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APPLICATION OF EBP GUIDELINES TO TREATMENT  
PLANNING FOR AN ADOLESCENT WHO STUTTERS

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# EBP Briefs

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# Application of EBP Guidelines to Treatment Planning for an Adolescent Who Stutters

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## Structured Abstract

**Clinical Question:** Would an adolescent who stutters (P) exhibit long-term improvement in stuttering management from fluency shaping approaches (I) or speech modification techniques (C), as shown by increases in controlled and spontaneous fluency, reduced severity of moments of stuttering, and decreased negative impact of stuttering (O)?

**Method:** Evidence-based practice process guidelines (Cordes, 1998; Pietranton, 2006).

**Study Sources:** Electronic search of relevant ASHA journals (*Journal of Speech, Language, and Hearing Research*; *American Journal of Speech-Language Pathology*; *Language, Speech, Hearing Services in Schools*), *Journal of Fluency Disorders* and *Journal of Communication Disorders*; electronic search of Science Direct; hand search of clinical textbooks devoted to stuttering treatment.

**Search Terms:** stuttering, fluency, adolescents, treatment, therapy, intervention

### Primary Results:

There are more published studies, and thus more empirical support, for treatment strategies that yield controlled fluency or stutter-free speech, as opposed to techniques leading to stuttering modification. Addressing the cognitive and affective components of stuttering in treatment has limited impact on the behavioral dimensions of stuttering, but significantly reduces avoidance, social anxiety, perceived stress, and severity of stuttering, and significantly improves quality of life and perceptions of self-efficacy.

### Conclusions:

While limited, there is strong evidence that speech modification techniques result in changes in both fluent and stuttered speech in the short-term. Maintenance of these changes appears more likely for fluency shaping or controlled fluency approaches when compared to stuttering modification approaches. Overall, stuttering therapy is effective, and the evidence that one approach is significantly better than another remains to be seen.

## Clinical Scenario

Ann is a first-year MA student in speech-language pathology at a large Midwestern university. One of her summer practicum assignments is a week-long intensive residential program for adolescents who stutter, offered through her department. She is responsible for providing daily individual therapy for one client, a 15-year-old male named Jake who presents with chronic stuttering. In addition, she is responsible for planning three group therapy sessions for the 10 teenagers in the program (eight males, two females). Ann has had one introductory course on the condition of stuttering at the undergraduate level, and one graduate course in stuttering intervention. Jake is her first fluency client.

## The Clinical Question

In 2005, the Joint Coordinating Committee on Evidence-Based Practice (EBP) of the American Speech-Language-Hearing Association issued a position statement that defined EBP as an approach to treatment in which “high-quality research evidence is integrated with practitioner expertise and client preferences and values” (American Speech-Language-Hearing Association, 2005). While this definition indicates a broad view that includes what the clinician and the client know, the reality is that published guidelines for the process of EBP emphasize critical appraisal of the treatment efficacy literature in therapy technique as the sole focus (Pietranton, 2006; Zebrowski, 2007). This narrow focus, despite the more inclusive definition of EBP, may be the result or cause of sparse research in how and why the people involved in the stuttering therapy process matter to the outcome. Ann knew that a comprehensive use of EBP meant that she needed to select and embed the best strategies for helping Jake make behavioral changes into a broader framework that considered the goals and measurable outcomes that Jake wanted to achieve. So, she decided to collect information from Jake about what he wanted to achieve and look for treatment strategies with the best empirical support.

Ann developed a plan for obtaining the client information and research evidence relevant to the clinical question: Would an adolescent who stutters (P) exhibit long-term improvement in stuttering management from fluency shaping approaches (I) or speech modification

techniques (C), as shown by increases in controlled and spontaneous fluency, reduced severity of moments of stuttering, and decreased negative impact of stuttering (O)? To answer this question, Ann decided to do the following:

1. Conduct an intake interview with both Jake and his parents.
2. Conduct a behavioral assessment.
3. Review course materials in adolescent and stuttering development.
4. Conduct a literature search for behavioral treatment strategies.
5. Conduct a motivational interview with Jake.
6. Select treatment strategies.

## Search for the Evidence

### Intake Interview

Ann conducted separate intake interviews with Jake and his mother prior to Jake’s arrival on campus. These interviews were conducted via secure web conferencing software (Elluminate Live). According to Jake, his parents first noticed his stuttering when he was eight years old. He expressed the belief that his parents were “not worried” about his speech disfluencies initially, but that “it bothered them” as he grew and continued to stutter. Jake reported that he received therapy “off and on” since the age of 10, but was not enrolled in therapy at the present time. When asked what he learned in therapy, he stated that he “practiced speech exercises and learned techniques.” When prompted to give examples of these, Jake said that he “couldn’t remember,” but that they helped him to “talk more smoothly.” Jake added that he stopped therapy because he “did not work well” with the therapist, and described treatment as a “bad experience.” When asked what he thought needed to happen in order for him to make changes in his speech, Jake stated that he needed to “believe that it can change, and try very hard.” Finally, Ann asked Jake what he thought his parents would like to see him accomplish in therapy, and he responded that they wanted “immediate change.”

Ann talked separately to Jake’s mother, who described Jake as a “good student and athlete.” According to his mother, Jake’s developmental and health history was unremarkable, and her only concern at the time of the interview was his speech. Jake’s mother expressed her

concern that he avoided talking, a behavior she had seen increase over the past year. She worried that Jake's stuttering was negatively impacting his social relationships and school performance. When Ann asked her for examples of the latter, Jake's mother stated that she couldn't think of any, but that she was confident that his stuttering "bothered him a lot."

### Behavioral Assessment

Ann recorded two speech samples (conversational speech and oral reading speech) during the intake interview with Jake, each 300 words in length. In the sample of *conversational speech*, Jake's speech was, on average, 24% disfluent (i.e., 24 speech disfluencies per 100 words), with a range from 21% to 26% disfluent. The three most frequently produced disfluency types were inaudible sound prolongations (or blocks; 40% of the total number of disfluencies), monosyllabic whole-word repetitions (27% of the total), and sound/syllable repetitions (19% of the total). The remaining 14% consisted of audible sound prolongations, revisions, and interjections. Ann rated Jake's stuttering severity in conversational speech as a 5 on the *Iowa Scale for Rating Severity of Stuttering*, where 0 = no stuttering and 7 = very severe stuttering (Johnson, Darley, & Spriestersbach, 1978). In the oral *reading sample*, Jake's speech averaged 9% disfluent (i.e., 9 speech disfluencies per 100 words), with a range from 8% to 10% disfluent. There were three types of speech disfluencies in the oral reading sample, including monosyllabic whole-word repetitions (50% of the total number of disfluencies), sound/syllable repetitions (31% of the total) and inaudible sound prolongations (19% of the total). Ann used a standard disfluency classification scheme (see Yairi & Ambrose, 1999) to conclude that the majority of Jake's speech disfluencies were characteristic of stuttering (i.e., sound/syllable repetitions, inaudible and audible sound prolongations and monosyllabic whole-word repetitions).

Ann noted a variety of speech and nonspeech related behaviors associated with the production of Jake's speech disfluencies. These included forward movements of the head, widening of the eyes, and visible physical tension in the lips and neck. She also measured the duration of ten of Jake's stuttering-like disfluencies, and observed their mean duration to be 1.24 seconds, with a range from .25 to 6.3 seconds.

### Stuttering in Adolescence

Ann's professional training included courses in different aspects of child development through adolescence. As a result, she recognized that the teenage years are a time of rapid and substantial growth and change, and that an understanding of this age range would help her in her therapy approach with Jake. Before Ann began her EBP review, and prior to making contact with Jake and his parents, she reviewed course materials in stuttering development from childhood through adulthood, as well as adolescent cognitive and emotional development.

Ann was reminded that stuttering is a disorder of childhood because it first emerges between two and four years of age. Perhaps more importantly, approximately 75% of children who begin to stutter experience unassisted recovery anywhere from six to 36 months post-onset; that is, the stuttering behavior subsides without direct intervention (Yairi & Ambrose, 1999). Since relatively early recovery is the typical developmental pattern, adolescents and adults whose stuttering persists are not representative of the group of children who exhibit stuttering. The prevalence of stuttering in adolescence is relatively low when compared to early childhood (.53% vs. 1.44% of the population), but increases in adulthood (from .53% to .78%; Craig, 1998; Craig et al., 2002; Hancock et al., 1998). The combined influence of two factors explains the initial decrease in incidence with age. The first is unassisted recovery, and the second is childhood intervention which shows a high success rate when compared to treatment for adolescents and adults. On the other hand, the primary cause of the increase in stuttering prevalence from adolescence to adulthood is relapse following stuttering therapy. Studies of both teens and adults who stutter indicate that between 30–72% experience post-treatment relapse, where relapse is defined as "the recurrence of stuttering symptoms that are perceived as personally unacceptable after a time of improvement" (Craig, 1998, p. 3). The persistence of stuttering from adolescence into adulthood results in significant personal cost. The literature contains numerous reports that chronic stuttering correlates with high levels of state and social anxiety, depression, hostility, and somatization, as well as bullying, difficulty establishing relationships, and a lower perceived quality of life. Underemployment and negative financial consequences are also likely because stuttering therapy is

typically not covered by health insurance (e.g., Blumgart, Tran, & Craig, 2010; Blood, Flood, Tellis, & Gabel, 2001; McCallister, Collier, & Shepstone, 2012; Mulcahy, Hennessey, Beiby, & Byrnes, 2008; Tran, Blumgart, & Craig, 2011). Although she realized that Jake's experiences of stuttering were unique to him, she came away from her reading with a broad understanding of the negative impact that stuttering was likely to play in Jake's life. She concluded that it was essential for her to obtain an insider's view of stuttering from talking to Jake, and to see if she might understand the meaning that he attached to his stuttering.

After reviewing the developmental literature, Ann realized that one of the most significant psychological changes that children undergo as they move through adolescence is the recognition that it is no longer acceptable to be dependent on their parents, and by extension, other adults who serve in helping relationships (i.e., teachers and clinicians). This period of turning away from childhood triggers an intense struggle as the teen faces the strong desire to grow up and the simultaneous wish to remain a child and allow parents or caregivers to make decisions for him or her (Wolf, 2002; Zebrowski & Wolf, 2011). As a result, the teen years are marked by a prevailing cognitive dissonance and stress as the adolescent gradually realizes that parents can no longer fix what is wrong (in this case, stuttering), while at the same time worrying about their ability to solve the problem on their own, with or without help. For adolescents who stutter, this active period of growth and development is shared with the behavior of stuttering and all the emotions, thoughts, and attitudes that come with it. The problem of stuttering often negatively impacts the teen's tenuous self-confidence and can be a defining factor in his or her developing identity.

Ann wondered whether Jake wanted help for his stuttering, or whether his parents were pushing him to come to the summer program. She knew that sometimes adolescents seek help at the urging of a parent who does the leg work and brings a reluctant teen to therapy. In these cases, the teen comes to therapy with partially formed ideas of why they are there and what they want. Ann knew from her reading that the adolescent determination for independence frequently leads to a complete rejection of what the adult world says that he or she should do. Jake may have refused or terminated stuttering therapy when, or perhaps because, his parents

believed it was (and is) important. On the other hand, it was possible that he wanted help but recognized his responsibility to work on improving his speech fluency, making him feel anxious or unsure about his ability to change.

Ann thought about how working with Jake would be very different from the experiences she had with younger children and adults, but after reading the relevant literature, she believed she was prepared for what challenges they might face together. She remembered his statement that prior therapy was a "bad experience" for him, and knew that they needed to establish a therapeutic alliance that would facilitate Jake's commitment to therapy and ability to make lasting change (Botterill, 2011). At the same time, she recognized that stuttering therapy during the adolescent years can yield large pay-offs, not just in terms of speech changes, but also by preventing the development of negative thoughts and feelings (Zebrowski & Wolf, 2011).

### Reviewing the Literature

Ann considered a variety of ways to conduct her evidence search, and she chose to use a combination of guidelines described by Pietranton (2006) and decision rules established by Cordes (1998) for selecting research to consider. The guidelines include the following sequence of steps:

1. Identify the clinical problem or question at hand.
2. Conduct a search of the literature in relevant resources.
3. Critically review the research evidence and select studies for consideration based on the following criteria (Cordes, 1998; Herder, Howard, Nye, & Vanryckeghem, 2006):
  - Studies must be published in peer-reviewed journals within the last 10 years (2002–2012).
  - Studies must examine a clearly defined stuttering treatment technique or techniques, and must present and compare observable data from pre- and post-therapy intervals.
  - At least one of these observable outcome measures needs to be speech behavior.
  - All or some of the study's participants must be individuals diagnosed to be stuttering, and be between 13 and 19 years old.

- Studies must contain evidence that qualifies as one of four levels of strength (1–4; where 1 = strongest). Level one is randomized control trial; level two is nonrandomized control trial; level three is observational studies with controls; and level four is observational studies without controls (Pietranton, 2006).
4. Integrate the best evidence with the knowledge, skills, experiences, and values that both she and Jake bring to the therapeutic relationship.

Ann's knowledge of the EBP guidelines, and the information she obtained from interviewing Jake and his mother helped her to narrow her electronic and hand search to the journals and texts that were most relevant. These included all of the peer-reviewed professional journals published by the American Speech-Language-Hearing Association (*American Journal of Speech-Language Pathology*; *Contemporary Issues in Communication Sciences and Disorders*; *Journal of Speech, Language, and Hearing Research*; and *Language, Speech, and Hearing Services in Schools*), as well as three peer-reviewed journals with a history of publishing high quality research studies in stuttering and stuttering treatment (*Journal of Fluency Disorders*, *Journal of Communication Disorders*, and *Seminars in Speech and Language*.) Finally, she selected textbook chapters with stuttering treatment research that appeared in three edited textbooks, published between 1998 and 2010 (Cordes, 1998; Gabel, Irani, Palasik, Swartz & Hughes, 2010; Kully, Langevin, & Lomheim, 2007; Manning & DiLollo, 2007; Zebrowski, 2007).

## Evaluating the Evidence

All of the journals and textbooks Ann reviewed contained at least one study that met the search criteria, with the exception of the *Journal of Communication Disorders*. The studies Ann reviewed assessed the efficacy or effectiveness of behavioral techniques intended to yield either controlled fluency or moments of stuttering that are shorter in duration and produced with less muscular tension, and fewer associated behaviors. In addition, several studies examined the efficacy of strategies for improving thoughts and feelings about self-efficacy, maintaining fluency or stuttering modification skills, and changing beliefs and attitudes about stuttering and verbal communication in general. These strategies were viewed

as adjuncts to behavioral speech techniques that lend additional support for long-term change. It's important to note here that treatment efficacy and treatment effectiveness are two separate but related phenomena. Efficacy refers to outcomes resulting from treatment administered in ideal conditions (e.g., controlling for study participants, treatment protocol and its delivery, and clinician training). Effectiveness refers to outcomes observed when the treatment in question is delivered under average or typical conditions. This distinction is important to note because discrepancy in outcomes across these two conditions is not unusual; therapy delivered in a carefully controlled setting may yield good results that are not seen when the same treatment is administered in real world settings (Pietranton, 2006).

Ann reached two primary conclusions based on her critical review of the selected treatment studies. First, treatment protocols that focused in whole or part on controlled fluency had the most empirical support (e.g., Boberg, & Kully, 1994; Bothe, Davidow, Bramlett, & Ingham, 2006; Hearne, Packman, Onslow, & O'Brian, 2008; Langevin, Kully, Teshima, Hagler, & Prasad, 2010; O'Brian, Onslow, Cream, & Packman, 2003). These controlled fluency, or "fluency shaping," techniques were strategies designed to assist the individual to produce speech that is free from stuttered disruptions. Specific techniques observed to increase controlled fluency, either alone or in combination, were

- prolonged vowels,
- physically relaxed articulatory contacts ("soft" or "light" contacts),
- slow and physically relaxed initiation of speech ("easy" or "smooth starts"), and
- reduced speech rate (through prolonged vowels or syllables, or through phrasing and pausing).

Though studies uniformly showed a significant increase in controlled fluency immediately post-treatment, there were equivocal results for maintenance of post-treatment levels over time.

Second, there were fewer studies specifically evaluating the efficacy of therapy techniques aimed at modifying or changing the moment or instance of stuttering (e.g., Blomgren, Roy, Callister, & Merrill, 2005; Irani, Gabel, Daniels, & Hughes, 2012). Furthermore, results from existing investigations were equivocal. The limited research available indicated that strategies aimed at reducing the

severity of stuttering (as opposed to yielding stutter-free speech) lead to decreased frequency of stuttering in the short-term, but not in the long-term. Specific stuttering techniques that have been evaluated include

- disclosure (talking openly about stuttering in general and one's own stuttering in particular; voluntary stuttering; analysis of stuttering behavior in self and others);
- prolongation or "stretching" when initiating speech;
- "pull-outs" (i.e., Van Riper, 1973; holding the stuttered disruption briefly, without changing articulator position, reducing muscle tension and initiating phonation and articulator movement in a slower, physically relaxed manner); and
- "cancellations" (i.e., Van Riper, 1973; the person who stutters deliberately pauses after producing a stuttered word, and says it again fluently before continuing).

Ann's search resulted in a small number of studies that examined the efficacy of different forms of technology to elicit fluency (e.g., Pollard, Ellis, Finan, & Ramig, 2009) or to deliver standard treatment by computer (Euler, von Gudenberg, Jung, & Neumann, 2009) or webcam (Carey, O'Brian, Onslow, Packman, & Menzies, 2012). In addition, her investigation yielded a few studies that examined the efficacy or effectiveness of adjunct strategies for maintaining increased (Cream et al., 2010; Cream, O'Brian, Onslow, Packman, & Menzies, 2009; Ingham, Ingham, & Bothe, 2012; Menzies, O'Brian, Onslow, Packman, St. Clare, & Block, S., 2008). One such strategy was video self-modeling, in which the individual watches a videotaped sample of him/herself producing stutter-free speech (controlled fluency). In these studies, recordings were made of adolescents and adults who stutter after they had received fluency shaping therapy. Participants were instructed to use the skills they had learned while generating a sample of their speech, and this sample was video recorded. The recording was edited so that the final version contained no instances of stuttering or comments made by the investigator. Each participant was given his or her individual recording and directed to watch it daily across a period of time, and to speak the way he or she spoke on the recording. In both an observational study without controls, and a randomized control trial, video self-modeling resulted in reduced stuttering, but was not more efficacious than

standard maintenance protocols. However, the use of self-modeling yielded better self-reported outcomes related to stuttering severity, speech satisfaction, and quality of life when compared to outcomes for standard maintenance procedures.

Ann's search also returned studies that examined the efficacy or effectiveness of cognitive behavioral therapy (CBT) in stuttering treatment, either alone or combined with therapy that included speech modification techniques (e.g., Menzies et al., 2008). Ann interpreted findings to indicate that delivery of CBT did not lead to a functional reduction in stuttering; however, therapy that incorporated CBT along with speech modification techniques resulted in both increased fluency, and reduced social and general anxiety and avoidance behaviors when compared to treatment with a sole focus on speech.

Finally, Ann's consideration of the evidence she found was largely influenced by one study in which a meta-analysis of the results of multiple stuttering treatment studies was conducted (Herder et al., 2006). This meta-analysis revealed that no one approach demonstrated significantly greater effects over another. Taken together, Ann concluded that behavioral approaches to the treatment of stuttering result in positive outcomes. In addition, she concluded that therapy adjuncts such as self-modeling and CBT are effective in improving self-efficacy and stuttering-related thoughts and feelings and as such might indirectly influence the experience of stuttering; alone, however, they did not functionally decrease moments of stuttering. With this in mind, she decided that it was essential to consider what, if anything, Jake wanted to change about his stuttering, and why.

### Motivational Interviewing

Ann knew that following EBP principles meant that reviewing the treatment literature was only part of the process; the selection of therapy strategies required her to combine this "best evidence" with Jake's experiences, goals, and values. The final task of her EBP approach before treatment planning for Jake was conducting a motivational interview with him. Motivational interviewing is based on the assumption that the individual is the "expert" about his or her thoughts, feelings, needs, and preferences, and a shared understanding of these between the client and clinician is what guides development of the treatment plan (Behrman, 2006).

Ann asked Jake a series of questions to elicit his perspective. For example:

- What do you think I need to know so that I understand what it is that you would like to learn or change as we work together?
- Tell me about the therapy you have had for stuttering? What was helpful? What was not helpful?
- How do you think stuttering has affected your life? To get started, think of a scale from 1 to 10, where 1 is “it hasn’t affected me at all,” and 10 is “it affects me every day.” If you choose a number above 5, can you give me an example of how it has affected you, or affects you now?
- If our work together is successful and you could say “Wow, I’m glad I worked on this because I am doing much better,” what would you be doing differently, or what changes would you see?
- Do you think that your parents and friends would see the same things? What would they notice that was different?

Ann and Jake discussed a variety of other topics during the interview, including his support systems, his view of his strengths, and other times in his life when he either made changes or learned something new. In cases where Jake learned to do something new, Ann asked him his thoughts on how he was able to accomplish this learning.

### Selecting Treatment Strategies

Using Jake’s responses from the motivational interview, Jake and Ann created a plan for change that would be used as a map for their work together. Jake decided that he wanted to “know what to do” when he stuttered, and he also wanted to “talk easily” most of the time. He thought that a good place to start would be to “figure out why” he stutters, and then “try to remember [his] tools.” When Ann asked him how he would know that his plan was working, Jake said that he “wouldn’t be afraid to talk,” and would “want to come to therapy because [he] could see that [he’s] getting better.” He added, when asked, that “sticking with it” would be hard if he didn’t see change, or if therapy was “boring.” Ann asked Jake what they could do if therapy was not helping, and Jake replied that they should “talk about it and try some new stuff.” Ann followed this comment by

wondering if Jake could think of another time when he was trying to change and experienced difficulty, and what he did about it. Jake responded, “Learning to skateboard was tough, but I wanted to hang out with these two guys who did it a lot. I just kept at it till I was good enough. It took some time, though; I guess I’m stubborn that way.” Finally, Jake identified his mother and father as his primary supports, and his friends Joe and Ray as other people he could go to with problems. He added that while his parents were “always there” for him, they sometimes were “annoying” about stuttering and what he should do about his speech.

### Making the Evidence-Based Decision

Based on her review of the evidence and Jake’s preferences about what he wanted to change (obtained from both the intake and motivational interviews), Ann worked closely with Jake to jointly develop a treatment plan for Jake that consisted of the following:

1. Reviewing online, print, and video media to study the anatomy and physiology of the speech mechanism
2. Identifying behaviors of both fluent and disfluent speech, and the behavioral correlates of each
3. Reviewing available speech modification strategies and identification of the tools previously used in stuttering therapy
4. Integrating prolonged speech and stuttering modification strategies (particularly initial prolongation and pull out)
5. Contextualizing therapy sessions by holding them in different locations in and out of the clinic, using random rather than blocked trials, variable practice and decreasing clinician feedback within and across sessions (Maas et al., 2008)

### Conclusion

“Best practices” require a clinician to consider treatment research that meets specific criteria, along with her or his own clinical expertise, and the client’s theory of what needs to be changed, why, and how it might be accomplished. Each of these components is a necessary but not sufficient piece of the EBP process. While there are limited options for how one might search through the

literature for the best treatment options, there is substantially more latitude in how the client and clinician use this information to develop a therapy plan that is tailored to the needs of the client and the preferences and values of both.

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