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SENIOR PROJECT - APPROVAL

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PROJECT TITLE: A study of the primary care provided to children who stutter: Do doctors know enough?

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Comments (Optional):

**A Study of the Primary Care Provided to Children who Stutter:
Do Doctors Know Enough?**

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The importance of early intervention in the successful treatment of stuttering has become a focus of clinicians and researchers in the recent past. Research has indicated that identification of stuttering and treatment for the disorder during the preschool years can yield positive results, and appears to be more effective than intervention during later years. Indeed, if the problem is treated when in its beginning stages by a properly trained professional, the outlook is good (Luper, 1997). Several cases of early intervention have resulted in 100% recovery at the end of treatment (Starkweather, Gottwald, & Halfond, 1990; Gottwald & Starkweather, 1995).

Lincoln and Onslow (1997) provided further evidence of the effectiveness of early intervention. They conducted a long-term study on a group of 43 children who received treatment for stuttering between the ages of 2 and 5. They found “virtually stutter free speech” in 100% of the subjects 2 to 7 years after the completion of formal treatment. Furthermore, they proposed that early intervention is not only more successful, but the most economic option in the treatment of stuttering, saving clients who stutter both time and money. Citing Andrews, Guitar, and Howie (1980), they claimed adult therapy can require up to 100 hours of treatment, with relapse a common occurrence; in comparison, their subjects achieved stutter-free speech in an average of 10.5 sessions.

Conversely, intervention in later stages of stuttering is complicated by speaking anxiety and concomitant behaviors (Luper, 1997). Increased experience in living with the problem results in longer treatment time and less success (Conture, 1996). In a follow-up study of their own, Craig and Calvert (1991) surveyed a group of adults who stuttered 12 to 18 months after the completion of therapy. Ninety-six percent of the participants were satisfied with their speech immediately following treatment; at the time of the survey, only 42% were similarly satisfied. The authors stated that the results were possibly due to relapse, or a return of stuttering. If we

use Conture's (1996) definition of effective treatment, successful therapy would have "resulted in the individual's being able to speak with disfluencies within normal limits whenever and to whomever he or she chose, without undue concern or worry about speaking" (p. S20). Such a low satisfaction rate indicates that more than half of the adults surveyed experience some "undue concern or worry." This anxiety indicates that adult intervention does not result in the success rates of early intervention mentioned previously. In stating an opinion formulated during their years of clinical practice and research, Daly, Simon, and Burnett-Stolnack (1995) claim that it is very unlikely that adults with long-term, well established stuttering will achieve permanent stutter-free speech.

Failure to identify stuttering in children and intervene during the preschool years may cause severe problems in the speech and language development of children, resulting in problems in school. Stuttering may slow the development of reading skills in that children may avoid, or have great difficulty with, reading aloud (Luper, 1997). Children who stutter (CWS) may avoid speaking and asking questions, losing valuable learning opportunities. Other children and adults may feel uncomfortable interacting with CWS and may avoid communicating verbally with those children. Consequently, an extremely important tool in the development of preschool children, oral interchange, may be unavailable to CWS (Gottwald and Starkweather, 1995). One estimate places the child who stutters an average of half a school year behind his nonstuttering peers (Boberg & Shea, 1978). Therapy in the early years may avoid such problems.

The pediatrician or family physician is often the first health authority to see a child with a fluency disorder, or the first to be consulted by a concerned parent. Physicians are "major interpreters and communicators of health information to patients and family" (Andrews, Neilson, & Curlee, 1988, p. 1445). As such, they can play an important role in the diagnosis of a speech

problem like stuttering, educating the patient and parents, correcting common misconceptions about the disorder and its causes, and making appropriate referrals (Zibelman, 1982). However, speech disorders such as stuttering have been ignored in the education of physicians (Zibelman, 1982; Aronson, 1987). Additionally, many are not aware of the importance placed on early intervention in the treatment of stuttering, nor do they have guidelines for making referrals to appropriate professionals (Riley & Riley, 1989).

A brief review of medical text books and journals from the mid 1970s to the present was conducted to find information concerning the etiology, nature, and treatment of stuttering available to physicians. Among causes of the disorder mentioned were psychological disorders and anxiety (Foye & Sulkes, 1994; Schoenwetter & DeAngelis, 1984). Such statements conflict with studies conducted by speech-language pathologists which indicate that neither of these conditions are possible etiologies of stuttering (Bloch & Goodstein, 1971; Peters & Guitar, 1991). Delays in referral to speech-language pathologists were also recommended (Schoenwetter & DeAngelis, 1984; Harper & Richmond, 1977). Other authors completely neglected to mention the services of these professionals and, accordingly, guidelines for referral to them (Zibelman, 1982; Foye & Sulkes, 1994). Recommendation to delay referral conflicts with the evidence supporting early intervention addressed previously.

As the literature has indicated, early intervention is extremely important in the successful treatment of stuttering. As parents' primary sources of information concerning their children's development, physicians can play a significant role in the initiation of early intervention. However, speech disorders are omitted from most medical school curricula, and information published in medical texts and journals contradicts findings from research conducted within the field of speech-language pathology.

Are doctors adequately and accurately informed about the etiology, nature, and treatment of stuttering? Do they know enough about the fluency disorder to make a diagnosis, educate parents about the problem, and make appropriate referrals? These questions must be answered in order to insure that CWS receive the necessary treatment in a timely manner. Inadequacies in physicians' knowledge should be exposed so that those who treat and/or study fluency disorders can help "fill in the gaps." This study aims to investigate physicians' understanding of the etiology, characteristics, and treatment of stuttering and test the accuracy of their knowledge.

Methods

Subjects

Twenty-two physicians participated in this study: seven pediatricians and fifteen family practitioners. The subjects were those who responded to a survey sent to 74 Knoxville area physicians. Office addresses were obtained from the Knoxville Academy of Medicine's 1994-1995 Membership Directory. The participants were provided with addressed, stamped envelopes in which the surveys were to be returned. Subjects were assured complete anonymity, as neither their names nor any identifying marker was placed on the survey or the return envelope.

The doctors were educated in medical schools throughout the United States, with the largest number (10) having graduated from the University of Tennessee medical program. Two subjects had been practicing medicine from 0 to 5 years; three from 6 to 10 years; six from 11 to 15 years; two from 16 to 20 years; and nine for 20 or more years.

Materials

A survey was designed specifically for this study. The form consisted of 19 data questions, followed by a brief section requesting background information. Areas of inquiry included the following:

- physicians' knowledge of the etiology and characteristics of stuttering
- doctors' experience with the disorder
- formal screening and treatment procedures used with patients
- referral practices
- physicians' beliefs about their stuttering patients' psychological health compared to their non-stuttering clients
- sources of information about stuttering
- interest in continuing education programs about stuttering.

A copy of the survey can be found in the Appendix.

Results

Etiology and characteristics

In questions asking physicians to name what causes and characterizes stuttering, respondents were asked to circle all applicable options. The question concerning etiology gave an "other" option, eliciting four responses not offered as choices. Three of these answers were from pediatricians, explaining their belief that stuttering has some link to speech development (i.e. "normal child -- transient," "developmental disfluency distinct from cluttering," and "can be developmental"). The final alternative response came from a family practitioner claiming simply, "I don't know." The remaining responses are listed in Tables 1a and 1b.

Table 1a. Causes of stuttering

	# of Pediatricians	# of Family Practitioners
Motor control problem	2	4
Neurological disorder	2	7
Psychological disorder	5	11
Genetic origin	3	2
Learned habit/imitation	4	9
Nonspecific physical problem	0	2
Traumatic events	3	8

Table 1b. Characteristics of stuttering

	# of Pediatricians	# of Family Practitioners
Interjections of sounds, syllables, words, or phrases	0	8
Part-word repetitions	7	12
Whole-word repetitions	4	4
Phrase repetitions	2	4
Revisions (of grammatical structure, pronunciation)	2	2
Incomplete phrases (thought or content not completed)	2	5
Within-word interruptions or repetitions	3	8
Tense pauses	4	7

Physicians' experiences

The physicians' experiences with parental concern about speech development and actual cases of stuttering are presented in Table 2a and 2b. As the participants were given an empty blank in which to place their answer, a large range of numbers were received. For ease in reporting, the ranges used in the table (i.e., 0-5, 6-10, etc.) were created after the responses were received.

Two pediatricians' responses have been omitted from the summary. These physicians responded with percentages rather than whole numbers. One answered that 3 to 5% of patients'

parents have expressed concern over their children's speech development, and that "most" of these concerns were stuttering. The second answered that 10 to 15% of parents have been concerned, and that less than 1% of those cases were judged to have a stuttering problem.

Table 2a. Number of parental concerns about children's speech development

	Pediatricians	Family Practitioners
0-5	2	12
6-10	1	1
11-15	0	0
16-20	1	1
21-25	0	1
26-30	0	0
31-40	0	0
41-50	1	0

Table 2b. Number of children believed to be actually stuttering

	Pediatricians	Family Practitioners
0-5	4	15
6-10	1	0
11-15	0	0
16-20	0	0
21-25	0	0
26-30	0	0
31-40	0	0
41-50	0	0

Screening and Treatment Procedures

Results to questions inquiring about any formal screening or treatment procedures are listed in Table 3. Not all subjects responded to every question. Those physician's answering that they "never" provided treatment for their patient's stuttering were asked to skip questions about counseling and distributing printed informative materials.

Table 3. Screening and Treatment Procedures

	Screen ^a	Treat ^b	Counsel ^c	Printed Info ^d	Send Home ^e
Always	1	0	3	0	0
Frequently	2	3	3	1	4
Sometimes	2	2	1	0	7
Rarely	2	3	0	3	3
Never	13	12	2	6	7

^aDo you use a screening procedure developed by a speech disorders specialist?

^bDo you ever treat these patients yourself?

^cDo you provide counseling for the parents of the children who stutter?

^dDo you provide printed informative materials to the families?

^eDo you inform parents that speech disfluencies are a normal part of speech development, and assure them the child will recover without help?

Referral Practices

Table 4 summarizes the professionals to whom pediatricians and family practitioners refer their patients who stutter. Not all physicians provided answers to this question.

Table 4. Referral Practices

	Speech Pathologists	Neurologists	Psychiatrists	Psychologists	ENT Specialists	Pediatricians
Always	9	1	0	1	1	0
Frequently	3	1	1	0	0	0
Sometimes	7	1	0	2	1	1
Rarely	2	1	0	0	0	0
Never	0	0	0	0	0	0

Beliefs about Patients' Psychological Health

A total of 12 physicians believe that their patients who stutter are *more likely* to have psychological problems than their nonstuttering peers. Nine respondents indicated that their patients who stutter are *just as likely* to have poor psychological health, while none responded that they were *less likely* to have problems. Of those who responded that CWS are more likely to have psychological problems, nine answered that the problems *result from* the disfluent speech, while five indicated that they believe the problems *cause* the stuttering.

Sources and Adequacy of Information

Twelve physicians responded that they have received information about stuttering from medical textbooks, ten from medical journals, three from continuing education seminars, and three from public services announcements. In the space provided for “other” answers, two family practitioners indicated that they had no sources of information, and one pediatrician

claimed “experience” as her sole source of knowledge. Twenty participants responded that they had never received any educational materials from the Stuttering Foundation of America; the other two were “not sure.”

When asked if they felt their knowledge of stuttering is sufficient to perform their role as a child’s primary health care source, nine responded “yes,” nine answered “no,” and four indicated that they were “not sure.” Fifteen of the respondents stated that they were interested in expanding their knowledge, six responded that they were not, and one indicated a “possible” interest.

Preferences for Continuing Education

Table 5 displays the methods with which doctors indicated they would or would not be willing to expand their knowledge of stuttering.

Table 5. Preferences for continuing education activities

	would definitely utilize	might utilize	would not utilize
Seminars in your hometown	1	9	3
One-on-one meeting w/ area speech pathologists	3	3	7
Educational pamphlets, videos, etc.	11	3	1
Articles in medical journals you receive	14	2	0
Journals specifically about speech problems	3	2	8
Internet web pages	2	8	3
Stuttering Awareness Month activities	1	5	6

Discussion

The literature review and these results indicate that physicians are probably receiving little, if any, information about stuttering in their medical training. Despite the 41% of respondents that indicated their knowledge of stuttering is sufficient to function as a child’s

primary health care provider, the deficiencies in their understanding of its etiology and necessary treatment may be leading to incorrect parent counseling and possible delayed intervention.

Results indicate that physicians are able to identify stuttering behaviors (repetitions and tense pauses being the most common responses). However, it appears as though they do not have a clear understanding of possible etiologies (see Table 1a). The three most prevalent responses when asked what causes a child to begin stuttering were psychological disorder, learned habit/imitation, and traumatic events. Research clearly indicates that none of these three are a predisposing factor in the onset of stuttering. A survey of ten years of stuttering research returned no proof that CWS are psychologically any different than their nonstuttering peers (Bloch & Goodstein, 1971). In testing the idea that stuttering is a learned behavior or imitation, Van Riper (1992) compared the stuttering of children to those they were supposedly imitating and found substantially dissimilar stuttering patterns. Furthermore, he argued that if imitation was a factor in stuttering onset, then there would be more incidence of stuttering among siblings. Trauma, on the other hand, may be a precipitating factor in the onset of stuttering; such emotional stress may cause difficulty in speaking for children already neurophysiologically vulnerable to stuttering. However, it is extremely rare for traumatic events to cause stuttering when children have no predisposition to the disorder (Peters & Guitar, 1991).

Only seven of the doctors surveyed responded that they have used a screening procedure to assess their patients' disfluencies. With a little education, it would be very possible to increase this number. A number of brief, simple screening devices are available for use by physicians. Luper (1997) and Gray, Smith & Schneider (1996) provide the procedure distributed by the Stuttering Foundation of America. This checklist can help the physician determine if a disfluent patient's symptoms indicate normal speech development, or mild to severe stuttering.

Riley & Riley (1989) have also produced a simple, short method of determining whether or not a child should be referred to a speech-language pathologist (SLP). This procedure will help a physician label type, frequency, and duration of disfluencies, as well as concomitant behaviors and other people's reactions, as normal, borderline, abnormal, or very abnormal. They worry, however, that the screening procedure "may not be widely distributed," and encourage SLPs to distribute the form to physicians in their areas (Riley & Riley, 1989, p. 63).

None of the respondents indicated that they *always* inform parents that speech disfluencies are a normal part of speech development, and assure them the child will recover without help. However, 64% of those surveyed have, at some time, given this advice to parents (see Table 3). Such information "had to be false in many cases, or stuttering would not exist" (Starkweather, Gottwald, & Halfond, 1990, p. 8).

One of the most important functions of a physician in helping his/her patient with stuttering would be the referral to a speech-language pathologist. However, only 41% *always* refer to a SLP (see Table 4). *None* of the pediatricians responding to the survey *always* refer their patients for speech services. Pediatricians are parents' first and most important source of information about their children's development. It seems that physicians would be doing a disservice to their clients if they regularly failed to refer their stuttering patients to SLPs. Even if the physician doubts the patient is actually stuttering, fluency enhancing suggestions from a SLP would be beneficial even for a child with normal disfluencies. Indeed, there is "little justification in withholding a referral" (Luper, 1997, p. 756).

Riley & Riley (1984) list several negative outcomes of physicians' "nonreferral." When parents follow doctors' orders and the child does not improve, many of those parents blame themselves. When no referral is made, treatment is delayed for a couple of years or more. Once

intervention is finally attempted, stuttering is already well established and will be more difficult to treat. Also, the longer a child waits before entering therapy, the more he will suffer through teasing classmates, and the more likely circumlocution will be a common avoidance behavior. In other words, this system of “nonreferral” may negatively affect a CWS’s chances of ever achieving fluent speech.

The idea that people who stutter have some form of psychological maladjustment is a prevalent, outdated theory that will obviously not die easily, especially if primary health care providers believe in it and perpetuate its existence by passing on such judgments. However, physicians might understand more about the psychological health of their patients who stutter than the numbers indicate. Of those who answered that CWS are more likely to have psychological problems than their nonstuttering peers, a large majority said those problems result from the stuttering rather than cause disfluencies. Those respondents may actually be referring to the frustration, fear, and overall negative attitudes about verbal communication displayed by many people past the beginning stages of stuttering (Peters & Guitar, 1991).

In looking at physicians’ previous sources of information and preferred sources of continuing education materials, one word describes what speech-language professionals need to strive for in disseminating information: convenience. The majority of subjects responded that they have received information from their old medical texts and the journals they receive. Among those interested in expanding their knowledge, the most popular selections were “articles in medical journals you already receive,” and “educational pamphlets, videotapes, etc.” (see Table 5). Information such as this should awaken researchers to the opportunity to submit relevant articles to medical journals, and the national organizations to the educational opportunities available through the materials they publish and distribute.

Having stated how researchers and organizations can benefit from the results of this survey, it seems appropriate to recommend clinical applications. Information such as that obtained during this study can help clinicians, especially those serving in school systems, become “proactive” rather than “reactive” in the effort to provide intervention for CWS. For example, school clinicians who are aware that pediatricians are sending children home to “grow out of it” can be more attentive and practice more aggressive screening for stuttering among children entering the school systems each year. Such a “proactive” approach would be preferable to “reacting” with potentially unsuccessful therapy when a child has slipped through the system and developed advanced, well-established stuttering.

A survey of 22 physicians in a medium-sized city is not adequate to make sweeping statements about the condition of the medical field in the United States. Further research is needed to clarify the population that should be targeted with educational efforts, as well as the specific issues on which those efforts should focus and in what format they should be presented. This next project should focus solely on a large sample of pediatricians. They see many more children than family practitioners; accordingly, they will face a larger number of parental concerns about speech development. Ideally, it should be a funded effort, so that paper and postal expenses do not negatively affect sample size.

It is important for speech-language professionals to remember that “evidence points towards more, not less, interest on the part of physicians in communicative disorders in the future” (Aronson, 1987). A notable reason they lack knowledge about the nature of the services speech-language pathologists provide is that these professionals have not put forth the effort to educate the public (Smith & Weber, 1988). With a better understanding of the educational needs within the medical community that further research will provide, attention can be focused on

increasing efforts and funding to assure the spread of knowledge concerning the nature, characteristics, and treatment of stuttering. Additionally, the importance of early intervention must be communicated so that children who stutter may always receive the necessary treatment in a timely manner.

Appendix: Survey

1. What causes a child to begin stuttering? Please circle all that apply.
 - a. motor control problem
 - b. neurological disorder
 - c. psychological disorder
 - d. genetic origin
 - e. learned habit/imitation
 - f. nonspecific physical problem
 - g. traumatic events
 - h. other _____

2. What characterizes stuttering? Please circle all that apply
 - a. interjections of extraneous sounds, syllables, words, or phrases
 - b. part-word repetitions
 - c. whole-word repetitions
 - d. phrase repetitions
 - e. revisions (of grammatical structure, pronunciation)
 - f. incomplete phrase (thought or content not completed)
 - g. within-word interruptions or repetitions
 - h. tense pauses

3. In the past five years, how many of your patients' parents have expressed concern over their child's speech development? _____

4. How many of these concerns do you believe were stuttering? _____

5. In helping your patients who stutter, do you use a screening procedure developed by a speech disorders specialist?
 - a. always
 - b. frequently
 - c. sometimes
 - d. rarely
 - e. never

6. Do you ever treat these patients yourself?
 - a. always
 - b. frequently
 - c. sometimes
 - d. rarely
 - e. never

If you answered question 6 with a, b, c, or d, please answer the following questions; if your answer was d, please go to question 10.

7. Do you provide counseling for the parents of the children who stutter?
 - a. always
 - b. frequently
 - c. sometimes
 - d. rarely
 - e. never

8. Do you provide printed informative materials to the families?

- a. always
- b. frequently
- c. sometimes
- d. rarely
- e. never

9. Do you inform parents that speech disfluencies are a normal part of speech development, and assure them the child will recover without help?

- a. always
- b. frequently
- c. sometimes
- d. rarely
- e. never

10. Do you refer a child who stutters to a speech pathologist or therapist?

- a. always
- b. frequently
- c. sometimes
- d. rarely
- e. never

11 (a). Do you refer the child to another medical doctor?

- a. always
- b. frequently
- c. sometimes
- d. rarely
- e. never

(b). If you answered (a) with a, b, c, or d, please circle all which apply.

I have referred my patients who stutter to

- a. Neurologists
- b. Psychiatrists
- c. Psychologists
- d. Ear, Nose, and Throat specialists
- e. Other _____

12. How would you compare the psychological health of your patients who stutter compared to patients with normally developing speech?

- a. more likely to have psychological problems
- b. just as likely to have psychological problems
- c. less likely to have psychological problems

13. If you selected (a) in the above question, please circle one of the following.

- a. Stutterers' psychological problems result from their disfluent speech.
- b. Stutterers' psychological problems cause their disfluent speech.

14. What have been your sources of information about stuttering?

- a. medical text books
- b. medical journals
- c. continuing education seminars
- d. public service announcements
- e. other _____

15. Have you ever received or read any educational materials from the Stuttering Foundation of America?

- a. yes
- b. no
- c. not sure

16. If you answered yes to the above question, how would you rate the usefulness of the material?

- a. very useful
- b. somewhat useful
- c. not at all useful

17. Do you feel your knowledge of stuttering and its causes is sufficient to perform your role as a child's primary health care source?

- a. yes
- b. no
- c. not sure

18. Would you be interested in expanding your knowledge of stuttering?

- a. yes
- b. no

19. If you answered yes to the above question, please indicate your preferences.

	would definitely utilize	might utilize	would not utilize
seminars in your hometown	1	2	3
one-on-one meetings with area speech pathologists	1	2	3
educational pamphlets, videotapes, etc.	1	2	3
articles in medical journals you already receive	1	2	3
journals specifically about speech and language problems	1	2	3
internet web pages	1	2	3
area Stuttering Awareness Month activities	1	2	3

Background Information

The following questions are used only to compare your answers to those of others and will not be used in any manner for identification purposes.

1. Where did you attend medical school? _____

2. In which of the following is your Board Certification?

- a. Pediatrics
- b. Family Practice
- c. Other _____

3. How long have you been practicing medicine?

- a. 0-5 years
- b. 6-10 years
- c. 11-15 years
- d. 16-20 years
- e. 20+ years

References

- Aronson, A. (1987, November). The clinical Ph.D.: Implications for the survival and liberation of communicative disorders as a health care profession. Asha, 29, 35-39.
- Andrews, G., Guitar, B., & Howie, P. (1980). Meta-analysis of the effects of stuttering treatment. Journal of Speech and Hearing Disorders, 45, 287-307.
- Andrews, G., Neilson, M., & Curlee, R. (1988). Stuttering. JAMA, 260, 1445.
- Bloch, E. & Goodstein, L. (1971). Functional speech disorders and personality: A decade of research. Journal of Speech and Hearing Disorders, 36, 295-314.
- Boberg, E & Shea, R. (1978). Stuttering: Recent developments in theory and in therapy. Canadian Medical Association Journal, 119, 357-360.
- Conture, E. (1996). Treatment efficacy: Stuttering. Journal of Speech and Hearing Research, 39, S18-S26.
- Craig, A. & Calver, P. (1991). Following up on treated stutterers: Studies of perceptions of fluency and job status. Journal of Speech and Hearing Research, 34, 279-284.
- Daly, D., Simon, C., & Burnett-Stolnack, M. (1995). Helping adolescents who stutter focus on fluency. Language, Speech, and Hearing Services in Schools, 26, 162-168.
- Gray, S., Smith, M., & Schneider, H. (1996). Voice disorders in children. The Pediatric Clinics of North America: Pediatric Otolaryngology, 43, 1357-1384.
- Foye, H. & Sulkes, S. (1994). Developmental and behavioral pediatrics. In R. Behrman & R. Kliegman (Eds.), Essentials of Pediatrics, 2nd Edition. Philadelphia: W.B. Saunders.
- Gottwald, S. & Starkweather, C. (1995). Fluency intervention for preschoolers and their families in the public schools. Language, Speech, and Hearing Services in Schools, 26, 117-126.

Harper, G. & Richmond, J. (1977). Normal and abnormal psychosocial development. In A. Rudolph (Ed.), Pediatrics, 16th Edition. New York: Appleton-Century-Crofts.

Lincoln, M. & Onslow, M. (1997). Long-Term Outcome of Early Intervention for Stuttering. American Journal of Speech-Language Pathology, 6, 51-58.

Luper, H. (1997). Stuttering. In Hoekelman, R. editors: Primary Pediatric Care. St. Louis: Mosby-Year Book.

Peters, T. & Guitar, B. (1991). Stuttering: An integrative approach to its nature and treatment. Baltimore: Williams & Wilkins.

Riley, G. & Riley, J. (1989). Physician's screening procedure for children who may stutter. Journal of Fluency Disorders, 14, 57-66.

Schoenwetter, C. & DeAngelis, C. (1984). School health. In C. DeAngelis (Ed.), Pediatric Primary Care, 3rd Edition. Boston: Little, Brown & Co.

Smith, A. & Weber, C. (1988, April). The need for an integrative perspective on stuttering. Asha, 30, 30-32.

Starkweather, C., Gottwald, S., & Halfond, M. (1990). Stuttering prevention: A clinical method. Englewood Cliffs, NJ: Prentice Hall.

Van Riper, C. (1992). The nature of stuttering. Prospect Heights, IL: Waveland Press.

Zibelman, R. (1982). Stuttering. American Family Physician, 25, 161-163.