Cluttering and Stuttering: Related, Different or Antagonistic Disorders?

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Introduction

Speech and language disorders may be classified into disorders of 1) articulation, 2) voice, 3) language and 4) fluency (Van Riper 1978). The fluency disorder most extensively described in the literature is of course stuttering, whereas the professional interest in other fluency disorders is relatively new, particularly in the United States (St. Louis & Rustin, Chapter 2).

However, the disorder of cluttering has been described in the European literature on phoniatrics and logopedics as early as in the eighteenth century (Luchsinger 1951). Weiss (1964) classified stuttering and cluttering in the same family of disorders, saying that stuttering has overshadowed its "illegitimate" brother.

Dalton and Hardcastle, who include stuttering and cluttering in a six-fold classification system of fluency disorders, say that both disorders are "manifested primarily by impairments in the temporal and sequential aspects of speech output" (Dalton & Hardcastle 1989, p. 2).

Both earlier and more recent descriptions of cluttering, however, indicate that cluttering should not be classified solely as a fluency disorder. Both articulatory and language characteristics are mentioned in definitions and descriptions of cluttering (e.g., Weiss 1964; Preus 1981; St. Louis 1985), and Van Riper (1982, p. 27) says that the symptomatology of cluttering "includes far more than the disordered fluency, which is only one of its characteristics."

Thus cluttering seems to be a more extensive and general speech disorder than stuttering, but as a separate clinical entity it is closely interrelated with stuttering, a relationship described by Weiss (1964, p. 68) as "the most important single relationship in the field of speech pathology."

Early Descriptions of the Relationship between Cluttering and Stuttering

The first descriptions of cluttering are found in the literature of stuttering and deals with the relationship between the two disorders. The main hypothesis was that cluttering was the basis of most stuttering. Weiss (1964) and Seeman (1974) maintained that about half of the cases of stuttering had their background in cluttering. In Weiss's opinion stuttering develops as a reaction of struggle or effort to overcome cluttering. Freund (1952) found that this development often takes place in puberty and that late onset cases of stuttering are often based on cluttering. Freund also maintained that speech constitutional inadequacies (manifested as cluttering) are blended with expectancy-neurotic tendencies (manifested as stuttering), and that these two factors lead to the development of stuttering.

Weiss (1964, p. 72) writes about the development and interaction of the two disorders: "Cluttering is usually observed before the stammering develops; it persists in the early stages of stammering until suppressed by the patient's efforts, and it reappears when stammering lessens." To Weiss stammering meant fully developed or "secondary" stuttering, the difference between "primary" stuttering and "primary" cluttering being one of nomenclature. This is in agreement with Freund's (1952, p. 151) opinion that in the first stages of stuttering "we lack means to differentiate it from cluttering."

The early literature naturally stressed the difference between the two disorders, but also pointed to similarities. Seeman (1974) hypothesized an organic origin of both disorders, maintaining disturbances in identical cortical centers to be responsible for both. Heredity was supposed to play an important part in the two disorders, and Seeman found that in many cases this double disorder might appear as cluttering in one generation and stuttering in the next.

However, for those writers who wanted to establish cluttering as a separate clinical entity, it was particularly important to stress the difference between stuttering and cluttering. These writers (e.g., Freund 1952; Weiss 1964; Langova & Moravek 1966; Schmidt 1969) presented lists of criteria differentiating cluttering from stuttering. The list in Table 4.1 is taken from Weiss (1964, p. 69).

Table 4.1. Typical differences between stuttering and cluttering (Weiss 1964). Adapted with permission from Weiss, D.A. (1964) **Cluttering.** Englewood Cliffs, NJ: Prentice Hall.

	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

As can be seen, the list consists of a number of psychological and situational opposites between the two disorders and does not contrast speech behavior.

Such lists were mostly based on the writers' clinical impressions and were to a small extent affirmed by research. One of the few early research attempts in identifying differentiating criteria was done in Czechoslovakia by Langova and Moravek (1966), who compared three groups (stutterers, clutterers and combination cases) in studies of EEG, DAF and pharmacological effects. Table 4.2 gives a summary of some of their findings. More abnormal EEG tracings in clutterers than in stutterers were

also found by other researchers (see Seeman 1974; Daly 1986).

Table 4.2. Research findings by Moravek and Langova (1966)

	Stutterers	Clutterers	Combined Cases
Abnormal EEG	13.5%	48%	37.1%
DAF improved speech	82%	0%	23%
DAF worsened speech	3%	85%	56%
Effects of Chlorpromazine	66% worse	86% improved	73% improved
Effects of Dexfenmetrazine	78% improved	100% worse	37% worse

In the lists of differentiating criteria between cluttering and stuttering mentioned earlier, personality variables were often included, but these clinical impressions were scarcely supported by research. An exception is a study by Schmidt (1975) in Hamburg, who applied Eysenck's dimensions of intro- and extroversion and neuroticism, finding that all clutterers were extroverts and all stutterers introverts. Fifteen per cent of the clutterers and 85 per cent of the stutterers scored high on the scale of neuroticism.

The scanty empirical research and the speculative nature of this early literature has made it highly vulnerable to criticism (Van Riper 1970; Preus 1987). In order to sharpen the contrast between stuttering and cluttering this early literature has tended to stereotype both stutterers and clutterers (Dalton & Hardcastle 1989).

Van Riper (1970) criticizes the distinctive features suggested by Weiss, Freund and others. He thinks the difficulty in making the differential diagnosis "stems from the lack of precision in the definition of each disorder, both appearing to be syndromes rather than distinct entities" (Van Riper 1970, p. 347).

The Differential Diagnosis

A differential diagnosis between cluttering and stuttering should preferably be based on universally accepted definitions of both disorders, expressed in sets of objective and quantifiable characteristics. Even if differing

definitions of stuttering exist, most clinicians will agree that its main characteristics are 1) repetitions of segments of words and monosyllabic words, and 2) prolongations of articulatory postures resulting in audible prolongations or breaks in the flow of speech (Preus 1981).

However, as is evident from Chapter 3, we have no universally accepted definition of cluttering. As yet definitions of cluttering have been both defective and divergent.

Some of these definitions are broad and include more than just speech and language behavior (e.g., Weiss 1964). Two main characteristics, abnormally high speech tempo and indistinct articulation with elisions and distortions of speech sounds, are mentioned in most definitions (Luchsinger 1963; Weiss 1964; Langova & Moravek 1966; Seeman 1974; Bloodstein 1987; Preus 1987; Dalton & Hardcastle 1989). Some definitions (Weiss 1964; Langova & Moravek 1966; Preus 1987; Dalton & Hardcastle 1989) include deficits in language formulation, and two (Bloodstein 1987; Dalton & Hardcastle 1989) mention monotony of voice.

None of the above-mentioned characteristics are found in definitions of stuttering, and so far it should be easy to keep the two disorders apart. However, some definitions and descriptions of cluttering also include repetitive behavior.

Among the symptoms of cluttering, Weiss (1964) mentions repetitions of monosyllabic words and of the first syllable of polysyllabic words, the rapidity of these repetitions being equal to that of the non-repetitive speech. He also considers vowel stops (short vowel blocks) a sign of cluttering (Weiss 1964).

Dalton and Hardcastle (1989) also mention repetition of segments (syllables), and Bloodstein (1987) describes the pattern of speech in clutterers as repetitive. St. Louis et al (1985) found that alleged clutterers had few sound and syllable repetitions and prolongations compared to stutterers, but that stutterers and clutterers were not significantly different from one another in word and phrase repetitions.

St. Louis and his cowriters do not seem to distinguish between monosyllabic and polysyllabic word repetitions. Because repetition of monosyllabic words are acknowledged as a symptom of stuttering and repetition of polysyllabic words not (see Wingate 1964), we cannot tell from this piece of research whether repetition of monosyllabic words might be a common symptom of both stuttering and cluttering. Until research can give us more information about the nature of word repetitions of clutterers,

the differentiation between stutterers and clutterers in the matter of repetitive behavior is still unsettled (see also Myers and Bradley's chapter).

Dalton and Hardcastle (1989) criticize the old differentiating lists for lacking research support, and instead suggest a differentiation between stuttering and cluttering based on the main **phonetic** features which are potentially characteristic of the two disorders as compared to normal speech. They point to four dimensions as central for the evaluation of speech fluency: 1) transition smoothness, 2) pausing, 3) rhythmical pattern and 4) regulation of tempo.

In Figures 4.1 and 4.2 Dalton and Hardcastle (1989) display the main phonetic features characteristic of the disorders of cluttering and stuttering.
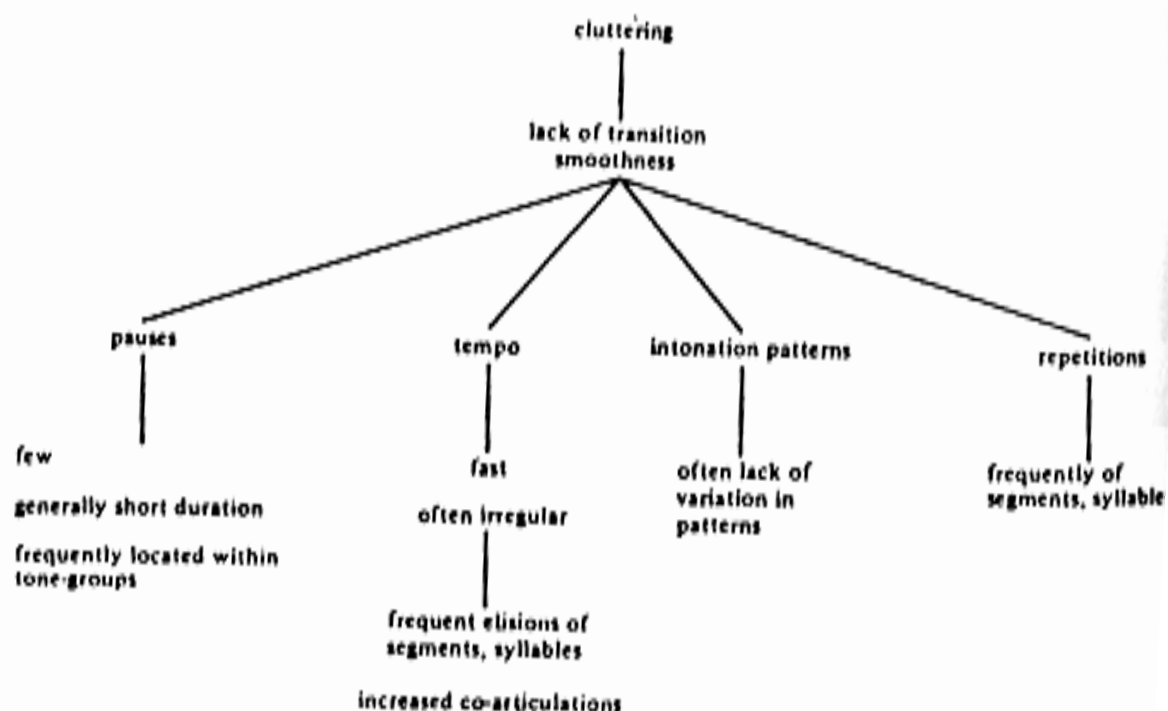
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                        cluttering
                            |
                    lack of transition
                        smoothness

    pauses            tempo       intonation patterns      repetitions

few                  fast         often lack of            frequently of
                                  variation in             segments, syllable
generally short duration  often irregular   patterns

frequently located within
tone-groups

                     frequent elisions of
                     segments, syllables

                  increased co-articulations
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Figure 4.1. See text. Reproduced with permission from Dalton, P. & Hardcastle, W. F. (1989) **Disorders of Fluency**. 2nd. Edition. London: Whurr.
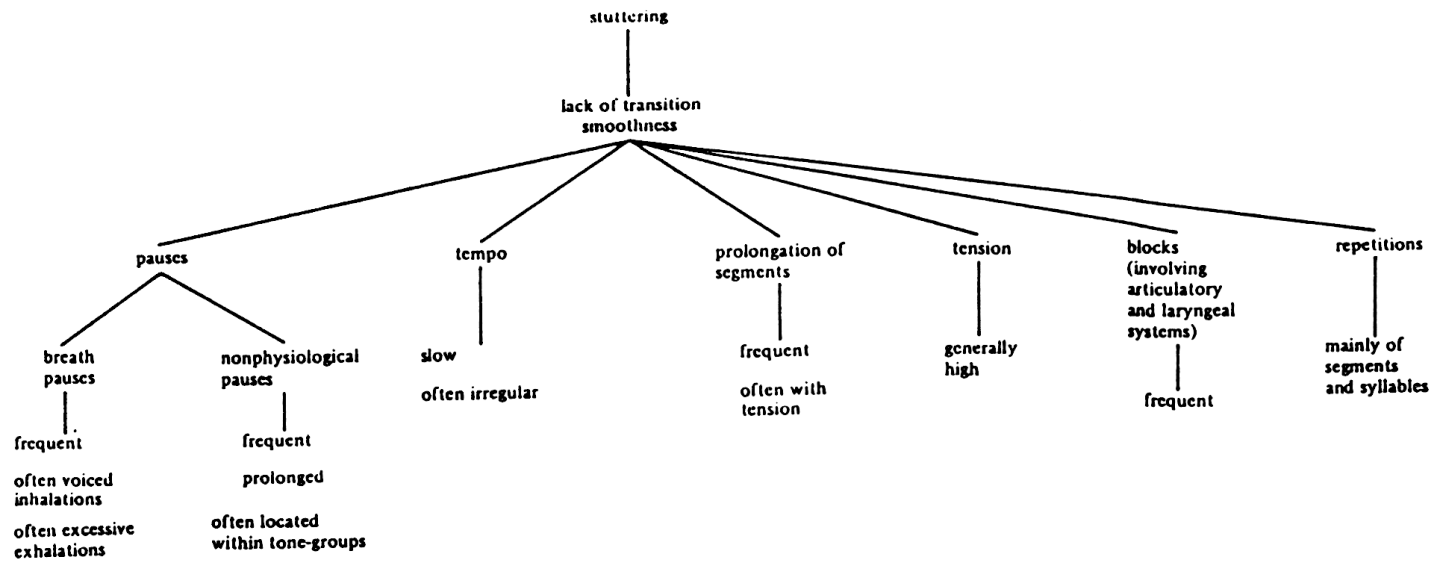
Figure 4.2. See text. Reproduced with permission from Dalton, P. & Hardcastle, W. F. (1989) **Disorders of Fluency.** 2nd. Edition. London: Whurr.

Dalton and Hardcastle maintain that the increased rate of utterance affects coarticulation, and leads to elisions of sounds and even whole syllables. They say: "It is plausible that the speech of clutterers may be characterized by a greater degree of coarticulation than is normal with coarticulatory influence extending over more than four segments, for example, and not being constrained by word and syllable boundaries" (Dalton & Hardcastle 1989, p. 44).

In coarticulation the speech sounds following one another mutually interact, primarily within syllables and words. Agnello (1975) has maintained stuttering to be an expression of lacking or poor coarticulation, and as early as in 1965 Stromsta pointed to coarticulatory features as basis for a distinctive differential diagnosis between stuttering and normal nonfluency. With respect to the coarticulation phenomenon it may thus be said that stuttering and cluttering are at opposite ends of a continuum with normal fluent speech in the middle.

The two main agreed-upon characteristics of cluttering (high speech tempo and indistinct articulation) may thus be seen as one phenomenon. Elisions and distortions of speech segments are consequences of excessive tempo and coarticulation.

Some writers also add language formulation defects to their description of cluttering (Weiss 1964; Langova & Moravek 1966; Preus 1987; Dalton & Hardcastle 1989). The latter, however, believe that the excessive speech tempo causes the formulation defect in disturbing the necessary preprogramming of language (Dalton & Hardcastle 1989).

Because language defects are often, but not always, present in clutterers, Liebmann may have been right to suggest in the first part of the century, (see Dalton & Hardcastle 1989, p. 123), that there are two types of cluttering: "...one being motor in form and having lack of attention to kinaesthetic and somato-motor performance as its basis, while the second was said to be receptive in nature with disorders of auditory attention predominating."

Clinical experience with clutterers gives reason to hypothesize the existence of two main components in cluttering, which in the individual clutterer are differently weighted: a motor component which is primarily expressed in rapid speech tempo and excessive coarticulation, and a linguistic component which may cause language formulation defects, delayed language development, dyslexia or learning disabilities (Preus 1987).

However, when repetitions of word segments (part-word repetitions) or

prolongations occur in the speech of a clutterer, we are faced, not with a pure clutterer, but with a combination case of stuttering and cluttering, the so-called cluttering type of stutterer.

The Cluttering Type of Stutterer

One reason why cluttering and stuttering have not always been differentiated, is that the two disorders are often found in the same individual, and the fact that most of the clutterers asking for therapy are combination cases. The prevalence of combined cases are most often given in percentages of clutterers within a sample of stutterers. Table 4.3 shows percentages of cluttering stutterers as calculated in different sources. The mean of these percentages is approximately 35 percent, that is to say that about every third stutterer is a cluttering stutterer.

Table 4.3 Prevalence of cluttering in stutterers.

Source	Percentage
Dalton and Hardcastle (1989)	25
Daly (1986)	40
Freund (1952)	21
Langova and Moravek (1966)	31
Preus (1981)	32
Preus (1989)	34
Schmidt (1969)	67
Seeman (1974)	50.7
Van Riper (1982)	18

Studies also give figures for stuttering symptoms in clutterers. Langova and Moravek (1966) maintain that more than half of their clutterers showed symptoms of stuttering, and Kleinsorge (1989) found 35.7 percent stuttering among 64 clutterers in Germany.

Stutterers with speech behaviors of cluttering may be said to belong to a subgroup of stutterers. The possibility of identifying subgroups within the

population of stutterers has been studied in a number of investigations. Whereas etiological subgrouping has met with little success as long as the etiology of stuttering is still a riddle, the value of clinical subgroups has been underscored (see Preus 1981). The cluttering type of stutterer is one of the most frequently suggested ones in the literature on subgroups (e.g. Grewel 1960; Luchsinger & Arnold 1965; Zaliouk & Zaliouk 1965; Freund 1966; Schmidt 1975; Richter 1981). The research by Langova and Moravek (1966) mentioned earlier in this chapter (see Table 4.2) indicates that combination cases of stuttering and cluttering take an intermediate position between pure stutterers and pure clutterers in EEG studies and studies of the effect of DAF and certain pharmacological drugs on speech.

Van Riper's study of the development of stuttering in 300 cases in fact turned out to be a study of developmental subgroups. His Track II stutterers, consisting of about 18 percent of the cases he managed to classify, may be termed a cluttering subgroup. These stutterers frequently showed delayed language development, cluttering and articulation disorders. The onset of stuttering took place at the onset of speech. The development of the disorder was slow, the disfluencies were dominated by repetitions, and there was little anxiety and avoidance behavior even in adult age. Van Riper (1982, p. 101) says "the individuals in Track II end up as stutterers. They do not become fluent when they try to talk slowly and carefully." Van Riper's developmental track hypothesis has been subjected to research by Ohashi (1973), Daly (1981) and Preus (1981). Daly found that 24 percent and Preus that 18 percent of the stutterers fitted into Van Riper's Track II.

Preus (1981) also applied multivariate analysis to study contrasts between the stutterers in the different tracks and found that Track II stutterers were characterized by cluttering, articulation disorders and delayed language development. The stuttering was mostly repetitive and not particularly severe. The anxiety level was low, and scores on Halstead's Impairment Index (Reitan & Davison 1974) were often indicative of brain dysfunction.

Van Riper's and Preus's descriptions of their Track II stutterers have some similarities to the descriptions of brain injured stutterers in East Germany and the Soviet Union studied by Becker and his coworkers (1988). This subgroup of stutterers had also stuttered from the onset of speech, and the development of the disorder had been slow. Brain injured stutterers were said to show symptoms of cluttering, dysarthria and tachylalia.

All of these studies indicate that symptoms both of cluttering and stuttering appear early. The old literature maintained cluttering to be

primary to the development of stuttering, but Daly (1986) says it is not clear whether one of the two disorders typically precedes the other.

Preus (1981, 1987) also analyzed his material in order to identify clinical subgroups with differential treatment consequences. The stutterers might be classified into eight differential treatment groups of which two displayed the disorder of cluttering. One of the two groups scored high on cluttering, but low on avoidance behavior and a series of variables measuring the frequency and severity of overt stuttering behavior. Delayed auditory feedback tended to increase the stuttering of these individuals. The other cluttering subgroup also had low scores on variables measuring the frequency and severity of stuttering, but scored high on cluttering and avoidance behavior.

In clutter-type stuttering it is important to distinguish between the stuttering and the cluttering component, evaluating the relative importance of either component. Thus, Preus's two stuttering subgroups needed different approaches to therapy (Preus 1981). In cases with a strong component of stuttering one should concentrate on the stuttering to begin with. Later the two disorders may be treated simultaneously, and at the end it should be possible to work solely on the cluttering. Van Riper (1982) says that when the stuttering decreases as a result of therapy, combined cases clutter more than before.

Gregory (1979) has discussed therapy methods in terms of a stutter-more-fluently / speak-more-fluently dichotomy. For the cluttering stutterer a combined approach seems necessary. In cases with severe stuttering and avoidance behavior a non-avoidance type of therapy ad modum Van Riper is a good starting point. However, the cluttering component needs therapy measures more directed towards the total speech response, a speak-more-fluently approach involving the training of articulation, voice, rhythm and language.

Some therapy methods for stutterers may be more applicable to cluttering stutterers than to non-cluttering ones. Becker (1988) and his coworkers in Eastern Europe advocate a re-building of speech motorics with kinaesthetic exercises for their group of brain-injured stutterers, which also included clutterers.

In Denmark, Svend Smith (1955) advocated his accent method both for stutterers, clutterers and voice cases. "Unstressed syllables should be trained into rhythmical conciseness in relation to the stressed ones," said Smith (1955, p. 198), pointing to a goal that must be important in the therapy for

clutterers.

Other methods for treating stutterers have been advocated for clutterers. Dalton and Hardcastle (1989) have found syllable-timed speech useful in the early stages of therapy with clutterers, and Daly (1986) advocates Shames and Florance's stutter-free program. It goes without saying that prolonged speech and other methods intended to slow down the speech tempo are often chosen in therapy with cluttering stutterers.

Cluttering and Stuttering in the Mentally Retarded

The high prevalence of fluency disorders in the mentally retarded is well documented. Particularly high prevalences in individuals with Down's syndrome have been reported. (See Preus 1973; Van Riper 1982; Cooper 1986; Bloodstein 1987.)

These findings have made researchers doubt if the fluency behavior should correctly be identified as stuttering. In the early literature (Cabanas 1954; Weiss 1964) the dysfluent behavior was believed to be cluttering, because the delayed language development and high prevalence of other speech and language disorders make cluttering a more plausible explanation than stuttering.

Another reason why disfluent behavior in the mentally retarded was labelled cluttering was that the early authorities on cluttering applied obsolete definitions of stuttering, including the presence of awareness of and reactions to stuttering. Cabanas (1954) maintains that there is a **psychological** difference between the blocking of a stutterer and that of a Down's syndrome individual.

Critical evaluations of these early clinical findings and opinions about the dysfluent behavior in the mentally retarded has lead to some research which shows that both stuttering and cluttering may be present in this group of people. In Denmark Forchhammer (1955) found both stutterers and clutterers in his study of inhabitants of institutions for the mentally retarded, reporting higher prevalences of both disorders among the lower functioning (trainable) than among the higher functioning (educable) individuals.

Preus (1973) in his study of 47 Norwegian individuals with Down's syndrome, based his diagnoses both on quantifiable speech behavior characteristics and on evaluations made by institutional personnel. He found 47 percent stutterers and 32 percent clutterers (19.2 percent were

combination cases of stuttering and cluttering, 27.7 percent pure stutterers and 12.7 percent pure clutterers).

Cooper (1986, pp.133-134) draws these conclusions from his review of the literature: "The types of disfluencies exhibited by disfluent retarded stutterers are similar to those observed in populations of stutterers of normal intelligence. A significant number of mentally retarded disfluent individuals (particularly those with Down's syndrome) also exhibit behaviors such as abnormally rapid speech and articulatory disorders characteristic of the syndrome labelled cluttering."

The relationship between the two fluency disorders in mentally retarded individuals has scarcely been subjected to study, but Preus (1973) failed to find a significant statistical correlation between the two disorders in individuals with Down's syndrome.

Some mentally retarded individuals with stuttering and/or cluttering are in need of treatment for their fluency disorder. Treatment approaches may well be based on the Demands and Capacities Model (Adams 1990; Starkweather & Gottwald 1990) with a building up of language functions, motor and speech training and counselling of parents and institutional personnel. Preus (1990) has suggested some treatment approaches for mentally retarded individuals with fluency disorders.

Research Needs in the Relationship between Cluttering and Stuttering

Our knowledge of the relationship between cluttering and stuttering leaves much to be desired. One main reason for this state of affairs is that we have not arrived at a universally accepted definition of cluttering, so our knowledge of the relationship of the two disorders must be based on tentative definitions and descriptions of cluttering. But we feel we know the contours of cluttering well enough both to sift relevant knowledge from the literature and to look forward in planning research that may make us understand this disorder more fully.

Stuttering and cluttering have both been described as disorders partially based on heredity, the hereditary factor having been suggested to be stronger in cluttering than in stuttering (Daly 1986). A common genetic factor has also been hypothesized (Seeman 1974). We need genetic studies including both disorders of the type Kidd and his associates have performed with stutterers (Kidd 1985). Is it true, as Seeman (1974) suggested, that stuttering and cluttering shift from one generation to the next? Do

cluttering and stuttering have a common genetic basis, which in some generations manifests itself in stuttering and in other generations in cluttering?

Cluttering has been called the mother lode of stuttering. Whereas the early literature describes stuttering much as a secondary disorder superimposed on cluttering, newer literature suggests that both disorders may be present from the start and develop together with some sort of interaction. Only longitudinal studies can give sufficient knowledge about the developmental and interactional aspect of the two disorders. Van Riper's developmental track hypothesis may be a good starting point for such kinds of research. Yairi (1990) also advocates large scale longitudinal research concerning developmental aspects of fluency disorders.

Prevalence studies of cluttering have shown dissimilar findings in different countries. American authorities maintain the disorder to be rare, but Becker and Grundmann (1970) found 1.5 per cent clutterers in a study of German school-children. Dalton and Hardcastle (1989, p. 127) ask for international studies of both fluency disorders, saying: "It might be worth while to investigate the relationship between the type of disfluencies produced by speakers of a number of different languages and aspects of those languages such as rhythm and complexity of articulatory pattern."

Dalton and Hardcastle's suggestions that clutterers and stutterers are at opposite ends of a continuum of coarticulation, should lead to more empirical research of the coarticulatory features both in stutterers and clutterers.

Interest in the cluttering type of stutterer should increase research efforts in identifying subgroups of stutterers. Both Preus (1981) and Yairi (1990) offer research suggestions. It is most important to establish meaningful subgroups at an early stage of the disorder. Identification of subgroups (among them cluttering stutterers) should be followed by treatment research with the aim of tailoring different treatment approaches to different subgroups of stutterers.

In this matter it is not difficult to point to other unsolved questions to which research may give answers. Communicative behavior of clutterers (e.g. turn-taking, non-verbal behavior, etc.) may be different from that of stutterers. We need to know more about the relationship between the two disorders in the mentally retarded. Langova and Moravek's early research on EEG, DAF and medication should be repeated with today's technical equipment and statistical knowledge. And to return to the problem of

definition, the nature of the repetitive behavior in both disorders should be studied and contrasted, such as tempo and regularity of the repetitions, and whether clutterers show monosyllabic word repetitions.

Summary and conclusions

Cluttering has been seen as an outgrowth of stuttering, and in much of the literature it has been tied to stuttering. In the early literature cluttering was considered the basis of all or most stuttering. The two disorders seemed to run in the same families, and their possible neurological sites were believed to be identical. Cluttering was considered a language weakness which might develop into stuttering, particularly due to the clutterer's efforts to correct his cluttering. Differences between clutterers and stutterers in speech, language, personality and variables affecting fluency were displayed in tables contrasting and stereotyping both clutterers and stutterers.

A differential diagnosis between cluttering and stuttering should be based on accepted definitions of both disorders, expressed in sets of objective and quantifiable characteristics. Adequate definitions of stuttering, but not of cluttering, exist. Definitions of the two disorders should preferably be non-overlapping. In cases where characteristics of both disorders appear, we might talk of a cluttering subgroup of stuttering. Prevalences of combined stuttering and cluttering average around 35 per cent. Cluttering and stuttering in the same individual may be studied within the framework of a subgroup hypothesis.

Several writers have suggested cluttering subgroups of stutterers, among them Van Riper, whose developmental track hypothesis has been subjected to some research. Most clutterers referred to therapy are combined cases of cluttering and stuttering, and some treatment considerations for the cluttering type of stutterer are discussed.

The high prevalence of alleged stuttering in the mentally retarded, particularly in individuals with Down's syndrome, has raised questions about the nature of this dysfluent behavior. Studies have shown the existence of pure cluttering, pure stuttering and combined cases. Cluttering and stuttering in the mentally retarded should be regarded as part of an extensive language defect, and this fact should be taken into consideration in the choice of therapy approaches.

Above all, research is needed to arrive at an adequate definition of cluttering. Longitudinal research of developmental aspects of stuttering and

cluttering should study the possible development of cluttering into stuttering and the mutual relationship of the two disorders. Genetic studies should investigate cluttering and stuttering in families and possible changes between the two from generation to generation. The two disorders may be differently distributed in separate languages due to differences in rhythm and articulation patterns. Research based on the subgroup hypothesis is needed to fit treatment programs more to the requirement of cluttering stutterers.

We may answer the headline question of this chapter in the affirmative: Stuttering and cluttering **are** related, different and antagonistic disorders. The two disorders are **related** in that both may be classified as disorders of fluency, and in that both disorders are often found together in the same individual. We also believe that cluttering may sometimes develop into stuttering or that the two disorders may interact in some way in combined cases. Stuttering and cluttering are **different** in that it is possible to differentiate between them (even if the delineation may sometimes require clinical skill), in that cluttering is not solely a fluency disorder (and perhaps even not primarily), but has linguistic and articulatory aspects. The fact that stuttering and cluttering seem to be at opposite ends of a continuum of coarticulation shows that the two disorders may also be considered **antagonistic**. Perhaps they may be considered as opposites in other respects as well, such as in the reaction to DAF.

Our knowledge of the relationship between cluttering and stuttering may seem somewhat conflicting, and only serious and extensive research work may give us a more complete understanding of this relationship.