

A Fluency Rules Therapy Program for Young Children in the Public Schools

Charles M. Runyan and Sara Elizabeth Runyan

This article presents a "fluency rules" therapy program designed specifically for young children who stutter. This treatment program, which consists of seven rules for fluent speech production, was developed and pilot tested in a public school environment. Preliminary results based on nine children indicate that the Fluency Rules Program is effective in producing fluent speech and the children's speech production remained fluent for a 1–2 year period.

The effectiveness of using a stuttering treatment program designed specifically for children in a public school environment has not been extensively investigated. A notable feature often associated with providing therapy in public schools is the large number of children for whom each clinician provides service. Runyan and Bennett (1982) found that in Virginia the average caseload for a public school speech-language clinician was 60 children. They also found that a large caseload and the factors associated with its size (i.e., travel between schools, IEP meetings, parent conferencing, etc.) significantly contributed to the amount of services scheduled for each child. In fact, a typical child in this study was enrolled in therapy on the average of only two 30-min therapy sessions per week. Based on these findings, a stuttering treatment program to be considered for public school use would have to be effective given the therapeutic time limitations inherent in this job setting. Therefore, the purpose of this study was to develop and then test a stuttering treatment program designed specifically for preschool and early grade school children in a public school environment.

Method

The Fluency Rules Program (FRP) was devised 5 years ago with the intent to teach early grade school stuttering children to speak fluently. The FRP rules were developed to instruct these children, in language they could comprehend, about the physiologic concepts associated with fluent speech production.

The following is a description of the fluency rules that comprise the current FRP along with some comments and suggestions regarding their use.

Charles M. Runyan is a professor and Sara Elizabeth Runyan is an assistant professor in the Department of Speech Pathology and Audiology, James Madison University, Harrisonburg, VA 22807. Requests for reprints may be sent to this address.

Rule 1—Speak Slowly

The child is instructed in a slow rate of speech production (Purcell & Runyan, 1980). This is intended to allow additional time for the child to remember the fluency rules as well as provide time to develop self-monitoring skills necessary for the acquisition of the physiological skills required for fluent speech. The use of symbolic therapy materials such as turtles and snails in conjunction with a desk level metronome can be helpful in establishing the child's comprehension of slow rate. In fact, in a follow-up study an ear-level metronome was used successfully on one fifth-grade male. This child, as well as those using the desk metronome, were instructed not to talk with each beat of the metronome. Instead, they were told to let the beat of the metronome remind them to talk slowly as well as to remind them of any other designated fluency rule. Of course, once fluency is well-established the child's conversational speech will be returned to an age appropriate rate.

Rule 2—Use Speech Breathing

Explain to the child the difference between regular and speech breathing. For speech breathing our explanation includes breathe in quickly, then slowly let the air out, speak on "out" breaths, begin speaking shortly after the "out" breath starts, and keep the air moving (i.e., do not hold your breath!). Having the child trace the outline of a breathing cycle as described above on a black board or a piece of paper has been useful in establishing this rule.

Rule 3—Touch the "Speech Helpers" Together Lightly

Illustrate that the speech helpers (i.e., lips, tongue, and teeth) are parts of the mouth and are used to make speech sounds. The use of cartoon characters of each speech helper has increased the child's awareness of these structures. Explain that it is necessary to touch the speech helpers together very lightly and if pressed together too hard airflow will stop. The concept of light contact has been effectively presented by contrasting this manner of speech production with a demonstration of trying to say a word with the lips pressed tightly together. Another treatment procedure used effectively to illustrate this concept involved squeezing the child's arm as he speaks. That is, as the child speaks fluently the clinician holds the stutterer's arm lightly, then when a stuttering block occurs that involves excessive oral tension, the clinician squeezes the arm gently but firmly. The amount of pressure applied to the arm should be subjectively proportional to the amount of tension exhibited.

Rule 4—Use Only the Speech Helpers to Talk

This rule explains to the child that fluent speech is produced by moving the speech helpers and it is not necessary or helpful to move other muscles or body parts when speaking. The intent of Rule 4 was to eliminate any secondary behaviors that may have developed. It has been our experience that the use of a mirror during therapy has been successful in eliminating secondary behaviors. Usually the

children were unaware of these extraneous movements and once these behaviors were pointed out they were quickly eliminated. On occasion we have targeted a particular persistent behavior and had the child produce this motor response in an attempt to initiate speech. The purpose of this therapy technique was to illustrate to the child that he can perform a great number of motoric responses (e.g., head turns) but that speech is not begun until the speech helpers are moved and airflow begins.

Rule 5—Keep Your Speech Helpers Moving

Explain to the child that fluent talkers do not “hold on to” or prolong sounds when they speak; that fluent speech is made up of “short” sounds that are connected together to form words and sentences.

One effective clinical approach used to teach the concepts of long and short words employed the use of a long and short piece of rough material (e.g., velcro), (Minor, 1983). These different lengths of rough material were used in therapy by instructing the child to rub his finger across the surface of each in order to feel the difference between long and short. Then, when the child produces a long sound (i.e., prolongation) he is required to rub his finger across the long piece of material as he repeats the prolonged word. This procedure is repeated several times with the intent to make the child aware of his length of production. Next, the child is asked to rub his finger across the short piece of material as he produces the target word more quickly. Hopefully, this therapy procedure will improve the child’s ability to understand and then self-monitor the feeling of using the more appropriate “short” word method of speech production.

Rule 6—Keep “Mr. Voice Box” Running Smoothly

By the use of a cartoon character or other illustrations, show the child that “Mr. Voice Box” is in the neck and when it is running you can feel the voice box vibrate. Of course, this can be demonstrated by having the child hum while holding his neck. We also explain to the child that it is the “out breaths” (see Rule 2) that makes “Mr. Voice Box” run and it is very important that when the voice box starts running it is done very smoothly with an easy or gentle onset of vocal-fold vibration. If a further demonstration of voice onset is needed we have the child contrast the physiological feelings associated with two distinctly different modes of initiating phonation. First, the child should feel the tension of abrupt phonation by phonating while pulling up on or pushing against a heavy object. Next, the child monitors easy onset by starting the phonatory process with a breathy voice and then increases vocal fold vibrations until the appropriate pitch and intensity has been reached. The practice of easy onset of voice often creates a prolonged method of speech production. Therefore, the final stage of this rule is to shorten the duration of the onset to an appropriate length for conversational speech.

Rule 7—Say a Word Only Once

Inform the young stutterer that to speak fluently and be understandable a talker does not have to repeat words. The most effective treatment procedure used for

Rule 7 involved two railroad trains. The first train contained different cars and represents fluent speech. The second train had a number of similar cars in a row and represented speech that contained repetitions. The concept learned from this example demonstrates that the train can run smoothly with only one of each type train car. The duplicates (repetitions) are unnecessary.

To implement these fluency rules the FRP was structured in the following manner. First, as part of the diagnostic session, a determination is made regarding which fluency rules have been broken. Next, the appropriate fluency rules are explained to the child. Often this explanation includes teaching the child language concepts necessary for full comprehension of the various fluency rules (e.g., say a word only *once* and *slowly*). In order for the child to apply the new fluency rules, a self-monitoring program is used. This self-monitoring program is based on interdiscrimination and intradiscrimination and consists of three steps. First, the stutterer is asked to determine when the clinician, who through imitation, is breaking the designated fluency rules. Once the child is successful at identifying the clinician's dysfluencies (interdiscrimination) he is asked to listen to tape-recorded samples of his speech to detect any occurrence of broken fluency rules. Finally, the stutterer is asked to determine when instances of broken fluency rules or stuttering occur during conversational speech. When the stutterer successfully completes the self-monitoring phase the intensive practice portion of the program is commenced. During this phase, the child converses with the clinician and is instructed to compare and contrast the physiologic feelings of fluency and stuttering. When the child breaks a fluency rule he practices the fluent version a designated number of times to again distinguish the feeling of fluency from that associated with stuttering.

Occasionally, a child has difficulty with a particular rule. To assist the child apply the difficult rule and then transfer its application to conversational speech it has been helpful to alter the position of the words associated with the target rule within the sentence framework. That is, the child either through reading or reciting after the clinician produces the target word fluently; first at the end of a sentence, then in the middle position and finally to the more difficult initial position (e.g., I see the bear; The large bear is fuzzy; Bears are large animals). As in the other phases of therapy, the child is instructed to physiologically feel and report how the target word is produced fluently using the fluency rules.

The final phase of the FRP involves the carry-over or the transfer of the fluency rules to the home and classroom. Obviously to accomplish this transfer it is paramount the child remembers the fluency rules in these new speaking environments. The most effective procedure used to facilitate this carry-over has been to place a discriminative stimulus in each environment. In the school the speech-language pathologist, the classroom teacher, subject teacher, and the student meet to select a small unobtrusive item to be placed in each room as a reminder of the fluency rule (i.e., stickers on notebooks or refrigerator magnets on the edge of chalk boards). Only the teacher and the student need be aware of the item. Then, if the child should forget to use a fluency rule the teacher can subtly provide a reminder by glancing in the direction of the stimulus item. At home, basically the same procedure is recommended. By placing the stimulus items in conversation areas

(e.g., the family room, kitchen, bedroom, and dining room) and having family members use these stimuli with the stutterer when needed has been helpful. The subtle nature of the use of these stimuli has a secondary benefit in that it negates or reduces the need for direct confrontations when fluency rules are not used. This procedure can reduce the chance of family conflicts arising from the possible need for constant reminding of the fluency rules sometimes associated with the early stages of transfer. Ideally the transfer segment of therapy will result in the fluency rules being generalized to areas away from the therapy room and ultimately lead to fluent speech in these environments. The following is an outline of the Fluency Rules Program.

1. Determine fluency rules broken.
2. Teach language concepts necessary for complete understanding of instructions.
3. Self monitoring phase to determine when to apply the fluency rule.
4. Practice fluent speech production using the fluency rules.
 - (a) Physiologically contrast the stuttered with the fluent speech productions.
 - (b) For difficult to learn rules use the altered word position in sentence program.
5. Carry over to the home and classroom.

The therapeutic procedure outlined and explained above was used with nine young stutterers contained in the caseload of the public school clinician who had been trained by the authors in the use of the FRP. These nine stutterers were treated in two groups. The first group of five stutterers ranging in age from 4:6 to 6:5 was followed for 2 years. In the first year, these children were evaluated and then enrolled in the FRP. During the second year therapeutic instruction was not provided but the children were monitored for any sign of relapse by the speech-language pathologist, the classroom teacher, and the family. At the conclusion of this second year, each child's speech was again recorded and analyzed. A second group of four less severe stutterers ranging in age from 3:8 to 7:1 was enrolled in the FRP at the beginning of the second year of the investigation. That is, when the first group of stutterers was entering the monitoring year this second group was just beginning the active therapy portion of the program. At the beginning of each school year, the children were evaluated by the public school clinician and the first author and only those instances of stuttering agreed upon by both professionals were included in the subsequent evaluation. These agreed upon instances of stuttering were used to determine both pre and posttreatment frequency of words stuttered and to complete the three components of the Stuttering Severity Instrument: frequency, duration, and physical concomitants (Riley, 1972). Also evaluated was the child's speaking rate at the time of the diagnostic and at the end of each school year.

Results

Table 1 provides a summary of the frequency of stuttering and speaking rate for both groups of stutterers over the 2-year period of the investigation. Statistical analysis using a *t*-test for correlated data (Downie & Heath, 1970) indicated that a

TABLE 1. Listed are the two groups of stutterers with their age, sex, frequency of words stuttered during a 5 min sample, and their speaking rates which were calculated in words per minute.

Subjects sex	Age	Speaking rate		Number stuttered words in a 5-min speech sample		
		End of 1 yr	End of 2 yrs	Pretreatment	End of 1 yr	End of 2 yrs
1 M	4-8	92	135	46	2	1.67 ¹
2 F	4-6	74	100	74	1.67 ¹	1.67 ¹
3 M	5-4	98	130	54	1.67 ¹	1.67 ¹
4 F	6-5	63	104	66	2	2
5 F	6-1	52	140	65	2	3
6 M	7-1	140	145	14	5	—
7 M	7-0	120	130	10	2	—
8 M	6-3	130	130	20	2	—
9 F	3-8	125	138	25	1.67	—

¹These frequency scores were obtained for 3 min and extrapolated to 5 min for statistical analysis.

significant reduction in the frequency of stuttering [$t = 4.8, p = .01, df = 8$] was noted at the end of the first year of the therapeutic program. Examination of the speaking rates of the children demonstrates that the improvement in fluency did not occur because of a reduced speaking rate. Only one child did not increase his speaking rate as the first year concluded while a second child, who was in the group followed for 2 years, exhibited a slight reduction in rate at the end of the second year. It should be noted that this child, as was true for all the children, was speaking at an age appropriate rate at the conclusion of this investigation (Purcell & Runyan, 1980).

Table 2 contains the results of the Stuttering Severity Instrument (Riley, 1972) and the therapy schedule used with each child during the period of the investigation. Evaluation of the three subsections of the Stuttering Severity Instrument data demonstrates that improvement occurred on all three measures. These combined results seem to be consistent with the desired effect for an acceptable treatment program.

Discussion

The outcome of this study indicated that the FRP was an effective therapy program when used in a public school environment to reduce stuttering in young children. The children's speaking rates and the frequency of words stuttered demonstrated that the newly acquired fluency did not occur because of a reduction in verbal output. The results of the Stuttering Severity Instrument (SSI) indicated that not only was there a reduction in the frequency of stuttered words, but that the severity of those remaining blocks was minimal. That is, both the duration of the blocks and the struggle behavior (i.e., physical concomitants) were eliminated or reduced. Further inspection of the data illustrates that this improvement in fluent speech production occurred during the first year of therapy and was maintained during the follow-up period. It should also be noted that even though each child demonstrated an improvement in the amount of fluent speech production, all the children's speech contained slight residual effects of the stuttering disorder. These residual effects were in the form of two or three iterations of a syllable and were noted in the duration section of the SSI. These iterations did not occur frequently enough nor were they accompanied by any secondary behaviors to be scored in these respective columns. These remnants of stuttering are a lingering concern and should be followed to determine what impact they will have on the child's fluency at some later date.

An unexpected factor that was not considered during the design of this treatment program appeared to have played an important role in its success and versatility. This unexpected factor was the children's thorough understanding of the concept of "rules." Recall, that an integral component of the FRP was to develop treatment strategies in a language framework that a child could easily comprehend. It was apparent that all the children in this study knew, without supplementary instruction, the concept of not breaking or the importance of obeying rules. This familiarity with what constitutes a rule made the implementation of the program considerably more effective and efficient.

TABLE 2. Total score and subtest scores for each subject on the Stuttering Severity Instrument (Riley, 1972) calculated during the diagnostic evaluation, 1 year, and 2 years after the diagnostic evaluation. Also included is the therapy schedule used for the entire school year following the diagnostic.

Subject	Subtests of Stuttering Severity Instrument												Number and length of therapy session scheduled per week
	Total SSI ²			Frequency			Duration			Physical concomitants			
	Pretreatment	1	2	Pretreatment	1	2	Pretreatment	1	2	Pretreatment	1	2	
1	17	1	1	14	0	0	3	1	1	0	0	0	3-30 min sessions
2	27	2	2	16	0	0	4	2	2	7	0	0	2-30 min sessions
3	20	2	1	14	0	0	4	2	1	2	0	0	2-30 min sessions
4	21	3	2	16	0	0	4	2	2	1	1	0	2-30 min sessions
5	28	3	3	16	0	0	4	3	3	8	0	0	3-30 min sessions
6	11	1	—	6	0	—	2	1	—	3	0	—	3-20 min sessions
7	7	1	—	4	0	—	3	1	—	0	0	—	2-20 min sessions
8	16	4	—	6	0	—	4	2	—	6	2	—	3-20 min sessions
9	14	4	—	8	0	—	2	2	—	4	2	—	3-20 min sessions

Note. The Stuttering Severity Instrument is a 45-point scale that consists of three sections: frequency (instances of stuttering), duration (length of the three longest blocks), and physical concomitants (overt or noticeable secondary behaviors). The range of severity points assigned to each section of the scale depending upon the stutterers severity are as follows: frequency 0-18, duration 0-7, and physical concomitants 0-20.

Of course efficiency and adaptability were important factors in the design of FRP because the treatment schedule used was a typical public school therapy format. Thus as Table 2 illustrates the children in both groups were seen in therapy two or three times a week with each session lasting 20 to 30 min. Therefore, the use of FRP in a public school environment seems to be effective in reducing the occurrence of dysfluencies, duration of the blocks, and struggle behavior while maintaining an appropriate speaking rate even considering the time constraints of the therapeutic setting. And, more importantly the beneficial effects of the program have been maintained over a reasonable period of time. It is also noteworthy that, although no formal assessment was made, the parents of all the children reported a significant improvement in fluent speech production at home. To date, this program has been used with only a small number of children and the therapeutic benefits documented for a relatively short period of time. Therefore, the FRP's ultimate effectiveness and versatility can only be demonstrated when a larger and more diverse group of stuttering children are treated over a longer time period.

REFERENCES

- DOWNIE, N. M. & HEATH, R. W. (1970). *Basic statistical methods*. New York: Harper & Row.
- MINOR, B. (1983). Personal communications.
- PURCELL, R., & RUNYAN, C. M. (1980). A normative study on the speaking rates of children. *Journal of the Speech and Hearing Association of Virginia*, 21, 6-14.
- RILEY, G. D. (1972). A stuttering severity instrument for children and adults. *Journal of Speech and Hearing Disorders*, 37, 314-322.
- RUNYAN, C. M., & BENNETT, C. W. (1982). Results of a survey of public school speech-language pathologists in Virginia. *Journal of the Speech and Hearing Association of Virginia*, 23, 91-95.

Received September 25, 1984

Accepted September 10, 1985