

Treatment of Attention in Aphasia

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Background

It is now fairly well established that people with aphasia have impairments in some forms of attention^{1,2,3,4 & 5}.

However, the interaction of attention and linguistic performance is not fully understood.

Attention may play an important role in conversational success⁶.

Unlike the traumatic brain injured population⁷, there are very few reports of attempts to improve attention in people with aphasia^{8 & 9}.

Research Questions

Following attention training, will the participant exhibit

improved performance on the attention training tasks?

improved performance on the CTMT¹⁰ and IVA¹¹?

improved performance on the PICA and the measure of conversational success¹²?

Participants

62 year-old female; 9 years post unilateral left hemisphere CVA

chronic borderline fluent aphasia; good repetition and auditory comprehension

2, female university students; no knowledge or experience with aphasia

Method

Baseline and post-treatment testing completed over six consecutive days immediately preceding/proceeding treatment

Treatment delivered in 1-hour sessions, 5-days per week, over the course of 12 weeks. Participant completed 51 of 53 scheduled sessions.

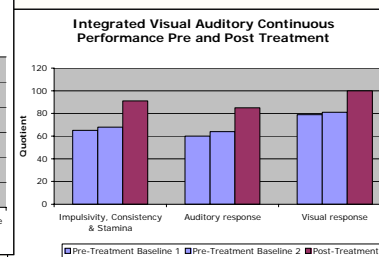
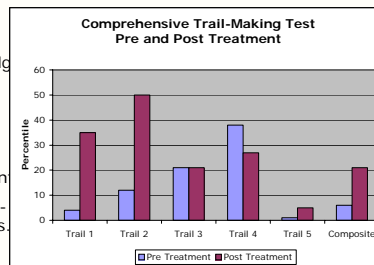
The treatment consisted of selected computerized tasks designed to improve attention skills from the PSSCogRehab¹³ software program.

Results

Regression Analysis for Change Over Time on PSSCogRehab Training Tasks

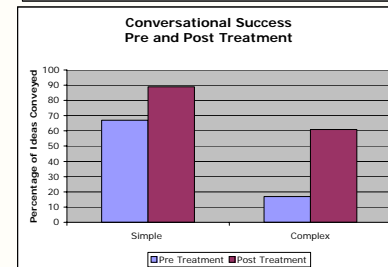
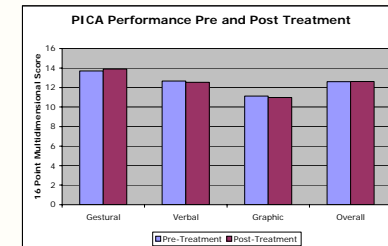
Task	Reaction Time	Variance	Right Side Reaction Time	Left Side Reaction Time
Focused Attention				
Simple Visual Reaction	0.56	-0.24		
Simple Auditory Reaction	0.17	-0.30		
Selective Attention				
Visual Reaction Auditory Prestimulus	-0.02	-0.21		
Auditory Reaction Visual Prestimulus	-0.34	-0.18		
Simple Choice Visual Reaction	-0.54	-0.01		
Simple Choice Auditory Reaction	-0.43	-0.20		
Visual Reaction Multiple Stimuli	-0.48	-0.03		
Higher Level Attention Regulation				
Visual Reaction Differential Response	-0.74	-0.28		
Visual Discrimination Differential Response - default			-0.48	-0.35
Visual Discrimination Differential Response - switch			-0.41	-0.34
Visual Scanning 2	-0.21			
Visual Scanning 3	-0.72			

Red font = $p < .05$
Blue font = $p < .01$



References

- ¹Tseng, C.H., McNeil, M.R., & Milenkovic, P. (1993). An investigation of attention allocation deficits in aphasia. *Brain and Language*, 45, 276-296. ²Murray, L.L. (2000). The effects of varying attentional demands on the word retrieval skills of adults with aphasia, right hemisphere brain damage, or no brain damage. *Brain and Language*, 72, 40-72. ³Erickson, R.J., Goldinger, S.D., & LaPointe, L.L. (1996). Auditory vigilance in aphasic individuals: Detecting nonlinguistic stimuli with full or divided attention. *Brain and Cognition*, 30, 244-253. ⁴Purdy, M. (2002). Executive function in persons with aphasia. *Aphasiology*, 16, 549-557. ⁵Ramsberger, G. & Rende, B. (2002a, November). *Executive functions: A critical component of conversational success in aphasia*. Paper presented at the meeting of the American Speech-Language-Hearing Association, Atlanta, Georgia. ⁶Park, N.W. & Ingles, J.L. (2001). Effectiveness of attention rehabilitation after and acquired brain injury: A meta-analysis. *Neuropsychology*, 15(2) 199-210. ⁷Helm-Estabrooks, N., Connor, L.T., & Albert, M.L. (2000). Treating attention to improve auditory comprehension in aphasia. *Brain and Language*, 74, 469-472. ⁸Sturm, W., Wilmes, K., Orgass, B., & Hartje, W. (1997). Do specific attention deficits need specific training? *Neuropsychological Rehabilitation*, 7, 81-103. ⁹Reynolds, C.R. (2002). *Comprehensive Trail-Making Test*. Austin, Texas: Pro-Ed. ¹⁰Sandford, J.A. & Turner, A. (2002). *IVA (Integrated Visual and Auditory) Continuous Performance Test*. Richmond, VA: BrainTrain. ¹¹Ramsberger, G. & Rende, B. (2002b). Measuring transactional success in the conversation of people with aphasia. *Aphasiology*, 16 (3), 337-353. ¹²Bracy, O.L. (1994). PSSCogRehab [Computer Software]. Psychological Software Services Inc., Indianapolis, IN.



Conclusions

Although results of a case study must always be interpreted with caution, this case strengthens the understanding of the emerging relationship between attention, linguistic processing and functional communication in people with aphasia. The results suggest that treatment of attention in aphasia – even in someone years post-onset – may produce measurable changes in their attention skills and in their conversational communication. The lack of change on linguistic measures supports the idea that attention/executive functions play a more integral role in functional communication than isolated linguistic performances.