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Phase II trial of a syllable-timed speech treatment for school-age children who stutter

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ABSTRACT

Purpose: A recent clinical trial (Andrews et al., 2012) showed Syllable Timed Speech (STS) to be a potentially useful treatment agent for the reduction of stuttering for school-age children. The present trial investigated a modified version of this program that incorporated parent verbal contingencies.
Methods: Participants were 22 stuttering children aged 6–11 years. Treatment involved training the children and their parents to use STS in conversation. Parents were also taught to use verbal contingencies in response to their child's stuttered and stutter-free speech and to praise their child's use of STS. Outcome assessments were conducted pre-treatment, at the completion of Stage 1 of the program and 6 months and 12 months after Stage 1 completion.
Results: Outcomes are reported for the 19 children who completed Stage 1 of the program. The group mean percent stuttering reduction was 77% from pre-treatment to 12 months post-treatment, and 82% with the two least responsive participants removed. There was considerable variation in response to the treatment. Eleven of the children showed reduced avoidance of speaking situations and 18 were more satisfied with their fluency post-treatment. However, there was some suggestion that stuttering control was not sufficient to fully eliminate situation avoidance for the children.
Conclusions: The results of this trial are sufficiently encouraging to warrant further clinical trials of the method.

1. Introduction

There is a pressing need to develop better treatments for school age children who stutter (Nippold, 2011; Nippold & Packman, 2012). Stuttering is most tractable during the preschool years with outcomes becoming less positive with increasing age (Bothe, 2004; Bothe, Davidow, Bramlett, Franic, & Ingham, 2006; Ingham, 1984; Ingham & Cordes, 1999; Onslow & Packman, 1997, 1999; Prins & Ingham, 1983). As well as becoming increasingly difficult to treat, stuttering can lead to social and emotional problems as children enter formal school years (Conture & Guitar, 1993). School children who

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stutter are chronically bullied because of their stuttering. One report showed 11–12 year-old children who stutter have a 63% risk of bullying compared to 22% for controls (Blood & Blood, 2007). A report of 28 stuttering children aged 7–15 years found that 59% of them reported being bullied and 38% reported bullying to have occurred on most days or every day (Langevin, Bortnick, Hammer, & Wiebe, 1998). Davis, Howell, and Cooke (2002) reported that peers were far more likely to categorize stuttering school children as victims of bullying. A survey report of 332 adults (Hayhow, Cray, & Enderby, 2002) indicated that 56% of stuttering children may be affected considerably by bullying during the school years. For any child, bullying during the early school years is strongly associated with subsequent anxiety (Gladstone, Parker, & Malhi, 2006).

Social anxiety generally emerges during early adolescence, hence there are likely to be signs of its development during the school years (Smith, Iverach, O'Brian, Kefalianos, & Reilly, 2014). There are direct psychometric data to confirm that possibility (Davis, Shisca, & Howell, 2007; Messenger, Packman, Onslow, Menzies, & O'Brian, 2015). Additionally, indirect evidence of social anxiety for this age group is that stuttering children have more negative attitudes to communication than their peers and those attitudes to communication progressively worsen during the school years (DeNil & Brutten, 1991; Vanryckeghem & Brutten, 1997; Vanryckeghem, Hylebos, Brutten, & Peleman, 2001). There is also evidence of educational problems associated with stuttering, with a large-cohort report based on data from the United States National Health Interview Survey showing that stuttering school children are significantly more likely to repeat a grade than control children (Boyle, Decoufle, & Yeargin-Allsopp, 1994). Those findings about problems with school children who stutter are consistent with a report using a standard stuttering quality of life measure with 50 stuttering 8–11 year-olds and controls (Beilby, Brynes, & Yaruss 2012). The stuttering children had significantly lower quality of life than peers.

In short, it is common for school children who stutter to suffer bullying, potential social anxiety and quality of life problems. Those difficulties mean that for children who miss the preschool window of opportunity for treatment, it is critical that treatment be started as early as possible after entering school.

1.1. Treatments for school-age children who stutter

There is little clinical evidence to guide speech-language pathologists (SLPs) in how to treat the disorder. This situation was highlighted in a recent editorial in the journal *Language, Speech and Hearing Services in Schools*, where it was stated that "... during the past 10 years, NO [author's capitals] data-based studies that focused on building fluent speech in school-age children have been published in American Speech-Language-Hearing Association journals ... and only one such study (Koushik, Shenker, & Onslow, 2009) was published in the *Journal of Fluency Disorders*." (Nippold, 2011, p. 99).

1.1.1. Speech restructuring

Historically, speech-restructuring treatments (Onslow & Menzies, 2010) have the strongest evidence for the school-age population (Boberg & Kully, 1994; Craig et al., 1996; Hancock et al., 1998; Kully & Boberg, 1991; Ryan & Van Kirk Ryan, 1995); however, there are a number of problems with this approach. First, the continued use of an unnatural speech pattern is unlikely to appeal to children. For a population at risk of social anxiety because of negative social conditioning, an unusual speech pattern that could draw attention to the speaker is clinically contraindicated. Second, the treatment notoriously is associated with relapse for all age groups. Finally, speech restructuring treatments such as the Craig et al. (1996) trial were developed for use in intensive treatment formats, which require significant clinical infrastructure and time. This presents a barrier to translation of any clinical trial results, because most SLPs would not have the infrastructure to use such a logistically challenging format.

1.1.2. Verbal response contingent stimulation

Verbal response contingent stimulation has been shown to be of clinical value for pre-school children who stutter, particularly for the Lidcombe Program. The mechanism for the apparent clinical effects of this operant method with the Lidcombe Program are not clear, seeming not to be linguistic (Bonelli, Dixon, Bernstein Ratner, & Onslow, 2000; Lattermann, Shenker, & Thoradottir, 2005; Onslow, Stocker, Packman, & McLeod, 2002) or acoustic (Onslow et al., 2002). In fact, there is even some question about whether any such mechanisms are directly related to parent use of verbal response contingent stimulation (Donaghy et al., 2015). It has been suggested, for example, that the treatment effects my be due to the child practicing fluent speech, in response to the parental contingencies, while the brain is still highly plastic (Venkatagari, 2005). Regardless, clinical trials of verbal response contingent stimulation with school-age children show some evidence of a treatment effect (de Kinkelder & Boelens, 1998; Hewat, Onslow, Packman, & O'Brian, 2006; Lincoln, Onslow, Lewis, & Wilson, 1996; Ryan & Van Kirk Ryan, 1983) with evidence of reducing treatment effect with age (Koushik et al., 2009).

1.1.3. Syllable-timed speech

Another treatment that has received renewed attention in recent years for the school-age population is syllable-timed speech (STS). It has been known for centuries that speaking each syllable in time to a rhythmic beat reduces stuttering. The treatment was recommended as a stuttering treatment during the early 20th Century. There are three reports of STS being used as a treatment for school-age children (Alford & Ingham, 1969; Andrews & Harris, 1964; Greenberg, 1970). Andrews and Harris (1964) used STS to treat children and adults and observed the child group (five 11-year olds) responded significantly better to the treatment than either the adolescent or the adult participants. Shortly after, Alford and Ingham (1969) used STS in conjunction with negative practice and a token reinforcement system to treat nine children aged 7–10 years, again