

The effectiveness of speech therapy in aphasia treatment

[Science](#), [Biology](#)



Aphasia is a language impairment where the comprehension and production of speech is affected. Aphasia can come in various different forms and severities and is always due to a brain injury. , tThe most common brain injury being a cause is stroke, however, aphasia can also follow other brain damage such as tumours or infection. Aphasia may occur while other cognitive abilities are still undamaged, though it commonly occurs alongside other disorders. It is a life changing condition, with around half of those diagnosed having long term aphasia . (Steele R D et al, 2003.).

One of the possible ways that aphasia can be treated is with speech and language therapy. I have looked at a trial which was carried out to try and establish whether an early intervention of speech and language therapy following a stroke would be more effective than no speech and language therapy (Laska A. C. et al., 2011).. The patients were tested in various ways at 3 weeks after the stroke and 6 months after the stroke. One of the tests used was the Amsterdam-Nijmegen everyday language test (ANELT test) which was designed to assess the level of verbal communicative abilities of individuals with aphasia (Blomert et al., 1994).

This test scores from 1-5, where 5 is normal. The other test assessed the aphasia by measuring comprehension, fluency, repetition and naming (Reinvang I, 1985.) The outcome of this test is the aphasia coefficient (coeff). This test scores from 0-59 where 59 equals normal. All tests for aphasia were performed by three speech pathologists who had been blinded as to the randomization. Other parameters were also assessed such as education level.

The Speech Therapy that was used was Language Enrichment Therapy (LET) (Salonen L, 1980). This is popular especially in Scandinavia as it involves both Speech and Language therapists and heavy involvement from the patient's family and friends at home. The patients designated to be in the group receiving therapy were given 45 minute long sessions every weekday over 21 days., Following this, all patients could receive therapy. However, these therapy sessions were reported and counted so it could be seen as to in order to assess whether early intervention speech therapy does had have any effect.

One hundred and twenty three patients suffering from aphasia were randomised into two groups - those having LET for 21 days and the control group who could only access therapy after 21 days. 114 (93%) of these patients could be tested on day 21 and then the follow up tests could be conducted in 99 of the patients (80%). There were no significant differences between the baseline characteristics of the two groups except for the history of myocardial infarction (23% in the therapy group versus 5% in the control group). Figure 1 shows a flow chart for the randomized patients.

The median measurements on the ANELT scale on day 21 was 1.3 for the treatment group up from 1 in the original testing, and the ANELT score was 1.2 for the control group also up from 1 originally. The aphasia coefficient median coeff score increased by 8.5 points from 10.5 to 19 for the therapy patients and increased by 9 points for the control group up from 13 initially to become 22. Patients with a higher level of education improved more in both tests, and out of the 10 types of aphasia the patients that improved the

most were those suffering from transcortical sensory aphasia, while and those with global had the poorest outcome.

At the six month follow up, where 99 of the patients could be tested, the ANELT score was 1.8 in the treatment group, an increase by 0.5 and the ANELT score for the control group was 3, which was a significant increase by 1.8. As well as this, once again the patients with a higher level of education (over twelve years) reached on average 4.5 on the ANELT scale, whereas those with less education (under twelve years) only scored 1.5 on average at the six month follow up testing.

The results of this trial displayed that early speech and language therapy in the form of a LET program does not affect the degree to which aphasia affects a person after a certain amount of time. However, the patients level of education seemed to have a significant impact on how much the patient was able to recover as patients with over twelve years of education did notably better in the tests both 21 days in and 6 months in. Although this may be the case for this particular study, other studies have found no correlation between educational level and the recovery level of patients with aphasia. (Lazar RM, 2008). In the patients with more fluency to begin with, those in the speech and language therapy group showed a particular improvement in the first 21 days, and these effects continued throughout the 6 months. These patients were the ones who benefited most from the therapy.

The overall conclusion for this particular trial showed that early speech and language therapy does not improve the outcome of patients suffering from aphasia following an acute ischemic stroke. An ischemic stroke is (“ the sudden loss of blood circulation to an area of the brain, resulting in a corresponding loss of neurologic function.” (Jauch E. C, 2018)C.). In this trial patients suffering from intracerebral hemorrhage (a blood vessel in the brain bursts causing bleeding inside the tissue) weren't were not included as they have a much higher mortality rate, so it is unclear as to whether early intensive therapy could improve the outcome of the surviving patients of this type of stroke.

In another trial, the researchers investigated the role of massed practice in rehabilitation in order to try and determine what the most efficient amount of speech therapy is for patients suffering from post stroke aphasia. (Stahl B et al., 2017). 30 Thirty patients were suffering from chronic aphasia, with German as their first language, these patients were randomly assigned to two groups. Each group received Intensive Language-Action Therapy (ILAT) which is a type of speech therapy used only for sufferers of aphasia and applies neuroscientific and linguistic principles to the rehabilitation of language (Difrancesco S, 2012).

This type of speech therapy is drastically different fromto LET, which was used in the first trial I discussed in the trial above, as LET mainly focuses on the involvement from of family members and friends to boost conversation to help rehabilitation. On the other hand, whereas ILAT incorporates a large

use of games to try and stimulate neurological activity primarily in the frontal lobe of the brain.

All the patients were measures tested on the Aachen Aphasia Test (AAT) which evaluates spontaneous speech, token test, mimicking speech, speech from the written word, naming things and comprehension of speech (Willmes K, 1980). By the end of the four week trial on average group one increased from 1.2 to 2.4 on the AAT scale, and group two increased by 0.8 points to 2.2 on the AAT scale. This displays a difference of 0.4 points improvement between group one and two, which is a different outcome to the first trial as the group with the least intensive speech therapy faired performed better. This perhaps displays the idea that ILAT is a better therapy approach compared to LET as it showed greater improvement over the period where the patients were receiving the therapy intensively.

The results of the trials display that performing the ILAT therapy straight after the stroke would provide the best outcomes., especially on those with higher education levels. This is because there was a faster rate of improvement in the weeks following a stroke rather than when the therapy began over a year after the stroke. However, the outcomes of the first trial, where the level of education was taken into account, shows this is also a very important factor in the recovery.

As there was such a huge difference between the outcomes of patients with different education levels in the LET trial, it education would have perhaps been an important variable would have been better for the ILAT therapy trial

to have placed patients into groups according to education level taken into account. However, in the ILATis experiment the participants were assigned to each group completely randomly, therefore the second trial was much less thorough in separation of the participants into the groups so this may have affected the results had a negative effect on the outcomes. ILAT involves altering the pathways in the brain through neuroplasticity and primarily the treatment is performed wholly by speech therapists, as well as some assistance from communication partners.

It aims to bring strength to synaptic links in the brain and does this through daily practice. (Difrancesco S et al., 2012). This is a very pure form of speech therapy as the treatment is almost all delivered by therapists, whereas in LET, much of the rehabilitation is done by family and friends, following a plan set out by a therapist with infrequent check ups. ILAT however did provide the best results suggesting that speech therapy is an effective method of treating aPhasia. However, ILAT does only seem to just be marginally more effective than LET which appears to be a much cheaper service, due to less use of professional time.

One review into the effectiveness of speech therapy (Bainton D et al., 1997) placed therapy performed by trained therapists against volunteers such as part time hospital staff who were just instructed to encourage the patients to communicate. This time the patients were measured on the Functional communication profile scale (Sarno, 1969). The results for both approaches, shown on figure 2, show a similar pattern, with a rapid improvement

in the first four weeks of treatment which eventually begins to slow down, with the FCP score deteriorating between the 8th and 12th week.

Then, as treatment stopped at the 12th week the speech therapy groups improvement began to plateau, whereas the volunteer group continued to improve perhaps suggesting that just encouraged communication may sometimes be the better approach. However from the earlier trials this seems to be dependent on the person. In the volunteer group the patients on average were over 3 years younger than the other group, suggesting that age may be a factor in recovery as the brain has more plasticity the younger the person is. (Mahncke H W, 2006). Speech and Language therapy is effective for most people looking at the results of the trials, however for older individuals and those with lower education levels SLT does not seem to work as well, possibly due to weaker pathways in the brain which are harder to restore through therapy.

In conclusion, Speech Therapy does seem to be an effective form of treatment for aphasia, however certain variables such as age and education level do drastically affect the results of the treatment and how successful it can be. ILAT Therapy is used only for the treatment of aphasia, so perhaps this explains why the level of improvement in this particular trial was more substantial than the LET trial.

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