Identification Of Cluttering Behavior Among Children Who Stutter.

IDENTIFICATION OF CLUTTERING BEHAVIOR AMONG CHILDREN WHO STUTTER

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ABSTRACT

The purpose of this investigation was to identify the incidence of cluttering among children classified as stutterers. This investigation attempted to answer the following questions:

1. Among children who have been identified as stutterers, is it possible to determine the differences in linguistic and behavior patterns between those correctly labeled as stutterers and those who could correctly be labeled as clutterers?
2. What behaviors of characteristics are included in cluttering that are different from stuttering?

The population consisted of 81 speech clinicians employed in three Intermediate Units of Northeast Central Pennsylvania. The population also included 109 students with fluency disorders who had been identified as stutterers.

Two questionnaires were developed to obtain data. The first was a demographic instrument which included clinicians' background and experience, awareness and knowledge of cluttering, and current caseload data. A checklist instrument which incorporated Weiss' description of cluttering was also developed. Weiss defined cluttering as a central language disorder characterized by disturbances in perception, articulation, thinking,

attention span, and excessive rate which affected all channels of communication: speech, reading, writing, rhythm, and lack of awareness. Thechecklist instrument was the primary tool to determine the incidence of cluttering.

The checklist instrument employed the Likert format. Chi square was applied for data analysis. Significant X^2 scores were found between clinicians' ability to predict cluttering and their observations of cluttering. Significance at the .05 level was found between subjects' educational background, experience, and ability to observe cluttering.

Application of the checklist instrument resulted in differentiation between cluttering and stuttering. Cluttering included unawareness, word-finding difficulty, spelling difficulty, rapid rate of speech, improvement in fluency if told to think before speaking or when attention was brought to speech details, volunteering in group discussions, reading problem not related to fluency, short attention span, and distractibility to auditory and visual stimuli. Stuttering included avoidance of speaking, difficulty following oral directions, speaking more fluently in 1:1 situations, secondary symptoms, and have a quick thinking

process in yes or no responses. Fifty-six students were classified as clutterers, 44 as stutterers, and nine as clutterer-stutterers, according to these criteria.

Based on the data from this investigation, the author concluded that two conditions of fluency exist: cluttering and stuttering. Recognition of cluttering as a type of disorder closely approximating specific learning disability is essential for correct remediation. Cluttering may affect total communication processes and should therefore be included in speech and language programs.

CHAPTER I

NEED FOR THE STUDY

More than two centuries ago the first references to cluttering as a disorder of speech and language processes appeared in the literature (Luchsinger and Arnold, 1965). Cluttering was just defined as:

> . . . a speech disorder characterized by the clutterer's unawareness of his disorder, by a short attention span, by disturbances in perception, articulation and formulation of speech and often by excessive speed of delivery. It is a disorder of the thought processes preparatory to speech and based on a hereditary disposition. Cluttering is the verbal manifestation of Central Language Imbalance, which affects all channels of communication (e.g. reading, writing, rhythm and musicality) and behavior in general. (Weiss, 1964, p. 1)

The first and only definitive work on cluttering as a distinct disorder was written by Deso A. Weiss in 1964. Weiss commented on the lack of objectifiable data and the need for continued research on cluttering that:

> Cluttering is only now beginning to receive the attention it deserves in the literature on speech pathology and in the practice of speech therapy. One of the most important developments in the last decade is recognition by an increasing number of therapists that cluttering has a close and intricate relationship with certain other language disorders, the most important of which are stammering, dyslexia, and dysgraphia. Cluttering has come of age. (Weiss, 1964, p. 114)

In the decade that has passed since Weiss' publication,

his text remained the only one available on the disorder of cluttering. A substantial amount of research and clinical impressions have been reported in the literature written in languages other than English.

Several reasons have been posited for the meager research reported on cluttering in the United States. First, many conflicting terms have been used to define, identify, or describe the phenomenon of cluttering. Ogilvie (1942) summarized the international research on cluttering and reported 23 synonyms in the English literature. Such descriptions as tachyphemia (rapid speech), tumultus sermonis (chaotic speech), paraphrasia praeceps (speech that is formulated by overhurrying and becomes distorted), and agitophasia (speech that is excited) have been reported. With such disagreement in terminology and descriptions, there was undoubtedly confusion in professional discussions of cluttering. Second, there was difficulty in distinguishing cluttering from other forms of speech and language disorders. Some investigators, for example, included cluttering and stuttering under the same category which they designated as dysphemia (Robbins, 1951). Others described cluttering as a functional relative of stuttering (Luchsinger and Arnold, 1965). Cluttering has been a useful term for identifying problems of

rate and rhythm; however, it overlapped stuttering to the extent that it included problems of fluency. "Clutterers can do what stutterers do--struggle with disfluency--but additionally clutterers tumble erratically through speech, blurring intelligibility as they go" (Perkins, 1971, p. 330). The difficulty in differentiating cluttering from stuttering has been compounded, therefore, by the fact that in both of these disorders the major observable speech behavior was a disruption in fluency. These nonfluent or dysfluent productions have been categorized as repetitions, hesitations, and prolongations of sounds, syllables, words, and phrases. Perhaps cluttering has not been recognized as a separate distinct communication disorder but has been categorized with stuttering because they both included the common disorder of fluency in speech productions.

Because speech clinicians have not regarded cluttering as a separate disorder, cluttering seldom appeared in the incidence reports in public school or clinical records. Weiss (1964) explained the negligible incidence of cluttering by the characteristic attitude clutterers have toward their speech disorder. Clutterers, unlike stutterers, were almost totally unaware that a problem existed, or they considered it relatively unimportant in their ability to communicate normally.

Many speech clinicians and other specialists in the fields of language and learning disabilities have also been unaware that cluttering existed as a separate disorder. Cluttering has been a neglected area of study among speech and language specialists in the United States (Arnold, 1965; Weiss, 1964; Van Riper, 1975).

A differentiation of cluttering from stuttering is necessary to provide the additional etiological factor of a congenital language dysfunction as the basis for nonfluent speech behavior. Also, such a distinction could provide a focus for concentration on broader linguistic components in therapy for the remediation of the disorder. Consequently, more appropriate therapeutic programs could be developed which would concentrate on remediation of other areas of linguistic dysfunction, not merely the speech production aspect. Reading, writing, spelling, and perceptual disabilities would be investigated as components of cluttering. Accurate diagnosis and broader treatment might then help to prevent the more serious learning, emotional, or social problems that confronted the individual whose speech was not fluent.

PURPOSE OF THE STUDY

It was the purpose of this investigation to identify the incidence of cluttering among those children classified as stutterers. Specifically, the study investigated the following questions:

> Among children who have been identified as stutterers, is it possible to determine the differences in linguistic and behavior patterns between those correctly labeled as stutterers and those who could correctly be labeled as clutterers?
>
> What behaviors or characteristics are included in cluttering that are different from stuttering?

DELIMITATIONS

This study was conducted during the fall of 1976. The population consisted of children identified by approximately 81 speech clinicians who were employed in public schools, clinics, colleges and universities, and intermediate units in the vicinity of Northeast Central Pennsylvania. The population was further limited to 109 children who were enrolled in a speech therapy program because they had been identified as stutterers.

PROCEDURES FOR GATHERING DATA

Personal contact was made with administrators or supervisors of all school districts within Intermediate units 16, 18, and 29, to obtain permission for

the study. Written permission was obtained from the parents of those children who participated in the study.

Following a training session conducted by the investigator, all speech clinicians were asked to complete a scale regarding incidence of stuttering in their caseloads. The checklist was distributed to speech clinicians during personal contact meetings. The checklist was used on each child during a diagnostic session conducted by the speech clinician. Supportive evidence was obtained from a clinician's report of experience with cluttering and from case history records. All data remained anonymous.

Subjects were limited to those who met the following criteria: identification as a stutterer; enrolled in a therapy program within the geographic boundary of Northeast Central Pennsylvania; normal intelligence; adequate hearing in the speech range; no known emotional disability; and no severe sensory or physical handicap.

ANALYSIS OF DATA

The checklist instrument was the primary tool used to determine the incidence of cluttering. A classification system was applied to categorize those

incidents which had a common designation that would best be considered as cluttering. The number and percent of incidents in each category were determined. Descriptive analysis of data determined whether significant differences could be determined between cluttering and stuttering. A classification of clutterer, stutterer, or clutterer-stutterer was assigned to each client with a fluency problem. The classification was determined according to the direction of responses observed by the subjects during routine therapy sessions.

A second instrument was developed to obtain demographic information on respondents' sex, age, educational background, certification areas, and professional experience. Data relative to experiences included information on caseload types and frequencies of disorders treated. Clinicians also indicated their awareness and understanding of the nature and complexity of cluttering.

Following receipt of all data, an item analysis was used to tabulate the frequency and percent of each statement on the demographic instrument. Chi square analysis was employed to determine subjects' ability to predict the incidence of cluttering within their current caseloads. Additional chi square measures

were applied to determine the effect of demographic data upon subjects' ability to observe cluttering within their current caseloads.

Summary

This chapter has presented an introduction on the need and rationale for an investigation in the area of cluttering. Delimitations and procedures for conducting the study were also presented. Chapter II will present a review of the literature on cluttering and the confusion that exists in identifying and differentiating cluttering from stuttering. Findings of researchers will be compared and discussed. Chapter III will present the design of the study. A discussion of the pilot study and procedures for collection of the data will be done. Chapter IV presents the data collected from two questionnaire instruments and their relationship or effect upon subjects' ability to predict or observe cluttering behavior. Analysis of data and statistical treatment are also presented. Chapter V will summarize the findings of the current investigation and discuss conclusions based on the data collected. Implications and recommendations for future research will also be presented.

CHAPTER II

THE REVIEW OF RELATED LITERATURE

Preliminary to this investigation, a review of related literature pertaining to cluttering, its terminology, synonyms, characteristics, and etiological factors, the incidence, treatment and prognosis in cluttering, and cluttering and stuttering behavior was conducted. A review of the major textbook on cluttering was also conducted.

INTRODUCTION

Reported literature and discussions of cluttering reveal that while writers have talked about and reported on cluttering behavior for a long period of time, little systematic investigation has been conducted.

According to Weiss (1964), the leading American authority and author of the only textbook written exclusively on cluttering, cluttering is a disorder that has been reported in the literature for more than two thousand years, and has been mentioned briefly ". . . by almost every nineteenth century encyclopedist in the field (p. XI)." Little agreement and wide disparity has been reported in the variety of terms and descriptions

designated as cluttering. Weiss consolidated the numerous terms and other characteristics related to cluttering in his textbook entitled CLUTTERING (1964).

Reviewing the history of the disorder, its philosophical and therapeutic management, Weiss offered his consideration of cluttering as a primary symptom of a common disability which he called a central language imbalance. Although lamenting the lack of scientific investigation in cluttering, Weiss believed that careful clinical observations were equally important in determining the presence of cluttering.

Other investigators such as Arnold (1970), de Hirsch (1975), Brodnitz (1976), Perkins (1977), and Van Riper (1971) also stated that basic research studies were unduly meager in the area of cluttering. These writers agreed that a regrettable lack of attention had been afforded by most Americans to a much-needed area of study. All authors reported that confusion existed in the use of terms and descriptors, as well as the other factors and causes of cluttering.

A logical explanation for the paucity of fundamental research in cluttering may be the wide disparity in terminology, description, and definition that exists within the field of communication disorders itself. Ogilvie (1942) summarized the international research on cluttering and reported that twenty-three synonyms had

been used in the English literature. (See appendix 1). All the synonyms categorized cluttering as a generalized speech disorder whose most common overt characteristic was an exceedingly rapid and indistinct speech production.

The first writers who suggested that cluttering should be considered as more than a disability in speech production were Freund (1934) and Weiss (1935). According to these authors, cluttering was a manifestation of a disassociation between an individual's thinking and speaking processes. While no specific explanations were offered, this concept of cluttering as a manifestation of a larger, broader language-based disability was an expansion from earlier considerations which included it as a speech disorder. International literature indicated wide reaction by speech and language pathologists to this new conceptual framework. Publications on cluttering began to appear on both sides of the Atlantic.

An extensive section on cluttering was included in Luchsinger and Arnold's (1952) textbook under the classification of tachyphemia. In his treatise on speech disorders, Seeman (1959) reported cluttering as a disorder. The first volume devoted to cluttering was compiled by Luchsinger (1963). All these references appeared in the German literature, however. Weiss (1964) regretted that American writers had not

accorded cluttering a separate and distinct position in the field of speech pathology.

R. and H. Bakwin (1952) acknowledged that cluttering was a rarely-studied phenomenon which had not been fully recognized by American writers. They described cluttering as a unique speech disorder because it represented ". . . simply an exaggeration of the errors of speech made by the normal person (1966, p. 369)." According to the Bakwins, cluttering was basically a rapid, confused or jumbled speech that caused little subjective discomfort or concern in the individual. The Bakwins reported that all degrees of the disorder may be observed, from speech that is hurried, repetitious, and confused, to an almost total incomprehensibility. Articulation defects were the most prominent characteristic in some clutterers, they noted, while in others, syntax or word confusion were most pronounced. The Bakwins (1952, 1960, 1966) agreed that in America, cluttering was often confused with stuttering.

An example of the confusion that existed is apparent in the fact that most American writers included cluttering under the same category with stuttering. Some investigators (Arnold, 1965; Robbins, 1951; Van Riper, 1954) also included both disorders under the label of dysphemia, which suggested a central or common

cause for the problems. Robbins (1951), in his dictionary of speech terms, included both cluttering, which he called tachyphemia, and stuttering, called spasmophemia, as two characteristics or types of dysphemia.

Freund (1952) described cluttering as the primary disability that formed the basis for the development of stuttering. According to Freund, cluttering was a primary dysphasic disability which included both oral and written communication. Both Robbins and Freund believed that cluttering was a constitutionally determined defect within a concept of a hereditary dysphasia. Their interpretation related cluttering to a lack of integration of the highest levels of cortical functions. Freund noted that both cluttering and stuttering impairments appeared simultaneously in families. He hypothesized a hereditary component although no conclusive evidence was available to support his hypothesis.

Perkins (1971) attempted to explain the confusion and the paucity of research on cluttering by contemporary American writers. According to him, cluttering has been researched and discussed more by European writers yet is "of growing interest to American speech and language pathologists (Perkins, 1971, p. 6)." He believed the term itself was so ambiguous that it

connoted too many neurological and behavioral characteristics. According to Perkins, if cluttering were bared to its essential components, it was extremely difficult to distinguish from stuttering. If we knew how to define cluttering, he stated, we might then be able to identify it. These two difficulties, defining and identifying, were believed by Perkins to be related to the fact that data on the frequency of cluttering are almost nonexistent.

Although few authors were making more than a brief reference to cluttering and its manifest behaviors, the consideration of cluttering as more than a disorder in speech production was beginning. Underlying the reporting of cluttering by many professionals was the suggestion that cluttering should be viewed as a broader disability in the field of language and speech pathology. Cluttering was reported to indicate dysfunction in both oral and written language, as well as some behavioral characteristics similar to those which had been observed in stuttering (de Hirsch, 1961; West, Ansberry and Carr, 1957; Van Riper, 1963; Luchsinger and Arnold, 1965; Perkins, 1977). Cluttering was a term that was beginning to be included in some of the professional writing of American authors.

CHARACTERISTICS OF CLUTTERING

Contributions by Deso A. Weiss

The first and only textbook written exclusively on the disorder of cluttering was compiled by Weiss, an internationally known authority in the field of speech and language pathology. Weiss received his medical degree in Vienna and emigrated to the United States in the 1940's. The theories and practices discussed in his book CLUTTERING were derived from years of clinical observations and extensive experience in speech and language therapy. Weiss reviewed the international literature on cluttering from an historical review of major theoretical viewpoints to symptomatological factors, from differential diagnoses of cluttering behavior to its relationship with other disorders, and from prognostic indicators to preventive measures.

Published in 1964 by Prentice-Hall Publishers, Weiss' book was included as part of the Foundations of Speech Series recommended by the American Speech and Hearing Association for speech pathologists and audiologists as a necessary addition to their professional libraries. The book was heralded as the first which discussed cluttering as a separate and distinct entity in the field of speech pathology in the United States or elsewhere. Without exception, researchers and writers in the field refer to Weiss; text as the

most comprehensive source of information dealing with the disorder of cluttering. Weiss' work is unparalleled in depth and scope, both theoretically and clinically. Although the bulk of his results were primarily reported observations of clinical cases and case histories rather than experimental study, cluttering as Weiss reviewed it had been a topic under considerable discussion in professional literature internationally.

In 1950, Weiss presented the most extensive definition of cluttering as one aspect of a generalized disorder of all channels of communication. Believing that cluttering was part of an inherited disorder which he called "Central Language Imbalance," he explained his rationale for using that term (Weiss, 1964, p. 6). Central indicated that the disability originated in the brain and affected numerous functions of the individual. Language included all channels of communication, not only the motoric speech components but also the use of symbolic and linguistic processes. Imbalance suggested a temporary dysfunction or incoordination in performing various functions; it was an optimistic attitude implying that with early identification and proper treatment remediation of dysfunctions could occur. Weiss preferred the term imbalance because he believed the disorder was not organic in the usual sense of the word. While organic usually implied a physical or neurological

cause of a relatively permanent nature, imbalance did not specify a cause but a temporary condition that could be improved or remediated.

Other authors proposed various terms as a common basis for various speech and language disabilities, Weiss reported. Quiros (1956) preferred the label of infantile speech and language organization impairments. Luchsinger (1959) was reported to suggest the term asthenia or weakness of speech. According to Weiss, Arnold (1960) called it a General Language Disability. Barger (1960) suggested the term Minimal Brain Damage. Falk and Falk (1962) recommended that the various disorders be included under the title of Disturbance of Nervous Integration. Weiss (1964) concluded that central language imbalance was the most appropriate term. He asserted that the most common manifestation of a central language imbalance was cluttering, which he defined as a disorder characterized by:

> . . . the clutterer's unawareness of his disorder, by a short attention span, but disturbances in perception, articulation, and formulation of speech and often by excessive speed of delivery. It is a disorder of the thought processes preparatory to speech and based on a hereditary disposition. Cluttering is the verbal manifestation of Central Language Imbalance, which affects all channels of communication (e.g. reading, writing, rhythm and musicality) and behavior in general (Weiss, 1964, p. 1).

Weiss contended that cluttering had been misdiagnosed or ignored throughout antiquity and the Middle Ages. He believed that neither correct identification nor adequate consideration had been given to cluttering as a distinct phenomenon of communication disabilities. In his opinion, many historical references to stuttering should have been called cluttering. Weiss believed, for example, that Demosthenes, the great Greek orator who supposedly stuttered, actually demonstrated symptoms of cluttering. The reported indistinct speech, dyslalia, weak voice, short inhalations, and inability to focus on the main point of a discourse were manifestations of cluttering, he contended. Weiss stated that Hippocrates' famous theory that stuttering resulted from an improper balance between an individual's thought and speech performance was more accurately a description of cluttering than stuttering.

Weiss deplored the confusion in defining the terms cluttering, stuttering, and stammering, which often had been used interchangeably to describe various symptoms. According to Weiss, stuttering was an imprecise word that meant both nonfluent or repetitious speech, and the cluttering or confusion of speech sounds and words. The term stuttering, he believed, encompassed stammering, cluttering, and the mistakes of disfluency

caused by momentary embarrassment or uncertainty. Weiss emphasized that the term stuttering should be reserved for speech that is characterized by spasmodic blocking, fear of speaking, struggle behavior, and awareness of difficulty. Although he preferred the term stammering, Weiss admitted that most professionals used the term secondary stuttering to describe such behavior. His preference for the word stammering has not been accepted by American writers. Although some investigators interchange stammering and stuttering, British writers use the former and American writers the latter term. Cluttering, Weiss reported, was a term that writers had also been using but whose meaning remained elusive semantically.

Evidence that the semantic difficulty remained a problem is the fact that most writers included both disorders, stuttering and cluttering, under one category. Generally, stuttering is the major disorder under which cluttering is included. Weiss hoped that American researchers would recognize cluttering as a distinct disorder once its symptomatology had been discussed.

Almost every writer on cluttering has noted the abnormally fast speech performance of clutterers, some considering it to be one of the most significant components. According to Weiss (1964), Bazin (1717) first reported one of the most accurate descriptions of the

effect of excessive rate on speech performance:

> Then there is a bad habit, acquired in childhood and not corrected by the parents, a restless and too labile disposition which causes the tongue to outstrip the thoughts or that several unnecessary thoughts and ideas try to get expressed at the same time; making the effort to proffer them in the same instant, the speaker cannot keep them asunder and gets stuck in the first syllable, blocking with his tongue. . . Here we have to mention also an overhurrying of speech when these individuals, due to their excessive speech drive, don't take sufficient time for the correct enunciation of words. In such individuals speech is often quicker than their thoughts and they mostly try to express ideas which are as yet incoherent and chaotic (Weiss, 1964, p. 2).

In Weiss' interpretation, Bazin considered the poor enunciation to result from the excessive rate of the speaker.

According to Weiss, Liebmann (1900) described cluttering characteristics more precisely than had previously been done. Liebmann divided cluttering into two forms, the motor or expressive, and the sensory or receptive form. The motor form was caused by inattention to the kinesthetic performance and imbalance between a clutterer's thinking process and his limited articulation ability. When a clutterer accelerated his speech, the results were articulation deviations such as omissions of sounds, syllables, and whole words, inversions of the sequence of sounds, repetitions and substitutions of sounds. When speed was reduced, deviations decreased. In the receptive form of

cluttering, the predominant symptoms included disorders of auditory attention and a basic weakness in the organization of thoughts. The disorganized thinking resulted in interference with verbal expression and produced the characteristic errors of grammar and syntax.

Liebman considered cluttering to be symptomatic of the clutterer's inferior attention span, as observed in frequent repetition of the same error with a lack of awareness. Even when an error was brought to the clutterer's attention, he could not reconstruct what he had just spoken. Thus short term memory was also included in the disability. Weiss remarked that between the time of Kussmaul (1877) and Liebmann (1900), only the German writers considered cluttering as a distinct pathological entity.

Weiss reported that Greene (1916) and Roman-Goldzieher (1928) described characteristics of cluttering, called agitophasia, in which disabilities were observed in both the individual's speech and handwriting. The writing of clutterers was described as hastily written, with poorly formed letters, omitted syllables, substitutions, transposed words, and produced in an almost illegible hand. Clutterers' writing was considered to be a counterpart of their inarticulate speech.

Weiss (1930) compared the attention span of children with normal speech and cluttering children. Both

groups repeated a series of nonsense syllables after the examiner. Normal youngsters produced three syllables at age three, four at age four, five at age five, and six at age six. From six until puberty, they could repeat one additional syllable for every two years of age. Clutterers performed less proficiently than normal speakers. According to Weiss, other investigators found similar proficiency for normal children and concurred that clutterers are less proficient than normal speakers in such tasks. Weiss attributed the inferior performance of clutterers to their inability to attend to such tasks. He suggested that attention span could be increased by practice in memorizing series of nonsense syllables.

Weiss related other problems such as reading and writing disabilities to the clutterer's short attention span and poor concentration ability, which he considered were basic symptoms of cluttering. In young clutterers, for example, poor reading often resulted from guessing rather than learning the letters of the alphabet. Weiss emphasized that cluttering should not be confused with the disorder of specific dyslexia, where the inability to read persists despite concentrated effort and attention. Virtually all clutterers manifest a reading disability, skimming material, memorizing contexts, substituting similar-sounding words with no contextual

relationships, and omitting or adding words with no contextual relationship to material. The vocabulary of the clutterer is restricted, his comprehension is poor, and both oral reading and silent reading are adversely affected. Weiss believed that the clutterer did not lack ability to read, but that he did not attend properly nor fulfill his reading potential. A decreased attention span in cluttering, a function of concentration ability, precludes the clutterer's ability to focus on details of an object or event, and limits his memory of such activities. Poor achievement in school of clutterers could also be attributed to a concentration disability, Weiss believed. With concerted effort and specific therapy activities, concentration could be improved.

Weiss reported that articulation disability, characterized by imprecision and indistinct production, had been observed in clutterers by every investigator. Clutterers lack expressiveness and intelligibility even when the utterance of syllables is correctly paced. Indistinct articulation is characterized by omissions of sounds, syllables and words, substitutions, prolongations or repetitions of dounds, syllables and words, and inversions of the order of sounds. Clutterers also telescoped several syllables of words, that is, omitted partial components.

Clutterers interjected syllables such as "you know" which provided time to select appropriate words. According to Weiss, other investigators concluded that poor articulation in cluttering was not due to general motor inability. He believed, however, that this poor articulation performance was at least partly due to the clutterer's inadequate attention to his performance generally.

Noting that some investigators had reported the monotonous speech pattern and lack of rhythm as the most noticeable symptoms of cluttering, Weiss stated that monotony and dysrhythmic speech may be explained by the manner in which clutterers think. While thoughts of normal speakers proceed by whole phrases or sentences, he believed that thoughts of clutterers proceed by clusters of only two or three words at one time. Consequently, their speech production occurs in short melodic patterns that appear stereotyped or monotonous.

Weiss also related frequent errors in grammar and spelling, both oral and written, to the clutterer's dysfunction in attention and memory. Incorrect sentences resulted from inattentiveness to his own and other's speech and writing. While sometimes able to notice grammatical errors in others, the clutterer commits identical errors himself. Weiss related this discrepancy to a poor thinking process, lack of awareness, and

impatient attitude of the clutterer in both speech and action.

The nonfluencies of a clutterer, Weiss asserted, indicated inadequate speech formulation, and were evidence of poorly integrated and incomplete thought processes. Weiss believed that clutterers expressed ideas rather than complete thoughts. Ideas were less structured mental activity than thoughts. Thoughts were orderly, sequential processing of those ideas. The clutterer's verbal skills resulted in pauses, gaps, and his searching for particular words or phrases in communicating.

In normal speech, which is a reflection of inner order in an individual, a speaker conveys the impression that he knows what he wants to express and forms his thoughts into words and phrases with relative ease. In cluttering, a reflection of inner disorder, the individual lacks clear, inner formulation and produces speech that is haphazard, repetitive and indistinct. Clutterers have limited knowledge in grammar and verbal skills which diminish their rate of thinking. Their diminished rate of thinking, together with haphazard and superficial attention in preparation for speech production, reflect their general approach to all activities. When the clutterer learned to speak more carefully and deliberately and learned to attend and concentrate more

carefully, his thought processes would ultimately improve. The result would automatically lead to better sentence production, improved reading ability, and increased writing skills.

Weiss attributed other characteristics such as restlessness, hyperactivity, inability to be alert and interested for only short periods of time, directly to the clutterer's motor drive, which he believed accounted for his tachylalia and compulsive talkativeness. Hyperactivity, he asserted, constituted a basic constitutional weakness in clutterers and was further evidence of their lack of maturation. Clutterers act impatient, lack consideration for the consequences of their acts, have a casual attitude toward responsibility, and act younger than their years, causing them to be considered less intelligent.

According to Weiss, stutterers are generally overachievers, and the typical clutterer is an underachiever. The few psychological studies of clutterers indicate that they have at least average intelligence. Weiss emphasized that a central language imbalance influences both the clutterer's emotional and intellectual development; however, use of the term should not lead erroneously to the conclusion that the clutterer is generally inferior. The clutterer has weaknesses,

especially in communication ability, but may be capable of unlimited intellectual achievement.

In adolescence, Weiss reported, clutterers often become angered by persistent failure and an inability to achieve grades which are commensurate with their ability. However, unaware of their speech disability and generally poor readers and spellers, they become aware of and frustrated by their underachievement. Diligent students at times, they also become worried, listless, truant, and unmanageable at this age. When an underachiever is observed, Weiss noted, the possibility of cluttering as the basis for the inferior performance should be investigated.

Two types of symptoms which had been observed in cluttering, the obligatory and facultative symptoms, were distinguished by Weiss. Obligatory symptoms were always exhibited and were the major symptoms upon which diagnoses were made. Obligatory symptoms included short attention span and poor attention ability, lack of total awareness of the disability, and an excessive number of repetitions in speech production. Because it had been reported in the majority of cases, Weiss included a reduced capacity in perceptual ability as an obligatory symptom. The most common facultative symptom was a reading disability, especially in reading out loud. Over-hurried speech, which occurred frequently in

cluttering, was also a facultative symptom. In facultative areas impairment may occur in one function with good performance in a closely related function. For example, some children demonstrate an excellent sense of rhythm generally although they may perform poorly in other tasks of musical performance.

Weiss emphasized that evidence of cluttering symptoms does not occur immediately. A clutterer is capable of adequate performance when he focuses his attention upon a task. The basic constitutional characteristic of clutterers is, however, that while they may temporarily be able to control their behaviors, after a short period of time, restlessness, hyperactivity, and lack of attention will inevitably return. Typically, clutterers perform erratically in many areas. Weiss believed such behaviors confirmed his theory that clutterers lacked maturation and development commensurate with their chronological age.

Weiss affirmed that cluttering was the disorderly, often accelerated speech which was the external expression of an unclear, chaotic internal verbal system. Comparing the various speech disorders included in central language imbalance to the peaks of an iceberg, Weiss observed that from a distance each peak appears to emerge from the water independently. Upon closer inspection, however, each peak is observed to be

part of a larger mass that lies beneath the water. Speech disorders, like delayed speech, dyslalia, reading and writing disabilities, cluttering, disorders of rhythm and musicality, personal disorderliness and restlessness may also be observed as manifestations of a more generalized underlying pathology, the larger, broader, central language imbalance.

Florensky (1933), reported Weiss, concluded that accelerated speech, or tachylalia, may not always be observed in cluttering. Florensky discounted the belief that rapid speech production was the "essence" of cluttering; she reported that it was a symptom which may not always be present. Agreeing with Florensky, Weiss reiterated the difficulty in determining a normal or standard rate of speaking. Among various geographic areas and individuals different rates of speech are found which are considered normal. For example, rural populations generally speak slower than urban areas, and the drawl of southern United States is noticeably slower than the speech rate of the northern states. Also, many normal speakers talk at a rapid rate without any errors or disorder, while some clutterers speak at a normal rate. Only if accompanied by other symptoms such as hesitations, repetitions, or articulation errors would an individual's rate of speech be considered abnormal. In cluttering, excessive speed is usually accompanied by

poor speech formulation and production, indicating that the speech mechanism cannot adequately perform the necessary communication function.

Weiss believed that the important factor in determining the existence of cluttering was the rate of speed of the speaker's repetitions of sounds or words. In cluttering, a repetition was the exact syllabic speed of the free-flowing or nonrepetitive speech production. This exact speed characteristic was also true of normal speakers who repeat sounds or words under moments of stress or uncertainty. A faster or slower rate is important because it indicates that the individual has become aware of his repetitions or errors and was attempting to correct them. In Weiss' opinion, such awareness of the disorder would rule out the existence of cluttering. Only when there was characteristic unawareness of speech difficulties, with continued repetitions or errors does cluttering truly exist. Weiss cautioned, however, that the diagnosis of cluttering not be made solely on the basis of speech rate or repetition rate alone, but only when the speech of the individual indicated faulty integration and formulation.

Contributions by Others

Cluttering symptoms have been described as a combination of rapid, slurred speech to inaccurate,

transposed and unintelligible verbal expression; from written disabilities that include spelling and grammatical errors to reading disabilities and lack of awareness of such problems; and from an attitude of carelessness, inattentiveness, and lack of concentration to a squirming, restless individual whose thoughts and speech may be uncoordinated or out of phase. Perhaps the most widely agreed upon characteristic in the discussion of cluttering is the excessive rate factor.

Froeschels (1946) believed that cluttering develops when the thinking process occurs too rapidly for the speech flow to follow, or when a new thought is not clear or ready to be processed. Thus cluttering resulted when either the thinking process of the speech performance were not properly formulated or adequately processed. If several words occur to an individual for the same thought, speech may be delayed by the interference of one word for another. During expression, the total idea would absorb the speaker's attention to the extent that essential parts that should receive focus may not become clear and the fluency of the utterance would be disturbed.

R. and H. Bakwin (1952, 1950, 1966) believed that the excessive speech rate factor was a fundamental

characteristic in the identification of cluttering behavior.

West, Ansberry, and Carr (1957), who considered cluttering to be a functional relative of stuttering, also described cluttering as a ". . . rapid utterance with many elisions, transpositions, and omissions of significant speech sounds, and with frequent lapses of syntax (p. 591)." While their primary emphasis was placed upon the speech errors, they also included cluttering as a disability in language performance.

Some references to cluttering have evolved from anecdotal terms such as Spoonerism and Wherryism to describe rapid speech utterances of the Reverend W. A. Spooner of Oxford, England, and Senator Wherry of Nebraska. Senator Wherry's speech was reported to be so rapid that he frequently lost control of his words. His speech errors, called Wherryisms, include "bell-door ringer," "Chief Joints of Staff," and "opple amportunity." The cluttering of Bishop Spooner of New College, Oxford, also related to his excessive rate of production. His errors, called Spoonerisms, are defined as accidental transposition of initial sounds or other parts of two or more words. Well-known spoonerisms, which writers have considered to be manifestations of cluttering, include "The Lord is a shoving leopard," and "The two great English poets, Kelly and Sheets"

(Arnold, 1965; Bakwin and Bakwin, 1952; de Hirsch, 1975, Weiss, 1964).

Van Riper (1963) described the major feature of cluttering as an excessive rate of speaking together with disorganized sentence structure and slurred or omitted syllables and sounds. The cluttering child ". . . falters, repeats, changes words, slurs his speech sounds, transposes syllables, and generally makes a hurried mess of his communication (p. 26)." According to Van Riper, when the child speaks swiftly, his speech becomes almost incoherent. By decreasing the hurried, hasty speech, and the urgency with which the child attempts to communicate, Van Riper believes cluttering behavior may be diminished to some degree. Most authorities report similar descriptions of the excessive rate factor in cluttering.

de Hirsch (1955, 1969) also noted reading disabilities in clutterers. Agreeing with Froeschels, she added that ". . . some children's organization of verbal material is so poor that they never get their point across (p. 243)." Clutterers' difficulty is demonstrated by their inability to tell a simple story and bring about its salient points. de Hirsch described clutterers as having short attention spans, tone-deafness, lacking a sense of rhythm, and having faulty feedback mechanisms. In addition, they have little awareness of

difficulty, with no signs of anxiety. Difficulties were also observed in their handwriting, which de Hirsch described as jerky and dysrhythmic. She felt that clutterers' word configurations shifted, they were erratic spellers, had primitive motility, poorly differentiated fine motor coordination, and a delay in developing body images. All these characteristics, she was convinced, were patterns that clutterers demonstrated.

According to de Hirsch (1974), clutterers:

> . . . are often voluble and rapid-fire talkers. Their sentences appear to be hanging in mid-air. There is little structure to their verbal output; they tend to ramble on. . . an unusual number of fillers such as 'em' as well as omissions of words or even parts of sentences is observed (p. 64).

de Hirsch believes that:

> . . . clutterers lose the verbal gestalt--spoken written, or printed--from one moment to the next, (1974, p. 64) In 30 years of experience she has never seen a clutterer who was a good speller. Clutterers may be compared to young children who simplify phonemic clusters and telescope words in both speech and spelling. Their words are run together in writing exactly as they are in speaking.

Considering monotonous speech patterns to be related primarily to the clutterer's lack of musical ability, Pearson (1962) evaluated their recognition of rhythmic patterns by administering the Drake Test and the Seashore Test. His results indicated that expressive dysrhythmia, or the inability to reproduce regularly repeated patterns of short and long beats, was more

marked than receptive dysrhythmia, the inability to recognize rhythm patterns.

Arnold (1960, 1963), considered dysrhythmia in cluttering to be part of a condition which he called congenital amusia. Characteristics of poor pitch and a poor sense of melody caused the speech of the clutterer to be described as monotonous or jerky. Arnold associated mixed laterality and left-handedness with cluttering problems. He reported that familial or inherited left-handedness was frequently found in cases of congenital reading disabilities as well as congenital language disabilities like cluttering. Mixed dominance and maturational delay of distinct laterality establishment disturbed orientation to space, direction, and time, he believed. According to Arnold, clutterers prefer concrete, precise and scientific tasks or occupations like science, math, business and mechanics. While seldom a good speaker, he reported, the clutterer often becomes a good mechanic or scientist.

Both Arnold (1960) and de Hirsch (1961) noted that the clutterer's poor articulation paralleled his poor motor performance generally. They suggested that general motor activities should be examined in any evaluation of the clutterer's speech performance.

Although conflicting reports have been presented, the majority of the studies reviewed suggest that

cluttering is a disability that encompasses all areas of speech and language performance, both oral and written performance. Although authorities in the field of speech and language pathology consider cluttering to be a serious disability that affects a child's social, emotional and academic learning, little research data are available. The paucity of research may be attributed to the fact that measurement of cluttering behavior must rely on responses involved in many other disabilities. Factors such as reading disability, misarticulations, nonfluent speech, auditory attention span, and restlessness are not easily separated from other conditions such as specific dyslexia, dyslalia, dysphasia, stuttering, and hyperactivity. Further, they are not easily, if at all, determinable as separate from each other. Children who clutter have been found to demonstrate some or all of the conditions in varying degrees, while other children may demonstrate some of the other conditions and yet not clutter.

ETIOLOGICAL FACTORS IN CLUTTERING

Contributions by Weiss

Weiss posited that the most constant etiological factor in cluttering was a hereditary component. In 1950 he asserted that cluttering should be considered as an inherited disorder that was one aspect of a

generalized disorder in all channels of communication.

Although Weiss felt that an organic basis existed in cluttering he did not use the term organic as meaning evidence of lesion nor positive signs of neurological involvement. Cluttering and the delay in speech development which accompanied it are factors related to hereditary maturational processes. According to Weiss, case histories of many clutterers revealed reports of delayed speech development in a client or other members of his family. Such a delay, Weiss reported, was a constitutional weakness or developmental deficiency within the family. Weiss' observations revealed that in almost every case of cluttering, a discussion with the client or his parents indicated at least one other member of the family had some type of speech disorder Most often the father also demonstrated cluttering behavior, although he was unaware that the behavior was being duplicated in his child. Although a delay in speaking does not necessarily lead to cluttering, Weiss emphasized that it often accompanies cluttering.

Weiss used the comparison of maturational differences that have been reported between males and females to support his viewpoint that cluttering resulted principally from a hereditary delay in maturational processes. More boys are born prematurely than

girls, there is a higher mortality rate among males, a slower development of speech in males, and more male than female clutterers and stutterers have been consistently cited as evidence that girls mature earlier than boys. These evidences are clinical observations and would not be considered organic in nature. There is no known neurological instrument nor evaluation tool that produces such evidence. According to Weiss, however, such differences mandate that consideration be given to the factor of maturational or developmental delay in cluttering.

Some researchers have attempted to determine if neurological differences existed among clutterers. Weiss reported that Luchsinger and Landolt (1951) were the first to attempt to determine differences in electroencephalographic (EEG) findings of clutterers. More irregularities were found among clutterers than stutterers, and among stutterers than among normal speakers; however, no definitive evaluation of the recordings could be used to distinguish clutterers from stutterers. Weiss stated that the significance of such results were still questionable. Encephalographic examination as a means of differential diagnosis would have to be postponed until it could become a more meaningful tool. Except in clearly defined organic disorders, such as epilepsy, he emphasized, such EEG

results have been inconclusive and may not be considered significantly different among clutterers.

According to Weiss, Meyer-Eppler and Luchsinger (1955) investigated the role of delayed auditory feedback of speech production. With the introduction of a delayed side tone, the speech disturbance that resulted was reported to resemble cluttering more than stuttering. For example, no spasmodic blocks such as those seen in stuttering were reported. Weiss interpreted such findings to indicate that cluttering may occur from a delay in the auditory feedback mechanism resulting from difficulty in perceiving sensory impressions. Such difficulty would parallel the disorder of sensory aphasia, where the sense organ is not damaged but the individual does not adequately perceive sensory information. Inability to process auditory or visual clues would explain the clutterer's lack of awareness of errors as opposed to stutterers' awareness of listener reaction. The clutterer is perceptually impaired; the stutterer is vitally aware of others' reactions.

Only when a hereditary component, symptoms of cluttering, and a lack of positive neurological involvement were present should the condition be labeled as true cluttering, Weiss affirmed. True cluttering would be indicative of a central language imbalance, he added. If neurological involvement were present,

Weiss indicated that the cluttering symptoms should be considered as symptomatic cluttering.

Although Weiss insisted upon the inclusion of a hereditary component for a condition to be labeled as true cluttering, he also attributed the clutterer's disabilities to a lack of maturation and an unevenness of development of various functions. Weiss reported that no cases of pathological anatomy had been observed in clutterers. Further, no gross anatomical findings could be expected to be found. While no specific hereditary factor had yet been found, Weiss insisted that the role of heredity would one day be proven conclusively.

Contributions by Others

Many investigators have offered a variety of explanations for the disability. Many of the studies presented have reported performance of subjects as percentages, with no experimental or control group represented. Most of the explanations that have been given as causes for cluttering have been based on clinical observations, assumptions and inferential impressions, with little support from scientific investigation. An explanation for this type of reporting may be that early investigators in cluttering received their training in a specialized area of

medicine called logopedics, a European term that designated the study of speech and language pathology. Trained in a medical-model, these specialists were trained primarily in direct patient care and alleviation of symptoms rather than in scientific study.

Some authorities reported extensive clinical experience with cluttering in European clinics and hospitals. They emigrated to the United States from European medical institutions where cluttering was considered to be a major disability in speech and language processing. Most of them hold medical degrees in addition to their specialization in speech and language pathology. Undoubtedly this medical orientation has influenced the theories and beliefs of writers who have reported on cluttering.

Eustis (1947) considered cluttering as one aspect of a hereditary syndrome that comprised a congenital language disability with specific dyslexia and tachyphemia. He believed the basis for all these symptoms was delayed psychomotor maturation. According to Eustis, the familial nature of language disabilities was impressive. Many case histories mentioned the existence of similar disabilities in other members of the family. According to Eustis, neuromuscular maturation in normal infants and young children develops in a

relatively definite sequence. The rate of development varies from child to child; however, generally girls are one or more months ahead of boys. Full attainment of bodily skills depends upon two factors: first, upon the myelinization of the nervous and motor systems, and second, upon practice or experience. Several assumptions, which Eustis considered to be logical, were that myelinization was completed earlier in girls than in boys, and that there is a tendency for familial rate of myelinization. These assumptions were derived from observations that children of certain families tended to develop faster or slower than average. Eustis suggested that any delay in neuromuscular maturation would result in a prolonged period of childhood awkwardness in body and hand movements. The rate of speech development would also be retarded. This would affect not only speech sound performance such as substitutions of "w" for "r", "th" for "s", and sound omissions, such as "tove" for stove, but also the flow of ideas into words, phrases and sentences would be disturbed. Undue pressure or effort to force the flow of speech would, according to Eustis, produce bodily tensions, grimaces, and contortions known as stuttering.

To illustrate the familial nature of specific language disabilities and left-handedness, ambidexterity,

and body clumsiness, Eustis traced a family tree covering four generations. Because all these conditions occurred together in an individual and in his family tree, Eustis believed they constituted a familial syndrome. The only factor which they appeared to have in common was a slow rate of neuromuscular maturation. Eustis interpreted such evidence to imply the existence of an equally slow rate of myelinization of both motor and association tracts of the nervous system. Accordingly, Eustis suggested ". . . that this inherited tendency to delayed neuromuscular maturation is the single factor from which all the various aspects of the syndrome may develop (1947, p. 455)."

Various investigators attempted to determine the presence of other physical or organic differences in clutterers, although no pathological anatomical findings have been related to cluttering. de Hirsch (1950, 1952, 1955) proposed a theory of lack of maturation of the nervous system as an etiological factor in cluttering. Weiss (1950) considered her theory as plausible because it did not preclude validity of either the hereditary or the developmental correlates. It was also consistent with the observation of many investigators that clutterers generally appeared and acted younger than their chronological ages.

de Hirsch and Langford (1950) reported that case histories of cluttering children frequently indicated a familial background, with evidence of difficulty in the area of language. In addition, they reported that many of these youngsters were delayed in establishing laterality. Many of the children had difficulty in enunciating sounds, with vocabulary usage, and in sentence construction. According to de Hirsch and Langford, this familial factor is impressive in reports of cluttering and has led many to believe that stuttering is also hereditary. They did not believe, however, that experience had substantiated a hereditary component in stuttering. They did affirm that what is constitutionally determined is a predisposition to disturbance in the language area, that is, in the use of symbols for expression. According to these researchers, all cluttering children do not necessarily become stutterers. Often, however, they do. In some families especially where some other member has had difficulty with speech, parental concern or anxiety regarding the child's performance is likely to be watched with anticipatory misgiving long before he utters a sentence. de Hirsch and Langford also suggested that undue attention to the child's speech productions could be the result of parental tension and anxiety in perfectionistic, unrealistic, or other equally deleterious attitudes. They

warned that such a hostile environment, which is reinforced by the child's own secondary gains in attention-getting, will tend to produce a stutterer out of a clutterer.

Freund (1952) considered cluttering to be a disturbance of language functions which encompassed both an organic and familial syndrome. He investigated the hereditary factor in the frequency and distribution of tachylalic speech anomalies in ninety-five families of pure stutterers, using a criterion of observable tachylalia as a determiner of cluttering behavior. In 95 families, Freund report 29 stutterers with tachylalia, seven stutterers only, and 12 tachylalics, for a total of 50% of such anomalies. In the families of 26 stutterer-clutterers, he found two stutterers with tachylalia, 12 stutterers, and 12 tachylalics, for a total of 92.5% of such disorders. According to Freund, tachylalia itself should not have been the only criterion on which to determine the existence of cluttering in these subjects. Such factors as poor word memory and lack of verbal formulation ability, which the family might not have noticed, are also important components of cluttering that were not investigated.

de Hirsch (1959, 1961, 1970, 1974) noted immature and undifferentiated patterning or behavior in developmental language disorders such as cluttering.

She labeled such patterning as maturational lag. de Hirsch reported that EEG's of older clutterers exhibited theta waves, from four to seven cycles per second, that are typical for early childhood but should disappear around the age of six years. Other demonstrations have been observed in cases with immature or primitive Bender (1966) drawings, infantile articulation, and auditory imperceptions. According to de Hirsch, what is handed down in families may be an underlying organic immaturity that is reflected in higher cortical functions such as language. This hypothesis, she believed, accounted for the fact that language disorders are more frequent in boys than in girls, with boys having a slower maturational rhythm than girls.

de Hirsch (1961) also reported that the clutterer's poor articulation paralleled his poor motor performance generally. She believed that dyspraxia, a disturbance in motor integration, might also be the basis for cluttering.

Seeman (1959, 1970) reaffirmed the heredity factor as the constitutional basis for cluttering. From eighteen family members he found sixteen who were clutterers. In one situation, cluttering appeared in four generations. In collaboration with Dr. Novak at the Phoniatric Laboratory in Prague, Seeman attempted to objectively determine whether an inability of the

musculature of articulation or rapid articulatory movements in clutterers caused the speech inaccuracies. Using a speed syllable test which Seeman devised, no significant differences between the cluttering children and the control children of the same age and ability were found up to puberty. In post-pubertal age in clutterers, the number of syllables produced per minute increased remarkably and reached its maximum after the age of 22 years. Clutterers were asked to repeat as quickly and as long as possible the syllable "tah" (p. 378). Clutterers produced 100-180 syllables of "tah" more per minute than the normal control subjects. At the beginning of the syllable test, Seeman reported, the articulation of the syllable was precise in clutterers. After a while, however, acceleration began and the articulation lost its precision.

Seeman's findings discount the concept that cluttering is caused by the disproportion of the quick flow of thinking and the motor ability of the organs of speech. The speech syllable experiment, he stated, proved that the acceleration appears even when repeating the same syllable "tah", when articulation is not controlled by thinking.

Further experimentation was conducted by Seeman and others on the motor and visual-motor reaction of clutterers. Thirty clutterers, 26 men and four women,

ranging from 13 to 40 years were compared with a control group of 50 normal speakers, 26 men and 24 women, aged 15-35 years. By means of a simple tapping test to measure speed and accuracy touching a target, clutterers' rate of tapping was 172.06; normal subjects recorded 226.04. Maximum speed of clutterers was 344.33 to 377.84 in normals. Normal subjects had 6.24 inaccuracies in hitting a target; clutterers scored 14.3 inaccuracies. In a visual motor reaction test in which subjects pressed a key to a switching of a bulb, the number of errors of clutterers was nearly twice that of the normal subjects. Reaction time of clutterers was shorter than normals. Although no referent was given to distinguish normal accuracy or time, it was stated that such examinations prove that the motorics of speech and general motor ability of clutterers is inferior to normal speakers.

Arnold (1965) reported that present understanding of the etiological factors related to cluttering was limited, but that certain conditions and influences are regularly associated with the cluttering speech syndrome.

Arnold distinguished between two types of hereditary influences, specific and nonspecific inheritance. In specific inheritance the cluttering syndrome itself is supposedly transmitted in families where

there are many clutterers or stutterers. In nonspecific inheritance, the manifestation is in the transmission of a general language disability, with a frequent occurrence of language disorders in a variety of combinations such as delayed speech, dyslexia, dysgraphia, dyslalia, dysgrammatism, dominance disturbance, and other types of delayed maturation.

In congenital language disability a typical sequence of verbal communication disorders occurs; a familial trait is always represented here. Most manifestations of this developmental language delay are overcome as mental development continues. In some cases, however, the constitutionally predetermined cluttering behavior persists. Arnold presented the probability that two types of hereditary influences exist that affect more males than females. The sex-linked greater language ability of females appears to be an important factor in their resistance to language and cluttering disabilities. The male may demonstrate greater susceptibility toward inheriting congenital and familial traits. Arnold emphasized that before conclusions can be drawn regarding the existence of a specific sex-linked tendency of the male toward such manifestations as cluttering, further research in biogenetics would have to be conducted.

Congenital or developmental dyspraxia reflects

an inherited condition of delayed psychomotor maturation that is noticed in the clutterer's poor coordination and awkward haste during all motor performances. Also reflected are a delay in cerebral maturation and concomitant delay in cerebral dominance. Neuromuscular immaturity will result in infantile misarticulations. Disturbed lateral dominance was considered to be associated with congenital language disability, with left-handedness and mixed laterality definitely associated with cluttering. It is not the left-handedness itself which causes the language disorder but rather the mixed dominance associated with maturational delay of establishing laterality that disrupts orientation of time, space, and direction. Neither Weiss (1964) nor Arnold consider that shifting handedness or unestablished laterality may cause cluttering; however, they both agree that such factors may aggravate existing difficulties.

Arnold was convinced that a clue to the problem of cluttering lies in the modality of auditory perception. He stated that congenital language disability and superior musical ability represent opposite poles of linguistic expression. Cluttered speech has often been described as jerky, stumbling, erratic, or with other references to temporal abnormalities. Cluttering has been characterized by many authors as alterations

in temporal segments of speech rate closely linked with acceleration of the speech production. Rate and rhythm may be included as the musical factors of speech production. Other writers have reported a lack of musicality in some clutterers, both in perceiving and reproducing rhythmic beats. The vocal quality of clutterers has also been described as lacking inflectional patterns and regularity of rhythm.

Mussafia (1970) defended Weiss' hereditary position of cluttering by presenting three cases of different aspects of cluttering. All three cases exhibited the common characteristics of rapidity of language, lack of articulation of syllables, repetition of syllables and words, lack of attention and concentration of thought, unawareness of difficulty, and lack of motivation to correct oneself. Mussafia considered the heredity factor to have great significance in determining etiology of this language disorder.

Grewel (1970) denied that there must always be a familial tendency in cluttering. He believed that in some families cluttering can occur with or without tachylalia, and that tachylalic speech can occur without cluttering in the individual or other family members. He defined tachylalia as a tendency to repeat first syllables and initial vowels, not consonants, which is often the case in primary stuttering. Grewel emphasized that

family history is an important diagnostic tool in differentiating cluttering from stuttering.

According to Grewel, "Probably half the number of children presented as stutterers are motor clutterers or clutter-stutterers (p. 308)." Speech pathologists were on the brink of differentiation within the cluttering group itself, he believed. The speech clinician must be well aware of the various related problems in cluttering, and should be instrumental in guiding the neurologist and the psychotherapist to the problem of cluttering.

Mitrinowicz-Modrzejewska (1970) reported on the familial auditory disability of cluttering children seen in the Phoniatric Department of the Medical Academy in Warsaw. She reported that 30% of their "little patients are clutterers: 20% boys, and 10% girls (p. 58)." Hearing evaluations of these clutterers revealed that the speech disorder resulted more from auditory disability, auditory memory dysfunction, and inferior auditory attention than from any organic lesion. In addition, cluttering was concluded to be a congenital disability which is evident in other members of a family. Among the group reported by Mitrinowicz-Modrzejewska, 30% were mentally retarded children who cluttered.

Van Riper (1971, 1972) discussed the speech of

clutterers and concluded that all results indicated a basic constitutional difference in such children. Symptoms of poorly organized linguistic, motoric, and perceptual abilities as evidenced in reading, writing and other language disturbances are commonly present. Articulation is slurred, and the onset of speech is delayed. Van Riper suggested that "There are clutterers who do not stutter, stutterers who do not clutter, some stutterers who have cluttered, and some who still do (1972, p. 263)." According to Van Riper, when the patterns of cluttering are found to coexist with stuttering, either in the current symptomatology or in past case histories, the suspicion is that there is the presence of an original constitutional difference or predisposition for the disability.

A review of the literature in cluttering reveals that the majority of writers have suggested the existence of a hereditary factor or familial weakness for the disorder. While no conclusive evidence has been offered, writers generally agree that lack of neuromuscular maturation and auditory attention are also factors related to or commonly found in cluttering individuals. No single or common cause was reported by all researchers; however generally agreement was reached that neuromuscular maturation is a necessary prerequisite for the development of fluent speech and language ability.

DIFFERENCES BETWEEN STUTTERING AND CLUTTERING

Contributions by Weiss

Weiss reported that no investigations or references to cluttering appeared from the time of Bazin (1717) until the beginning of the nineteenth century, when the first differentiations between cluttering and stuttering began. Poett (1833) was credited by Weiss to be the first to suggest that cluttering may be the basis for the development of stuttering if certain environmental influences were present. When adult models demonstrate impatience, excitement, rapidity of their own speech, and repetitions of sounds and words, a young child who cluttered might become a ". . . complete stutterer (Weiss, 1964, p. 3)." Weiss accepted Poett's assumption and added that stuttering involved an awareness of difficulty in speaking by a child to such an extent that his speech would become accompanied by struggle behavior. Such struggle or tensions are reactions to the difficulty in speech production. Weiss preferred to call the condition with struggle behavior stammering, which he classified as a major disorder with accompanied muscular contortions of the speech and body mechanisms.

Investigators have generally observed that in

the majority of cases stuttering has been preceded by a stage of effortless though frequent repetitions, prolongations, hesitations and self-correction. This early stage, Weiss reported, has been referred to as physiological stuttering or physiological cluttering. Physiological negated the implication that such nonfluencies were pathological in nature; they were developmental errors that resulted from a need to communicate when a child had not yet developed fluent behavior. Bluemel (1932) distinguished between the pathological nonfluencies of the developing child and the pathological unevenness of speech which could lead to stuttering. The latter condition was called primary stuttering by Bluemel, emphasizing that the child was unaware of difficulty at that stage. Weiss objected to the concept of primary stuttering because it presumed the next stage, secondary stuttering, would follow. According to Weiss, many children never developed into secondary stutterers.

Weiss asserted that regardless of terminology, the vast majority of cases of developmental stuttering which occurs in childhood exhibit characteristics of cluttering. A young child is unaware of his speech difficulties and repetitions, hesitations, and fast tempo, which have been observed and reported as a stage

of effortless speech disfluency by most investigators. Almost all children between two and five years of age exhibit this type of nonfluency, which is considered to be a normal stage of development when the expressive abilities of vocabulary, grammar, and formulation are not yet commensurate with the child's desire to communicate. With maturation of the nervous system and increased experience with words, the ability to communicate also increases and nonfluencies in the normal speaker will disappear. In some children, however, the nonfluencies continue beyond the normal stage, and a fear of speaking, speech blocks, and self-consciousness appear. These children would be labeled as stutterers.

Weiss preferred to call such children clutterer-stammerers, indicating that their speech had evolved from cluttering to speech that was characterized by spasmodic blocking and struggle behavior. He believed cluttering formed the basis for the stuttering. In his opinion, stuttering usually began in cluttering-like symptoms. When the stuttering symptoms were alleviated, the residual problem that remained was cluttering.

According to Weiss, the speech disorder which most writers categorize solely as stuttering could belong to one of three categories: pure cluttering,

pure stammering, and cluttering-stammering. Among individuals who seek professional help, clutterer-stammerer was the most frequent type, he believed. Based on his therapeutic experience, Weiss doubted the existence of pure stammering, which is not based on cluttering. He stated that he had never seen a case in which cluttering symptoms did not emerge after stammering had decreased. Again, Weiss substituted the term stammering for the word stuttering.

According to Weiss, researchers had not adequately considered the relationship between cluttering and stuttering. Although earlier investigators had noted the coexistence of cluttering and stuttering behaviors, Weiss and Freund were the first to define the basic clinical relationship between the two disorders. Weiss believed that the literature had accorded major importance to stuttering but only token mention of cluttering. According to him, the relationship between these two disorders can be considered ". . . the most important single relationship in the field of speech pathology (1964, p. 68)." Other writers had noticed the occasional appearance of the two disabilities; however, no systematic relationship had been hypothesized until Freund and Weiss in 1934. Freund, Weiss reported, had stated that both impairments appeared simultaneously in

families, and hypothesized a hereditary component. Weiss believed stuttering usually began from cluttering, which was only one aspect of an inherited and generalized disorder in all channels of communication. According to Weiss, many investigators corroborated his and Freund's theories and findings.

Weiss summarized various psychological and behavioral characteristics between cluttering and stuttering that he and Freund had observed in earlier investigations:

DIFFERENCES BETWEEN STUTTERING AND CLUTTERING BEHAVIOR

	Cluttering	Stammering
Awareness of disorder	Absent	Present
Speaking under stress	Better	Worse
Speaking in relaxed situation	Worse	Better
Calling attention to speech	Better	Worse
Speaking after interruption	Better	Worse
Short answers	Better	Worse
Foreign language	Better	Worse
Reading a well known text	Worse	Better
Reading an unknown text	Better	Worse
Handwriting	Hasty, repetitious uninhibited	Contracted, forced inhibited
Attitude toward own speech	Careless	Fearful
Psychological attitude	Outgoing	Rather withdrawn
Aptitude (academic)	Underachiever	Good to superior
EEG	Often diffuse dysrhythmia	Usually normal
Goal of therapy	Directing attention to speech details	Diverting attention from speech details

(Weiss, 1964, p. 69)

From Weiss' differentiation table, it would appear possible to delineate similar behaviors that are exhibited by children who are classified as nonfluent as either cluttering or stuttering components. No other researcher has presented such a complete dichotomous comparison between cluttering and stuttering behavior.

Contributions by Others

A lack of agreement in terminology and behavioral characteristics has resulted in much confusion and many errors in differentiating between cluttering and stuttering. Many authorities have defined stuttering; however, the variability among them clearly indicates difficulty in distinguishing or delimiting stuttering from cluttering. Stuttering has generally been described as a series of developmental stages, from a normal nonfluent period of total unawareness by the young child to periods of fluency. This reoccurence of fluency periods with periods of nonfluent stages finally develops into a confirmed stage, where struggle behavior, fear of speaking, and avoidance of speech phases become part of the stutterer's speech pattern (Bloodstein, 1958; Johnson, 1942, 1946, 1955, 1959; Van Riper, 1963, 1971, 1972).

Treatment of stuttering depends primarily upon

the author's point of view regarding the cause of stuttering. Some authorities regard stuttering as a symptom of a neurosis of psychological disturbance (Coriat, 1943; Glauber, 1958). To others, stuttering results from a neurological or physiological weakness in the individual, such as a delayed auditory feedback mechanism, or a lack of cerebral dominance (Travis, 1957). The most common theory regarding stuttering is that it may result from undue environmental pressure and communicative stress wherein the child demonstrates the disorders after others demonstrate anxiety, anticipated difficulty, and label the problem as stuttering (Johnson, 1946; Van Riper, 1971). Specialists usually advise parents and others in the child's environment to ignore early nonfluencies until struggle behavior or avoidances mandate speech therapy.

Cluttering and stuttering, while essentially different disorders, are easily mistaken for each other because of some common features found in both: disruption of rate and rhythm, repetitions, prolongations, and omissions of sounds, syllables, and words, and inadequate production of speech sounds.

Hunt (1870) first reported that stuttering and cluttering, essentially different disorders, were frequently found in the same individual. He attempted to clarify both terms on the basis of accompanied muscular

distortions. According to Hunt, stuttering contained frequent repetitions and was accompanied by muscular tension and contortions. Cluttering, however, was characterized by indistinct speech delivery that was free from muscular distortions. This lack of muscular involvement has been interpreted by many authorities to indicate a lack of awareness by the clutterer.

Hunt first reported that cluttering generally preceded stuttering in children, which viewpoint other writers considered to be extreme. Arnold (1960), de Hirsch (1961), Bloodstein (1958) and Van Riper (1963) admitted that a percentage of stutterers may develop from cluttering, but they included trauma, fright, and environmental influences as precipitants of stuttering.

Bluemel (1932) also proposed a relationship between cluttering and stammering. He attempted to distinguisn between the nonpathological or normal non-fluencies of a developing child, and the pathological unevenness of speech which could lead to more serious stuttering. Bluemel called this latter condition primary stammering and emphasized that the child was unaware of the condition. Once he became aware of his speech difficulty, the child was said to be in the secondary stage of stammering. Currently in use, Bluemel's stages are referred to as primary and secondary

stuttering rather than stammering. The term stammering is seldom used in American literature.

In 1952, R. and H. Bakwin compared cluttering with stuttering and reported one major difference in the outcome of their speech difficulty. Clutterers were able to improve their speech when they paid close attention to what they wanted to say. The Bakwins also observed that clutterers had much less confused speech with strangers than with their family or friends. They were able to remedy speech defects when they attended carefully and made special effort to produce correct speech. The reverse was true of stutterers, they reported. When a stutterer speaks to strangers, he becomes more tense and acutely conscious of his difficulty to the extent that his speech deteriorates. The Bakwins emphasized the great difference between these two disorders; the clutterer improved when he concentrated on his speech production or attempted to reproduce his speech, whereas the stutterer's speech, when attention was directed toward its details or when he attempted to reproduce it, deteriorated.

Freund (1952) reported differentiations between cluttering and stuttering behavior both in speech characteristics and in personality features. Freund compared the personality characteristics of clutterers and stutterers and reported diametrically opposed

results. Where a stutterer was timid, restricted, restrained, introspective, compulsive, overinhibited, and hesitant, the clutterer was the opposite: aggressive, expansive, explosive, extroverted, impulsive, uncontrolled, and hasty. Freund hypothesized that some individuals had mixed characteristics of stuttering-cluttering. He offered the mixed type as an explanation of why only a certain type of clutterer develops into a stutterer. Further, he posited, an assumed mixed personality type helped to explain a transitional developmental stage, like puberty, where there is heightened sensitivity to social awareness that may lead to a neurotic development in an otherwise timid clutterer. Freund's work was instrumental in presenting in schemata form some of the results of various studies in the area of cluttering and stuttering. He synthesized much of the earlier research and offered confirmation to the theories and observations which Weiss and he had discussed in earlier work.

Freund (1952) presented the frequency of stuttering and cluttering combinations that were observed in 513 cases:

Frequency of Combinations of Stuttering and Cluttering in Stutterers

Source of Observation	Age Group	Total Number of Cases	Stutt. Only	Stutt. and Clutt.	Percent of Total
Elementary Schools	7-10	135	113	22	14.8
Secondary Schools	11-18	257	193	64	25.0
Private Practice	"mixed"	121	95	26	21.5
Totals		513	401	112	21.8

(p. 154)

From 14.8% in elementary schools to 25% in secondary schools, with an average of 21% of the cases which Freund evaluated exhibited both stuttering and cluttering symptoms. He firmly believed that there was a familial factor relating to stuttering and cluttering. More than 92% of the stutter-clutterers reported speech anomalies in their families. Only 50% of the families of "pure" stutterers reported similar problems. According to Freund, such data confirmed the contention of a marked family disposition for cluttering.

According to Freund (1966) stuttering based on cluttering had been described by Weiss and himself in

the 1930's. Its existence, he believed, had been generally accepted by serious students of stuttering. Freund summarized the difference between stuttering and cluttering on which he had reported in 1934:

Differentiation Between Stuttering and Cluttering

I.	Awareness of the disorder	Stuttering exists	Cluttering does not exist or is feeble
II.	Attention	Increases the disorder	Diminishes the disorder
III.	In front of strangers speech becomes	Worse	Better
IV.	A more natural way of speaking makes the disorder	Less severe	More severe
V.	Short replies to questions makes speech	More difficult	Less difficult
VI.	When asked to repeat one's self, speech usually becomes	No better but often worse	Better
VII.	Therapy should direct attention	Away from articulation	Toward articulation

According to Freund, few personality studies comparing clutterers with stutterers had been conducted. He recommended that other studies be done on the clutterers' temperament, attitudes, and psychomotor performance to supplement the views held in the field of speech pathology on cluttering. He believed they would be highly

constructive and would help to alleviate some of the confusion that existed between the disorders.

Froeschels (1964) also discussed the relationship between cluttering and stuttering. Reviewing the case histories of 231 stutterers ranging from four to 48 years of age, he found that 23 were tachylalic. Among the 208 who were non-tachylalic stutterers, 17 (8%) also lisped. Among the 23 tachylalic stutterers, 11 (50%) articulated the /s/ sound incorrectly. Among the 65 tachylalic cases who did not stutter, the question arose as to which would be termed clutterers and which just rapid speakers. Froeschels believed that the minimum requirement for the use of the term clutterer should be ". . . that the person shows relatively frequent iterations (1964, p. 109)." Using this criterion, 33 of the objective tachylalic cases would be called cluttering; 37% of the non-iterating tachylalics and 50% of the clutterers exhibited difficulty with the /s/ phoneme.

Langova and Moravek (1964) believed that a difference existed in the auditory feedback ability of stutterers and clutterers. They subjected 28 clutterers to a variety of delayed auditory feedback times and reported that in 85% of the cases expressive speech aggravation was noted by reiterations, accent alterations, and a sensation of discomfort while speaking.

Contrary to the performance of stutterers, heightened attention to the speech act improved the clutterer's speech.

Langova and Moravek also reported abnormal EEG's in 15% of the stutterers whom they examined. Among clutterers, 50% had abnormal EEG's; among stutterer-clutterers, abnormal findings occurred in 39% of the cases. The effect of delayed auditory feedback (DAF) on 134 cases ranging from 8 to 52 years indicated that 54 cases out of 59 stutterers (92) showed speech improvement, with speech becoming more fluent and voice intensity increasing. In 25 of 28 clutterers (85%), speech aggravation with speech errors, monotonous voice, altered accents, repetitions, and reported unpleasantness when speaking were reported. Of 47 stutterer-clutterers, 11 (23%) improved; 26 (55%) got worse, and 10 (22%) were unchanged.

The electrophysiologic results indicated marked differences of internal mechanisms of both speech disorders. The number of abnormal findings in stutterers corresponds to those found in normal speakers. The high percentage of abnormalities found in clutterers suggests organic or functional anomaly within the brain of clutterers. Langova and Moravek concluded that there is a connection between cluttering and an organic or functional anomaly as evidenced by electrical

manifestations, and stated that ". . . Weiss and Freund were right having suggested cluttering as an organic disturbance as early as 1939 (p. 295)."

Soderberg (1969) also reviewed the use of delayed auditory feedback in reducing stuttering. He reported various investigations which demonstrated that alterations in the normal timing of auditory feedback, especially DAF, have been instrumental in stuttering reaction. The speech of a stutterer is generally facilitated in the presence of highly intensified environmental and experimental noises. Soderberg explained that stuttering is reduced when attention to the speech act is reduced by interference of auditory stimuli.

Sedlackova (1970) summarized additional experiments with stutterers and clutterers at the Phoniatric Clinic of Prague University. She concluded that not only were stutterers and clutterers mutually significantly different from one another symptomatologically, but also in their responses to various drugs. Stutterers achieved a more favorable therapeutic effect with ataractics, or minor tranquilizers such as chlorpromazine. Such differences were related to biochemical features relating to central nervous system functioning. Such findings, she reported, are consistent with the EEG and auditory feedback findings

reported by Langova and Moravek (1964), and are further confirmation that differences found between these two disorders may be related to metabolic, biochemical or enzymatic disorders, in which the hereditary factors have not yet been found.

Hutchinson and Burk (1973) restated what many investigators had reported.

> . . . little experimental investigation of cluttering has been undertaken and most of the descriptive information is based upon clinical observation. The exact relationship between stuttering and cluttering has not yet been well elucidated.(p. 194)

These authors believed that while minimal formal experimental research had been conducted, both stuttering and cluttering have been discussed with reference to a potential common denominator of abnormal self-monitoring. They attempted to systematically investigate the speech performance of stutterers and clutterers when exposed to temporal changes in auditory feedback. Further, they wanted to delineate the relationship between these two forms of pathological nonfluency. For their investigation, they evaluated three groups of speakers with fluency problems: stutterers, clutterers, mixed stutterers-clutterers, and a control group of normal speakers.

The control group consisted of ten young adult males with a mean chronological age of 23 years. Inasmuch as few speech and hearing clinics in the United

States enroll a large number of clutterers, members of the experimental group were solicited by means of an advertisement that was circulated around Purdue University campus for clutterers. Respondents were interviewed and speech samples taken. Using Weiss' definition and description of personality and behavior characteristics as the major tool for selecting clutterers, a reliability check was obtained among the principal investigator and three qualified speech pathologists who independently listened and judged the speech characteristics as cluttering. Three of the four judges had to label the subjects as clutterers before they were considered. From the 18 respondents, six subjects with a mean chronological age of 22.8 years were evaluated. Only two mixed stuttering-cluttering subjects were found. Contrary to Weiss' usage, the label of stutterer-clutterer did not necessarily imply a dominant stuttering component. Subjects in this study manifested cluttering symptomatology as well as tension, struggle, and avoidance behavior with stuttering more than cluttering.

Using 300 milliseconds as the minimum duration necessary for defining a perceived pause or change in speaking rate, stutterers exhibited significantly greater pause times than did clutterers. For all variables, clutterers and stutterers were significantly

different in performance. When the communicative systems of these groups were placed under stress of delayed auditory feedback, the different results obtained suggested that there are different internal regulation processes between the two types of fluency groups. Several implications regarding the differential diagnosis of pathological nonfluency were given.

In Hutchinson and Burk's opinion, the disorders of stuttering and cluttering must be recognized as separate entities in the "pure" form (1973, p. 204). This recognition must be accompanied by an awareness that the nonfluency of either condition may be caused by fundamentally different reasons. Such insights on the part of clinicians should open new treatment and more appropriate therapy for the clutterer and the stutterer-clutterer who have been obscured for such a long period of time. Hutchinson and Burk concluded that ". . . the greatest implication for diagnosis is the effective training of clinicians (1973, p. 205)."

Emerick and Hatten, in their text on Diagnosis and Evaluation in Speech Pathology (1974) reiterated that cluttering is sometimes confused with stuttering because they both present disruptions in fluency. They restated that "The distinguishing features of cluttering and stuttering have been succinctly summarized by Weiss (1964, see particularly p. 69) and Freund

(1966, pp. 140-144) (1974, p. 180)." Diagnosticians are cautioned to be aware of the differences in these disorders. Although the objective distortion of the speech signal may be somewhat similar in both stuttering and cluttering, they stated, some stutterers may exhibit features associated with cluttering. Clinically each of these fluency disorders, cluttering and stuttering, requires distinctly different management. They suggested that the diagnostician remember that a speech disorder involves more than a disturbance in the acoustic characteristics of the individual's oral output. Other characteristics must also be evaluated in order to determine the presence or absence of cluttering.

Although conflicting opinions have been presented, the majority of the studies reviewed have supported the view that while cluttering and stuttering both contain the common feature of nonfluent speech, cluttering is not accompanied by muscular contortions or struggle behavior as is stuttering. Further, a clutterer will improve his speech performance when careful attention is paid to the details of its production whereas the stutterer's speech will deteriorate under such scrutiny. General agreement was found to indicate that the absence of awareness of difficulty distinguished the clutterer from the stutterer.

Contributions by Weiss

Because few systematic studies have been done on cluttering, neglible incidents are reported in case histories. Weiss stated that cluttering has not been included in statistical analyses of speech disorders. A major reason for this omission is because of their unawareness of a disability existing, only a small percentage of clutterers seek treatment. In addition, because of lack of agreement in defining, describing, or differentiating, speech pathologists have not recognized cluttering as a distinct and separate disorder. According to Weiss, cluttering was "A venerable concept in the Old World. . ." but had as yet not achieved status in the New (1964, p. 50).

Before treatment begins for cluttering, Weiss emphasized the need for obtaining a careful case history during an initial interview with the client or his parents. Reading out loud should be a mandatory part of the procedure, as well as discussion of familiar topics such as hobbies, television programs, and the speech performance of the client. Because it might be a traumatic experience to initially confront him with the fact of his errors, Weiss recommended a tape recording of the child's speech only as a last resort.

The application of differential diagnosis to excluded types of symptomatic cluttering resulting from neurological conditions such as brain lesions, tumors, epilepsy, and aphasia was also recommended. These individuals, as well as mentally retarded youngsters, such as mongoloids, and deaf and hard-of-hearing individuals may also demonstrate symptomatic cluttering symptoms of indistinct articulation, repetitions and prolongations of speech, and vocal disturbances.

Weiss, adamant in his belief that cluttering was the principal if not the only basis for the development of stuttering, suggested therapy for cluttering would diminish or eliminate other symptoms in stuttering. He recommended various activities for the remediation of cluttering, such as concentration in vocabulary development, repetition of stories, rehearsal of speech before utterance, attention span and concentration tasks, counting and mathematical exercises, and training in correct articulation production. Use of the chewing method where the client concentrated on chewing movements identical with speech movements was also strongly advocated. This method, developed by Froeschels and discussed by Weiss and Beebe in 1950, was highly successful in teaching necessary tactile-kinesthetic movements for correct speech production.

Although he stated it was a rare occurrence

Weiss admitted that some clutterers achieved a degree of self-improvement. These individuals become compulsive perfectionists through over-compensation and attempts to control excessive speech and erratic delivery. Most cases of self-correction existed when the clutterer was both intelligent and ambitious. Self-improvement can occur at two critical points. One is at the beginning of formal education, and one is at puberty. At these times, children develop an increased self-awareness and must learn to develop some self-control over all their shortcomings generally. Weiss warned, however, that many clutterers may develop into stutterers at those stages if the attempt to overcome cluttering has been misdirected or stressful.

Depending upon the motivation and cooperation of the client and his intellectual capacity, prognosis for cluttering ranged from good to almost hopeless. The average time for successful therapy was one year, when clients were between the ages of ten and eighteen. Recommended sessions were one-half hour three times per week for the first six months, then twice a week, then finally once a week. In addition, a maintenance period of six months, during which the client would be seen once a month was recommended. In children six to eight years of age with mild cluttering, parents could help the child to achieve some degree of self-improvement.

This child should be seen every six months, with parents working diligently on specific procedures at home. Games and specific tasks could help to develop structure and an analytic approach to communication skill development.

In working specific correction of a child's speech, age was a significant factor to be considered because stuttering may develop from pressure and attention to speech details. Weiss suggested two general rules to prevent stuttering from occurring. First, correction should be positive and pleasant, never punishing nor impatient. Second, simple but explicit directions should be given in the areas in which the child was working so that he would not attempt self-correction of which he was incapable.

Weiss summarized his findings and diagnostic and remedial techniques after years of clinical observation and case study. His emphasis on treatment complied with his obligation to help clients with an underlying disorder which manifests itself in cluttering behavior. Weiss expected many of the concepts which he presented to meet with resistance. These concepts, however, had been discussed with many of his experienced colleagues who eventually concurred with his observations.

Weiss' work presents a valuable framework of reference from which to view some critical theories and

clinical practices regarding the nature of nonfluent speech in a field which has almost totally ignored his concept of cluttering. His results and differentiation between cluttering and stuttering are accepted by writers and researchers internationally; even those of his colleagues who do not totally accept his philosophy of cluttering defer to his text as the major reference in cluttering in the field of speech and language pathology. Thirteen years ago, in 1964, Weiss believed that cluttering had ". . . come of age (p. 114)."

INCIDENCE, EVALUATION, DIAGNOSIS, AND TREATMENT OF CLUTTERING

Contributions by Others

Authorities agree that cluttering has not been included as a separate disorder, nor included in the case histories in most clinics or therapy programs. No data are available inasmuch as no study of the incidence has been done in the United States. Voelker's (1943) was the only statistical study which even alluded to cluttering in the incidents of speech disorders. Although not specifically using the term cluttering, Voelker's category of dysrhythmia included such behaviors as defects in stress, pitch patterns, perseverations and syllabic rate. Voelker also

included tachyphemia under the classification of dysphemia, thereby including several behaviors characteristic of cluttering under various areas.

Perello (1970) reported that in nineteen years of experience he had diagnosed 34 cases of tachyphemia out of 7,227 patients. In only seven of the cases did he observe that "pure syndrome e.g. the speech trouble (p. 381)." In the remainder of the clients, cluttering was accompanied by dyslalia, delay in language, dyslexia, dysorthography, mirror-writing, left handedness, and stuttering. Perello's data indicate that cluttering undoubtedly deals with a central language imbalance which is manifested in a variety of ways.

Becker and Grundmann (1970) reported on the first systematic investigation to determine the percentage of clutterers in a segment of the population. They reaffirmed that there had been no systematic mass investigation of the population for cluttering, nor statistically reliable data on the subject. Their study was undertaken to fulfill two purposes: to increase their knowledge of cluttering, and to serve as a tribute to Deso Weiss and his scientific efforts.

In the spring of 1968, Becker and Grundmann conducted their investigation on 606 children between seven and eight years of age who attended regular school

in Berlin. Eighty students who had been attending a special school for one year because of stammering were also included. Among the 606 pupils, 11 or (1.8%) were regarded as probable clutterers. Among the 80 students in the special school for children with speech defects, nine, or 11.5% were regarded as possible clutterers.

Becker and Grundmann admitted that the lack of other mass investigations in cluttering prevented them from comparing their results with others. Their percentage seems to be relatively high, however, considering the 0.7% of stutterers that has been reported among children of this age. Because most authorities believe cluttering is a seldom-occurring disability, such data must be questioned.

Arnold (1970) unquestionably supported the existence of cluttering although little scientific support is available and lamented the lack of research in this area. According to him, ". . . references to cluttering in the most complete compilations barely reach the number 100. Indeed, cluttering is the neglected speech disability (p. 247)."

Perkins (1977) discussed the fact that most specialists write about cluttering and stuttering as similar disorders because they have the common disability of nonfluent speech. Although he admitted that

confusion still exists in the field regarding the differentiation of both disorders, Perkins stated that cluttering appeared to reflect a more profound disability than stuttering. Not only was cluttered speech more defective in many ways than stuttered speech, it was also accompanied by other language disabilities. Viewed from a language viewpoint, Perkins concluded that ". . . European research that consistently shows more neurological disability among cluttering than stuttering gains in credibility (Perkins, 1977, p. 325)."

Because cluttering and stuttering have been combined as one disability, few writers have attempted to clarify different diagnostic or remedial treatment for such behaviors. Obviously, if researchers would consider cluttering as a disorder in all areas of communication ability, a complete diagnostic battery would be essential in order to distinguish cluttering from stuttering. All areas of language, both oral and written, would need to be assessed in both their qualitative and quantitative aspects.

Arnold (1960) and Goldschmidt (1970) mandated that more complete assessment be included in evaluating for cluttering.

According to Van Riper (1970), many authors had attempted to outline procedures for differential

diagnosis between stuttering and cluttering with a wide range of behavioral and personality features. Van Riper suggested that researchers utilize quantitative rather than qualitative measures, and referred to Weiss' (1964) diagram to differentiate between clutterers and stutterers. A collection of diagnostic materials more extensive than ever used before would have to be selected with reliability of judgments determined by experts. Only then, Van Riper asserted, could we begin to measure the relative amount of cluttering or stuttering in the mixture. At present, he lamented, such research had not been considered.

Elaborating on the difficulty of such a research project, Van Riper (1970) reported that subjective terms such as attention span and qualitative judgmental statements of awareness, excessive number of repetitions and lack of ability hindered evaluation of cluttering. Many diagnostic items are not objectively measurable or at least identifiable, he lamented. That such a diagnostic differentiation of cluttering from stuttering should be done Van Riper was certain. He believed, moreover, that if basic research was completed, our diagnostic tools could be refined to measure, quantify and weigh our assessments more accurately, not only in differentially diagnosing cluttering from stuttering, but from one disorder to another.

Treatment of cluttering has not been considered by the vast majority of specialists in the field of speech pathology.

Because of its unreported incidence, most authorities agreed that cluttering was a disorder that encompassed a multitude of disabilities in addition to the nonfluent behavior that was always observed. Treatment would depend upon the nature, complexity, and degree of involvement of the various symptoms and dysfunctions characteristic of cluttering. Unless one identified a disorder, however, treatment could not be applied nor improvement expected. Cluttering would have to be recognized as a separate and distinct disorder before diagnosis and therapy were initiated.

Procedures for the investigation of the existence and nature of cluttering have been poorly designed and lack reliable data, relying on clinical observations, case histories or judgmental impressions. Therefore, it is impossible to specify the incidence or nature of cluttering from the available literature.

In a report to the Fourteenth Convention of the International Association of Logopedics and Phoniatrics in Paris in August, 1968, Weiss (1967) reaffirmed his position on cluttering. His presentation constituted the first report of the entire problem before a broad international forum. Weiss asserted that cluttering

should not be regarded as either functional or organic in nature, but rather as a hereditary disability. His opinion, Weiss stated, was an improvement on earlier opinions which he had shared that anything hereditary had to be considered organic. The basic common denominator of all cases of cluttering, he emphasized, is found not in the actual speech production but in those processes preparatory to speaking; that is, in formulating speech. The clutterer's difficulty lies in his inability ". . . to integrate all the elements of his language (1967, p. 236)." He is unable to proceed from non-verbal thinking to a well-integrated expression of thought. Weiss declared a preference for this unifying psychological concept of cluttering to the previous concept of phenomenological approach of viewing the rapidity of speech as the decisive symptom of cluttering.

Weiss reiterated that the various symptoms of cluttering are so vast and inconsistent that the problems are also seen in other disabilities labeled as dyslexia, dysgraphia, amusia, and voice dysfunctions. Although much disagreement is prevalent in the field regarding the nature of cluttering, and full scientific corroboration is not yet available, he declared, clinical evidence is overwhelming. Weiss concluded "We deem cluttering to be the most promising chapter of modern logopedics (1967, p. 258)."

CHAPTER III

PROCEDURES

A discussion of this writer's purpose in the study of cluttering, a description of the population selected, and the development of the instrument to differentiate between cluttering and stuttering are included. The selection of a Likert Scale in collecting data, the training of speech clinicians in the area of cluttering, follow-up procedures for collecting data, and the proposed analysis of data are also included.

The purpose of this investigation was to determine the incidence of cluttering among children who had been diagnosed as stutterers, and the various linguistic and behavioral patterns among some stuttering children that would more accurately identify them as clutterers. Such patterns were considered to be observable in public school environments where speech clinicians routinely evaluate and remediate speech and language problems.

As Supervisor of School Services in the Mt. Carmel Hearing and Speech Center in Newark, New Jersey, where children were referred for evaluation of speech

and language problems, this investigator in 1967-68 noticed that some children who had been referred because of stuttering exhibited a variety of symptoms that had not been observed in other stuttering youngsters. Some children were observed to demonstrate not only disruptions in their speech fluency, but also word-finding difficulties, grammatical errors, and vocabulary deficiencies that did not seem to be associated with nonfluent speech patterns. These latter errors appeared to be more indicative of underlying linguistic deficiencies than speech disturbances.

This writer discussed her findings with another speech clinician who had also observed similar behaviors in some children who stuttered. They decided to investigate the extent to which nonfluent speech behavior in young children was related to their language performance (Williams and Marks, 1968).

Initially, six elementary school children who manifested a stuttering problem were given extensive speech and language evaluations which included the Illinois Test of Psycholinguistic Abilities (ITPA) (Kirk and McCarthy, 1961). Inspection of ITPA profiles revealed certain similarities among the six subjects. All six achieved visual motor association standard scores which were significantly below either their own

total standard scores or below the standard scores of all other subtests in the visual motor channel. Because of these findings, the authors decided to further explore ITPA performance of young children who stuttered to determine whether such profiles were characteristic of this population.

Five girls and 23 boys who attended regular classes in elementary public or parochial schools in New Jersey or Pennsylvania were chosen for this study. At that time the principal investigator had moved to Pennsylvania and was teaching at Bloomsburg State College. According to school records, none of the subjects had any handicapping physical, psychological or behavioral problems. All had been diagnosed as stutterers and met the following criteria: an I.Q. of 85 or above on the Peabody Picture Vocabulary Test (PPVT) (Dunn, 1959), adequate articulation as measured by the Templin-Darley Screening Test of Articulation (Templin-Darley, 1960), and an absence of hearing impairment as measured by audiometric screening. Chronological ages ranged from 5-3 to 9-5, with a mean age of 7-6; mental ages ranged from 5-6 to 14-8, with a mean age of 8-5; and I.Q.'s ranged from 87 to 146, with a mean score of 105.7.

Although this study was initially designed to explore the performance of young stutterers on the ITPA, with PPVT scores used only to screen out subjects whose intellectual score was below normal, analysis of results was later extended to include correlation of PPVT and ITPA scores. Results indicated that eleven subjects performed significantly lower than their own standard scores on the auditory vocal sequencing subtest on the ITPA. Moreover, almost all subjects manifested uneven language functioning which indicated weakness in some areas of linguistic performance. Analysis of ITPA scores also suggested that stutterers might have a relative weakness at the automatic level of performance, including visual memory functioning. At the automatic level, an individual's habits of functioning are less voluntary than at the representational level. Automatic functions are highly organized and integrated, however, and are involved in such activities as visual and auditory closure, speed of perception, ability to respond to a visual or auditory sequence, rote learning, synthesizing sounds into words, and utilizing redundancies of experience (Kirk, McCarthy, and Kirk, 1968).

The authors believed the performance of stutterers in this study might be a reflection of underlying

deficiency in psycholinguistic abilities of this population, or that it suggests that stuttering might develop in some children because of weakness in the automatic levels of language performance. Although no conclusions were drawn from the small sample, the authors agreed that further study was indicated to explore language factors related to stuttering.

Pilot Study for Present Investigation

Preliminary to this investigation, a pilot study was conducted in the Capital Area Intermediate Unit, Harrisburg, Pennsylvania, in September, 1976. The purpose of this survey was to identify which statements of the 15 selected by this investigator were considered to be essential in identifying cluttering behavior among stuttering children. The investigator received permission from the Director of Speech and Language Services of the Capital Area Unit to conduct the survey of speech and language clinicians in that area. On September 24, 1976, this writer visited the Harrisburg Area School District. As a result of previous telephone conversations, arrangements were made to have clinicians in the Unit meet with the investigator. Fifteen speech and language clinicians met with the writer on an individual basis to determine the

efficacy of undertaking an expanded research project in cluttering. During a personal conference with each respondent, impressions, reactions, and suggestions relating to the investigation of cluttering were explored in both oral and written form. Of the 15, three served as Instructional Advisors or Supervisors, and one was the Program Director and Administrator of Speech and Language Services for the Unit. All 15 had experience in the field of speech and language therapy and had worked with stuttering youngsters. The clinicians discussed each item on the Checklist of Behaviors with the investigator, which was an adaptation from Weiss' (1964) chart of differentiation between cluttering and stuttering symptoms.

Clinicians also completed the Educational Background and Experience Record Form (See Appendix 2). Written responses to Question 7-A regarding whether they had ever heard about cluttering revealed affirmative answers. Knowledge about cluttering had been gained from either college courses, professional literature and discussions, or various work experience with clutterers. In individual discussions with the investigator, all respondents agreed that cluttering was distinguishable from stuttering and that it was a

separate disorder that required different therapy management.

A variety of descriptions were given to Question 7-C regarding what cluttering meant. Five specialists reported that cluttering was primarily a language disorder that included word-finding and thinking difficulties. One clinician described the condition as a disorder in sequencing and organizational thinking. Five respondents believed cluttering was demonstrated by rapid rate; two of those five said it was accompanied by learning problems. Three of the five believed rhythm disorders also accompanied the excessive rate problem. Two clinicians equated cluttering with stuttering. One believed that when a clutterer was told to decrease his rate of speech he became a stutterer. One clinician stated that cluttering comprised a disorder so complex that it was "too much to tell." She did, however, report that the type of treatment preferred for such a client would be language therapy.

Other clinicians stated preference for different types of therapy for clutterers, ranging from articulation (1); articulation and stuttering (1); multiple articulation (1); stuttering, articulation and

language (1); stuttering and language (1); stuttering (1); and language (5). Four clinicians responded with the designation of "not applicable" because they had not observed clutterers in their caseloads. All other respondents indicated that they had had clutterers in their caseloads. These results indicated that while clinicians generally agreed that they had basic knowledge about cluttering, no agreement was found in their choice of type of therapy for such clients.

To the question of how many clutterers had ever been in their caseloads, the following responses were obtained: six clinicians reported that they did not know the number of cases; four had had one clutterer; one had two; three had three, with one of those reporting from three to five; and one clinician reported 15 clutterers had been observed in her caseloads. Interestingly, two of the respondents who reported not knowing how many clutterers they had ever seen recommended either stuttering or stuttering and articulation therapy for such cases. The other four replied with "not applicable" designation. It would seem from such results that stuttering and cluttering are often considered to be a similar disorder, at least as far as type of therapy is concerned.

Clinicians reacted to the instrument to

determine clutterers from stutterers, agreeing that the checklist of behaviors would be a beneficial tool for differentiating between those disorders. Many clinicians expressed concern that because cluttering was a more severe disorder with broader language and cognitive disturbances, some children who demonstrate fluency problems may be misdiagnosed as stuttering by an uninformed clinician. Clinicians agreed that clutterers were being overlooked by most speech and language clinicians because of lack of training in many institutions in differentiating symptoms between cluttering and stuttering. They also reported that more emphasis was needed in language training, both in diagnosis and remediation, than was commonly taught in some institutions.

Of the 11 clinicians engaged in speech and language therapy, nine (82%) had students with fluency problems currently enrolled in their caseloads. A total of 19 nonfluent children were reported among the nine clinicians. It should be noted that the Harrisburg Unit is only one of two public school programs in the United States which has a clinical program of such quality that it is certified by the American Speech and Hearing Association Professional Services Board. The other program is located in California.

Certification indicates that the program meets the highest standards required by the national certifying agency for professionals engaged in the practice of speech and language therapy.

The suggestions and responses made by the staff of Intermediate Unit 15 were incorporated into the present instrument of Checklist of Behaviors Observed in a Clinical Situation. Items 16 through 20 reflect their specific reactions and suggestions to the questionnaire. As a result of the preliminary study and the responses in the Harrisburg area, both from those professionals actively engaged in the practice of speech and language therapy and those who supervise such activities, the investigator planned to further explore the problem of cluttering in other areas or Units. Arrangements were made for conducting the present investigation of cluttering in three other Intermediate Units in Pennsylvania, Units 16, 18 and 29.

Population Selection

Subjects for this study were selected from all speech clinicians employed in academic year 1976-77 in the cooperating public schools of Intermediate Units 16, 18, and 29, located in the central northeastern region of Pennsylania. The area is primarily rural,

and is economically supported by small industry and farming. The residents are predominantly white, with a small representation of black and oriental population. Based on earned income, residents fall into middle and lower-class economic status.

Permission for this investigation was granted by the supervisors of the Intermediate School Districts, principals of school buildings, and cooperating clinicians. Supervisors were contacted by telephone and by written communication to arrange personal visits to discuss the nature and procedures for the study. During personal visits, the objectives of the investigation and the necessity to contact speech clinicians were discussed with each supervisor. Group meetings were planned within each Unit to establish personal contact with all clinicians within that geographic area. Supervisors agreed that group meetings were feasible. The supervisors identified 81 speech clinicians employed in the three Units to provide diagnostic and remedial speech and language services to communicatively handicapped children.

All 81 clinicians participated in the study and responded to the survey of educational training and experience record. During each group visit, this investigator conducted a training session regarding the

nature of cluttering as it had been discussed by Weiss in 1964. Transcription of the training session is included in Appendix 5 . Following the training sessions in the Intermediate Unit, each clinician completed a questionnaire (See Appendix 2) regarding his educational background and professional experience. Clinicians were advised that the purpose of the study was to determine the incidence of cluttering among children currently enrolled in speech therapy for stuttering. Clinicians reported no children in their caseloads who had been referred or diagnosed as clutterers.

A checklist of behaviors that were to be observed in a clinical situation was distributed to all clinicians who worked with children with fluency problems. Each clinician was asked to complete one form for each child during a forthcoming diagnostic session, noting various language and behavioral characteristics such as rapidity of speech production, reading, spelling, and articulation errors, coordination and balance, and attention and concentration skills (See Appendix 3). Clinicians were also asked to provide any additional information relating to the fluency problems. The checklist was the major instrument to be used to determine the presence of cluttering behaviors related to

academic performance, such as reading and spelling deficits, attention or distractibility levels, and gross and fine motor dysfunctions. Each item was read aloud, and questions were invited from the groups. No difficulties were encountered and clinicians generally agreed that the instrument was self-explanatory and could be used easily in a routine therapy session.

Design of the Study

Investigations which utilize a frequency count of responses to questionnaire items typically apply Likert or Chi Square analyses for meaningful interpretation of data. Because this study comprised an analytical survey using the questionnaire format, both Likert and Chi Square analyses were appropriate applications to data. An item analysis program at Bloomsburg State College, Bloomsburg, Pennsylvania will be used to tabulate the frequencies and percentages of each statement and the relationship or effect of clinicians age, background, experience, and educational training upon such statements.

The Likert Scale was adopted as the principal instrument to collect data on children who demonstrated fluency problems. The data were collected and the responses processed for use in a program designed to analyze instruments of the Likert type (Kohr, 1973).

The program was used to score the instrument by providing frequency of item designations. Designations for each item were as follows: Always was assigned a 1; Often a 2; Occasionally a 3; Seldom a 4; and Never a 5 score. Twenty items comprised the instrument. Items 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 17, 18, 19, and 20 were analyzed in the order in which they were designated on the form. Items 1, 2, 12, 15, and 16 were reversed in analysis of the Likert instrument. This procedure was adopted by the investigator to be used to differentiate those items which were considered to constitute stuttering and those which constituted cluttering. Items 1, 2, 12, 15, and 16 were designed to constitute stuttering behavior; all others were believed to constitute cluttering behavior. Clinicians' responses of Always, Often, Occasionally, Seldom, and Never were collapsed from a five-point scale into a two-point scale, where Always, Often, and Occasionally were assigned a "one" score, and Seldom and Never a "two" score. Items which were reversed would be the opposite, with Always, Often, and Occasionally assigned a "two," and Seldom and Never a "one" score. Designation of "one" would be interpreted to indicate cluttering behavior, while a "two" indicated stuttering behavior. The attitude score for each

subject would thus be obtained by the direction that clinicians assigned to the responses for each statement on the form.

Likert Analysis

In the Likert procedure, a large number of statements in the attitude area to be measured are collected from various sources such as books, articles, and statements of opinion. The statements thus obtained are desinged to elicit either a favorable or unfavorable response. Each statement should be carefully selected and edited following the informal criteria suggested by Thurstone and Chave, Likert, Bird, Edwards and Kilpatrick:

1. Avoid statements that refer to the past and not to the present.
2. Avoid statements that are factual or capable of being interpreted as factual.
3. Avoid statements that may be interpreted in more than one way.
4. Avoid statements that are irrelevant to the psychological object under consideration.
5. Avoid statements that are likely to be endorsed by almost everyone or almost no one.
6. Select statements that are believed to cover the entire range of the affective scale of interest.

7. Keep the language of the statements simple, clear, and direct.
8. Statements should be short, rarely exceeding 20 words.
9. Each statement should contain only one complete thought.
10. Avoid statements containing universals such as all, always, none, and never.
11. In writing statements, words such as only, just, merely, and others of a similar nature should be used with care and moderation.
12. Statements should be in the form of simple statements rather than in compound or complex sentences.
13. Avoid the use of double negatives.
14. Avoid the use of words that may not be understood by those who complete the scale.

The statements should be given to a group or a committee and the 20 to 25 statements which were considered to be most relevant should be selected.

In preparing the final scale, only those statements which were considered to be the most differentiating statements should be used. Some of the selected

statements should be favorable. The strongly agree responses then would carry the weight of 1 and the strongly disagree responses the weight of 5. The other statements should consist of unfavorable statements and the scoring system reversed. The advantage of having both kinds of statements represented in the final scale is to minimize possible response sets of subjects that might be generated if only favorable or unfavorable statements were included in the scale.

Chi Square Analysis

To determine if obtained distribution of frequencies corresponds to a theoretical normal curve distribution, a x^2 "goodness of fit" analysis is appropriate. First a table of observed frequencies on criterion variable categories was obtained and then a table of expected frequencies was constructed in various tables. The expected data table is identical in form to the observed table but lists theoretical frequencies based entirely on the expected outcome of the study when H_o is true. The chi square test helps to determine if the discrepancy between the observed and expected frequencies is merely sampling fluctuation or an indication of population bias.

For chi square, degrees of freedom is based on

the number of cells in each contingency table. The general formula for chi square analysis is

$$x^2 = \sum_{i}^{n} \frac{(0i - Ei)^2}{Ei}$$

The general formula for computing degrees of freedom for chi square problems is

$$df = (r-1)\ (c-1)$$

(Downie and Starry, 1977, p.78).

Collection of Data

Several contacts were necessary before all 81 respondents completed the Educational Training and Experience Record. During the initial group meetings, 68 (84%) applicants were present. Five respondents each were absent in Units 16, and 18; in Unit 29, three clinicians were absent. Forms and instructions were given to respective supervisors of each Unit, asking them to convey pertinent information regarding the study, cluttering, accuracy of reporting observed behaviors and background information. Questions were to be forwarded to the investigator, who would plan additional meetings or contacts by telephone to clarify information as needed.

By December, 1976, one-half (41) of the forms had been returned accurately completed; 41 were

incomplete, inaccurate, or not returned to the investigator. The investigator made regular contacts, both by telephone and personal visits, to obtain complete data. All 81 forms were received by March, 1977. Examination of the material revealed, however, that incomplete data had been secured on 17 respondents. In April, 1977, completed data were received by the investigator.

Table 1 indicates population distribution of clinicians according to age, sex, number of years experience, highest degree obtained, type of institution from which degree was obtained, and location of institution where degree was obtained. Of the total number of respondents, 45 (56%) reported that they had children with fluency problems currently enrolled in their caseloads. A total of 109 children were reported as having fluency problems. All 109 children were considered to be stutterers. Likert analysis will be applied to this group of subjects.

TABLE 1

Population Distribution of Clinicians

Sex	Birthyear	Highest Degree Year	Bachelor	Master	Bloomsburg State College	University in Pa.	Private College, Pa.	Outside Pa.	Other State College Inc. Ind. Univ. Pa.	Total Years Experience
F	1953	1974	X			X				2
F	49	72		X		X				6
F	52	74	X		X					2
F	52	74	X		X					2
F	52	73	X			X				4
M	37	71		X	X					18
M	49	71	X						X	5
F	52	74	X						X	1
F	43	69		X	X					7
F	19	44		X		X				20
F	54	76	X						X	1
F	49	76		X	X					5
M	49	62		X						18
F	52	74	X						X	2
F	51	74	X			X				3
F	54	76	X						X	1
F	27	74		X	X				X	22
M	47	69	X		X					7
M	32	57	X		X					19
F	52	75		X	X					1
F	50	75		X	X					4

TABLE 1 (Cont'd.)

Sex	Birthyear	Highest Degree Year	Bachelor	Master	Bloomsburg State College	University in Pa.	Private College, Pa.	Outside Pa.	Other State College Inc. Ind. Univ. Pa.	Total Years Experience
F	1951	1973	X		X					3
F	39	61	X		X					11
F	51	73	X		X					4
F	37	59	X		X					10
F	20	60	X		X					16
M	43	74		X					X	10
F	52	76		X	X					1
F	51	75		X		X				3
F	50	72	X		X					5
F	50	71	X					X		6
M	45	72	X		X					5
F	53	74	X							3
M	51	76		X	X					4
F	54	76	X							1
F	51	73	X							4
M	35	75		X	X					10
F	49	74		X	X					5
M	51	74	X							3
F	50	73	X							4
M	27	64		X		X				26
F	52	74	X							3
M	47	70	X							6

TABLE 1 (Cont'd.)

Sex	Birthyear	Highest Degree Year	Bachelor	Master	Bloomsburg State College	University in Pa.	Private College, Pa.	Outside Pa.	Other State College Inc. Ind. Univ. Pa.	Total Years Experience
F	1952	1974	X							3
F	54	76	X							1
F	50	73		X		X				4
F	52	74	X							3
F	49	74		X	X					6
F	49	72		X	X					5
F	52	74	X							2
M	45	70		X				X		4
F	49	71	X							6
F	51	73	X							4
F	51	73	X							4
F	36	76		X	X					13
F	15	34	X							15
F	51	73	X							4
F	52	74	X							3
M	47	71		X	X					9
F	53	75	X							2
F	53	75		X	X					2
M	29	62		X		X				19
F	50	72	X							5
F	54	76	X			X				1
M	32	59	X		X					16

TABLE 1 (Cont'd.)

Sex	Birthyear	Highest Degree Year	Bachelor	Master	Bloomsburg State College	University in Pa.	Private College, Pa.	Outside Pa.	Other State College Inc. Ind. Univ. Pa.	Total Years Experience
F	1951	1973	X						X	3
F	49	72		X	X					6
F	52	74	X			X				3
F	42	70		X	X					13
M	49	75	X			X				2
F	53	75	X			X				2
F	39	60	X						X	15
M	47	76		X	X					15
M	33	71		X	X					16
F	52	74	X			X				3
F	51	73	X				X			4
F	52	74	X			X				3
F	54	76	X			X				1
F	49	72		X				X		6
M	27	67		X		X				22
F	52	75	X						X	2

Summary

Eighty-one speech and language clinicians in Intermediate Units 16, 18, and 29 in Central Northeastern Pennsylvania were asked to complete a questionnaire relating to their educational background and experience and a checklist of behaviors on 109 children whom they had diagnosed as stutterers. An analysis of scores would indicate which of these children would be considered to demonstrate cluttering behavior and which would be called stutterers.

The results of differentiation of children as clutterers or stutterers would determine the extent to which clinicians engaged in the practice or supervision of speech and language therapy could recognize and treat cluttering as a separate and distinct disorder from stuttering. The differentiation procedure would utilize a modified version of Weiss' (1964) schematic format differentiation between cluttering and stuttering behavior.

CHAPTER IV

PRESENTATION OF THE DATA, STATISTICAL TREATMENT, AND FINDINGS

This chapter will attempt to analyze the data in frequency and percentage tabulations for each tiem on the educational background and experience instrument and its relationship with the items on the Likert instrument.

The results of each respondent were transferred from the questionnaire instrument into data processing cards. Responses were processed for use in a Statistical Package for the Social Sciences program designed to analyze instruments of the Likert type and to yield chi-square correlations. The facilities of the Computer Center at Bloomsburg State College, Bloomsburg, Pennsylvania were used for this purpose.

RESULTS OF THE FREQUENCY AND PERCENTAGE ANALYSIS OF CLINICIANS' BACKGROUND AND EXPERIENCE

The responses of each respondent were transferred from the questionnaire instrument into data processing cards. This first analysis of data resulted in frequency and percentage tabulations of the responses

of 81 clinicians, including four instructional advisors (supervisors) in three Intermediate Units of Pennsylvania. Table 2 lists the population distribution of clinicians according to sex. A preponderance of female clinicians was found, with 75% of the respondents being female, and 25% being male respondents.

TABLE 2

Population Distribution by Sex

Sex	Frequency	Percent
Male	20	24.7
Female	61	75.2
Total	81	100.0

Table 3 lists the distribution of clinicians according to their Intermediate Units. Units 16 and 18 consisted of 32 and 31 respondents respectively; Unit 29 employed 18 clinicians. Units 16 and 29 each had one instructional advisor, while Unit 18 employed two supervisors. Clinicians actively engaged in conducting speech therapy totaled 77, with four instructional advisors for all three Units.

TABLE 3

Employment Area of Clinicians

Intermediate Unit	Frequency	Percent
16	32	39.51
18	31	38.27
29	18	22.22
Total	81	100.00

Of the 77 clinicians actively engaged in the diagnosis and remediation of communication disorders, 70 (90.81%) reported their major responsibility as speech therapy; 2 (2.60%) clinicians designated their major responsibility as hearing therapy; and 5 (6.49%) indicated their major responsibility as language therapy. The latter clinicians worked exclusively with mentally retarded individuals, whose major deficits are generally agreed to be language-oriented. The designation of "speech therapy" in general usage indicates both speech and language therapy for individuals with communication disorders.

Table 4 lists the birth year of clinicians, ranging from 1915 through 1954. The mean year of birth was 1946; the mode year was 1952; and the median year of birth was 1950. Range of clinicians' ages was 22 years to 61 years old. Fifty-nine clinicians (72.83%)

were born after 1946 and fell between the ages of 22 and 30 years old. Ten respondents were from 31 to 40 years old; nine were from 41 to 50 years of age; and three were older than 50 years of age.

TABLE 4

Clinicians' Birth Year

Year of Birth	Frequency	Percent
1915	1	1.2
1919	1	1.2
1920	1	1.2
1927	3	3.7
1929	2	2.5
1932	2	2.5
1933	1	1.2
1935	1	1.2
1936	1	1.2
1937	2	2.5
1939	2	2.5
1942	1	1.2
1943	2	2.5
1945	2	2.5
1947	4	4.9
1949	10	12.3
1950	6	7.4
1951	12	14.8
1952	16	19.8
1953	5	6.2
1954	6	7.4
TOTAL	81	100.0

Table 5 indicates the ages of clinicians and their highest degree levels. Thirty-nine (48.15%) respondents were from 22 to 25 years of age. Twenty (24.70%) were from 26 to 30 years old; the remaining 22 clinicians were older than 31 years.

At both the bachelor and master's levels, a preponderance of female clinicians was observed, with 20 (25%) males and 61 (75%) females totally. At the bachelor level, nine (18%) males and 42 (82%) females comprised the group. Fifty-one respondents (63%) held bachelor's degrees only. At the master's level, 11 males (37%) and 19 females (63%) held that degree. Of the 81 clinicians totally, only 30 (37%) held master's degrees or equivalents.

TABLE 5

Clinician Age and Highest Degree

Birth Year	Age Range	Bachelor M	Bachelor F	Master* M	Master* F	Subtotal M	Subtotal F	Total	Percent
1951-54	12-25	1	33	1	4	2	37	39	48.15
1946-50	26-30	5	4	2	9	7	13	20	24.70
1941-45	31-35	1	0	1	3	2	3	5	6.17
1936-40	36-40	0	3	0	1	0	4	4	4.94
1931-35	41-45	2	0	3	0	5	0	5	6.17
1926-30	46-50	0	0	4	1	4	1	5	6.17
Before 1925	51+	0	2	0	1	0	3	3	3.70
Subtotal		9	42	11	19	20	61	81**	100.00%
Percent		18	82	37	63	25	75	100.0	
Total		51		30**		81			
Percent		63		37		100.0			

*Master's Degree or Equivalency

**Includes Four Instructional Advisors (Supervisors)

Table 6 lists the type and length of experience of respondents. Of the 81 clinicians, 53 (65.4%) reported no type of previous experience. Twenty (24.7%) who did report a previous employment indicated that it had been in public school settings. The remainder of eight clinicians (10%) had conducted therapy in a hospital setting (1 clinician, 1.2%), private school (four or 4.9%), state institution for the retarded (two clinicians, or 2.5%), and one (1.2%) in a correctional institution. A total of 28 respondents reported previous employment.

Of the 28 who reported at least one previous position, 12 (15%) had worked for one year only. Five (6.2%) had two years' experience in a previous position, three respondents (3.7%) had worked for three years previously; two (2.5%) had four years and two (2.5%) had five years of previous employment. Of the remaining four clinicians, one (1.2%) had seven years of previous employment; one (1.2%) had 10 years; one (1.2%) had 12 years; and one (1.2%) had 15 years of experience in a previous position.

Twenty-six of those with previous employment had worked in Pennsylvania. The other two respondents had been employed outside Pennsylvania, one in New Jersey, and one in South Carolina.

Only 10 (12%) clinicians reported two previous positions. Nine (11.1%) had been in the public schools and one (1.2%) at a state institution for the retarded. Of the 10 respondents with two previous experiences, one reported one year of that experience; two had two years previously; three had four years; and two clinicians reported five years experience in a previous employment. One clinician reported 11 years and one reported 15 years in their second previous employment.

Nine of the 10 clinicians with a second previous employment had been employed in Pennsylvania, while one had worked in Virginia.

Five respondents indicated they had been employed in three previous positions. All five had been in public schools in Pennsylvania. The number of years worked in a third previous position ranged from one to 12 years. One clinician had worked for one year; two had worked for two years; one for 11 years; and one for 12 years in a third previous employment.

No clinician reported more than three previous employment positions. The previous experience of clinicians ranged from one year to 19 years totally. The mean number of years of experience was 4.53; the mode was 4.00 years; and the median number of years of experience was 3.71 years. Table 7 indicates the number

of years' experience by Intermediate Units. Units 16 and 29 employed clinicians with approximately the same mean number of years experience, with 16 being 7.0 years and 29 being 7.39 years. Intermediate Unit 18 employed clinicians with the least number of years' experience, 5.9 years.

TABLE 6

TYPE AND LENGTH OF EXPERIENCE

NO. YRS.:	0	1	2	3	4	5	6	7	8	9	10
Present Position	Freq.	13	10	14	16	9	7	2	2	0	2
	%	(16)	(12.3)	(17.3)	(19.8)	(11.1)	(8.6)	(2.5)	(2.5)		(2.5)
Previous Position I	53	12	5	3	2	2	0	1	0	0	1
	(65.4)	(14.8)	(6.2)	(3.7)	(2.5)	(2.5)		(1.2)			(1.2)
Previous Position II	71	1	2	0	3	2	0	0	0	0	0
	(87.7)	(1.2)	(2.5)		(3.7)	(2.5)					
Previous Position III	76	1	2	0	0	0	0	0	0	0	0
	(93.8)	(1.2)	(2.5)								
TOTAL YRS. EXPERIENCE		9	9	13	13	7	7	2	0	1	3
		(11.1)	(11.1)	(16.0)	(16.0)	(8.6)	(8.6)	(2.5)		(1.2)	(3.7)

TABLE 6 (Cont'd.)

NO. YRS.:		11	12	13	15	16	18	19	20	22	26
Present Position	Freq.	0	1	1	1	2	0	1	0	0	0
	%		(1.2)	(1.2)	(1.2)	(2.5)		(1.2)			
Previous Position I		0	1	0	1	0	0	0	0	0	0
			(1.2)		(1.2)						
Previous Position II		1	0	0	1	0	0	0	0	0	0
		(1.2)			(1.2)						
Previous Position III		1	1	0	0	0	0	0	0	0	0
		(1.2)	(1.2)								
TOTAL YEARS EXPERIENCE		1	0	2	3	3	2	2	1	2	1
		(1.2)		(2.5)	(3.7)	(3.7)	(2.5)	(2.5)	(1.2)	(2.5)	(1.2)

TABLE 7

Clinician Experience

A. - I.U. 16

Cl. No.	Sex	Employment Record: Years in Pres. Position	Previous Position	Position III	Position IV	Total Yrs. Experience
1	F	2	0	0	0	2
2	F	3	1	2	0	6
3	F	2	0	0	0	2
4	F	2	0	0	0	2
5	F	4	0	0	0	4
6	M	3	2	11	2	18
7	M	5	0	0	0	5
8	F	1	0	0	0	1
9	F	7	0	0	0	7
10	F	5	2	2	11	20
11	F	1	0	0	0	1
12	F	2	1	1	1	5
13	M	3	10	5	0	18
14	F	1	1	0	0	2
15	F	3	0	0	0	3
16	F	1	0	0	0	1
17	F	6	12	4	0	22
18	M	5	2	0	0	7
19	M	19	0	0	0	19
20	F	1	0	0	0	1
21	F	4	0	0	0	4
22	F	3	0	0	0	3
23	F	10	1	0	0	11
24	F	4	0	0	0	4
25	F	6	4	0	0	10
26	F	16	0	0	0	16

TABLE 7 - A. - I.U. 16 (Cont'd.)

Cl. No.	Sex	Employment Record: Years in Pres. Position	Previous Position	Position III	Position IV	Total Yrs. Experience
27	M	5	1	4	0	10
28	F	1	0	0	0	1
29	F	3	0	0	0	3
30	F	5	0	0	0	5
31	F	5	1	0	0	6
32	M	5	0	0	0	5
Total			12	7	3	224

$32 \overline{)224} = 7.0$ years

TABLE 7 (Cont'd.)

B. - I.U. 18

Cl. No.	Sex	Employment Record: Years in Pres. Position	Previous Position	Position III	Position IV	Total Yrs. Experience
33	F	3	0	0	0	3
34	M	4	0	0	0	4
35	F	1	0	0	0	1
36	F	4	0	0	0	4
37	M	7	3	0	0	10
38	F	5	0	0	0	5
39	M	1	2	0	0	3
40	F	4	0	0	0	4
41	M	4	5	5	12	26
42	F	2	1	0	0	3
43	M	6	0	0	0	6
44	F	3	0	0	0	3
45	F	1	0	0	0	1
46	F	4	0	0	0	4
47	F	3	0	0	0	3
48	F	6	0	0	0	6
49	F	1	4	0	0	5
50	F	2	1	0	0	3
51	F	4	0	0	0	4
52	M	6	0	0	0	6
53	F	4	0	0	0	4
54	F	4	0	0	0	4
55	F	5	2	4	2	13
56	F	12	3	0	0	15
57	F	4	0	0	0	4

TABLE 7 (Cont'd.)

B. - I.U. 18

Cl. No	Sex	Employment Record: Years in Pres. Position	Previous Position	Position III	Position IV	Total Yrs. Experience
58	F	3	0	0	0	3
59	M	8	1	0	0	9
60	F	1	1	0	0	2
61	F	2	0	0	0	2
62	M	4	15	0	0	19
63	F	4	1	0	0	5
Total			12	2	2	184

$31 \overline{)184} = 5.9$ or 6 years

TABLE 7 (Cont'd.)

C. - I.U. 29

Cl. No.	Sex	Employment Record: Years in Pres. Position	Previous Position	Position III	Position IV	Total Yrs. Experience
64	F	1	0	0	0	1
65	M	15	1	0	0	16
66	F	3	0	0	0	3
67	F	6	0	0	0	6
68	F	3	0	0	0	3
69	F	13	0	0	0	13
70	M	2	0	0	0	2
71	F	2	0	0	0	2
72	F	10	5	0	0	15
73	M	8	7	0	0	15
74	M	16	0	0	0	16
75	F	3	0	0	0	3
76	F	4	0	0	0	4
77	F	3	0	0	0	3
78	F	1	0	0	0	1
79	F	6	0	0	0	6
80	M	4	3	15	0	22
81	F	2	0	0	0	2
Total			16	15	0	133

$18 / \overline{133} = 7.39$ or 7 years

Table 8 represents the caseload types by Intermediate Unit and number of subjects in each unit who worked with each type of disorder. A total of 5,343 students were enrolled for speech, language, and hearing problems in all three Intermediate Unit programs.

The number of clinicians who worked with each type of disorder varied, as did the number of cases in each disorder.

The highest proportion of cases were students reported to have articulation problems, for a total of 4,180 students or 78.23% of the total caseload. Language problems constituted 966 cases, or 18.08% of the total caseload. Fluency problems totaled 109 students, or 2.04% of the caseload who were labeled as stutterers. Voice problems totaled 20 students, or 0.37% of the caseload. Other problems, such as hearing impairments, myofunctional defects (tongue thrust problems), and cleft palate, totaled 68 students, or 1.27% of the total caseload in all three Units.

TABLE 8

Type and Frequency of Disorder in Each Unit

	16		18		29			
	Number of Cases	Number of Clin.	Number of Cases	Number of Clin.	Number of Cases	Number of Clin.	Sub-Total	%
Articulation	1620	26	1718	27	842	15	4180	(78.23)
Language	339	28	420	26	207	12	966	(18.08)
Fluency	42	18	58	20	9	7	109	(2.04)
Voice	10	4	5	5	5	3	20	(.38)
Other	12	5	25	8	31	3	68	(1.27)
Total	2023	32	2226	29	1094	29	5343	(100.0)

Table 9 represents the caseload by Intermediate Unit and number of clinicians in each unit who work with each type of disorder. The number of clinicians who worked with each type of disorder varied somewhat. Of the total number of 77 clinicians who were actively engaged in conducting therapy, 68 respondents (88.31%) worked with articulation disorders. The number of students per clinician ranged from one to 129 students per clinician, with a mean of 51.39 students per clinician.

Of the total number of 77 clinicians actively engaged in therapy, 66 (85.71%) worked with students with language problems. The number of students with language problems per clinician ranged from three to 51 students, with a mean of 11.93 students per clinician.

Of the total number of 77 clinicians actively engaged in conducting therapy, 45 (58.44%) worked with children who exhibited fluency problems. The number of students per clinician ranged from one to eight students per clinician, with a mean of 2.48 students.

Twelve clinicians (15.58%) of the 77 actively engaged in therapy worked with students with voice problems. The number of students ranged from one to four students per clinician, with a mean of 1.67 students per clinician.

TABLE 9

CASELOAD - A. IU 16

TOTAL	N=26 Artic	N=28 Lang.	N=18 Fluency	N=4 Voice	N=5 Other
87	71	12	4	0	0
11		11			
100	91	3	4	1	1
75	36	30	5	4	
73	65	4	2	2	
115	99	15	1		
10		10			
73	70	3			
45	37	8			
14		14			
15		15			
58	55		3		
90	66	23	1		
62	53	6	2	1	
13	2	10	1		
44	22	13			9
88	86	1	1		
141	129	11	1		
87	77	10			
69	48	18	3		
92	85	7			
73	72		1		
65	58	5	2		
74	56	15	3		
86	84		2		
83	56	24	3		
71	66	5			

TABLE 9 (Cont'd.)

IU 16

TOTAL	N=26 Artic	N=28 Lang.	N=18 Fluency	N=4 Voice	N=5 Other
14	1	12			1
67	29	33	3	2	
13		12			1
115	106	9			
2023	1620	339	42	10	12
%	80.08	16.76	2.08	.494	.593
Mean 65.26	62.30	12.11	2.33	2.00	2.80

TABLE 9 (Cont'd.)

CASELOAD - B. IU 18

TOTAL	N=27 Artic	N=26 Lang.	N=20 Fluency	N=5 Voice	N=8 Other
70	64	5	1		
70	59	10	1		
115	90	17	8		
29		29			
48	25	20	1		2
73	59	14			
51	40	7	3	1	
87	70	15	2		
102	99	2	1		
51	11	40			
33		33			
86	70	11	4		1
95	85	5	5		
102	57	40	4	1	
89	84		3	1	1
73	59	14			
93	78	15			
87	80	5	2		
80	75	1	2	1	1
84	72	4	3		5
70	33	30	1	1	5
31	9	13			9
75	70		5		
96	73	23			
73	64	4	5		
101	48	51	1		1
101	94	6	1		

TABLE 9 (Cont'd.)

IU 18

TOTAL	N=27 Artic	N=26 Lang.	N=20 Fluency	N=5 Voice	N=8 Other
74	69		5		
87	81	6			
2226	1718	420	58	5	25
%	77.18	18.87	2.61	.224	1.12
Mean 76.76	63.63	16.15	2.90	1.00	3.13

TABLE 9 (Cont'd.)

CASELOAD - C. IU 29

TOTAL	N=15 Artic	N=12 Lang.	N=7 Fluency	N=3 Voice	N=3 Other
52	50		2		
81	69	11			
99	92	7			
65	20	45			
71	70		1		
98	95	1			2
19					19
65	39	25		1	
90	86		1	3	
10					10
91	81	10			
58	32	25	1		
47	37	8	2		
67	63	4			
37	7	29		1	
45	23	22			
99	78	20	1		
1094	842	207	9	5	31
%	76.965	18.92	.822	.457	2.833
Mean 64.35	56.13	17.25	1.29	1.67	10.33

Sixteen clinicians (20.78%) of the 77 actively engaged in therapy worked with students who were labeled as "other," including those with cleft palate, myofunctional defects, and hearing impairments. In this category, the number of students per clinician ranged from one to 19 students, with a mean of 1.19 students per clinician.

Of the 26 clinicians in Unit 16 who worked with articulation cases, two clinicians had caseloads of from 31 to 45 children; six clinicians had from 46 to 60 children in their caseloads; six respondents had from 61 to 75 children; four respondents had from 75 to 90 children; two had from 91 to 105 in their articulation caseloads; one clinician had from 106 to 120 children; and one clinician reported from 121 to 135 children in his caseload. The total number of articulation cases was 1620, or 80.08% of the total caseload of 2023 children in Unit 16. The mean number of cases was 62.31 students with articulation problems.

Of the 28 clinicians who worked with students with language problems, 23 clinicians worked with from one to 15 children with these problems; four clinicians worked with from 16 to 30 children; and one clinician worked with 31 to 45 children with language problems. The total number of language problems reported was 339

children or 16.75% of the total caseload. The mean number of children with language problems was 12.11 in Intermediate Unit 16.

Of the 18 respondents in Unit 16 who worked with children with fluency disorders, all reported caseloads of from one to five students of this type. The total number of cases reported was 42, with a mean of 2.33 students per clinician.

Four clinicians reported voice cases, with caseloads ranging from one to four students with this type of disorder. The total number of voice cases was 10, with a mean of 2.00 students per clinician.

Five clinicians reported a total of 12 students in the category of "other," with a mean of 2.80 students per clinician in Unit 16. The range of students was from one to nine students per clinician in Unit 16.

In Intermediate Unit 18, 27 clinicians worked with children with articulation problems. The total number reported was 1718, or 77.18% of the Unit's total caseload of 2226 cases. The mean number of children per clinician was 63.63 with articulation problems. Two clinicians reported caseloads of from one to 15 children; one reported a caseload of from 16 to 30 children; two reported from 31 to 45 children; five reported from 46 to 60 students; nine reported from 61 to 75 students; six

reported from 76 to 90; and two clinicians reported from 91 to 105 students with articulation problems.

Of the 26 clinicians in I.U. 18 who worked with language problems, 17 reported caseloads of from one to 15 children with this type of disorder; five reported from 16 to 30 children; three reported from 31 to 45 children; and one reported from 46 to 60 youngsters. The total number of language problems in the Unit was reported to be 420 students, with a mean of 16.15 students per clinician.

Twenty clinicians reported fluency caseloads that totaled 58 students. The range was from one to eight students, with a mean of 2.90 students per clinician.

Five clinicians worked with a total of five children with voice problems. All five reported one child each.

Eight clinicians reported a total of 25 children in the "other" category, ranging from one to nine students and a mean of three students per clinician. The nine students of the one clinician were all hearing impaired; one child had a cleft palate; five received therapy for tongue thrusting, and the remainder 11 students were mentally retarded.

In Intermediate 29, of the 15 clinicians who worked with children with articulation disorders, one clinician had from one to 15 in his caseload; two clinicians had from 16 to 30 children; three clinicians had from 31 to 45 children; one had from 46 to 60 students; three clinicians had from 61 to 75 students; three had from 76 to 90 students; and two clinicians reported from 91 to 105 students. The total number of articulation cases was 842, or 76.97% of the caseload total of 1094 students in this Unit. The mean number of cases was 56.13 cases with articulation problems.

Twelve clinicians reported a total number of 207 children with language problems. Six respondents reported caseloads of from one to 15 children; five reported from 16 to 30 children; and one from 31 to 45 students. No clinician reported more than 45 children with language problems in his caseload. Language problems constituted 18.92% of the total caseload. The mean number of children was 17.25 per clinician.

In fluency, seven clinicians reported a total of nine students, or .82% of the total caseload. Two clinicians each reported two students with fluency problems; five respondents had one student each.

Three clinicians in Unit 29 worked with voice cases, for a total of five cases or .457% of the total

caseload. One clinician reported three cases, and two clinicians each reported one case of voice disorders. The mean number of voice cases was 1.67 per clinician.

A total of 31 children classified under the "other" category, with three respondents. One clinician had two students; one had 10 hearing impaired students; and one respondent reported 19 students of this type. Percentage of total caseload was 2.83, with a mean of 10.33 students per clinician.

The educational background and experience of 81 respondents within three Intermediate Units of Northeast Central Pennsylvania was presented. A comparison of caseloads of each Unit by type and frequency of disorder was also made.

A majority of respondents (51) were trained at the bachelor level; 30 clinicians held the master's degree or equivalency level. Forty-nine clinicians were 30 years old or younger. Fifty-three respondents reported no experience prior to their present position.

The principal disorder treated was articulation, which comprised over 75% of the total caseload of 5,343 students enrolled in the three Units. Fluency disorders totaled 109 cases, or two percent of the total caseload who were designated as stutterers.

The previous analysis was conducted on the

demographic information of individuals directly responsible for the diagnosis, treatment, or supervision of students with communication disorders. The next analysis will constitute the major treatment of data as it applies to those children who exhibited fluency disorders and were labeled as stutterers. An attempt will be made to determine whether some of the characteristics exhibited by the 109 students with fluency problems might be considered as components of a cluttering disorder rather than stuttering. A differentiation between stuttering and cluttering will be presented by analysis of behavior and linguistic patterns observed by clinicians. The extent to which clinicians were aware of the nature, meaning and treatment of cluttering will be determined. The effect of clinicians' background and experience upon their ability to observe and report cluttering will also be presented.

RESULTS OF AWARENESS, MEANING, AND TREATMENT OF CLUTTERING BY CLINICIANS

The responses of each clinican were transferred from the questionnaire instrument into data processing cards. A frequency and percentage tabulation was conducted on clinicians' responses to awareness and meaning of cluttering. Table 10 indicates the extent to which clinicans were aware of cluttering and the various meanings which they attributed to the disorder.

TABLE 10

Awareness and Meaning of Cluttering
According to Clinicians

Meaning of Cluttering	Frequency	Percent
Speech Problem (Articulation)	2	2.5
Articulation and Language	1	1
Language and Stuttering	10	12
Stuttering Synonym (Including Rapid Speech, Rate and Rhythm Problems)	34	42
Central Language Disorder (Including Sequencing, Stuttering, Perception, Thinking Problems)	19	24
Not Sure, Forgot, Don't Know	15	18.5
	81	100.0%

In response to Question 7-A on the Educational Background and Experience Form regarding whether clinicians had ever heard of cluttering, 78 (96%) respondents reported awareness of cluttering; only three (4%) clinicians indicated they had not ever heard of cluttering. On Question 7-C "What does it mean to you?", however,

15 (18.5%) clinicians responded with a designation of "Not sure, forgot, or don't know." Only three clinicians (3.5%) believed cluttering constituted an articulation problem. Forty-four respondents (54%) designated cluttering to mean stuttering and language disorders. Nineteen (24%) clinicians responded with broad descriptions that paralleled Weiss' (1964) definition of cluttering as a central language disorder that included stuttering, sequencing, perception and thinking problems.

Sixty-two clinicians (77%) had gained knowledge about cluttering from college courses in communication disorders (speech pathology). One respondent (1%) had learned about cluttering from a course in special education. Eight (10%) had gained their knowledge of cluttering from books and other literature. Only one clinician (1%) reported previous experience with clutterers in her career. Two respondents (3%) indicated they had heard about cluttering from professional discussions in public school settings.

Although 15 respondents did not give a meaning for cluttering on the questionnaire, only seven (9%) consistently answered "Forgot or Not Sure" to Question 7-B relative to where they had heard about cluttering. Forty-two (52%) of the respondents indicated they had not seen a clutterer in their professional experience.

The other 49 (48%) reported having had from one to 50 clutterers in their clinical experience. Thirteen (16%) reported one clutterer; 10 (12%) indicated they had seen two clutterers; three (3%) checked three cases, and three more (3%) checked four cases of cluttering some time in their experience. Four clinicians (5%) indicated they had seen five clutterers; one (1%) had seen seven; one (1%) 15; one (1%) 25 cases of cluttering. One (1%) indicated he had observed 40 clutterers in his career; and one clinician (1%) responded that he had seen a total of 50 clutterers in his professional career.

RESULTS OF THE FREQUENCY AND PERCENTAGE ANALYSIS OF CHECKLIST INSTRUMENT

The responses of each respondent were transferred from the questionnaire instrument into data processing cards. This first analysis of data resulted in frequency and percentage tabulations for each item in the response categories of "always," "often," "occasionally," "seldom," and "never" by each respondent and all respondents.

The responses of clinicians can be found in Table 11, which lists the frequency and percentages for the 20 statements used in the questionnaire instrument. The total number of cases read was 109. The number of

cases deleted because of insufficient responses was four. The total number of valid cases (Total N) upon which succeeding results are based was 105. The number of cases omitting two (approximately 10%) or fewer items was 14, or 0.13 proportion of the total N. The number of cases omitting more than two items was three, or proportion of the total N of 0.03.

TABLE 11

Frequency and Percentage Analysis As Determined From the Responses of Clinicians

Statement	Response Categories				
	Always 1	Often 2	Occasionally 3	Seldom 4	Never 5
1. The nonfluent speaker is aware of fluency problem.	*3 **2.85	8 7.61	21 20.00	34 32.28	39 37.14
2. The nonfluent speaker avoids speaking, if possible.	28 26.66	27 25.71	27 25.71	17 16.19	6 5.71
3. The nonfluent speaker has word-finding difficulty.	3 2.85	28 26.66	26 24.76	35 33.33	13 12.38
4. The nonfluent speaker is a poor speller	13 12.38	28 26.66	26 24.76	30 28.57	8 7.61
5. The nonfluent speaker speaks at a rapid rate.	21 20.00	33 31.42	24 22.85	19 18.09	8 7.61
6. The nonfluent speaker improves fluency if told to "Think before you speak.".	11 10.47	23 21.90	38 36.19	28 26.66	5 4.76
7. The nonfluent speaker substitutes words out of context in reading.	4 3.80	23 21.90	22 20.95	29 27.61	27 25.71
8. The nonfluent speaker has difficulty following oral directions	6 5.71	13 12.38	26 24.76	30 28.57	30 28.57

TABLE 11 (Continued)

Statement	Response Categories				
	Always 1	Often 2	Occasionally 3	Seldom 4	Never 5
9. The nonfluent speaker volunteers in group discussions of conversations.	13 12.38	32 30.47	22 20.95	24 22.85	14 13.33
10. The nonfluent speaker has inappropriate inflectional patterns	6 5.71	16 15.23	20 19.04	28 49.52	35 22.85
11. The nonfluent speaker reads unfamiliar material more fluently than familiar	1 0.95	8 7.61	20 19.04	52 49.52	24 22.85
12. The nonfluent speaker speaks more fluently in a 1:1 situation than group	10 9.52	22 20.95	28 26.66	32 30.47	13 12.38
13. The nonfluent speaker also has articulation errors.	21 20.00	10 9.52	18 17.14	11 10.47	45 42.85
14. The nonfluent speaker is more fluent after attention is called to speech details.	10 9.52	32 30.47	38 36.19	17 16.19	8 7.61
15. The nonfluent speaker exhibits secondary symptoms	33 31.42	18 17.14	19 18.09	24 22.85	11 10.47

TABLE 11 (Continued)

Statement	Response Categories				
	Always 1	Often 2	Occasionally 3	Seldom 4	Never 5
16. The nonfluent speaker has a "thinking process" that is quick in simple yes or no answers. . .	14 13.33	21 20.00	23 21.90	34 32.38	13 12.38
17. The nonfluent speaker reads with errors not related to the fluency problem (reading problem). . . .	6 5.71	27 25.71	26 24.76	24 22.85	22 20.95
18. The nonfluent speaker exhibits gross motor problems such as walking and running.	4 3.80	6 5.71	11 10.47	19 18.09	65 61.90
19. The nonfluent speaker is easily distracted by auditory or visual stimuli (short attention span) .	11 10.47	20 19.04	27 25.71	18 17.14	29 27.61
20. The nonfluent speaker has poor coordination in balance, posture, and movement	6 5.71	4 3.80	19 18.09	15 14.28	61 58.09

*Number of respondents per category

**Percentage of respondents per category

RESULTS OF THE LIKERT ITEM ANALYSIS

The responses for each respondent were transferred from the questionnaire instrument into data processing cards. This analysis resulted in the descriptive statistics for the total attitude of the respondents by an analysis of scores obtained on the questionnaire. The program analyzed scores on the instrument by providing the mean, variance, standard deviation, variance (unbiased estimate), standard deviation (estimated), reliability (coefficient alpha), standard error of measurement, and estimated inter-item correlation.

The investigator utilized a computer program to list all frequencies and percentages for each statement by the respondent and for all respondents. Table 12 lists the outcome of the item analysis program. The number of items in the questionnaire instrument was 20. Eighty-one respondents, including four Instructional Advisors (supervisors), were included in the analysis. Results indicated that the mean score of all respondents was 65.952. Variance of the scores was: 82.844 while the standard deviation was: 9.102. An estimate of the reliability of the scale by using Guttman's Lambda-3 Index was: 0.674. Coefficient Alpha Index of Reliability was computed to be: 0.688. Standard

error of measurement was computed at: 5.082. The estimated average inter-item correlation equaled: 0.099. The estimated number of items to achieve the following reliabilities was based upon an equation derived from a generalized Spearman-Brown Formula:

Reliability (internal consistency)	0.60	0.70	0.80	0.90
Estimated Number of Items	14	21	36	82

The average Item-Total R was: 0.383. The average Adjusted Item-Total R was: 0.320. A summary of the distribution of the item-total correlations and adjusted item-total correlations is as follows in Table 12.

TABLE 12

Likert Item Analysis - 20 Items

Item	Results
Number of items in the instrument	20
Number of response categories	5
Number of respondents	105
Mean	65.952
Variance	82.844
Standard deviation	9.102
Variance (unbiased estimate)	83.641
Standard deviation (estimated)	9.146
Skewness (estimated Gamma 1)	-0.115
Kurtosis (estimated Gamma 2)	-0.624
Guttman's Lambda-3 Index of reliability	0.674
Coefficient Alpha Index of reliability	0.688
Standard error of measurement	5.082
Estimated Average inter-item correlation	0.099

RESULTS OF CHI SQUARE ANALYSIS

The first application of chi square was used to determine the extent to which subjects were able to predict cluttering among children whom they had diagnosed as stutterers. Chi square analyses were applied to responses which clinicians indicated on the checklist instrument for each child currently enrolled in therapy for fluency disorders. A total of 109 students with fluency problems were reported by 45 subjects who worked with children with that type of disorder. Respondents indicated that none of the 109 students were expected to be classified as clutterers. While respondents expected the frequency of cluttering in their caseloads to be zero, in fact more clutterers than stutterers were found.

Table 13 indicates the results of analyses which were performed on the behaviors reported on the checklist instrument. Of the 109 cases, 56 (51.35%) students received a majority of "one" scores that indicated cluttering. Forty-four (40.36%) students received a majority of "two" scores that indicated stuttering. Nine (8.25%) students received equal designations of "one" and "two" scores and were classified as clutterer-stutterers.

Table 13 also indicates the summary of observed cluttering cases compared to observed stuttering cases. This first analysis of scores resulted in extremely significant chi square scores for all variables inasmuch as respondents expected zero frequency for cluttering cases. Although the expected value was zero in all cases, a value of one was needed in order to utilize the calculator at the Computer Center of Bloomsburg State College for chi square treatment. This value substitution was done on each analysis of this type and was not considered to invalidate results.

TABLE 13

Cluttering Versus Stuttering Cases
Observed and Expected

	Observed	Expected
Cluttering	56	(0) 1 *
Stuttering	44	107
Clutterer-Stutterer	9	(0) 1 *
Total	109	109

*Expected value was 0, but to get calculator to perform chi square analysis, value of 1 was needed. This was done on each analysis of this type.

To determine the ability of subjects to predict cluttering, a chi square test for appropriate contingency tables was constructed between the variables of sex, age, experience, and background of respondents and their actual scores of observed cluttering and stuttering behaviors. Cell frequencies amounted to 2180 totally, which was the number of items (20) on the checklist instrument multiplied by the number of children (109) with fluency disorders. Table 14 indicates the sex variable of clinicians and their ability to predict cluttering.

TABLE 14

Clinician Sex and Predicted Cluttering

SEX	Cluttering	Stuttering	Sub-Total
Male	183	157	340
Female	958	882	1840
Total	1141	1039	2180*

$\dot{x}^2 = 949{,}809.88$

df = 1

p = less than .001

* = Score obtained from 20 items on each checklist instrument multiplied by 109 cases with fluency disorders.

Thus while clinicians had reported the expected value of cluttering to be zero, more cluttering than stuttering behavior was observed by utilization of the checklist instrument.

Table 15 indicates ability to predict cluttering by Intermediate Unit where clinicians were employed. Extremely significant chi square analysis was found.

TABLE 15

Intermediate Unit and Predicted Cluttering

I. U.	Cluttering	Stuttering
16	457	383
18	584	576
29	100	80

X^2 = 558,391.77

df = 2

p = less than .001

Table 16 reflects the ability of subjects to predict cluttering and the total number of years they were employed in their present position. Significance was found beyond the .001 level for this category.

TABLE 16

Years Experience in Present Position and Predicted Cluttering

Total No. Yrs. Present Position	Cluttering	Stuttering
1	206	194
2	180	200
3	183	217
4	295	225
5	83	37
6	42	58
7	11	9
8	14	6
10	25	15
12	52	48
15	13	7
16	23	17
19	14	6

$X^2 = 206,870.99$

df = 12

.001 = 32.91

Table 17 indicates the ability of subjects to predict cluttering and the institution from which they received their undergraduate training.

TABLE 17

Ability to Predict Cluttering and Bachelor Institution

Bachelor Institution	Observed Cluttering	Stuttering
Bloomsburg State College	548	472
University in Pa.	293	247
Private College in Pa.	105	95
College Outside Pa.	195	225

$X^2 = 43,520.99$

df = 3

.05 = 7.81

.01 = 11.35

.001 = 16.27

Table 18 lists the ability of respondents to predict cluttering and their area of concentrated study at the bachelor level. Significance was found beyond the .001 level in this category.

TABLE 18

Predicted Cluttering and Concentration Area at Bachelor Level

Major Area of Study	Observed Cluttering	Stuttering
Speech Pathology	1051	969
Special Education	65	55
Psychology	25	15

$X^2 = 1,107,767.25$

df = 2

.001 = 13.82

Table 19 lists the ability of respondents to predict cluttering and their attainment of a master's degree level of training. Significance beyond the .001 level was found for this variable.

TABLE 19

Ability to Predict Cluttering and Master's Degree

Master's Degree or Equivalency	Observed Cluttering	Observed Stuttering
No	847	813
Yes	294	226

$X^2 = 802,161.82$

df = 1

.001 = 10.83

Table 20 indicates the ability of clinicians to predict cluttering and the institution from which they received their master's degrees. Extremely significant results from this variable were found.

TABLE 20

Ability to Predict Cluttering and Master's Institution

Institution	Observed Cluttering	Observed Stuttering
Bloomsburg State College	164	96
University in Pa.	43	57
College or University Outside Pa.	25	15
Other State College, Incl. Indiana University of Pa.	62	58

$X^2 = 32,796.43$

df = 3

.001 = 16.27

Table 21 indicates the major area of concentrated study at the master's level and the ability of subjects to predict cluttering. Results were extremely significant in this category.

TABLE 21

Ability to Predict Cluttering and Concentration Area at Master's Level

Area of Concentration	Observed Cluttering	Observed Stuttering
Comm. Disorders	274	206
Audiology & Administration	20	20

$X^2 = 75,054.84$

df = 1

.001 = 10.83

Table 22 reflects the ability to predict cluttering and certification of subjects by the American Speech and Hearing Association (ASHA). Results were extremely significant at this category.

TABLE 22

ASHA Certification and Predicted Cluttering

ASHA Certification	Observed Cluttering	Observed Stuttering
No	1101	999
Yes	40	40

$X^2 = 1,212,118.99$

df = 1

.001 = 10.83

Table 23 indicates the ability to predict cluttering and other certification which clinicians held. Results were extremely significant in this category.

TABLE 23

Other Certification Areas and Predicted Cluttering

Other Areas of Certification	Observed	
	Cluttering	Stuttering
No	1042	938
Yes	99	101

$X^2 = 1,093,880.85$

df = 1

.001 = 10.83

Table 24 indicates the ability to predict cluttering and one previous experience (I) of clinicians. Results were extremely significant for this variable.

TABLE 24

Ability to Predict Cluttering and Previous Experience I

Previous Experience I	Observed Cluttering	Stuttering
No	862	778
Yes	279	261

$X^2 = 56,347.84$

df = 1

.001 = 10.83

Table 25 indicates the ability to predict cluttering and the number of years experience subjects reported in the first previous position I. Results were extremely significant in this category.

TABLE 25

Ability to Predict Cluttering and Years In Previous Experience I

No. Years	Observed Cluttering	Stuttering
None	877	803
1 - 10 years	264	236

$X^2 = 837,140.65$

df = 1

.001 = 10.83

Table 26 indicates the ability of respondents to predict cluttering and the number of years experience they held in a second previous position II. Results in this category were extremely significant.

TABLE 26

Predicted Cluttering and Years Experience II

No. Years	Observed Cluttering	Observed Stuttering
None	1071	969
1 - 5 years	70	70

$X^2 = 1,150,256.75$

df = 1

.001 = 10.83

Table 27 indicates the ability to predict cluttering and the number of years experience respondents had in a third previous employment III. Extremely significant differences were found in this category. No subject reported more than three previous experiences.

TABLE 27

Ability to Predict Cluttering and Years Experience III

No. Years	Observed Cluttering	Observed Stuttering
None	1133	1027
1	8	12

$X^2 = 1,282,069.10$

df = 1

.001 = 10.83

Table 28 reflects the ability to predict cluttering and subjects' awareness of the disorder. Results indicated extremely significant differences in this category.

TABLE 28

Ability to Predict Cluttering and Awareness

Awareness	Observed Cluttering	Observed Stuttering
Yes	1133	1027
No	8	12

$X^2 = 1,282,069.10$

df = 1

.001 = 10.83

Table 29 indicates the ability of clinicians to predict cluttering and where their knowledge of cluttering was originally obtained. Results indicated extremely significant differences in this category.

TABLE 29

Predicted Cluttering and Source of Cluttering Knowledge

Source	Observed Cluttering	Stuttering
Com. Dis. Course	862	818
Spec. Ed. Course	52	48
Books, Lit.	94	86
Public School Discussions	13	7
Forgot, Not Sure	120	80

$X^2 = 1,508,733.03$

df = 4

.001 = 18.47

Table 30 indicates the ability of respondents to predict cluttering and the meaning which they attributed to the disorder. Results indicated extremely significant differences in this category.

TABLE 30

Ability to Predict Cluttering and Meaning

Designated Meaning	Observed Cluttering	Stuttering
Sp. Prob. (Articulation)	43	37
Artic. & Lang.	23	17
Lang. & Stuttering	167	193
Stuttering Synonym	221	239
Rapid Sp., Rate and Rhythm	288	232
Central Lang. Dis.*	94	46
Stutter, Perception Artic.	36	24
Not Sure, Forgot	269	251

$x^2 = 203,347.27$

df = 7

.001 = 24.32

*Including Perception, Stuttering, Thinking Problems, Language.

Table 31 reflects the predicted cluttering and the total number of clutterers subjects had ever seen in their caseloads.

TABLE 31

Predicted Cluttering and Number of Clutterers Seen

No. Seen	Observed Cluttering	Stuttering
None	577	603
1	163	157
2	108	92
3	64	56
4	100	60
5	47	13
7	10	10
15	13	7
20	36	24
50	23	17

$x^2 = 387,938.18$

df = 9

.001 = 27.88

Table 32 indicates predicted cluttering and whether subjects had ever included clutterers in their caseload. Analysis of this variable revealed extremely significant differences within this category.

TABLE 32

Predicted Cluttering and Cluttering Cases

No. Cases Seen	Observed Cluttering	Observed Stuttering
None	577	603
1 - 50	564	436

$X^2 = 649,343.69$

df = 1

.001 = 10.83

Table 32 indicates the predicted cluttering and clinicians' preference for treatment of cluttering. Results indicated extremely significant differences in this category.

TABLE 33

Predicted Cluttering and Therapy Preference

Therapy	Observed Cluttering	Stuttering
Articulation	59	41
Fluency, Rate	396	364
Voice	9	11
Lang. & Artic.	24	36
ALL*	127	93
Artic. & Stutter.	52	28
Lang. & Stutter	77	23

$X^2 = 184,650.64$

df = 6

.001 = 22.46

*Stuttering, Articulation & Language

Table 34 indicates the ability of clinicians to predict cluttering and the number of cases which they reported who currently demonstrated some behaviors of cluttering. None of these children were considered to be clutterers by the subjects.

TABLE 34

Ability to Predict Cluttering and Cases with Cluttering Characteristics

No. Cases	Observed Cluttering	Observed Stuttering
None	764	796
1	164	116
2	55	45
3	158	82

$X^2 = 636,980.45$

df = 3

.001 = 16.27

Table 35 reflects predicted cluttering and subjects' current treatment of cases who demonstrated some cluttering behaviors. Extremely significant differences were found in this category.

TABLE 35

Ability to Predict Cluttering and Treatment of Cluttering Behaviors

Therapy	Observed Cluttering	Observed Stuttering
None	729	751
Language	76	64
Fluency, Rate, Rhythm, Perception	325	215
Articulation and Language	11	9

$x^2 = 641,283.83$

df = 3

.001 = 16.27

Table 36 indicates predicted cluttering and subjects' total years of experience. Extremely significant differences were found in this category.

TABLE 36

Predicted Cluttering and Total Years Experience

No. Years	Observed Cluttering	Stuttering
1	156	144
2	189	211
3	190	210
4	295	225
5	47	13
6	13	27
9	14	6
10	76	64
11	13	7
15	64	56
16	36	24
18	26	34
19	14	6
26	8	12

$X^2 = 107,995.73$

df = 13

.001 = 34.53

Table 37 reflects predicted cluttering and the year in which subjects received their undergraduate training. Results were extremely significant in this category.

TABLE 37

Predicted Cluttering and Year of Bachelor Degree

Year	Observed Cluttering	Observed Stuttering
1964 or Before	190	170
1965 - 1969	86	54
1970 or Later	865	815

$X^2 = 766,198.08$

df = 2

.001 = 13.82

Table 38 indicates predicted cluttering and the year in which the master's degree was obtained by respondents. Extremely significant differences were found in this category.

TABLE 38

Predicted Cluttering and Year of Master's Degree

Year	Observed Cluttering	Stuttering
1964 or Before	881	859
1970 or Later	260	180

$X^2 = 707,788.09$

df = 1

.001 = 10.83

Table 39 reflects predicted cluttering and the age of subjects at the time of the study. Results were extremely significant in this category.

TABLE 39

Predicted Cluttering and Subjects' Age

Age	Observed Cluttering	Stuttering
22 - 25	667	693
26 - 30	212	128
31 - 35	61	39
36 - 40	54	46
41 - 45	38	22
46 - 50	34	46
Over 50	75	65

$X^2 = 502,559.33$

df = 6

.001 = 22.46

RESULTS OF SECOND CHI SQUARE ANALYSIS

The second chi square analysis of data was applied to determine the effect which criterion variables such as subjects' age, Intermediate Unit, experience, and educational background had upon the subjects' ability to observe cluttering behavior among children with fluency problems. To determine if differences occurred in the observations of cluttering by

respondents as a result of different criterion variables, the second analysis derived the expected values of cluttering from the observed values that were indicated by subjects on the checklist instrument.

Table 40 indicates the effect of sex on respondents' observations of cluttering. No significant differences were found as a result of a sex variable.

TABLE 40

Clinician Sex and Observed Cluttering

Sex	Observed Cluttering	Observed Stuttering
Male	183	157
Female	958	882

$X^2 = 0.34$

df = 1

.05 = 3.84

Table 41 indicates the effect of employer location on observations of cluttering. No significant differences were found to occur relative to the Intermediate Unit in which subject was employed.

TABLE 41

Intermediate Unit and Observed Cluttering

Intermediate Unit	Observed Cluttering	Observed Stuttering
16	457	383
18	584	576
29	100	80

$X^2 = 4.00$

df = 2

.05 = 5.99

Table 42 reflects the effect of institution from which subjects received their undergraduate training and their observations of cluttering. No differences were found among the various institutions and cluttering observations.

TABLE 42

Undergraduate Institution and Observed Cluttering

Institution	Observed Cluttering	Observed Stuttering
Bloomsburg State College	548	472
College or University in Pa.	293	247
College or University outside Pa.	105	95
Other State College, Incl. Indiana University of Pa.	195	225

$X^2 = 7.47$

df = 3

.05 = 7.81

Table 43 reflects the type of undergraduate degree and observations of cluttering. No significant differences were found as a result of degree type.

TABLE 43

Undergraduate Degree Type and Observed Cluttering

Bachelor Type	Observed Cluttering	Observed Stuttering
Science	1044	976
Arts	48	32
Education	42	31

$X^2 = 4.59$

df = 2

.05 = 5.99

Table 44 indicates the number of years experience in the present position and subjects' observations of cluttering. Significance beyond the .001 level was found at this variable.

TABLE 44

Experience in Present Position
and Observed Cluttering

Years Experience in Present Position	Observed	
	Cluttering	Stuttering
1	206	194
2	180	200
3	183	217
4	295	225
5	83	37
6	42	58
7	11	9
8	14	6
10	25	15
12	52	48
15	13	7
16	23	17
19	14	6

$X^2 = 42.83$

df = 12

.05 = 21.03

.01 = 26.22

.001 = 32.91

Table 45 indicates the effect of a master's degree upon subjects' observations of cluttering. A significant difference at the .05 level was found in this tabulation.

TABLE 45

Master's Degree and Cluttering Observations

Master's Degree	Observed Cluttering	Observed Stuttering
No	847	813
Yes	294	226

$X^2 = 4.89$

df = 1

.05 = 3.84

Table 46 reflects the effect upon subjects' observations of cluttering due to the type of institution from which their master's degree was obtained. At both the .05 and the .01 levels significance was found among those subjects who received their graduate degree at the state college within the geographic area covered in the study and those who received their graduate training at other institutions.

TABLE 46

Master's Institution and
Observed Cluttering

Type of Institution	Observed Cluttering	Observed Stuttering
Bloomsburg State College	164	96
University in Pa.	43	57
College or University outside Pa.	25	15
Other State College	62	58

$X^2 = 14.15$

df = 3

.05 = 7.82

.01 = 11.35

Table 47 indicates the effect other certification had upon subjects' observations of cluttering. Eleven clinicians reported other certification in five different areas: one in supervision, five in special education, two in English, one in elementary education, and two in secondary education. The remaining 70 subjects reported no additional area of certification. In this category, no significant differences were found.

TABLE 47

Other Certification and Observed Cluttering

Additional Areas of Certification	Observed Cluttering	Observed Stuttering
No	1042	938
Yes	99	101

$X^2 = 0.79$

df = 1

.05 = 5.99

Table 48 refers to the effect of years experience in one previous position upon observed cluttering. No significant differences were found in this category.

TABLE 48

Previous Experience I and Observed Cluttering

No. Years Previous Experience I	Observed Cluttering	Stuttering
0	877	803
1	90	70
2	36	24
3	63	57
4	29	31
5	20	20
10	26	34

$X^2 = 4.61$

df = 6

.05 = 12.59

Table 49 reflects the effect which two previous positions had upon subjects' observations of cluttering. Significance at the .05 level was found as a result of this variable.

TABLE 49

Previous Experience II and Observed Cluttering

Previous Experience II	Observed Cluttering	Stuttering
No	1071	969
Yes	70	70

$X^2 = 4.88$
df = 1
.05 = 3.84

Table 50 indicates the observations of cluttering and the effect of a third previous position. No significant differences were found in this tabulation.

TABLE 50

Previous Experience III and Observed Cluttering

Previous Experience III	Observed Cluttering	Stuttering
No	1133	1027
Yes	8	12

$X^2 = 1.22$
df = 1
.05 = 3.84

Table 51 indicates the effect of subjects' awareness of cluttering and their observations of that behavior. No significant differences were found as a result of that variable.

TABLE 51

Effect of Awareness on Observed Cluttering

Previous Awareness of Cluttering	Observed Cluttering	Observed Stuttering
Yes	1133	1027
No	8	12

$X^2 = 1.22$

df = 1

.05 = 3.84

Table 52 reflects the effect upon observed cluttering according to where subjects had first gained knowledge about the disorder. No significant differences were found as a result of that variable.

TABLE 52

Source of Cluttering Knowledge
and Observed Cluttering

Source	Observed Cluttering	Observed Stuttering
Com. Dis. Course	862	818
Spec. Ed. Course	52	48
Books, Lit.	94	86
Forgot, Not Sure	120	80
Public School Discussions	13	70

$X^2 = 6.46$

df = 4

.05 = 9.49

Table 53 indicates the effect of subjects' designated meaning for cluttering and their observations of the disorder. Significance at the .001 level was found as a result of this criterion variable.

TABLE 53

Cluttering Meaning and Observations

Designated Meaning	Observed Cluttering	Observed Stuttering
Sp. Prob. (Articulation)		37
Language & Stuttering		193
Stuttering Synonym		239
Central Language Disorder		46
Articulation & Language		17
Rapid Speech, Rate & Rhythm		232
Not Sure, Forgot, Don't Know		251
Stuttering, Perception, Articulation		24

$X^2 = 25.18$

df = 7

.05 = 14.07

.01 = 18.48

.001 = 24.32

Table 54 reflects the effect of having reported clutterers in a previous caseload and subjects' present observations of the disorder. For this variable, significance was found between the .05 and .01 levels.

TABLE 54

Observed Cluttering and Reported Cases in Previous Caseloads

No. of Cases	Observed Cluttering	Observed Stuttering
1	163	157
2	108	92
3	64	56
4	100	60
5	47	13
7	10	10
15	13	7
20	36	24
50	23	17

$X^2 = 20.01$

df = 8

.05 = 15.51

.01 = 20.09

Table 55 indicates the observations of cluttering and the effect of having included at least one clutterer in a previous caseload. Significance beyond the .001 level was found as a result of that variable.

TABLE 55

Observed Cluttering and Inclusion in Previous Caseload

No. Clutterers in Previous Caseloads	Observed Cluttering	Stuttering
None	577	603
1 or More	564	436

$X^2 = 12.44$

df = 1

.05 = 3.84

.01 = 6.36

.001 = 10.83

Table 56 indicates observations of cluttering and type of treatment preferred by subjects. Significant differences byond the .001 level were found in this category.

TABLE 56

Observed Cluttering and
Treatment Preference

Therapy Preference	Observed Cluttering	Stuttering
Articulation	59	41
Fluency & Rate	396	364
Voice	9	11
Lang. & Artic.	24	36
All*	127	93
Artic. & Stutt.	52	28
Lang. & Stutt.	77	23

$X^2 = 31.81$

df = 6

.05 = 12.59

.01 = 16.81

.001 = 22.46

*Language, Articulation, Stuttering

Table 57 indicates observations of cluttering and whether subjects had ever treated clutterers in their caseloads. Significance beyond the .001 level was found in this category.

TABLE 57

Observed Cluttering and Experience with Clutterers

Experience with Clutterers	Observed Cluttering	Observed Stuttering
No	397	443
Yes	744	596

$X^2 = 14.35$

df = 1

.05 = 3.84

.01 = 6.64

.001 = 10.83

Table 58 indicates the effect of total number of years experience upon observations of cluttering. In this category, significance was found beyond the .001 level.

TABLE 58

Observed Cluttering and Total Years Experience

Total No. Yrs. Experience	Observed Cluttering	Stuttering
1	156	144
2	189	211
3	190	210
4	295	225
5	47	13
6	13	27
9	14	6
10	76	64
11	13	7
15	64	56
16	36	24
18	26	34
19	14	6
26	8	12

$X^2 = 47.84$

df = 13

.05 = 22.36

.01 = 27.69

.001 = 34.53

Table 59 indicates the effect of year of undergraduate degree upon observations of cluttering. No significant difference was found in this category.

TABLE 59

Observed Cluttering and Year of Undergraduate Degree

Degree Year	Observed Cluttering	Observed Stuttering
1964 or Earlier	190	170
1965 - 1969	86	54
1970 or Later	865	815

$X^2 = 5.34$

df = 2

.05 = 5.99

Table 60 indicates the effect of graduate degree year upon observations of cluttering. Significance in this category was found at the .05 level.

TABLE 60

Observed Cluttering and
Master Degree Year

Degree Year	Observed Cluttering	Observed Stuttering
1964 or Earlier	881	859
1970 or Later	260	180

$X^2 = 10.27$

df = 1

.05 = 3.84

.01 = 6.64

.001 = 10.83

Table 61 indicates the effect of subject's age group upon observations of cluttering. Significant differences beyond the .001 level were found in this category.

TABLE 61

Observed Cluttering and Age of Subject

Age Group	Observed Cluttering	Stuttering
22 - 25	667	693
26 - 30	212	128
31 - 35	61	39
36 - 40	54	46
41 - 45	38	22
46 - 50	34	46
Over 50	75	65

$X^2 = 29.59$

df = 6

.05 = 12.59

.01 = 16.81

.001 = 22.46

RESULTS OF THIRD CHI SQUARE ANALYSIS

The final application of chi square analysis was applied to determine the relationship between subjects' awareness and designated meaning of cluttering and the degree year in which they received their undergraduate and graduate training. Additional cross

tabulation was applied between subjects' age groups and their awareness and meaning of cluttering.

Table 62 reflects the relationship between subjects' awareness and the year in which they received their bachelor degrees. No significant differences were found in this category.

TABLE 62

Cluttering Awareness and Bachelor Year

Degree Year	Awareness Yes	No	Subtotal
1964 or Before	16	1	17
1965 - 1969	7	0	7
1970 or Later	55	2	57
Total	78	3	81

$X^2 = 0.50$

df = 2

.05 = 3.84

In Table 63 the relationship between respondents' designated meaning of cluttering and their degree of undergraduate training was analyzed. Significance ($p < .02$) was found as a result of this cross tabulation.

TABLE 63

Cluttering Meaning and Bachelor Year

Degree Year	Meaning of Cluttering: Artic.	Lang. & Stutt.	Stutt. Syn.	CNS,CLD;* Seq.	Artic. & Lang.	Rapid Sp.	Not Sure, Forgot	Stutt., Perc.	Sub-Total
1964 or Before	2	0	4	2	1	4	4	0	17
1965 - 1969	0	1	0	5	0	1	0	0	7
1970 or Later	0	9	17	10	0	8	11	2	57
TOTAL	2	10	21	17	1	13	15	2	81

$x^2 = 28.78$

df = 14

.05 = 23.68 ($p < .02$)

*Central Nervous System) Sequencing
Central Language Disorder)

In Table 64, the relationship between awareness of cluttering and the year in which respondents received their master's or equivalency degrees was tabulated. No significant differences were found in this category.

TABLE 64

Cluttering Awareness and
Master Degree Year

Degree Year	Cluttering Awareness Yes	No	Subtotal
1964 or Before	52	3	55
1965 - 1969	2	0	2
1970 or Later	24	0	24
Total	78	3	81

$X^2 = 1.47$

df = 2

.05 = 3.84

Table 65 reflects the relationship between designated meaning which subjects indicated for cluttering and the year in which they received their master's or equivalency degrees. No significant differences were found in this tabulation.

TABLE 65

Cluttering Meaning and Master Year

	Meaning of Cluttering								
Degree Year	Artic.	Lang. & Stutt.	Stutt. Syn.	CNS,CLD, Seq.	Artic. & Lang.	Rapid Sp.	Not Sure, Forgot	Stutt. Perc.	Sub-Total
1964 or Before	2	4	18	8	1	9	12	1	55
1965 - 1969	0	0	0	2	0	0	0	0	2
1970 or Later	0	6	3	7	0	4	3	1	24
TOTAL	2	10	21	17	1	13	15	2	81

$X^2 = 18.81$

df = 14

$p = > .05$

In Table 66, the age group of subjects and their awareness of cluttering were analyzed. No significant differences were found in this category.

TABLE 66

Cluttering Awareness and Age Group

Age Group Years	Cluttering Awareness Yes	No	Subtotal
22 - 25	38	1	39
26 - 30	20	0	20
31 - 35	4	1	5
36 - 40	5	0	5
41 - 45	4	0	4
46 - 50	4	1	5
Over 50	3	0	3
TOTAL	78	3	81

$X^2 = 8.82$

$df = 6$

$.05 = 12.59$ $(p > .05)$

Table 67 indicates the relationship between subjects' designated meaning of cluttering and their age group. A significant difference at the .05 level was found in this category. Table value of 58.29 was determined by interpolation because of the high number of degrees of freedom.

TABLE 67

Cluttering Meaning and Age Group

Age Group	Meaning of Cluttering								
	Artic.	Lang. & Stutt.	Stutt. Syn.	CNS,CLD, Seq.	Artic. & Lang.	Rapid Sp.	Not Sure, Forgot	Stutt. Perc.	Sub-Total
22 - 25	0	5	14	5	0	7	7	1	39
26 - 30	0	4	3	8	0	1	3	1	20
31 - 35	0	1	1	1	0	1	1	0	5
36 - 40	1	0	2	0	0	1	1	0	5
41 - 45	1	0	1	1	0	0	1	0	4
46 - 50	0	0	0	1	0	2	2	0	5
Over 50	0	0	0	1	1	1	0	0	3
TOTAL	2	10	21	17	1	13	15	2	81

$X^2 = 64.25$

$df = 42$

$p < .05$

This chapter presented the data from 81 subjects and analyzed the frequency and percentage tabulations and chi square analyses from two questionnaires which were development by the investigator. No clinician had expected cluttering to be found in their caseloads; however, 56 clutterers were identified among 109 students with fluency disorders. A variety of descriptions were given, indicating that subjects were not generally in agreement regarding a single definition for cluttering. Respondents were, however, able to accurately observe and differentiate behaviors associated with cluttering when they utilized a checklist instrument which was constructed by the investigator.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Although the first references to cluttering as a disorder of speech and language processes appeared in the literature more than two centuries ago, much confusion occurred in identifying and treating the disability. The difficulty existed in differentiating cluttering from stuttering and was compounded by the fact that both disorders included disruptions of fluency as a major observable symptom. Cluttering seldom appeared in the incidence reports in clinical records because speech clinicians have not regarded the disorder as separate from stuttering.

The first and most definitive work on cluttering was written by Deso A. Weiss (1964). Weiss defined cluttering as

> . . . a speech disorder characterized by the clutterer's unawareness of his disorder, by a short attention span, by disturbances in perception, articulation and formulation of speech and often by excessive speed of delivery. It is a disorder of the thought processes preparatory to speech and based on a hereditary disposition. Cluttering is the verbal manifestation of Central Language Imbalance, which affects all channels of communication (e.g. reading, writing, rhythm, and musicality) and behavior in general. (1964, p. 1)

Weiss presented a schematic format differentiating cluttering from stuttering characteristics

that has been widely accepted by professionals in the field of speech and language therapy. Cluttering as a separate disorder from stuttering has been a much neglected area of study among speech and language specialists in the United States (Arnold, 1965; Weiss, 1964).

This study was undertaken to investigate the incidence of cluttering among children whose major fluency problem had been labeled by speech clinicians as stuttering. It was expected that some children who demonstrated disturbances in fluency patterns would also demonstrate concomitant language and behavior characteristics that would classify them as clutterers. Further, the study would delineate those behaviors or characteristics of cluttering from those of stuttering. Such delineation would result in more accurate diagnosis and broader treatment to include developmental or remedial techniques in other deficit areas such as reading, writing, spelling, attention, and concentration, which often accompany cluttering.

Determination of the Population

The population for this study was selected from all professional personnel trained in speech therapy who were employed by three Intermediate Units

in Northeast Central Pennsylvania. The total number of subjects was 81. Of this group, four were instructional advisors who did not carry a student caseload. The remaining 77 were actively engaged in the diagnosis and remediation of communication disorders.

Procedures

In order to investigate the stated purpose of this study, two instruments were developed by the author. The first instrument was a checklist to be used to determine the incidence of cluttering. Items on the checklist were selected from statements found in the literature, which included textbooks, research journals, review journals, professional journals, dissertation abstracts, monographs, and research resumes. As statements relating to cluttering were identified, they were rewritten and incorporated into a format suggested by Weiss (1964) and then grouped into a design suggested by Likert. Those statements were included which were considered to be behaviors identifiable and observable in routine speech therapy sessions by clinicians.

A pilot study was conducted using the first checklist, which contained 15 statements to distinguish between cluttering and stuttering behavior. Scoring procedures to express the quantity of a behavioral criterion on the checklist instrument employed a system

of weights ranging from one to five which were assigned to the responses of Always, Often, Occasionally, Seldom, and Never occurring behaviors. A low score indicated the presence of cluttering behaviors; a high score indicated that the condition was stuttering. As a result of the pilot study, the checklist was expanded to include 20 statements.

The second instrument was a questionnaire to obtain demographic data relating to subjects' age, sex, educational background, certification, and professional experience. Data on professional experience included information on present position, such as caseload types and frequencies of specific disorders. Subjects were also asked to indicate their awareness and understanding of cluttering.

Permission to conduct the study was obtained from administrative directors in three Intermediate Units. Upon receiving the necessary permission, the investigator personally contacted each of the subjects to solicit their cooperation. A group training session was conducted for clinicians in each of the units. The purpose of the sessions was to provide the clinicians with background information on the differentiation of cluttering from stuttering as stated by Weiss and other investigators. In addition, the writer gave instruction

on the use of the instruments to be employed in the study.

All clinicians were asked to complete the demographic form. The checklist instrument was distributed to those subjects whose caseloads included individuals with fluency disorders. Subjects received the training and the instruments to be used in the study during the fall of the academic year 1976. During the collection of data period, the investigator visited the subjects regularly to assist them in clarification of terms and procedures in completing the instruments. The completed forms were collected in April 1977, with 100% responses.

Following receipt of all data, an item analysis was used to tabulate the frequency and percent of each statement on the demographic instrument. By utilizing the information on the checklist instrument, a classification of clutterer, stutterer, or clutterer-stutterer was assigned to each student with a fluency disorder. The classification was assigned according to the direction of the numerical value of each behavior observed by the subjects.

To determine the relationship or effect of demographic information upon subjects' ability to predict cluttering, a chi square test was employed. Additional

statistical analyses utilizing chi square were applied to determine the degree to which demographic data influenced the observations of cluttering behavior; that is, did the age, training, and experience of the respondents effect their observational ability?

Summary of Findings

Historically, speech pathologists have not recognized cluttering as a separate and distinct disorder from stuttering. As a result, cluttering seldom appeared in incidence reports in public school or clinical records. Many speech clinicians and specialists in the fields of language and specific learning disabilities were also unaware that cluttering existed. Differentiation of cluttering from stuttering was necessary to provide appropriate remedial programs for individuals with such disorders.

The primary purpose of this study was to identify the incidence of cluttering among those children who had been previously classified as stutterers. Specifically, the investigation answered the questions:

> Among children who have been identified as stutterers, is it possible to determine the differences in linguistic and behavior patterns between those correctly labeled as stutterers and those who could correctly be labeled as clutterers?
>
> What are the characteristics that differentiate cluttering from stuttering?

In order to fulfill the primary purpose of the study, the caseload data from the 81 subjects were compiled. A total of 5,343 children were enrolled in therapy programs. Individual caseloads ranged from 10 to 141 students per clinician. The highest proportion of cases was students with articulation problems, with 4,180 students receiving remediation from 68 of the 77 clinicians actively engaged in providing therapy. The number of articulation cases per clinician ranged from one to 129, with a mean of 51.

Language problems constituted 966 cases who received therapy from 66 clinicians. The range of language caseloads varied from three to 51, with a mean of 11.9 students. Twelve clinicians worked with a total of 20 students with voice problems. Individual voice caseloads ranged from one to four, with a mean of 1.7 students. Other types of disorders such as cleft palate, myofunctional defects, and hearing impairments totaled 68 students who received therapy from 16 clinicians. The range of cases in this category was from one to 19, with a mean of one student per clinician.

The condition under primary investigation in this study was that of fluency disorders. In this

category, 45 clinicians reported a total of 109 students who had been labeled as stutterers. (See Chapter IV, Tables 8, 9, pp. 129 & 131) Specific data relative to this group revealed that the range was one to eight students per clinician, with a mean of 2.5. The analysis of data obtained from the checklist instrument indicated that the classification of stuttering was in error for 56 students. Fifty-six students were reported to exhibit a sufficient number of linguistic and behavior characteristics that differentiated them as clutterers. Analysis of the data from the checklist confirmed the diagnosis of stuttering for 44 students. Nine students demonstrated characteristics of both disorders and were classified as clutterer-stutterers.

Following the analysis of data to determine the incidence of cluttering among these children, the investigator considered the ability of subjects to predict cluttering. The subjects predicted that zero cases of cluttering would be identified among those children currently labeled as stutterers. Despite their prediction that no incidence of cluttering would be found, clinicians did identify and differentiate clutterers from stutterers. The identification was effected primarily by the application of the

checklist instrument which had been developed by the investigator. Analysis of this data resulted in extremely significant chi square scores. The ability to identify clutterers by observing specific behaviors during routine therapy sessions is a major finding of this investigation.

To determine subjects' awareness and definition of the term cluttering, the question "Have you ever heard of cluttering?" was included on the demographic instrument. Of 81 respondents in the study, 78 indicated they were aware of the disorder. Despite the fact that a training session had been given by the investigator, three clinicians reported that they had never heard of cluttering. The remaining clinicians responded with a wide variety of descriptions for the meaning of cluttering.

Fifteen clinicians (18.5%) responded with a designation that indicated they had forgotten, were not sure, or did not know the meaning of cluttering. Three respondents (4%) believed cluttering constituted some aspect of an articulation problem. Ten clinicians (12%) indicated that cluttering was composed of both language and stuttering components. Cluttering was viewed as a synonym for stuttering, including rapid speech, rate and rhythm problems, by 34 (42%)

respondents. Nineteen clinicians (24%) responded with descriptions that paralleled Weiss' (1964) definition of cluttering as a central language disorder that included stuttering, sequencing disorders, perceptual and thinking problems. Thus while the subjects generally indicated a lack of understanding of either the meaning or the condition, 53 were able to accurately describe the major characteristics of cluttering.

Additional analysis of the demographic information revealed that the ratio of male to female clinicians was 3:1, or 61 females to 20 males. The mean chronological age of the group was 30 years, with an age range of 22 to 61 years. More than half of the subjects were 30 years or younger. Data related to educational background revealed that 51 respondents held a bachelor's degree and 30 had attained a master's or equivalency degree. Data indicated that 71 subjects received their undergraduate training from colleges and universities within Pennsylvania. Of this group, 32 had degrees from the state college within the geographic area covered in this study. Of the 30 respondents with a master's or equivalency degree, 19 also attended the local state college.

The data pertaining to professional experience

of the clinicans revealed a range of from one to 19 years, with a mean of 4.5 years. Fifty-three subjects reported no previous professional experience before their current position.

Utilizing clinicans' observational data and information from the demographic instrument, a second chi square analysis was applied. The purpose of this analysis was to determine the effect of variables such as sex, age, and experience upon the subjects' observations of cluttering.

Variables of sex, intermediate unit where employed, and institution from which undergraduate training was completed were found to have no significant difference on subjects' ability to observe cluttering. A significant difference was found at the .001 level between clinicians' age groups and their observations of cluttering.

Data revealed that ability to observe cluttering and the effect of having been employed only once prior to present position was not significant. As a function of having had two previous positions, significant difference was found ($p < .05$). The total number of years at the present position was significant at the .001 level. Considering the total number of years at all positions, significance at .001 level was found.

(See Chapter IV, Tables 42, 46, 47, and 55, pages 179, 183, 184, and 191 respectively.)

Differences were found at .05 between those respondents with a master's degree and those with a bachelor's degree. Significant differences of $p < .01$ were found between those clinicians who received their master's degrees at the state college within the geographic area of this study and those who received their master's degrees at other institutions. (See Chapter IV, Tables 43 and 44, pages 180 and 181.)

A significant difference at .001 was found between respondents' stated meanings and their observations of cluttering. A significant difference of $p < .05$ was found between subjects' observations of cluttering and their reporting of clutterers in previous caseloads. Significance at the .001 level was found between those who had never included any clutterers and those who had indicated at least one clutterer in a previous caseload.

The type of treatment recommended for cluttering was significant at the .001 level. Significance at .001 was found between clinicians' ability to observe cluttering arnd their experience in treating the disorder. (See Chapter IV, Tables 52 and 54, pages 188 and 190.)

A cross-tabulation was computed between awareness of cluttering and subjects' age groups and years that bachelor and master degrees were received. Data indicated no significant differences for these variables. The meaning of cluttering and the respondents' age groups and years that bachelor and master degrees were received were analyzed. Results indicated significance at the .02 level for the year that bachelor degree was received and .05 level for age groups. No significant difference was found between the year the clinician received the master degree and the meaning attributed to cluttering. (See Chapter IV, Tables 46 and 47, pages 183 and 184.)

Conclusions

The ability of speech clinicians to observe and identify clutterers among stutterers was assessed. Data for this study were gathered through the utilization of two instruments designed by the investigator. One instrument was a checklist containing statements which described linguistic and behavioral characteristics of individuals with fluency disorders. The second was a demographic questionnaire. Based on the analysis of data from these instruments, and within the limits of this investigation, the following conclusions appear valid:

1. It is possible to identify the linguistic and behavioral characteristics that differentiate between cluttering and stuttering.

2. Descriptive statements of linguistic and behavioral characteristics can be arranged to produce an effective checklist instrument for the diagnosis of fluency disorders.

3. The identification of individuals who clutter is possible by utilizing a checklist instrument which contains statements pertaining to linguistic and behavioral characteristics.

4. During routine therapy sessions, clinicians with little or no previous training or experience with cluttering can effectively apply a checklist to identify specific types of fluency disorders.

5. The magnitude of caseload size, as reported by the clinicians in this study, is a major deterrent to effective identification and remediation of cluttering.

6. Speech clinicians, while generally aware of the term cluttering, are unfamiliar with the complexity of the disorder. They do not, therefore, include the incidence of cluttering within their caseloads.

7. Diagnosis and remediation of cluttering is

superficial and limited to oral language processes because speech clinicians are unfamiliar with the complexity of the disorder.

8. Clinicians generally did not respond to items on the checklist instrument related to spelling, reading, writing, attention and perceptual-motor behaviors. Presumably they do not recognize relationships among various factors in the total learning process.

9. When or where subjects received undergraduate training appears to have little or no effect on their knowledge of cluttering. A significant difference was found between respondents with bachelor and master degrees, particularly as it related to observational ability. The author concludes that this effect may be attributed to a difference in emphasis in training at the two levels, specifically increased attention to language disorders at the graduate level.

10. Sex of clinicians is not a factor in the identification of cluttering.

11. The number of previous positions and years of professional experience affect the ability to observe different behaviors in individuals with fluency problems. While most clinicians group all fluency disorders under the category of stuttering, with

experience they do recognize differences in linguistic and behavioral characteristics in individuals with these disorders.

Recommendations

Consistent with the findings of previous investigations, and based on the results of this study, it is suggested that two distinct conditions of fluency disorders exist. Further, these conditions, cluttering and stuttering, can be differentiated through observational techniques and correctly treated by specialists trained in the diagnosis and remediation of language disorders. In order to effectuate the diagnosis and remediation of cluttering, the following appear appropriate:

1. In the United States, a paucity of research exists in the area of cluttering. Apparently American professionals in speech and language are satisfied with the status quo. In order to change this state, it is recommended that a replication of this study be conducted. The replication should include:

   a. A larger population who have greater diversification of educational background;

   b. Clinicians with professional experience that includes employment in hospitals,

clinics, public and private schools, and speech and language centers; and

c. Subjects selected from a larger geographic area.

2. Throughout the period of this investigation it was apparent to the author that similarities existed between the characteristics associated with cluttering and those common to specific learning disabilities. It is recommended that research be conducted to establish the relationship through investigation of the following:

a. An assessment of the total linguistic performance including reading, spelling, and handwriting, of those children identified as clutterers with a comparison of present oral and written abilities.

b. An examination of case history records of the children used in this study with analysis of their previous and present academic performance as related to behaviors associated with learning disabilities.

3. Because the author was unable to secure an instrument designed specifically to identify linguistic and behavioral characteristics of cluttering, the investigator developed an instrument during the study.

The results of the study clearly indicate that clinicians could utilize the checklist instrument to identify clutterers during routine therapy sessions. The utilization of such an instrument would be invaluable as a tool in differential diagnosis. It is strongly recommended that this checklist instrument for the assessment of cluttering be utilized.

4. The American Speech and Hearing Association (ASHA), which certifies individuals as competent in speech and language, has apparently not considered the differentiation of cluttering from stuttering sufficiently important to include as a separate type of disorder. ASHA should recognize cluttering as a separate and distinct language disorder and should require certified training and service-providing institutions to include the incidence of cluttering.

5. The lack of understanding of the diagnosis and remediation of cluttering by speech clinicians is apparently of little or no concern to those who are responsible for hiring competent personnel to work with individuals with this condition. A major problem as seen by this author is that administrative personnel are limited in their understanding of the diagnostic and remediation process in speech and language. In addition, there appears to be minimal consideration

given to type of disorders when caseloads are assigned. The reported number of children included in some caseloads clearly indicates that remediation of speech disorders such as cluttering would be extremely difficult.

Supervisory personnel must be trained, or retrained, to understand the problems associated with specific language or learning disabilities. Selection of caseloads must be based on the qualifications of the clinician, the types of disorders, and the therapy time necessary to effectively remediate the problems.

6. Colleges and universities are not providing adequate study of speech and language processes. This situation results in a lack of preparation in total language assessment and remediation techniques. Further, while institutions of higher learning imply agreement with the philosophy of educating the total child, they in fact segregate curricular study into departments such as special education, communication disorders, and reading. Strict departmentalization suggests a lack of interdisciplinary relationships among the various aspects of total language processing and remediation.

Failure of the training institutions to

adequately prepare students to meet professional responsibilities is suggested by the data. Because of the importance of oral language ability upon the acquisition of written language processes such as reading and writing, it is recommended that all early childhood and primary grade teachers, reading specialists, learning disabilities specialists, and speech clinicians be trained, or retrained, to include at least a working understanding of both oral and written language processes.

Teachers involved in reading readiness programs and the teaching of reading must acquire knowledge of oral language processes such as speech sound production, voice production, rate, rhythm, and fluency development. Speech and language screening should be a consideration for teacher training, although complete diagnostic evaluation should remain the responsibility of trained clinicians.

Speech clinicians must understand the interrelationship between oral and written language processes. The importance of deleterious effects of developmental delays in oral performance upon later written language learning, including reading and writing, must be emphasized in training programs. Current trends in education place the responsibility

for remediation of written language disorders in the category of learning disabilities. Therefore, speech clinicians must be trained in specific learning disabilities if they are to be effective total language specialists.

With a minimum of training, classroom teachers can effectively utilize the checklist instrument developed by this investigator as a means to identify cluttering behaviors. Specialists in other areas such as psychology, reading, mathematics, and specific learning disabilities should also become familiar with the instrument and its implications in screening children with fluency problems. Early identification of such children by classroom teachers and all professionals who come in contact with these children will mandate that programs become developmental in nature rather than remedial.

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APPENDIX

CLUTTERING SYNONYMS

agitolalia

agitophasia

baryglossia

barylalia

cluttering

logorrhoea

paraphrasia praecox (praeceps)

careless speech

general indistinctness

mutilations

negligent speech

nigger-boy speech

poltern

slovenly speech

slurring speech

spluttering speech

speech agitans

tachylalia

tachyphemia

tachyphrasia

tumultus sermonia

EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE OF CLINICIAN

1. _____ M or F _____
(Name) (Sex) (Date of Birth)

2. _____
(Employer & Location: School District, IU, Clinic, Inst., Hospital)

3. _____ _____ _____
(Current Job Title) (No. Yrs.) (Major Responsibility)

4. Degree(s):
Bachelor of _____ _____ _____ _____
(Institution) (Major Area) (Year)

Master of _____ _____ _____ _____
(Institution) (Major Area) (Year)

5. Certification Areas:
ASHA: _____ _____ _____
Speech Audiology Hearing Impaired

STATE: _____ _____
(Specify Areas) (Specify level)

OTHER: _____

6. Previous Experience (Indicate if public school, clinic, center, institution, hospital)

A. _____ _____ _____ _____
(Type) No.Yrs. Location Major Respon.

_____

B. _____ _____ _____ _____
(Type) No.Yrs. Location Major Respon.

_____

C. _____ _____ _____ _____
(Type) No.Yrs. Location Major Respon.

(Use back if necessary for additional experience)

7. Cluttering:

A. Have you ever heard of cluttering? _____ B. Where? _____
(Yes or No)

C. What does cluttering mean to you?_____

_____

D. How many clutterers have you ever had in your caseloads?

_____

E. What type of therapy did you administer?_____

_____

(Articulation, Stuttering, Voice, Language, etc.)

8. How did you first become interested in speech pathology? _____

_____

_____

CASELOAD INFORMATION:

Total enrolled: _____

Articulation: _____

Language: _____

Fluency: _____

Other (Please specify) _____

Are any of the students considered to exhibit cluttering behavior? _____

(How many)

Under what category above do they receive therapy?_____

_____

CHECKLIST OF BEHAVIORS OBSERVED IN CLINICAL SITUATION

(Name-First, last initial optional)	(Grade)	(Birthdate)	(I.U.)	(Date)

(No. years in therapy)	(Major speech problem)	(Clinician)

THE STUDENT:	Always	Often	Occa.	Seldom	Never
1. Is aware of fluency problem.					
2. Avoids speaking, if possible.					
3. Has word-finding difficulty.					
4. Is a poor speller.					
5. Speaks at a rapid rate.					
6. Improves fluency if told to "Think before you speak."					
7. Substitutes words out of context in reading.					
8. Has difficulty following oral directions.					
9. Volunteers in group discussions or conversations.					
10. Has inappropriate inflectional patterns.					
11. Reads unfamiliar material more fluently than familiar.					
12. Speaks more fluently in a 1:1 situation than group.					
13. Also has articulation errors.					
14. Is more fluent after attention is called to speech details.					

THE STUDENT:	Always	Often	Occa.	Seldom	Never
15. Exhibits secondary symptoms.	_____	_____	_____	_____	_____
16. Has "thinking process" that is quick (simple yes or no answers)	_____	_____	_____	_____	_____
17. Reads with errors not related to fluency problem.	_____	_____	_____	_____	_____
18. Exhibits gross motor problems (walking, running)	_____	_____	_____	_____	_____
19. Is easily distracted by auditory or visual stimuli. (Attn. span)	_____	_____	_____	_____	_____
20. Has poor coordination (balance, posture, movement)	_____	_____	_____	_____	_____

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

2500 North State Street
Jackson, Mississippi 39216

School of Medicine
Department of Surgery
Division of Otolaryngology

Area Code 601
362-4411

November 25, 1975

Miss Colleen J. Marks
Assistant Professor
Department of Special Education
Bloomsburg State College
Bloomsburg, Pennsylvania 17815

Dear Miss Marks:

With many thanks for your letter dated November 19, 1975, I am happy to hear that you are interested in cluttering. All I could find out about this trouble has been described in a book entitled, "Voice, Speech, Language" by Luchsinger and Arnold, Wadsworth, 1965. Those authors who became more deeply interested in cluttering have been able to differentiate it quite clearly from stuttering or other disorders. American authors have been typically disinterested in this disorder for reasons that are not clear and not important. The late Dr. Deso Weiss of New York City wrote a book on cluttering which should still be available. You are right in stating that more attention should be paid to this complex disorder which, in my opinion, is part of a syndrome that could be called General Language Disability, a hereditary condition of inferior endowment in the entire area of language. Specific dyslexia or congenital reading disability is another facet of the syndrome.

With all best wishes, I shall be interested in your results.

Yours very sincerely,

Godfrey E. Arnold, M.D.
Professor and Director
Division of Otolaryngology

GEA:mw

KATRINA de HIRSCH, F.C.S.T.
46 East 82nd Street
New York, N.Y. 10028
BUtterfield 8-3985

Nov. 28th, 1975

Ms. Colleen Marks
Bloomsburg State College
Bloomsburg, Pa. 17815

Dear Ms. Marks,

Thank you for your letter of Nov. 19th, 1975.

Cluttering belongs into the category of developmental language disorders and is closely related to disturbances in reading, writing and spelling. It is an important syndrome that until fairly recently has been neglected by the A.S.H. and is not usually part of curriculum in speech pathology courses.

It has been known in Europe since about 1934-35 when it was discussed by Weiss and Freud.

Dr. Weiss has written a book about it in the sixties. Drs. Arnold and Luchsinger and I have published about it. (My latest paper appeared in the 1974 Bulletin of the Orton So.

Further work on the disorder should be very well worth while.

Sincerely,

Kdh/ac

FRIEDRICH S. BRODNITZ, M. D.
667 Madison Avenue
New York, N. Y. 10021

Tel. TEmpleton 8-9130

November 28, 1975

Professor Colleen J. Marks
Bloomsburg State College
Bloomsburg, Penna 17815

Dear Professor Marks:

Thank you very much for your letter of November 19th.

I very much agree with you that Cluttering is a speech defect that has been sadly neglected. With the exception of a few papers in the long defunct Journal Logos and the book by Deso Weiss (in Van Ripers Series) very little has been written or research done on this interesting subject. And I find that my students (graduate students who work for an M.A. or a Ph.D. in speech) are often quite misinformed about this condition.

If you are interested in it more luck to you.

Sincerely,

Friedrich S. Brodnitz,M.D.
Adj. Professor of Communication Sciences
Hunter College, The City University of New York

Training Session

On September 24, 1976, during conferences with speech clinicians in the Capital Area Intermediate Unit 15, the following introduction was given to each professional individually. In addition, in Intermediate Units 16, 18, and 29, during group meetings, identical information was part of each initial session that the investigator held with speech clinicians of each area.

Both Intermediate Unit 16 and 29 were able to schedule meetings during day meetings. Intermediate Unit 18 requested an evening meeting because of contractual commitments in their area.

After being introduced to each group, the supervisor advised the clinicians that the investigator needed their support in completing her study for dissertation. Inasmuch as the investigator had previously been associated with all three Units in a special project in which she served as Supervisor of clinicians and special educators for a two-year language program, many clinicians were acquainted with her. They all agreed to help with the collection of data.

Essentially, the investigator stated:

I want to ask you to use a scale which I've

devised to try to determine if any of your students are exhibiting cluttering behavior. This is not a screening device in itself, but should be applied on those children in your caseloads who have been referred or diagnosed as stutterers. I want to determine the nature of dysfluent or nonfluent speech patterns and want you to use the scale during a routine diagnostic session.

The scale is constructed on a five-point basis, from a "never" occurring behavior to an "always" occurring one. If you can, please try to arrange the session to be able to observe the items indicated. If there are any other behaviors which you feel should be included or that are demonstrated along with the nonfluencies, please list them or let me know what they are. If you do not understand any items or they are not clear, please ask and I'll try to explain as we go along.

What I am trying to determine is if the scale can be used to differentiate stuttering from cluttering behavior. How many of you know what cluttering is? (Pause for show of hands). Good, some of you have heard of it. For the rest, let me give you a brief description of cluttering.

First of all, cluttering has been described more by European than American writers. Perhaps the most

well-known writer is Deso Weiss, who wrote the only book in English on cluttering. It was an historical review that described cluttering as a Central Language Imbalance that was manifested in all areas of communication, as well as in cognitive and behavior dysfunctions. Reading, writing, spelling, attention span, concentration, distraction, lack of awareness of difficulty, lack of rhythm and music ability, articulation errors, and stuttering were all part of the cluttering syndrome.

Weiss and others believed that cluttering was a disorder that was caused by an inherited or familial weakness or predisposition. He also considered it to be a congenital language disorder and felt that after years of therapy, the stuttering problem was often the residual disorder of cluttering.

Please look at the scale and we'll go over each item. If you have any questions or don't understand, please ask. If you have not evaluated nor observed any of the behaviors in your session, mark an N.A. for not applicable or D.K. for don't know. If you can, please try to observe all the items I've indicated as it is very important for my study.

Thank you very much for your help and cooperation.

It is always a pleasure to come back to your I.U. and visit with you who do the good therapy which we in academic life talk about. It's always good to see old friends and try to develop new ones.

If you will complete these as quickly and accurately as possible and get them back to me, I'll be very appreciative. Again, thank you all very much.

VITA

Miss Colleen J. Marks was born on June 23, 1931. In 1962 she graduated from Edinboro State College, with a Bachelor's Degree in English and Speech Correction. In 1964, Colleen received her Master of Arts Degree in Speech Pathology from the University of Illinois.

From 1962 to 1963, Miss Marks was employed as a speech clinician in the Corry Area School District, Corry, Pennsylvania. She was a clinician in the Erie School District from 1964 to 1966, then taught at Edinboro State College from 1966 to 1967. At that time she was also Director of the Speech, Hearing, and Language Clinic at Edinboro. In 1967, she accepted the position as Supervisor of School Services at the Mt. Carmel Guild Hearing and Speech Center, Newark, New Jersey, where she directed the first parochial school system speech and language services program in the United States. Colleen joined the faculty at Bloomsburg State College in 1969, first in the Department of Communication Disorders, and currently in the Department of Special Education.

Miss Marks served as speech and language consultant for the Zem Zem Crippled Children's Hospital, Erie, Pennsylvania, and the Gertrude Barber Exceptional Children's Center, Erie; at the Kennedy Child Study Center, New York City; Intermediate Units 16, 18, and 29 in Northeast Central Pennsylvania; the

Hazleton School District; the Easter Seal Society for Crippled Children and Adults; St. Columba's School in Bloomsburg; and the Bloomsburg Christian School Society in Bloomsburg.

Miss Marks has conducted numerous inservice training workshops for school districts and intermediate units, and served as consultant in behavior modification and management for the Kennedy Child Study Center, Easter Seal Society, and the Behavioral Sciences Institute in Monterey, California. She has presented papers and been on the programs of the New Jersey Speech and Hearing Association, the Pennsylvania Speech and Hearing Association, the Americian Speech and Hearing Association, the American Association for Mental Deficiencies, the Eastern Regional Operant Technology in Communication Disorders, the Council of Exceptional Children, Columbia Day Care Society, Columbia Home Health Services Agency, Geisinger Medical Center Staff, Pennsylvania Council on Research, and the School of Hope, Williamsport, Pennsylvania.

Colleen has held memberships in the following organizations: Northeast Pennsylvania Speech and Hearing Association; Northwest Pennsylvania Speech and Hearing Association; Association for Children with Learning Disabilities; Council for Exceptional Children, Divisions of Early Childhood, Learning Disabilities, and Communication Disorders; Pennsylvania State Educational Association; National Education Association; Association of Pennsylvania State College and University Faculty; Pennsylvania Association of Higher Education; New Jersey Speech and Hearing

Association; Pennsylvania Speech and Hearing Association; American Speech and Hearing Association; Member of the Board of Directors, Easter Seal Society; Advisor, Student Speech and Hearing Association, Bloomsburg.

Honors or awards which Miss Marks has received include: Kappa Delta Pi, National Honor Educational Fraternity (1960); Vocational Rehabilitation Scholarship, Illinois (1963-1964); Traineeship Award, Buffalo (1966); Educational Award, Lehigh (1974-1978); Who's Who in Education (1974); and International Biography of Women (1975).