

CLINICAL NOTES

EFFECTS OF SUBGROUPING IN STUTTERING RESEARCH

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The most frequently utilized research design in stuttering research compares stutterers to nonstutterers, with the assumption that stutterers represent a homogeneous group. The present study examines the effects of subgrouping stuttering subjects. Sample populations were randomly selected from a pool of stuttering children, successively increasing the stringency of selection criteria for group membership. The groups were contrasted across five dependent variables. The results indicated that the performance differences between the groups increased as the selection criteria became more stringent. The findings were interpreted as supporting the need to more closely examine the individual differences of stutterers, deviating from the traditional research paradigm.

Most research in the area of stuttering compares stutterers with non-stutterers on some skill, behavior or performance. Stuttering research has been particularly notorious in finding conflicting or ambiguous results or data which cannot be replicated. There are several possible explanations that might be offered that address the approach to studying the problem of stuttering and may explain what many consider to be a rather dubious history of research.

A common assumption in stuttering research has been that subjects manifesting a common symptom represent a homogeneous population. It is reasonable to suppose that stutterers differ from one another in any number of respects. In fact, most studies report higher variability in their (stuttering) experimental group than in their (nonstuttering) control group. Two points arise from this observation. First, grouping and the use of group mean scores serve to obscure information relative to the characteristics of individual stutterers. Many researchers acknowledge that the "average stutterer" is nonexistent and that there are no traits that are

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common to all stutterers. Thus the average performance or characteristics of a group of stutterers should not be considered to be representative of stutterers in general. This only serves to dilute the power of research findings. Second, higher variability suggests less group homogeneity.

It is thus reasonable to suggest that stutterers might be delineated into subgroups based upon certain commonalities. While subgrouping is not a new concept in stuttering, it is utilized infrequently. St. Onge and Calvert (1964) suggested that one explanation for impediments in research in this area may be that stutterers are not a homogeneous population. Relatively few studies, however, reflect this thesis in their experimental design.

The concept of statistic reliability is constructed upon several factors including sample size, randomization, and subject selection. Generally, researchers strive for as large a sample as possible in an attempt to insure that the sample population is representative of the total population. This is desirable to the extent that other essential criteria are not compromised. In attempting to maximize sample size, researchers often utilize all available stutterers as subjects. In stuttering research, this may serve to dilute the power of findings and obscure information about the disorder. Including all stutterers in a single group may mask many individual differences that may be of value at this state of our understanding of the disorder.

The intent of this study was to examine the power of subgrouping stutterers and to simulate the effects of statistic comparisons based upon actual data; and finally to speculate on the impact subgrouping may have on research.

METHOD

A pool of 61 stuttering children on whom extensive case histories and performance data had been collected was formed. Included in the data were performance scores from the Michigan Neuropsychological Test Battery (Smith, 1976). Five of the 29 component subtest scores of the Battery were selected at random to be used as dependent variables for this study. They included scores on Raven's Progressive Matrices Test, errors on the Benton Visual Retention Test, right- and left-hand 30-s scores on the Purdue Pegboard Test, and the Wechsler Digit Span score.

Three comparisons were made between groupings of 10 stutterers. Each group was randomly selected from a larger pool of stutterers. The groups became successively more stringent in their criteria for group membership.

From the pool of 61 stutterers, two groups were selected at random (without screening) for comparison on the five dependent variables.

Next, a group of 10 stutterers was randomly selected from a pool of stutterers placed in regular classroom situations. Another group was ran-

domly chosen from a pool of stutterers enrolled in special education placements. These groups were contrasted on the five dependent variables.

Finally, the pool of "regular classroom" stutterers was screened to include only "functional" stutterers. The "special education" pool was screened to include only "organic" stutterers. A sample of 10 stutterers was randomly selected from each pool and compared statistically. Individual *t*-tests were used to assess each of the group differences. Functional stutterers, as defined by Liebetrau and Daly (1981), exhibit no concomitant disorders, "such as hearing loss, cleft palate, learning disabilities, mental retardation, and articulation problems" (p. 220). Organic stutterers "exhibited three or more positive neuropsychological signs of cerebral dysfunction. Classification of organic sign involved a stringent performance criterion of at least 2 yr below chronologic age norms for these children with otherwise normal intelligence" (p. 221).

RESULTS

The intent of this study was not to interpret the clinical significance of any subgroup's performance differences, but rather to measure the effects of subgrouping on delineating subtest performances. The results of the three comparisons are displayed in Table 1.

Comparison of the randomly selected groups failed to reveal statistical differences between these groups on any of the five variables. This finding, while unremarkable, reaffirms the integrity of the random selection process.

Contrasting stutterers in regular versus special education placements found significant differences on three of the five performance variables.

Functional and organic stutterers differed on each of the five variables in the final comparison. These groups represented the most distant extremes in the selection process and as anticipated, exhibited the greatest performance discrepancy.

Following for a moment, the succession of group differences on each dependent variable (Table 1), in every case, as the subgroups became successively more selective, the difference between the groups sharpened.

IMPLICATIONS

Imagine the difference, for example, when contrasting functional stutterers with nonstutterers versus contrasting organic stutterers to nonstutterers. The issue, however, is that there is as yet no measure of the proportions of various types of stutterers that are included in any sample populations and little knowledge as to what types of stutterers to control

Table 1. Group Comparisons with Increasing Membership Specificity

	Comparison I (Random 1 versus Random 2)			Comparison II (Regular versus Special Education)			Comparison III (Functional versus Organic)					
	Mean R1	Mean R2	t	Significance	Mean Regular	Mean Sp. Ed.	t	Significance	Mean Functional	Mean Organic	t	Significance
Ravens progress matrices	28.6	24.3	0.8838	0.6077	34.9	20.9	2.8660	0.0099	36.9	21.3	4.412	0.0005
Benton visual retention test (errors)	4.6	7.4	-1.1870	0.2495	3.0	6.2	-2.3175	0.0307	2.2	9.0	-3.778	0.0046
Purdue pegboard R (30")	10.2	12.1	-1.1792	0.2526	14.6	10.8	2.6433	0.0157	14.9	9.3	3.864	0.0041
Purdue pegboard L (30")	9.4	10.9	-.7817	0.5497	14.5	12.2	1.6634	0.1102	14.3	9.8	3.778	0.0046
Digit span (WAIS)	8.8	8.1	0.4264	0.6776	10.0	8.2	1.0435	0.3113	11.2	6.4	2.857	0.0101

for. As a result, any particular subgroup of stutterers may have an unnatural influence on the group mean. This difficulty is particularly problematic in studies using small sample sizes.

The intent of this study was not to draw clinical conclusions from the results of these comparisons, but rather to draw attention to possible benefits in comparing stutterers with stutterers to progress in our understanding of the nature of this disorder.

Research approaches might take the form used in this study—selecting performance scores and contrasting selected (screened) groups. There are, however, more powerful statistical tools, such as factor analysis or cluster analysis, which may be better employed for this purpose.

In summary, the most frequently used research paradigm, that of contrasting stutterers with nonstutterers, gains its power from the assumption that stutterers represent a homogeneous group. The results of this study serve to question that assumption. Second, consecutive subject selection of undifferentiated groups of stutterers probably results in over-generalized and diluted research findings.

At this stage of our understanding of the disorder, it is suggested that a deviation from the traditional research model may be beneficial. An examination of commonalities among subgroups of stutterers may enable researchers and clinicians to broaden their knowledge of the problems of stuttering.

REFERENCES

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