

## ***Stuttering:* An Interpretation of Research Findings.**

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Experimental research in stuttering has been carried on continuously at the University of Iowa since 1924. The first studies were concerned with the possible hypothesis that stuttering might be due to some sort of physical fault, but relatively thoroughgoing investigation over a period of several years failed to substantiate the hypothesis. Gradually, then, particularly after the early thirties, the Iowa researchers turned their attention more and more toward other approaches to the problem, four in particular:

1. The inter-relationship between stuttering and personality manifestations.
2. The conditions associated with onset and early development of stuttering in children.
3. Modes of therapy and their effects.
4. Conditions associated with variations in amount or severity of stuttering.

The personality studies have indicated that stutters are essentially like non-stutterers. Insofar as they differ from non-stutterers in their personal and social adjustments, they are a little more socially withdrawing and a little more inclined toward discouragement. It is a difference on the average of about the proper magnitude to indicate that stutterers react to the frustration and humiliation of stuttering with essentially normal affect. If they were more like non-stutterers than they are in these respects, it might be suspected that they were bland to an abnormal degree. What there is to add to this generalization is the observation that, while stutterers are like other people in having various reasons for developing maladjustments, the stuttering itself undoubtedly serves in many cases as a source of more or less significant emotional unrest and demoralization. This is not to say that stuttering is, or leads to, or is a symptom of psychoneurosis. It does not mean that stutterers cannot have psychoneuroses of the types other people have. Nor does it mean that psychoneurotic mechanisms cannot in some instances manifest themselves in stutter-like reactions. What it does mean primarily is that, while stutterers by and large appear to be essentially normal as personalities, they like other people, can and do have adjustment problems, and some of their adjustment difficulties seem to stem from the fact that they stutter.

In general, the studies so far made of the onset of stuttering have yielded substantial indications that the children who develop stuttering are essentially normal, and that in cases in which the problem can be traced back to its first days, or hours, or even minutes,, the

patient turns out to have more than two legs, so to speak. What is meant is that there is always the mother or father, occasionally a teacher, or some other responsible adult listener, or even several such listeners, in the picture along with the child. At first, indeed, there appears to be serious question whether the child is doing anything at all that can be properly judged to be of clinical significance. What the parent, or other adult listener, is doing, however, appears to be of very considerable importance. The parent, or other listener, in such a case is found to be making and acting upon a judgement — a judgment to the effect that the child's speech is not as it should be, a judgment that becomes overt in postures, frowns, or even actual statements that the child interprets as disapproval. And so it is the listener's judgment rather than the youngster's speech that appears to have the kind of consequences that need to be counteracted.

Speech samples obtained from approximately 200 pre-school age children have been analyzed. These have been essentially unselected children, except that they were attending the University of Iowa Preschools. Instances of repetition in the speech of these children have been counted. The repetitions fall into three main categories: (1) those involving repeated sounds or syllables su- su- such as this; (2) those involving repeated words such such such as this; and (3) those involving repeated phrases such as this such as this such as this. All children observed have exhibited repetitions; the range is roughly from 5 to 100 instances of repetition per 1,000 words, and the average is approximately 45 instances per 1,000 words. The repetitions are essentially effortless and apparently "unconscious."

Whenever young stutterers have been observed soon enough after the alleged onset, the phenomena indicated by their parents as those which they have "diagnosed" as stuttering are found to be quite like these normal speech repetitions. On the other hand histories taken very long after onset tend strongly to be obscured and apparently fashioned largely by presupposition. The basic fact appears to be that the parents, in the usual case, regard the child's normal non-fluencies as "abnormal" or "defective" or as "stuttering", or "stammering" and then react to the child accordingly with more or less disapproval and concern, which they make more or less manifest to the child.

What it comes to, so far as the present writer can determine, is that the speaker (the child) responds to what the listener (the adult) does. And what the listener does seems to be more or less unnerving to the speaker, so that, while the responses and effects appear

to be quite subtle and slow-working in most cases, the speaker's reactions to the listener's evident evaluations come in time to be marked by noticeable hesitation and tension. And as this development leads to more evident concern and disapproval on the part of the listener, so this more evident concern and disapproval are reacted to by the child with speech attempts that are correspondingly more unsure and strained. It is a vicious cycle, and, as such, it tends to expand.

The problem of stuttering, then, would seem to start, not in the speaker's mouth, but in the listener's ear, and at the very first it is the parent, or other authoritative listener, rather than the child, who is the patient, or at least the major part of the "composite patient."

But the problem, starting in this essential fashion, does not arise in a social, psychological, and physiological vacuum. Things happen to these parents and these children just as they do to other parents and other children, and some of these things are more conducive than are others to the sorts of parental evaluations and child reactions, and the sorts of basic parent-child relationships, that tend to eventuate in the behavior we recognize in speech clinics as stuttering.

Research on therapy per se has proved to be very difficult from a technical point of view. Experience with it to date has served to persuade the writer that during the exploratory phases of research of this type the most fruitful approach is likely to be the fairly simple one of doing the best one can to treat stuttering effectively case by case, keeping reasonably detailed records of what is done in each case, and observing and measuring by any and all means that one can devise the various kinds of change that take place.

Elaborately designed experiments, with two or more types of therapy, matched control groups, and other refinements, do not appear to this writer to be feasible at the present stage of our theoretical and clinical development and in any clinical situations known to him. It is to be hoped that the advances necessary to make them practical and worthwhile will be achieved. In the meantime, not only is there promise of important finding from the conservative type of project sketched above, but also there would seem to be significant implications for therapy in the data from much of the laboratory research on stuttering, particularly that concerned with determination of the conditions under which stuttering increases and decreases.

Indeed, in recent years the variations in amount or severity of stuttering have been drawn into sharper and sharper focus by investigators of the problem. In 1933 in the *Quarterly Journal of Speech* the present writer presented the notion that the stuttering problem might be approached fruitfully by concentrating on **the moment of stuttering** — that is to say, by dealing with the problem of stuttering as a series of stutterings, by regarding it crucially not as a more or less constant condition, but as intermittent responses.

This concept of the moment of stuttering suggested the feasibility of measuring amount of stuttering and variations in it by the obvious means of counting the moments of stuttering in systematically obtained samples of speech. From studies involving the counting of moments of stuttering three basic findings emerged.

These were (a) the adaptation effect — the decrease in frequency of stuttering that occurs with repeated readings of a passage or, to a lesser degree, with continued reading of non-repeated material; (b) the consistency effect — the tendency for stuttering to occur consistently in response to the same cues or stimuli; and (c) the recovery of the strength of the stuttering response, as measured by reference to its frequency or severity, subsequent to a sufficient interval of time following adaptation.

The adaptation of the stuttering response was found to amount on the average to about a fifty per cent. reduction in its frequency from the first to the fifth consecutive reading of a passage. The decrease with continued reading of constantly changing material is less but still substantial. One may look upon the adaptation effect as a kind of laboratory model of the improvement process, and as such it can readily be observed as affected by any specified condition. In this way the conditions associated with increase in improvement, as well as those associated with its retardation, or even its reversal, can be ascertained and appraised. Research of this sort tends, therefore, to yield findings that are of value not only in a theoretical but also in a most practical therapeutic sense, since anything one might mean by therapy for stuttering must necessarily involve the fostering of those conditions under which stuttering decreases in amount or severity.

In like manner the spontaneous recovery of the stuttering response following adaptation is of both theoretical and practical interest. The Jones\* study showed that within twenty-four hours after adaptation, achieved by five consecutive readings of a passage, the frequency of the stuttering response had returned to the approximate level observed before adaptation. The Jamison study indicated that roughly full recovery might be achieved within as short a period as four and one-half hours. This effect may be looked upon as a laboratory model, so to speak, of the process that is recognized clinically as a relapse. Like the adaptation effect, it can be investigated under controlled conditions with a view to identifying and evaluating the factors associated with increase and decrease in its rate and extent. The findings from such research would seem to have clinical implications of a very practical kind.

The consistency effect is significant particularly for what it implies relative to the essential nature of stuttering behaviour. The fundamental implication is that stuttering, rather than behaving like a "disorder," or "spasm," or "incoordination," or random "dyssynchronization" of the neuro-muscular mechanism involved in speech, behaves like a response made to

identifiable stimuli or cues with a very considerable degree of consistency or predictability. In the original study dealing with the consistency effect, Professor Knott and the writer reported that of the words stuttered in the second reading of a passage roughly two-thirds had been among those stuttered in the first reading. In general, this holds for any reading in relation to the preceding reading of any passage that is read several times in succession. This degree of consistency of the specific words eliciting the stuttering response suggests some mechanism akin to conditioning, if it is not in fact a variety of conditioning. This suggestion is heavily underscored by Brown's 1945 findings which may be highly abstracted in the statement that ninety-five per cent. of the stutterings in his investigation could be accounted for by reference to just four features of the stuttered words: initial sound, position in the sentence, length (number of letters), and grammatical function. Ninety-five per cent. of the stuttered words possessed one or more of the following characteristics: initial sound a consonant (except for the consonants -th (h), (w), (m), and (t), length greater than the median (five letters or more), one of first three words of a sentence, and grammatical function of adjective, adverb, noun, or verb.

Such findings, set in the general context of present-day knowledge about stuttering, and about behaviour generally, serve to emphasize impressively that neither of the traditional theories of stuttering — that one which attributed it to a physical fault and the other which viewed it as a symptom of an unstable or turbulent personality — was based on sufficient information about the ways in which stuttering behavior behaves. If they explained stuttering, they did not account for the stutterer's non-stuttered speech, and they did not explain the variations in stuttering frequency or severity in response to the particular cues and conditions now known to be associated with these variations. The kinds of data here referred to prompt one to regard stuttering as learned behaviour, and to investigate it, theorize about it, and treat it clinically, as such.

At the present stage of our total stuttering research program a relatively rough theory may be attempted. The writer, acknowledging his debt to all his instructors, students and colleagues in this area of research and clinical work, would prefer to state it in this general way:

Stuttering appears to be an anxiety-motivated avoidant response that becomes "conditioned" to the cues or stimuli associated with its occurrences. Like other anxiety-motivated avoidant responses, stuttering is anticipatory. That is, stuttering comes to be expected. The expectation of stuttering is apprehensive, characterized by anxiety in some degree, ranging from near panic to the very mild sort of affective reaction which the stutterer expresses by saying simply that he would rather not stutter — an affective condition or state which the present writer has called "rather-not-ness." This anxious or apprehensive expectation comes to be associated with and to be elicited by the sounds, words,

listeners and other cues or features of situations in relation to which stuttering has been experienced in the past. Such cues, then, function as reminders, and so as "storm signals," warning of "danger ahead." The "danger ahead" is evaluated with degrees of anxiety from mild to severe, depending on a number of factors among which are to be included quite definitely (a) the severity and discomfort of past stuttering, (b) the penalties consequent to past stuttering, (c) the stutterer's insight into the nature of his stuttering, behavior and the factors or conditions that affect it, (d) the stutterer's familiarity with ways of modifying his stuttering responses so as to decrease the tension, discomfort, and feelings of helplessness and lack of control involved in them, and (e) the stutterer's general sense of personal security, his feeling of "being able to afford to stutter," and his basic personal and social adjustment. So long as the "danger ahead" is anticipated with any degree of anxiety, the stutterer's reaction to it is avoidant. That is, he does various things in an attempt to avoid the "danger ahead," the expected stuttering. Now, these things he does to keep the expected stuttering from occurring, these avoidant responses — these are the stuttering. Stuttering, then, is what the speaker does to keep from stuttering.

The more intense the speaker's anxiety or concern over the anticipated "stuttering," the more cues it is likely to become associated with, so that the avoidant responses will occur more frequently, and the more intense or elaborate or prolonged or severe the avoidant responses will be on the average. As the anxiety about stuttering is weakened, therefore, both the frequency and severity of the avoidant reactions — of the stuttering, that is — are reduced. Improvement is a function, then, of anxiety deconfirmation. This theory implies that therapy is to be properly designed to deconfirm the speaker's anxiety or concern about his stuttering, by means of any and all relevant procedures from counseling in its various forms, through various techniques of modifying the avoidant responses, to systematically and judiciously increased speaking experiences and total speaking time.

This rough outline of a theory of stuttering is presented tentatively. It is the fruit, acceptable or not as it may be to specific readers, of experimenting and thinking by many workers over a period of many years. It is to be expected that it will be influenced by further data and by further evaluating of both old and new data. Its main value at this stage is undoubtedly to be found in the further experimentation and theorizing that it may stimulate.



\*This article was submitted at the request of the Editorial Committee of the South African Logopedic Society. When the request was received, the writer had just completed a summing up of some thirty years of stuttering research at the University of Iowa, and it seemed that he could best serve the interests of the readers of the *Journal* by sharing with them the main conclusions of this research. The material contained in this paper, therefore, is drawn and adapted, by permission of the publisher, from *Stuttering in Children and Adults: A Partial Report of Thirty Years of Research at the University of Iowa*, edited by the writer with the assistance of Ralph Leutenegger and scheduled for publication in the fall of 1954 by the University of Minnesota Press, Minneapolis, Minnesota, U.S.A., under a grant from the Louis W. and Maud Hill Family Foundation. The author is Chairman of the University of Iowa Council on Speech Pathology and Audiology.

## BIBLIOGRAPHICAL NOTE

The statements made in this paper are based on data and theoretical discussions of data that are to be found in a considerable number of articles, monographs, and books. At the University of Iowa alone approximately 150 M.A. and Ph.D. investigative dissertations on stuttering have been completed since 1924, and some 250 research reports and clinical and theoretical publications dealing with the problem have been produced at this research centre. A few selected references, including all these specifically cited in this article, are here listed for the benefit of interested readers.

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