

F.M. Alexander Technique in the Treatment of Stuttering – A Randomized Single-Case Intervention Study with Ambulatory Monitoring

Dorothea Schulte, Harald Walach

School of Social Sciences and Samuelli Institute European Office, University of Northampton, Northampton, UK

The Alexander technique (AT), a body-oriented method using mental direction of awareness, is named after its founder, the Australian actor Frederick Matthias Alexander (1869–1955), aiming at the modification of physiologically unfavorable automated habits and postures. Habitually executed movement patterns can be unfavorable and damaging. Alexander himself was able to cure his own functional dysphonia by employing the principles of his technique. In addition, he also successfully worked with stutters.

Stuttering is frequently associated with high tension in the muscles involved in speaking [1] and with neuromuscular coordination problems [2]. A reduction of such an increased muscular activity leads to reduction of the symptoms of stuttering [3, 4]. The most conspicuous feature of stuttering is the self-conditioned secondary symptoms, i.e. the patients' effort of fighting and overcoming stuttering when it occurs [5, 6]. Gradually, the strain increases and the secondary symptoms are automated into a strenuous and burdening habit. AT offers a systematic way of modifying such habits as stuttering-related increase in muscle tension and thus a possibility of coping with fears of expectancy.

Scientific evidence for AT's efficacy is missing despite its popularity [7]. We decided to combine an experimental evaluation technique with the highly individual approach of AT. For ethical reasons, we decided to recruit subjects who had experienced some therapy, but who had not been treated for 1 year prior to the study and who still had considerable residual problems with their stuttering. The 2 subjects came from a pool of local self-help groups and therapists who were alerted to the study and signed up for free treatment.

We used a single-case, time series design with a randomized beginning of the intervention, as described by Edgington [8, 9] and Wampold and Furlong [10]. The random component in our study was the randomized allocation of the beginning of the intervention within a 30-day intervention period after a 5-day baseline. Data acquisition was by ambulatory monitoring and in situations of everyday life, using a pocket PC by Psion, series 3a (Psion™ PCL, London, UK) [11]. The subjects were asked to reply to questions concerning their experiencing of and coping with stuttering immediately after episodes of speaking 3 times per day. Questions were related to anxiety, making contact with the body, using Alexander directives, general feeling, stuttering, quality and acceptance of stuttering, avoidance of words or letters, speed and trying to influence stuttering by diverse techniques including AT.

Variables were evaluated using a randomization test according to Edgington [9]. Randomization tests calculate a simple test statistic and permute this calculation through all possible arrays of data. The test statistic we used was the mean difference of a target variable between baseline, up to the intervention point, and the

Table 1. Results of the randomization test for the significant Psion items out of the 17

Variable	Mean values		
	BL	TR	p
Body contact prior to speaking?	1.03	3.59	0.02 n.s.
Attempt at positively influencing stuttering?	2.53	3.96	0.03 n.s.
Sensing of speaking movements	3.08	3.26	0.04 n.s.
AT directives prior to speaking?	1.05	2.97	0.02
AT directives during speaking?	1.0	2.54	0.02 n.s.
Body contact during speaking?	1	3.12	0.03 n.s.
Felt comfortable in the situation?	1.07	2.89	0.03 n.s.
Successful influencing of stuttering?	4.92	5.21	0.03
	3.9	4.22	0.02
	3.83	4.66	0.04
	3.33	4.07	0.03

First line = Female subject; second line = male subject. The absolute magnitude of mean values for baseline (BL) and treatment (TR) are given as well as the error probability (p). Error probabilities are derived by dividing the number of potential permuted differences that are equal or larger than the actual one by the number of all possible permutations (i.e. 179).

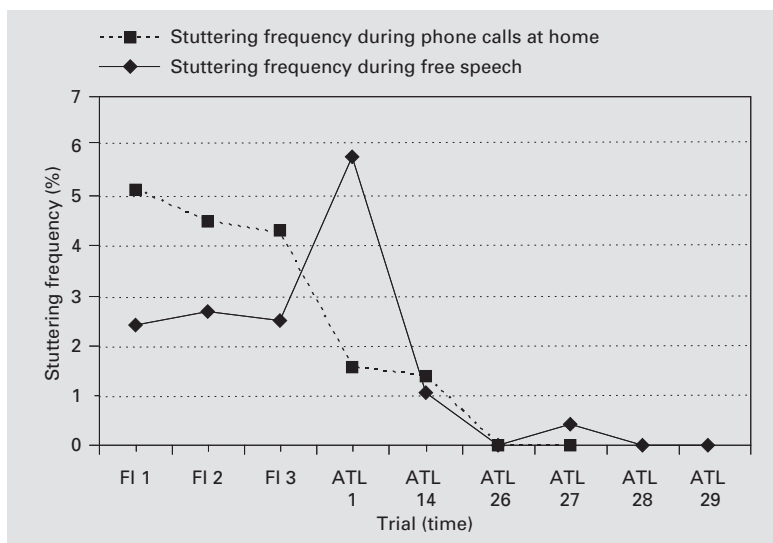
intervention period including the postobservation period. The number of all the hypothetical differences, which are larger or equal to the one obtained empirically, divided by the number of all potential differences gives the true probability that the empirically observed value could have occurred by chance. In addition to the data acquired by Psion entries, audio and video recordings of conversations within and outside of a treatment session were done in order to detect modifications in stuttering severity.

The subjects attended 30 lessons in total, which took place 2–4 times a week. Lessons were basically structured in two sections: (1) teaching of the basic principles of AT; (2) applying AT while speaking.

The first subject was a 27-year-old female student who had been stuttering since the age of 3 with a history of multiple therapies. Stuttering was still a residual problem which occurred in difficult situations. The second subject was a 47-year-old male professional working in an industrial enterprise. He has been stuttering since the age of 5 and has had multiple speech therapies and psychotherapies, including pharmacotherapy because of depression. Both subjects described their stuttering problem as medium in severity.

Although the subjects did not display high stuttering rates at the beginning of the study, a further improvement could be demonstrated in both subjects. The female subject's stuttering rate was between 2.5 and 4.6% before attending AT lessons, and only 0.3 and 0.74% after about 14 lessons to the completion of this study (fig. 1). The male subject's rates improved accordingly (from 5.24/8% to 0.64/2%).

Fig. 1. Stuttering frequency in the female subject during free speech with the investigator at the beginning of AT lessons (ATL) and during phone calls during natural situations at home. First interview (FI) values are mean values from 1- to 2-min talking sequences from the beginning, the middle of and the end of conversations, respectively. The first talking minute from the beginning of AT lessons and from phone conversations was evaluated, respectively.



Statistical evaluation of the Psion entries demonstrates a significant effect ($p < 0.05$) of AT on the successful influence on stuttering. Eight variables showed significant results in the randomization test with a significance level of 5% (table 1).

Our study, which to our knowledge is the first intensive single-case study of AT using ambulatory monitoring, has shown that in 2 cases of moderate residual stuttering 18–30 lessons of AT have led to a further improvement both in symptoms and in self-perceived coping and self-efficacy. The qualitative analysis showed that the subjects felt more able to control their stuttering and more relaxed.

By way of self-criticism one has to note the following limitations. Since this was the first study of its kind, we used a rather broad band of outcome variables. This leads to a potential problem with multiple testing. In both cases, 5 out of 17 variables show significant effects below the conventional limit (from $p = 0.02$ to $p = 0.04$). With 20 variables, only 1 would be expected to be significant by chance.

AT is a complex intervention, and an argument can be made that there is no single component that produces the effect but the interaction of all elements [12]. Thus, our study does not say anything about any particular component, which could only be studied by large dismantling studies. Meanwhile, AT as a whole seems to have stood one empirical test of therapeutic effectiveness in residual problems of stuttering.

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Harald Walach, PhD, University of Northampton
School of Social Sciences and Samuelli Institute European Office
Boughton Green Road, Northampton NN2 7AL (UK)
Tel. +44 1604 892952, Fax +44 1604 722067
E-Mail harald.walach@northampton.ac.uk