

EYE-GAZE TECHNOLOGY AS A COMMUNICATION DEVICE: HABILITATION PROCESS WITH THREE SUBJECTS WITH RETT SYNDROME

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Background

Communication in girls with Rett syndrome is a major problem (1), though some promising clues of their linguistic ability has been shown in studies using eye-gaze technology (2). International Classification of Functioning, Disability and Health (ICF) was developed to serve as a comprehensive framework for the components of functioning and disability for all health-related conditions.

Aim



- to evaluate subjects' ability to learn to use eye-gaze technology and its influence on their communication skills, their possibilities to take part in social situations as an active partner
- to find out which areas of functioning are most often used to describe habilitation process to gain eye-gaze technology as a communication aid

Method

Three teenage girls took part in a three-year habilitation process to learn to use Tobii-I® device as a communication aid. Reports about each subject's functioning and habilitation goals written by occupational and speech therapists were classified with ICF. Parents were interviewed, focusing on their experiences of the process.

Results

After the three-year habilitation all subjects could use eye-gaze technology as a communication aid. Parents believed that the eye-gaze computer had a positive impact on their daughters' communication and possibilities to participate, but found the repeated evaluations stressful to the girls and themselves.

Table 1. Most common ICF categories describing function during habilitation

ICF		Example
b215	Functions of structures adjoining the eye	"Fixation to a moving item is easier than to a stable item." "Difficult to gaze the down left corner."
d210	Undertaking a single task	
b130	Energy and drive functions (motivation)	"Eye-gaze is inaccurate with low motivation"
d335	Using nonverbal messages (signs and symbols)	"Expresses 'yes' with her tongue."

Table 2. Most common ICF categories for habilitation goals

ICF		Example
d110	Watching	"Enhance intentional use of eye-gaze"
d360	Using communication devices and techniques	"To express her needs by making 1-2 choices".
b215	Functions of structures adjoining the eye	"To learn to fixate the gaze long enough"

Table 3. Most common ICF categories describing improvement during habilitation

ICF		Example
b215	Functions of structures adjoining the eye	"Now moving her gaze throughout the whole screen."
d210	Using communication devices and techniques	"To express her needs by making 1-2 choices". "She has become calmer when practicing. She is not so restless anymore".
b147	Psychomotor functions	

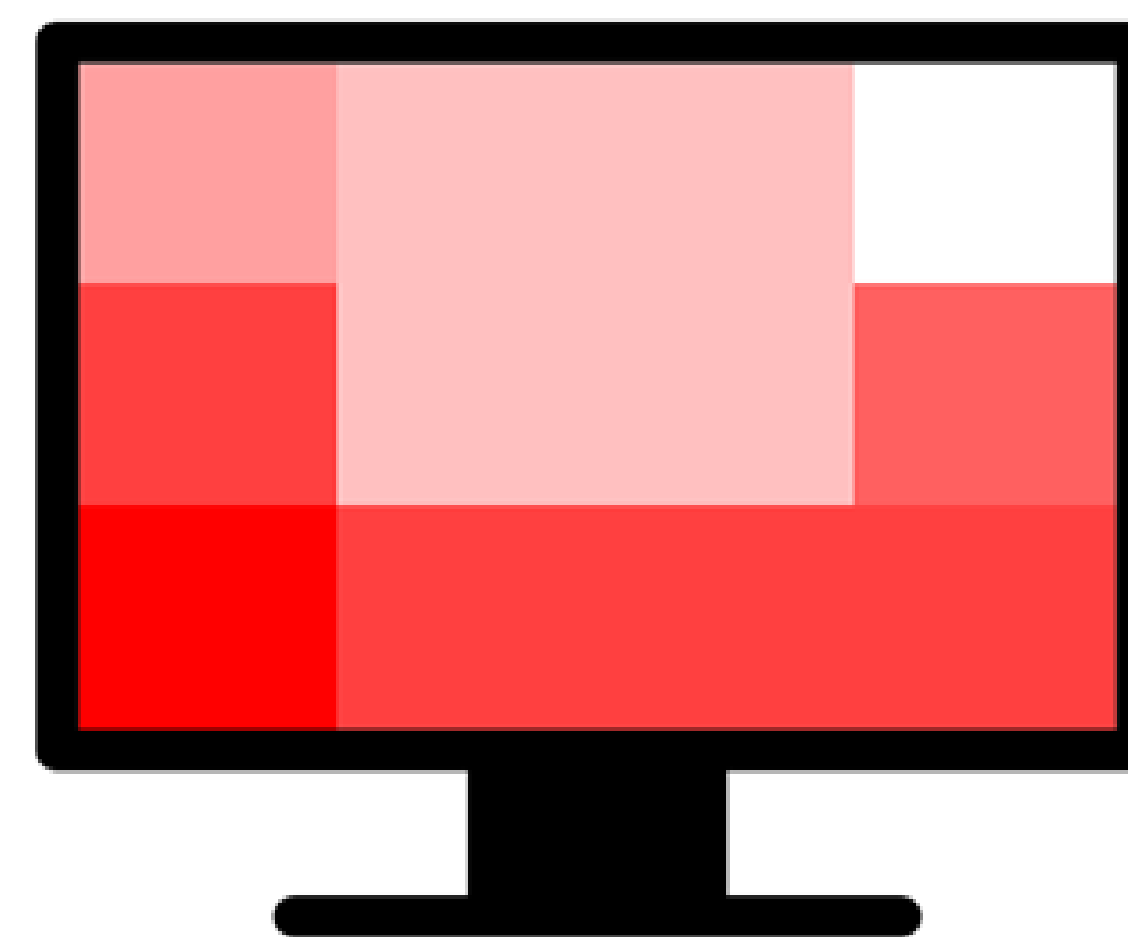


Figure 1. Subject A: Preferred areas for fixing the gaze at the screen. White indicates easy access, red avoided screen areas.

All subjects improved in their ability to use gaze as an intentional tool to control the computer screen although all were also reported to have dyspraxia in using eye-gaze.

Conclusions

- ICF is a useful tool for defining meaningful concepts, when analyzing natural habilitation process.
- The ability to use communication devices varied depending on alertness and motivation.
- Dyspraxia in using gaze seemed to diminish under the habilitation period. In future, it is important to offer individually motivational communication material early on, while simultaneously training the movements and fixation of the eye.

Bibliography

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