127    (2) coniferous      128    (4) consternation      129    (3) obese      130    (4) gauntet      131    (1) niclement      132    (1) cupola      133    (2) obliterate      134    (3) burnishing      135    (4) enineme      136    (4) enine      137    (3) legume      138    (4) enine      139    (2) deleterious      140    (4) raze      141    (2) impule      142    (1) carvat      143    (3) predatery      146    (1) incertitude      147    (2) imbibe      148    (3) bronnucuus      149    (4) eryptoam	123 _		.(2)	ellipse
125    (4) bumptious      126    (2) dormer      127    (2) coniferous      128    (4) consternation      129    (3) obese      130    (4) gauntlet      131    (1) inclement      132    (2) obliterate      133    (2) obliterate      134    (3) burnishing      135    (1) bovine      136    (4) eminence      137    (2) deleterious      140    (4) raze      141    (2) ambulation      142    (1) cravat      143    (3) perated      144    (4) marsupial      145    (3) protedatory      146    (1) incertitude      147    (2) imbibe      148    (3) bruncutus      149    (4) eryptogam	124 _		(2)	entomology
126    (2) dormer      127    (2) coniferous      128    (4) consternation      129    (3) obese      130    (4) consternation      132    (1) inclement      132    (1) inclement      133    (2) obliferate      134    (3) burnishing      135    (1) bovine      136    (4) eninence      137    (3) legume      138    (4) senile      139    (2) deleterious      140    (4) raze      141    (2) ambulation      142    (1) cravat      143    (2) impale      144    (4) marsupial      145    (3) predatory      146    (3) imbule      147    (2) imbule      148    (3) obmuncutus      149    (4) eryptogam	125 _		(4)	bumptious
127  (2) coniferous    128  (4) consternation    129  (3) obese    130  (4) gauntlet    131  (1) inclement    132  (1) cupola    133  (2) obiliterate    134  (3) bornishing    135  (1) bovine    136  (4) eminesting    137  (3) legume    138  (4) enile    139  (2) deleterious    140  (4) raze    141  (2) impule    143  (3) predatory    144  (4) incretitude    147  (2) imbibe    148  (3) predatory    149  (4) exptogam    150  (3) prostale	126 _		(2)	dormer
128    (4) consternation      129    (3) obese      130    (4) gauntlet      131    (1) inclement      132    (2) obliterate      133    (3) burnishing      135    (1) bovine      136    (4) eminence      137    (3) legume      138    (4) enline      139    (2) deleterious      140    (4) raze      141    (2) ambulation      142    (1) cravat      143    (2) impile      144    (4) marsupial      145    (3) predatory      146    (1) incertitude      147    (2) imbibe      148    (3) homuncutus      149    (4) eryptogam	127 _		(2)	coniferous
129    (3) obese      130    (4) gauntiet      131    (1) inclement      132    (1) cupola      133    (2) obliferate      134    (3) burnishing      135    (1) bovine      136    (4) eminence      137    (3) legume      138    (4) eninence      139    (2) deleterious      140    (4) raze      141    (2) ambulation      142    (1) cravat      143    (2) impale      144    (4) marsupial      145    (3) predatory      146    (1) incertitude      147    (2) imbibe      148    (3) bromuncutus      149    (4) eryptogam	128 _		.(4)	consternation
130  (4) gauntlet    131  (1) inclement    132  (1) cupia    133  (2) obliterate    134  (3) burnishing    135  (1) bovine    136  (4) eminence    137  (3) legume    138  (4) emine    139  (2) deletrious    140  (4) raze    141  (2) ambulation    142  (1) incertitude    143  (2) imple    144  (4) marsupial    145  (3) predatory    146  (1) incertitude    147  (2) imbibe    148  (3) predatory    149  (4) eryptogam	129 _		(3)	obese
131  (1) inclement    132  (1) cupola    133  (2) obliterate    134  (3) burnishing    135  (1) bovine    136  (4) eninence    137  (3) legume    138  (4) senile    139  (2) deleterious    140  (4) raze    141  (2) ambulation    142  (1) rareat    143  (2) impale    144  (4) marsupial    145  (3) predatory    146  (1) incertitude    147  (2) imbibe    148  (3) predatory    149  (4) exptogram    149  (3) prostile	130 _		(4)	gauntlet
132  (1) cupola    133  (2) oblifterate    134  (3) burnishing    135  (1) bovine    136  (4) eminence    137  (3) legume    138  (4) enile    139  (2) deleterious    140  (4) raze    141  (2) ambulation    142  (1) cravat    143  (2) impale    144  (4) marsupial    145  (3) predatory    146  (3) imbibe    148  (4) eryptogam    149  (4) eryptogam	131 _		(1)	inclement
133  (2) obliterate    134  (3) burnishing    135  (1) bovine    136  (4) eminence    137  (3) legume    138  (4) senile    139  (2) deleterious    140  (4) raze    141  (2) ambulation    142  (1) cravat    143  (2) impale    144  (4) predatory    146  (1) incertitude    147  (2) imbibe    148  (3) predatory    149  (4) cryptogam    150  (3) pensile	132 _		(1)	cupola
134  (3) burnishing    135  (1) bovine    136  (4) eminence    137  (3) legume    138  (4) senile    139  (2) deleterious    140  (4) raze    141  (2) ambulation    142  (1) cravat    143  (2) impale    144  (4) marsupial    145  (3) predatory    146  (1) incertitude    147  (2) imbibe    148  (3) protame    149  (3) protame	133 _		(2)	obliterate
135    (1) bovine      136    (4) eminence      137    (3) legume      138    (4) senile      139    (2) deleterious      140    (4) raze      141    (2) ambulation      142    (1) cravat      143    (2) impale      144    (4) marsupial      145    (3) predatory      146    (1) predatory      147    (2) imbibe      148    (3) bromuncutus      149    (4) eryptogam      150    (3) pensile	134 _		(3)	burnishing
136    (4) eminence      137    (3) legume      138    (4) senile      139    (2) deleterious      140    (4) raze      141    (2) ambulation      142    (1) cravat      143    (2) impale      144    (4) marsupial      145    (3) predatory      146    (1) incertitude      147    (2) imbibe      148    (3) homunculus      149    (4) cryptogam      150    (3) pensile	135 _		.(1)	bovine
137	136 _		(4)	eminence
138    (4) senile      139    (2) deleterious      140    (4) raze      141    (2) ambulation      142    (1) cravat      143    (2) impale      144    (4) marsupial      145    (3) predatory      146    (1) incertitude      147    (2) imbibe      148    (3) bomunculus      149    (4) cryptogam      159    (3) pensile	137 _		(3)	legume
139  (2) deleterious    140  (4) raze    141  (2) ambulation    142  (1) cravat    143  (2) impale    144  (4) marsupial    145  (3) predatory    146  (1) incertitude    147  (2) imbibe    148  (3) homuncutus    149  (4) eryptoarm    150  (3) penalte	138 _		(4)	senile
140    (4) raze      141    (2) ambulation      142    (1) cravat      143    (2) impale      144    (4) marsupial      145    (3) predatory      146    (1) incertitude      147    (2) imbibe      148    (3) homunculus      149    (4) cryptogam      150    (3) pensile	139 _		(2)	deleterious
141    (2) ambulation      142    (1) cravat      143    (2) impale      144    (4) marsupial      145    (3) predatory      146    (1) incertitude      147    (2) imbibe      148    (3) bromunculus      149    (4) cryptogam      150    (3) presile	140 _		(4)	raze
142  (1) cravat    143  (2) impale    144  (4) marsupial    145  (3) predatory    146  (1) incertitude    147  (2) imbibe    148  (3) homuncutus    149  (4) cryptogam    150  (3) pensile	141 _		(2)	ambulation
143  (2) impale    144  (4) marsupial    145  (3) predatory    146  (1) incertitude    147  (2) imbibe    148  (3) homuncutus    149  (4) eryptogam    150  (3) pendite	142 _		(1)	cravat
144  (4) marsupial    145  (3) predatory    146  (1) incertitude    147  (2) imbibe    148  (3) homunculus    149  (4) cryptogam    150  (3) pensile	143 _		(2)	impale
145    (3) predatory      146    (1) incertitude      147    (2) imbibe      148    (3) homunculus      149    (4) cryptogam      150    (3) pensile	144 _		(4)	marsupial
146    (1) incertitude      147    (2) imbibe      148    (3) homunculus      149    (4) cryptogam      150    (3) pensile	145 _		(3)	predatory
147    (2) imbibe      148    (3) homunculus      149    (4) cryptogam      150    (3) pensile	146 _		(1)	incertitude
148    (3) homunculus      149    (4) cryptogam      150    (3) pensile	147 _		(2)	imbibe
149(4) cryptogam      150(3) pensile	148 _		(3)	homunculus
150(3) pensile	149 _		(4)	cryptogam
	150 _		(3)	pensile





