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Assistive Technology Enhancement of Written Expression for Individuals with Neurodevelopmental Disorders [Poster]

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Purpose: Intervention Efficacy Study

The purpose of this project is to carry out an intensive training program in subjects with a broad range of neurodevelopmental disabilities to assess the efficacy of assistive technology (AT) intervention.

Subject Demographics (N=2):
- Mean Age: 12.9 years
- Mean Verbal IQ: 78
- Mean Full Scale IQ: 76
- Mean Reading Level: 7th grade 1st month
- Mean Writing Level: 7th grade 1st month

Subjects include individuals with fragile x syndrome, sex chromosomal abnormalities, Down syndrome, fetal alcohol syndrome and autism spectrum disorders.

Baseline Testing
- VMI: Motor Coordination
- WISC-IV: Full Scale IQ
- WASI: Verbal IQ
- WASI: Performance IQ
- PALS: Reading Level
- PALS: Writing Level
- Writing Quotient
- TOWL: Oral Expression
- TOWL: Written Expression
- TOWL: Spontaneous

Pre-intervention:
- Subjects are asked to write a story about a picture for 15 minutes
- IQ Testing (WASI or WISC-IV)
- Achievement (MBA), Process Assessment of the Learner (PAL)
- Test of Written Language (TOWL-IV)
- School Function Assessment (measures school participation and any AT applications implemented)
- Parent and Teacher Questionnaires
- Families and schools will receive summary of test findings and recommendations including the use of AT

Subjects are randomized into intensive intervention group or standard of care group. Subjects who are initially randomized to the control group are rolled over into the intervention group the following year.

Methods
- Re-evaluation post-control/pre-intervention, and post-intervention

Subjects
- 2 subjects enrolled to date
- 2 subjects disqualified to continue: 1 due to reading level lower than 1st grade, 1 due to cognitive level too high
- 17 randomized to intervention group, 11 to control group
- 10 subjects have completed 1 year of intervention
- Subjects have completed control year, rolled over to intervention group
- 32 subjects enrolled to date

Preliminary Results

Group of 10 subjects who have completed 1 year of intervention using the software:

Re Intervention Group Mean

Re intervention: years months day ra e wor’s SS

Post intervention: years months day ra e wor’s SS

- I understand how to use Co:Writer
- I understand how to use Write:OutLoud
- I think using software will help me teach writing
- I think being taught how to best use the software will help me with teaching writing
- I would be likely to use the software on my own without additional intervention
- My child writes better when he/she uses the computer
- My child struggles with writing – legibility
- My child writes better when he/she uses the computer
- My child struggles with writing – legibility
- My child writes better when he/she uses the computer
- My child writes better when he/she uses the computer
- My child writes better when he/she uses the computer
- My child writes better when he/she uses the computer

I am comfortable using the computer

Survey Questions

Discussion
- Although we do not yet see a trend in improvement of writing quotients scores, some individuals have shown improvement in skills such as amount of generative language produced after a year of software use.
- Although the reading level is significantly lower at time 2 thus far, we believe this is not a sign of loss of skills, but rather the demands of the standardized testing increasing with age

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