

On Defining Cluttering

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Introduction

A number of chapters in this volume comment on the need for a definition of cluttering. This chapter will summarize salient findings relating to the definition of cluttering, both published and unpublished. Next a working definition will be offered and the implications of adopting this described. The chapter will conclude with a call for empirical data centered on the definition of cluttering.

Review of the Literature

St. Louis and Hinzman (1986), presented a sampling of reported symptoms from the literature on the "syndrome" of cluttering. A syndrome is a constellation of symptoms which co-occur but which may or may not be manifest in a given individual. It was immediately clear from even a cursory review that cluttering is not a clearly identifiable entity. For example, in the article, a table listed all the symptoms of cluttering found in six well-known sources (Weiss 1964; Luchsinger & Arnold 1965; Wohl 1970; Van Riper 1971; Dalton & Hardcastle 1977; Daly 1986). In that analysis, there were at least 65 different symptoms or descriptions of the disorder. Rapid speaking rate was reported by five out of six authors and thereby reflected the highest level of agreement. This was followed by articulation errors, poor handwriting, and a condition preliminary to stuttering, symptoms which were reported by four of the six authorities. Single authors listed 28 different factors, including such unusual descriptions as: congenital dyspraxia, enhanced musical ability, inability to sing on key, short temper, or casual acceptance of life.

As noted by St. Louis, Hinzman and Hull (1985), research in the area of cluttering has been seriously hampered by the lack of an adequate definition. Clinical management of clutterers has suffered from the same problem as well. As the aforementioned list of symptoms from St. Louis

and Hinzman illustrates, there are no agreed upon impairments which therapy should address. Logically, in order to identify accurately and assess any given disorder, it is necessary to have a reasonably precise, objective, and tested definition of that disorder. The researcher and clinician need to know the necessary and sufficient characteristics which define the disorder and those characteristics which are either ancillary or superfluous. The lack of precision in definition has proven to be a major problem for speech-language pathologists and logopedists who find themselves working with alleged clutterers. The result is that the category called cluttering is so broad as to either not differentiate it from stuttering or to include other disorders, such as mild aphasia or language-learning disabilities.

Investigations of "Possible Clutterers"

Assumptions

At West Virginia University, we recognized the need for research designed to define cluttering in empirical behavioral terms (St. Louis et al 1985). Our logic in attempting to develop such a behavioral definition was as follows.

First, we assumed, as do most of the authorities (e.g., Weiss 1964; Van Riper 1971, 1982), that cluttering exists, either in isolation or in conjunction with stuttering. We recognized, however, that our research could suggest the possibility that cluttering does not exist as a reliable, perceptible clinical entity. Second, we assumed that cluttering is primarily a speech-language disorder and, as such, is most appropriately dealt with by speech-language pathologists. The speculative literature available indicates that clutterers are most likely to be confused with stutterers, and other speech and language problems, such as misarticulations, are quite common in the disorder. Again, however, we recognized that other professionals, such as learning disability or remedial reading specialists, were likely to have considerable research interest in clutterers as well, because impairments in areas such as attention, reading, or writing may result in greater problems for the clutterer than speech or language difficulties. Third, since we assumed cluttering to be primarily a speech-language problem, it was reasoned that the most appropriate behavioral dimensions to be used in a definition should mainly consist of speech and language characteristics.

The following studies were carried out to obtain preliminary data which

would be useful in deriving an objective definition. Since it is not logically possible to select a group of clutterers and study them in order to derive a definition, we chose a different strategy. We decided to isolate a minimum number of alleged symptoms characteristic of clutterers and then to select subjects based only on those symptoms. Having done so, we would determine whether or not this group was different from stutterers or normal speakers on commonly assessed speech-language measures and, if so, compare the findings of this group with what would be expected from the cluttering literature.

The data source included data sheets and audiotapes collected in 1968-69 across the USA from nearly 39,000 randomly selected school children in grades 1-12. This National Speech and Hearing Survey (NSHS) is described in detail elsewhere (Hull et al 1971; Hull et al 1976; St. Louis et al 1992).

Articulation Deviant Disfluent Nonstutterers

In the first study (St. Louis et al 1985), we screened NSHS subjects based on information from data sheets with the intent of selecting a group of subjects who were "possible clutterers." A total of 72 subjects were selected from the NSHS database representing three groups and two grade levels, grades 1-3 and grades 4-6. Average ages of the two grade levels were approximately 9 1/2 and 13 1/2 years. The first group was called "possible clutterers" or ADDN for "Articulation Deviant Disfluent Nonstutterers." "These subjects were selected on the basis of judgments of stuttering, fluency, and articulation by original NSHS examiners recorded on standard data sheets. The ADDN group had been judged to be articulation deviant, which the literature suggested might be characteristic of clutterers. These subjects were also judged to have fluency problems but, importantly, were not judged to be stutterers."

A digression is in order here. It must be pointed out that NSHS examiners rated each subject first for deviations in fluency, then the presence or absence of stuttering. Deviance in fluency was identified for subjects who manifested "disfluencies to the degree that they [were] disrupting to the overall speech pattern" (NSHS Operations Manual, 1968). In addition, for those subjects who further had "secondary mannerisms, tricks, or 'apparent emotional reactions' to disfluencies," a judgment of stuttering was made. Thus subjects could be rated as having deviance in fluency but not to be stutterers. By contrast, however, all stutterers had

deviant fluency, by definition. In retrospect, it does not appear that these scoring criteria are particularly defensible; nevertheless, they proved useful to us in this study.

The ADDN group members were matched with stutterers who were required to be free of judged articulation deviancy in this study. (Later, it will be pointed out that normal articulation may not be characteristic of the "typical" stutterer.) The third group were normal speaking controls judged to be normal with respect to stuttering, fluency, and articulation.

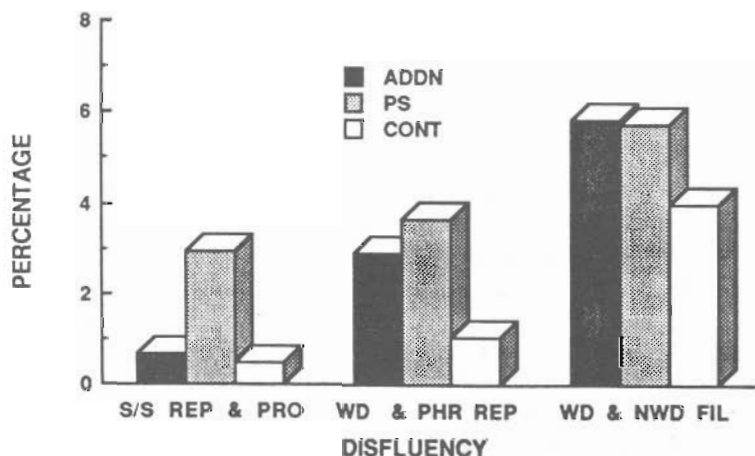


Figure 3.1. Disfluency types for "possible clutterers" (ADDN), "pure" stutterers (PS), and controls (CONT). (Data from St. Louis et al 1985.)

Figures 3.1 and 3.2 show selected results of our analysis of the taped speech samples of these subjects. Figure 3.1 provides disfluency data. From left to right, the three bars represent the ADDN ("possible cluttering") groups, the stutterers, (or PS for "pure" stutterers) and the controls (CONT). Data from the two grade levels were combined since, in no case, was there any group-by-grade interaction. The bars on the left reveal that, like controls, the ADDN group had few sound/syllable repetitions and prolongations (S/S REP & PRO). These symptoms were characteristic only

of the stutterers' speech samples, which is consistent with numerous reports from the literature (see Young 1984, for a review). The center plots show that the ADDN and PS groups had higher than normal levels of word and phrase repetitions (WD & PHR REP) but were not significantly different from each other. Word and non-word fillers (WD & NWD FIL) shown on the right, did not differentiate the three groups, but the ADDN and PS groups were higher than the CONT group.

Figure 3.2 shows data on structural language measures calculated from verbatim protocols. As seen on the left, the groups were not different with respect to utterance length (mean length of utterance in words [MLU-W]). By contrast, the ADDN group was significantly lower than both groups on measures of utterance completeness (percentage of utterance containing a noun phrase and a verb phrase [% U(NP + VP)] in the center and complexity (Verbs per utterance [Vs/U]) on the right. The reader will note that the completeness measures in the center are divided by 10 and the complexity measures on the right are multiplied by 5 in order that they could be shown clearly on one axis.

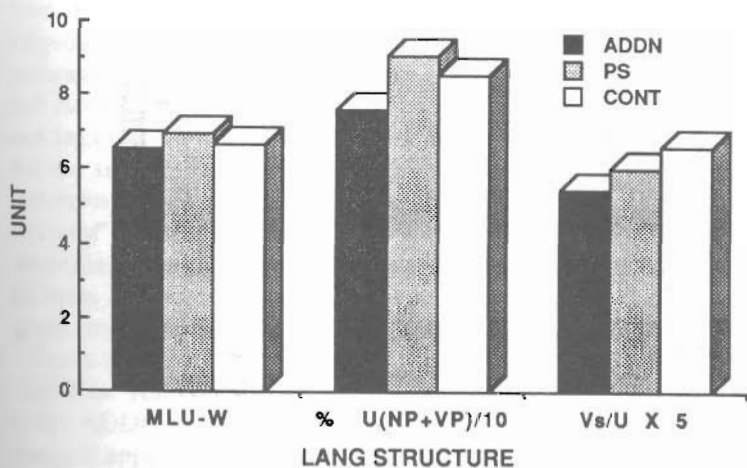


Figure 3.2. Language structural measures for "possible clutterers" (ADDN), "pure" stutterers (PS), and controls (CONT). (Data from St. Louis et al 1985.)

Figure 3.3 summarizes results for the three groups on overall rate of speaking. This analysis, not reported in St. Louis et al (1985) was carried out on all spontaneous utterances of 10 or more words containing no disfluencies except word fillers. Each utterance meeting these criteria was timed with a stopwatch and the number of syllables per second (syl/sec) calculated. The CONT group (mean of 3.6 syl/sec) talked significantly faster overall than the ADDN (3.1 syl/sec) or PS (2.8 syl/sec) groups. Also, the ADDN group was slightly faster than the PS group. The fact ADDN subjects were slower than controls was unexpected. As is pointed out by Myers (Chapter 4) overall rate of speech may not be the best measure of rate. For example, the syllables/second measure does not assess regularity of rate.

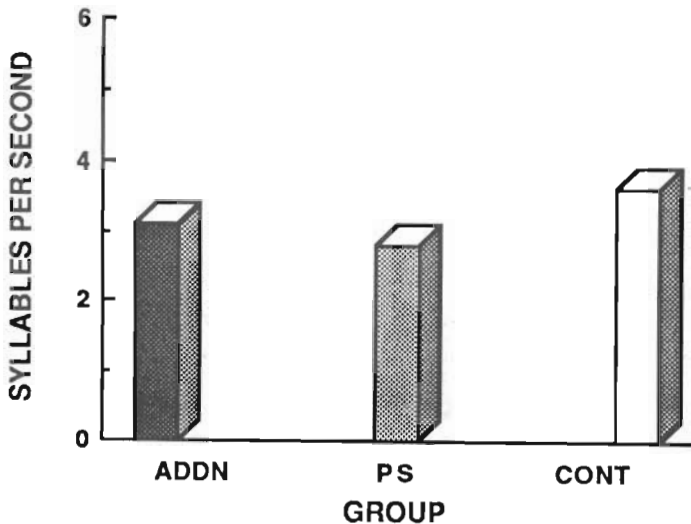


Figure 3.3. Rate of speech for "possible clutterers" (ADDN), "pure" stutterers (PS), and controls (CONT).

Overall, to the extent that the ADDN group is characteristic of clutterers,

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this investigation suggested that clutterers had abnormal disfluency characteristics but these were different from those of "pure" stutterers. The "possible clutterers" were likely to have identifiable language problems. There was evidence of a faster speaking rate than stutterers, but not faster than normal. In general, these findings were consistent with some of the reports from the literature on cluttering (Weiss 1964; Daly 1986).

Rate Deviant Disfluent Nonstutterers

In reflecting on this study, we wondered whether or not articulation errors which coexisted with fluency problems were a necessary variable in cluttering. As noted earlier, most reports from the literature suggested excessive or irregular speaking rates as an important and necessary characteristic. We wanted to obtain another group of subjects whom we could be more confident had rate and fluency problems but who were not stutterers. NSHS examiners also had scored each subject as normal or deviant for rate of speech. Therefore, utilizing the NSHS data, we selected another potential subject pool of "possible clutterers" who were judged to have deviations in speech rate and fluency but not stuttering. From 84 subjects in grades 1-6 meeting these criteria, a graduate student research assistant unfamiliar with this research listened to the tapes of all 84 subjects and rated each one on 5-point scales relative to disfluency, talking speed, and regularity of rate. Also, the student made a judgment as to whether or not the subject was a stutterer. Only six subjects, one in each grade by a fortuitous chance, were judged by the student to be a "disfluent" or "very disfluent" nonstutterer with "fast" and "irregular" speaking rates. As an interesting aside, this amounts to a prevalence rate of only 3 in 10,000 children. These six subjects were then matched with six subjects in each group from the previous study and analyzed in the same way.

Figure 3.4 provides a graph of the disfluency data. In this case, our RDDN or "Rate Deviant Disfluent Nonstutterer" group is plotted to the left of the ADDN group. Cautioning that there were only six subjects in each group, it appears that both "possible cluttering" groups are quite similar to each other and different from PS and CONT groups in much the same way as was seen in the earlier study. Figure 3.5 shows language data plotted similarly. Here, the differences between the RDDN and ADDN groups appear to be somewhat greater than for disfluency types. Nevertheless, there is evidence of language problems in possible clutterers.

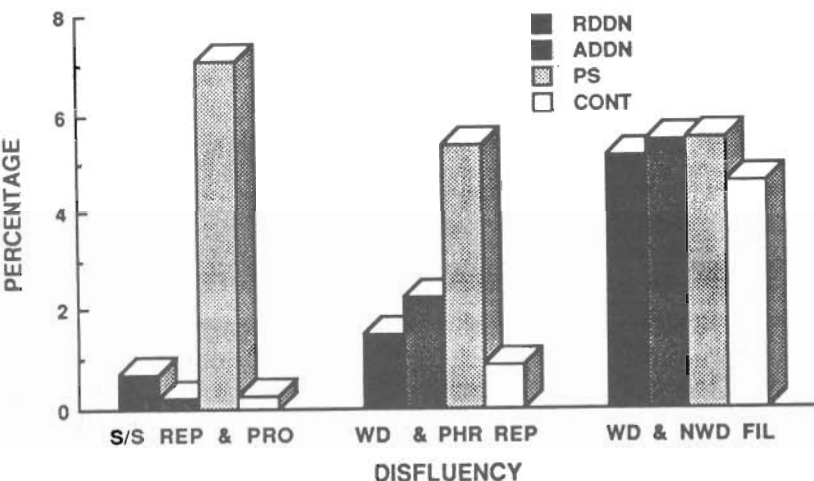


Figure 3.4. Disfluency types for "possible clutterers" (RDDN and ADDN), "pure" stutterers (PS), and controls (CONT).

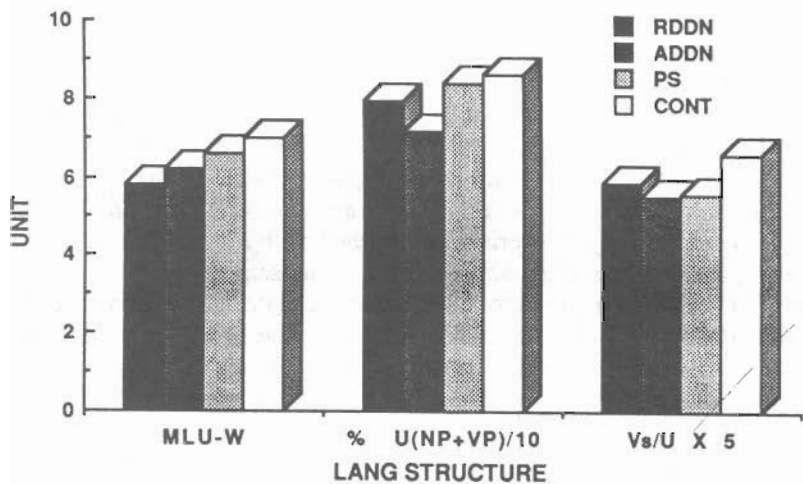


Figure 3.5. Language structural measure for "possible clutterers" (RDDN and ADDN), "pure" stutterers (PS), and controls (CONT).

Overall speaking rates are shown in Figure 3.6. In this case, it is clear that the RDDN subjects (5.0 syl/sec) spoke more rapidly than the ADDN (3.6 syl/sec) or PS (2.2 syl/sec) subjects, not surprising since, in the selection process, they were screened to manifest rapid speaking rates perceptually. The six controls had a mean rate of 3.4 syl/sec.

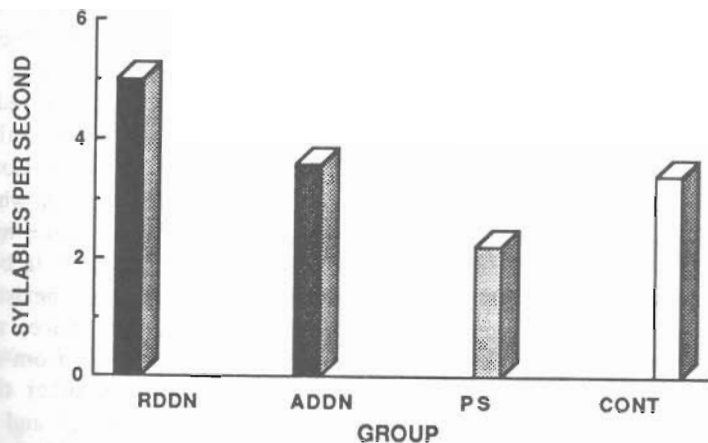


Figure 3.6. Rate of speech for "possible clutterers" (RDDN and ADDN), "pure" stutterers (PS), and controls (CONT).

Taken together, these studies suggest that we have identified at least one subgroup of fluency disorders which are similar to what the literature calls clutterers. In particular, these individuals have identifiable fluency problems, primarily due to abnormally high levels of word and phrase repetitions. They are not judged by trained examiners to be stutterers, presumably because they, like normal speakers, tend not to manifest sound/syllable repetitions, prolongations, or struggle behavior. In addition, this group's language characteristics tend to be less complete and less complex than normal speakers and stutterers as well. Rapid, irregular rates and/or articulation errors may be important identifying characteristics of this

group.

Coexistence of Other Communication Disorders in Stutterers and Other Disorders

There is an adage that research generates more questions than it answers. The reader will recall that subjects in the original stuttering group were constrained to manifest normal articulation. We wondered whether or not this group was representative of the average stutterer. In another study (St. Louis & Hinzman 1988), not specifically relating to cluttering, we selected two more groups of stutterers of 24, two each in grades 1-12, from the NSHS data representing two different levels of severity. One consisted of stutterers with moderate overall adequacy ratings (MS); the other, stutterers with severe overall ratings (SS¹). Another investigation (St. Louis, Chambers & Ashworth 1991) simply selected a group of 24 subjects which were identified by NSHS examiners as stutterers. All other variables were permitted to vary. This group was termed random stutterers (RS). In both investigations, stutterers in both studies were likely to manifest nonexistent communicative impairments, most notably in articulation, voice, and language. The question arose, "Were these stutterers different from our ADDN group with respect to speech or language variables other than fluency?" To attempt to answer this question, half of the MS and SS subjects in grades 1-6 were compared with the "pure" stutterers (PS) in the study in the first study of "possible clutterers." Adding the ADDN subjects to that comparison, Figure 3.7 verifies our assumption that the three groups of stutterers had much higher levels of sound/syllable repetitions and prolongations than possible clutterers, somewhat higher levels for word and phrase repetitions, but lower levels of word and nonword fillers. Figure 3.8 shows that although ADDN subjects were inferior to the PS group, these possible clutterers were not clearly inferior to the MS and SS groups on any of the language measures.

¹ These were identified by St. Louis and Hinzman (1988) as stutterers with moderate or severe overall deviations, ST(MD) and ST(SD), respectively, because NSHS examiners rated each subject on a normal-mild-moderate-severe basis or the dimension of overall adequacy. The abbreviations were changed for the sake of simplicity.

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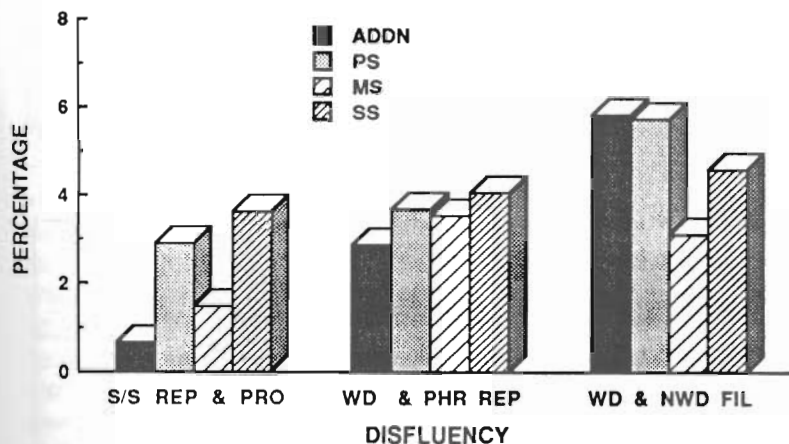


Figure 3.7. Disfluency types for "possible clutterers" (ADDN), "pure" stutters (PS), moderate stutters (MS), and severe stutters (SS). (Data from St. Louis et al 1985; St. Louis & Hinzman 1988.)

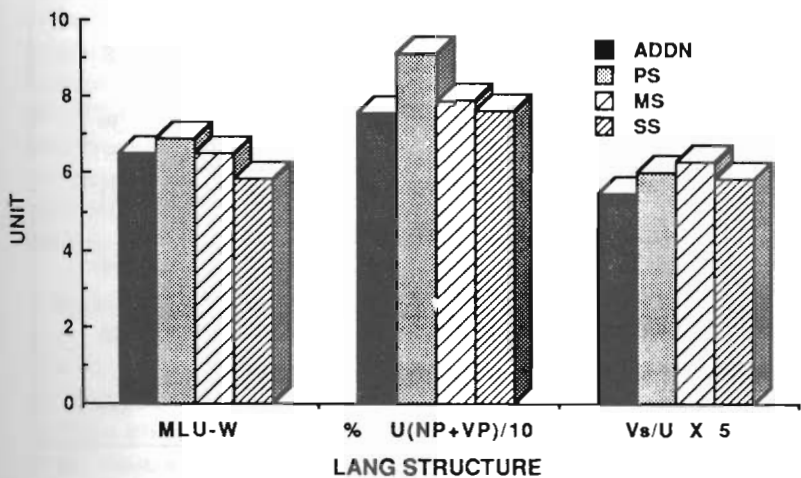


Figure 3.8. Language structural measures for "possible clutterers" (ADDN), "pure" stutters (PS), moderate stutters (MS), and severe stutters (SS). (Data from St. Louis et al 1985; St. Louis & Hinzman 1988.)

Table 3.1. Coexistence of communicative problems in ten studies utilizing the National Speech and Hearing Survey (NSHS) database. (Adapted from St. Louis et al 1992) *Starred underlined figures reflect selection criteria. ₁ Percentage of subjects scored by NSHS examiners. ₂ Percentages of subjects with two out of three language measures (see text) at least one standard deviation below the mean for control subjects.

GROUP	Percent With Deviance					
	RATE ₁	FLUENCY ₁	STUTTER ₁	ARTIC ₁	VOICE ₁	LANG ₂
CLUT (RDDN)	<u>100*</u>	<u>100*</u>	<u>0*</u>	67	80	67
CLUT (ADDN)	8	<u>100*</u>	<u>0*</u>	<u>100*</u>	63	33
STUT (PS)	8	<u>100*</u>	<u>100*</u>	<u>0*</u>	71	17
STUT (RS)	8	<u>100*</u>	<u>100*</u>	67	50	25
STUT (MS)	4	<u>100*</u>	<u>100*</u>	67	67	8
STUT (SS)	29	<u>100*</u>	<u>100*</u>	96	71	39
ARTIC (RA)	4	25	4	<u>100*</u>	63	21
ARTIC (DA)	8	21	0	<u>100*</u>	58	54
VOICE (MV)	0	8	0	63	<u>100*</u>	46
VOICE (SV)	4	8	4	58	<u>100*</u>	38

Selected results from the selection criteria described in the above figures, analyses and original NSHS judgments for articulation and voice are presented in Table 3.1. The first six rows show data from the studies we have been discussing. The remaining four rows represent two different

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levels of severity for comparable subjects with articulation (residual [or moderate] articulation [RA] and delayed [or severe] articulation [DA]) and voice (moderate voice [MV] and severe voice [SV] disorders (Ruscello et al 1991; St. Louis et al 1992). Starred, italicized items reflected selection criteria. Looking at unstarred percentages, it is clear that articulation and voice problems are common among possible clutterers and stutterers. It is also notable that articulation and voice disorders varied together to a surprising degree in all these studies when not constrained during subject selection. However, as can be seen in the third row for "pure" stutterers (PS), voice disorders occurred even when articulation disorders were not allowed to vary. Previously, it was noted that this group was unlike the "possible clutterers." Reflecting on this, it raises the interesting question of whether or not stutterers with articulation deviance may be more likely to have a cluttering component than normal articulating stutterers.

Rate, fluency, or stuttering judgments occurred less frequently (i.e., 0 to 25%) among articulation and voice disorders than articulation or voice ratings occurred among clutterers or stutterers (50-96%). As noted by St. Louis et al (1992), this is no doubt influenced by the lower frequency of occurrence of fluency or rate problems in the population than articulation or voice problems. Nevertheless, these differences observed in Table 3.1 suggest that rate deviations are basic to cluttering, more basic in fact than articulation disorders. As evidence of this, in row 1 of Table 3.1, four of the six (67%) of the RDDN subjects were judged by the NSHS examiners to have articulation deviance. By contrast, only 4-29% of the ADDN or four groups of stuttering subjects were identified as rate deviant. It appears that whatever disrupts the overall rate, rhythm, or fluency of a speaker, is also likely to disrupt other aspects of speech or language as well.

A Working Definition of Cluttering

The NSHS studies did not address the identification of other symptoms in the syndrome of cluttering. It is also important to point out that the NSHS database prevents us from being certain about the diagnosis of cluttering in the subjects we used. These results require confirmation by others. In spite of such weaknesses, based on these investigations, the author's current working definition of cluttering is as follows: Cluttering is a speech-language disorder, and its chief characteristics are (1) abnormal fluency which is not stuttering and (2) a rapid and/or irregular speech rate.

Implications

The working definition of cluttering as a fluency disorder distinct from stuttering but with a rapid and/or irregular speech rate ought to be considered alongside others which have been advanced. Daly (1986) provides an excellent review of the literature. Weiss (1964) defined cluttering as "...The verbal manifestation of Central Language Imbalance which affects all channels of communication...and behavior in general" (p.1). In 1968, he listed five obligatory symptoms: repetitions, lack of awareness of the disorder, weak and short attention span, perceptual weakness and poorly organized thinking. Others such as Seeman and Novak (1963) and Dalton and Hardcastle (1977) suggest that cluttering is primarily a disorder of rate in which the speaker either lacks the necessary inhibition or control to speak at a normal tempo. Myers (Chapter 5) adds an especially appealing corollary to the notion of rate disruptions in clutterers. Following leads by Starkweather (1987) and others, she introduces the concept of relative rate, suggesting that speed, per se, is less important than the clutterer's individual capacity for speed. She would prefer to define cluttering within a systems approach in which fluency, rate, articulation, and language skills and disabilities are functionally interrelated.

Perhaps the primary advantage of the working definition advanced here is its simplicity. The definition does not require the clinician to carry out careful studies of the client's language, articulation, awareness, attention span, learning ability, and so on in order to identify a clutterer. All the clinician has to do is listen to the client talk and make three judgments: Does this person have a fluency problem? Is this person a stutterer? Does this person have an excessively fast and/or irregular speaking rate? If the answers to these questions, respectively, are "yes," "no," and "yes," then the person is a clutterer.

There is abundant evidence that listeners can identify fluency problems. This includes differential diagnosis of individuals with stuttering, nonstutterers with excessive disfluency, and normal fluency. For example, Muma (1971) and Westby (1979) both identified "highly disfluent" children who, importantly, were not stutterers. Also, Young's (1984) review clearly illustrates that listeners can usually differentiate disfluencies which are normal from those which are stuttered.

Less research has been reported on listeners' judgments of rate, but it seems safe to assume that adults can decide if someone is a fast talker.

Most of us make such informal appraisals of new acquaintances quite often. Perhaps the reliability of making judgments of regularity of rate is less obvious. However, evidence does exist that listeners can make such judgments. For example, Darley et al (1969) made judgments on a large number of dysarthric patients using 38 dimensions of articulation, voice, and prosody. For prosody, judges scaled the severity of speech samples according to: too slow or too fast, progressive rate increases, alternate changes from slow to fast, prolongation of interword or intersyllable intervals, inappropriate pauses, and short rushes of speech separated by pauses. Intra- and inter-judge agreement were within one scale value (1-7) on 84-85% of the reliability samples analyzed. In a large longitudinal study of approximately 20,000 children, tested for speech/language/hearing at ages 3 and 8 years, 182 different examiners judged "dysfluent events," "stuttering," and "rate of speech sounds" (Lassman et al 1980; Shriberg et al 1986) studied 114 phonologically disordered children and included the following "rhythm" judgments: phrasing, stress, and rate. Individual reliability for these and three voice variables was reported to be marginal (i.e., 66.5%), but when consensus judgments were made (as was done by these authors), the screening procedure was reported to be reasonably reliable.

A second advantage of excluding other articulation and language disorders from a definition of cluttering is that there is considerable recent work which suggests that communicative disorders frequently coexist (see St. Louis et al 1991, for a comprehensive review). For example, various subgroups of stutterers have been found to manifest considerable coexisting problems in such areas as articulation, voice, and language (St. Louis & Hinzman 1988; Nippold 1990; Louko et al 1990). The proposed working definition may help clarify some current areas of confusion, e.g., are Van Riper's (1971, 1982) Track II stutterers simply a subgroup of stutterers, clutterers, or both?

Another advantage of the definition of cluttering advanced herein is that it is, in fact, a working definition. That is, if additional characteristics are found to be universally present in clutterers, the definition can be expanded to include them.

Finally, the definition has the advantage of being compatible with most other conceptualizations of clutterers. Since it is basically a perceptual definition, other definitions involving such constructs as underlying factors or interrelationships of coexisting disorders are not necessarily incompatible with it.

Limitations

Adopting a definition of cluttering as a nonstutter-type fluency disorder which also includes a rapid and/or irregular rate has disadvantages as well. Probably the greatest difficulty the definition encounters is clearly identifying the individual in which cluttering and stuttering coexist. In this person, cluttering may not be identified as a component when stuttering symptoms are manifest. On the other hand, it is possible that specific rate characteristics might eventually emerge to identify these cases. The definition also may not be specific enough to exclude certain types of apraxia, dysarthria, or emotional problems. If so, additional criteria may need to be added. Additionally, the definition could differentiate cluttering from tachylalia only if the tachylalic individual (if the condition exists) is judged to have an excessively fast rate but not to have a disorder of fluency.

Future Research on Definition

Research in the area of cluttering is needed, as is noted in nearly all the chapters of this volume. One of the major barriers to carrying out good research is the lack of an objective definition of cluttering which is generally accepted by the research or clinical community. It is no wonder that the literature presently available is fraught with inconsistencies and contradictions. Some of the variability in research results are no doubt due to substantial differences in what we call cluttering. If the proposed working definition were to be adopted by investigators in different settings, we might be able to get a handle on the breadth of variability within at least the major subgroup of clutterers. Optimistically, an objective set of defining criteria would begin to permit a reliable body of literature to emerge about this disorder.

There is little doubt that cluttering can co-occur with stuttering and that coexisting communicative, cognitive, and behavioral disorders are commonplace. Moreover, it can be argued that subgroups within the category of cluttering may require special attention both by researchers and clinicians (see St. Louis et al 1991). Nevertheless, there is an even greater need at this time to obtain consensus about the "lowest common denominator" of cluttering. The working definition proposed here is an attempt to provide a framework for that endeavor.

Several specific areas of research would be most beneficial in assisting in

the enterprise of better defining cluttering. Better measures of fluency are desperately needed. It is no longer sufficient to talk about fluency as the absence of stuttering or disfluencies. Starkweather (1987) summarized much of what is known in this area, but more research is required. Clinicians will need measures of rate which are valid and reliable but also reasonably easy to obtain. Importantly, the measures must be sensitive to irregularity of rate. Finally, there is need for carefully executed descriptive investigations of clutterers. For example, a group of clutterers, objectively defined (perhaps by our working definition), should be matched with group of stutterers and controls and given a large battery of tests in order to determine the prevalence of the other symptoms in the syndrome. The study should include subgroups of stutterers with and without coexisting communication disorders. A test battery should be administered to all subjects and should include: measures of speech such as rate, fluency, voice, and articulation; language measures, both standardized and nonstandardized; attitudes and awareness of fluency problems; learning aspects including academic achievement, learning style preference, and cognitive skills; a comprehensive case history; perceptual and motor abilities; and a complete audiological evaluation, including central auditory tests. Comparisons between clutterers, subgroups of stutterers, and normal speakers would provide the basis for identifying which complex of symptoms, if any, is uniquely characteristic of cluttering.