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Critical Review: Short and Long-term Outcomes of
Intensive Treatment for School-age Stuttering

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This critical review examines the short and long-term outcomes of intensive treatment for school-

PsycINFO, ComDis Dom, and Cochrane Library were searched using the following search terms: ((fluency) OR (stuttering)) AND ((intensive treatment) OR (intensive therapy))
A manual search was conducted to locate any studies heavily referenced in articles from the computerized search.

Conclusion

Studies selected for inclusion in this critical review were required to investigate the outcomes of intensive treatment for school-age individuals who stutter.

D Conclusion

Results of the literature search yielded one controlled trial and five quasi-experimental studies. Three articles from the British Journal of Disorders of Communication published in the 1970's were also reviewed (Fawcus, 1970; Rustin, 1978; Watts, 1971); although they reported some positive results, they were primarily descriptive in nature and thus were used for informational purposes only. The six studies considered in this review used one of two broad fluency therapy approaches: fluency shaping or stuttering modification.

Results

A randomized controlled trial (RCT) is often considered the gold standard in research design, however in certain instances, using an RCT can be inappropriate or impossible (Greenhalgh, 2006). All of the studies included in this review were subject to practical and ethical constraints relating to blinding procedures and withholding treatment. Double-blinding was not possible as subjects participated in their own treatment and thus were necessarily aware of which treatment they were receiving. An ethical concern faced by researchers in this field is how to create a control group without withholding treatment to eligible individuals. A commonly accepted practice is to use individuals who are on the waiting list for treatment to form a control group. This practice does not allow for true random assignment, however it is considered an acceptable compromise given the ethical constraints (Greenhalgh, 2006). Given that all of the researchers were faced with the same practical and ethical challenges, the studies in this review will be analyzed within these constraints.

Intensive Treatment Programs Using Fluency Shaping Approach

Craig and Hancock (1996) conducted a multi-centre trial with school-age children (9-14 years) comparing three treatments where Intensive Smooth Speech (ISS) (n=27) and Electromyography Feedback (EMG) (n=25) were offered at one clinic and Home Based Smooth Speech (HBSS) (n=25) was offered at another clinic. Subjects were assigned to treatment groups based on when and where they sought treatment. The control group (n=20) was recruited from the waiting list at the second clinic. ISS and EMG were intensive approaches and involved small group treatment sessions of 6.5 hours/day for five consecutive days with six periodic maintenance sessions over the next year. Pre and post treatment assessment results were

analyzed with a multivariate analysis of variance (MANOVA) and subsequent ANOVAS, which was appropriate for the group design. Results of the study showed that when compared with pre-treatment measures, all treatment groups showed a significant decrease in percent syllables stuttered (%SS) and anxiety, and a significant increase in naturalness and syllables per minute (SPM), at all points of assessment. The greatest changes were seen immediately post-treatment with slight increases in %SS up to 12 months. Significant differences were noted between the control group and each of the treatment groups, however there were no significant differences noted between the treatment groups on any of the outcome measures. Using Pearson's product-moment correlation coefficient, r , researchers found a positive, statistically significant correlation between pre-treatment severity and treatment outcomes at 12 months.

Craig and Hancock (1996) carried out a thorough, well-designed study. Despite the inherent practical and ethical limitations discussed above, the authors made efforts to limit possible sources of bias and error. One potential concern was that subjects were not randomly assigned to treatment groups, and thus may have differed on some important characteristics even before they received the treatment. The authors strengthened the validity of their findings by showing that the groups did not differ significantly on age, sex, or pre-treatment %SS. Although double-blinding was not possible, experimenter bias was limited by blinding the rater to both the subject's group and the time of the assessment. Finally, although the study lacked a control group at the 12 month assessment, the authors pointed to a lack of significant change in the control group over three months, as well as other research showing little spontaneous recovery in school-age stutters as evidence that differences in the treatment groups at 12 months were due to the interventions. Overall, Craig and Hancock (1996) conducted a well-controlled study, considered multiple variables, and a variety of outcome measures. Their study provides strong evidence for the effectiveness of intensive treatment for stuttering in school-age individuals.

Craig and Hancock (1998) conducted a follow-up to their original study (1996) to examine whether the treatment effects found at 12 months were sustained in the long-term (from two to six years). Of the original subjects, 19/25 in the EMG group, and 21/27 in the ISS group were

The Craig follow-up study used the same rigorous methods to limit bias and error as the original study (Craig and Hancock, 1996). One new challenge faced by this follow-up study was that of subject attrition. Subject attrition in the treatment groups was 24% and 22% (EMG and ISS respectively), with the possibility that subjects no longer a part of the study were systematically different in some way. To address this concern, the authors offered evidence that the 12-month outcomes of the subjects who remained in the study were no different than the subjects who dropped out of the study. Overall, the study offers considerable evidence of sustained long-term improvements in stuttering behaviours of individuals who attend intensive treatment programs.

Boberg and Kully (1994) conducted a quasi-experimental within-groups study to assess long-term outcomes in adolescents (ages 11-17 years, n=25) [and adults (ages 18-36, n= 17), whose results were not considered in this review] who attended the intensive treatment programs at the Institute for Stuttering Treatment and Research (ISTAR) over a two year period. The Comprehensive Stuttering Program (CSP), a smooth speech program with cognitive components, was administered seven hours/weekday for three weeks. Speech samples were collected through pre- and post-treatment telephone calls within the clinic, as well as two surprise phone calls to subject's homes during the two year follow-up period. Outcome measures included %SS and the Speech Performance Questionnaire (SPQ) to assess subjects' perceptions of their stuttering. Speech samples were presented to independent judges, who were blinded to the purpose of the study, and demonstrated an inter-rater reliability of 0.971. Descriptive statistics were used to analyze the data. The results showed a dramatic decrease in %SS of adolescents immediately post-treatment, with increases over the next 24 months. Authors noticed the increases appeared to be largely due to 6/25 adolescent subjects. When those subjects were removed and the means re-calculated, there was little evidence of relapse. Only 14 of 25 subjects returned the SPQ but results supported the %SS data. Post-hoc analyses at the follow-up assessments showed "no systematic relationship" between attendance at ISTAR refresher clinics and long-term outcomes (Boberg and Kully, 2004).

The Boberg and Kully study (1994) had a number of strengths, including excellent inter and intra-rater reliability, low attrition, blinding of raters, and long-term follow-up. Still, there are some weaknesses that limit the implications of their results. One limitation was that because no formal statistical procedures were used, it was not possible to determine which changes in the data were statistically significant. Additionally, researchers did not describe which methods they used in their

possible to determine if there are any significant differences in outcomes of fluency shaping and stuttering modification approaches.

A number of the studies (Boberg & Kully, 1994; Craig, 1996; Craig, 1998; Druce & Debney, 1997) identified a sub-group of individuals who demonstrated relapse in outcome measures (although rarely to pre-treatment levels). Interestingly, in three of four cases, the proportion of subjects who demonstrated significant relapse was near 25%.

All of the studies that considered long-term outcomes

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