logbuk

Structured use of eyegaze-technology for beginning (early) users and people with ambiguous consciousness

Sabrina Beer & Stephanie Leisner

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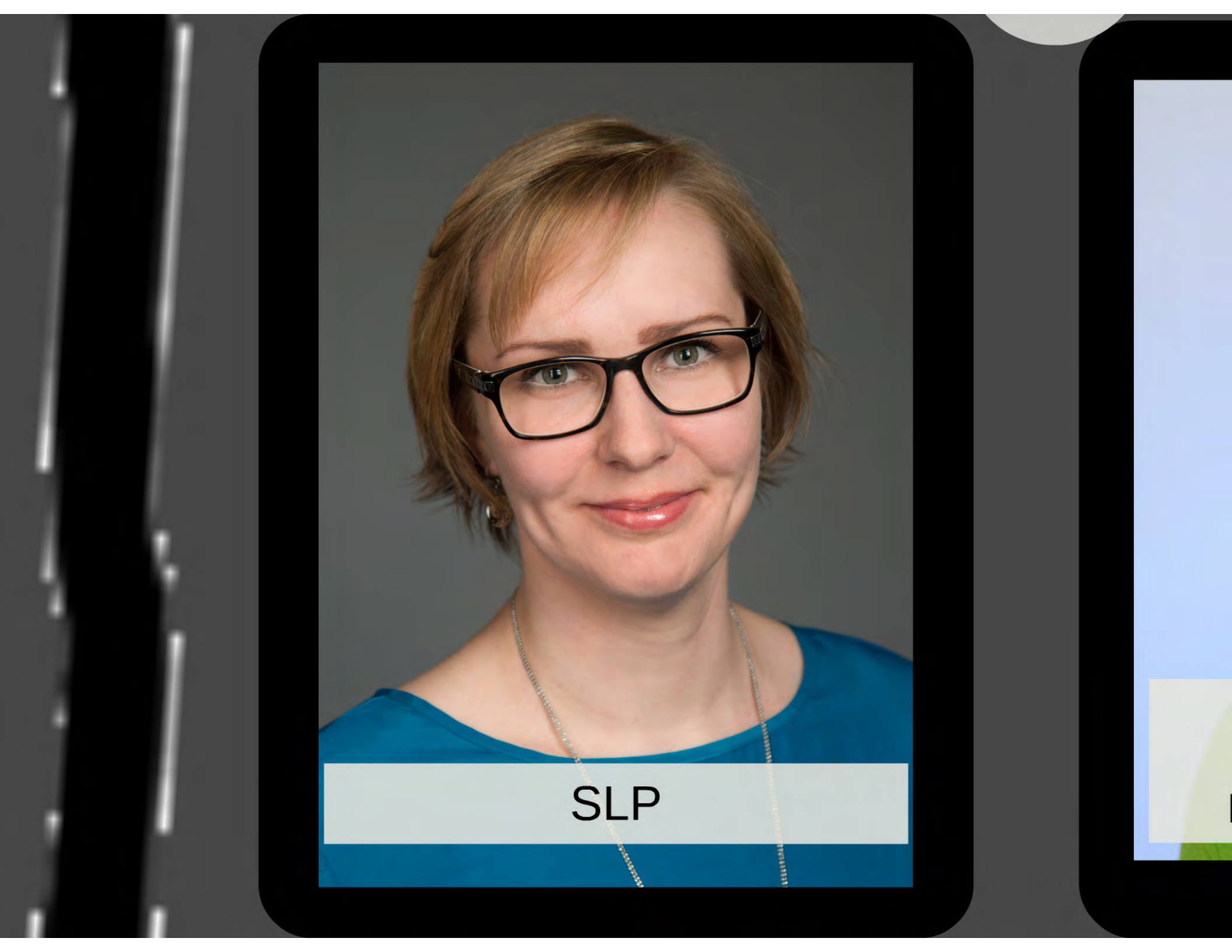

SLP

ICU Nurse
SSLT
MSc. Neurorehabilitation

initial point & issues

experience	*knowledge*	*consideration*	*assumption*
AAC-users with vague **visual** **cognitive** **linguistic** **+ limited motor abilities** no appropriate AAC-solution lack in knowledge about competencies	**eyemovement & gaze** basal performances often not affected	**eyetracking-systems** possible benefit for our users BUT numerous influencing variables	**eyegazesystem** **structured and guided introduction** may **visualize abilities** and **empower proactive communication**

experience

AAC-users with vague
visual
cognitive
linguistic
+ limited motor abilities

no appropriate AAC-solution

lack in knowledge about competencies

knowledge

eyemovement & gaze

basal performances

often not affected

consideration

eyetracking-systems

possible benefit for our users

BUT

numerous influencing variables

assumption

eyegazesystem

structured and guided introduction

may

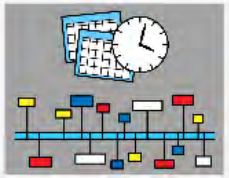
visualize abilities

and

empower proactive communication

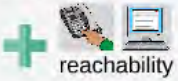
design of case series

participants all over germany

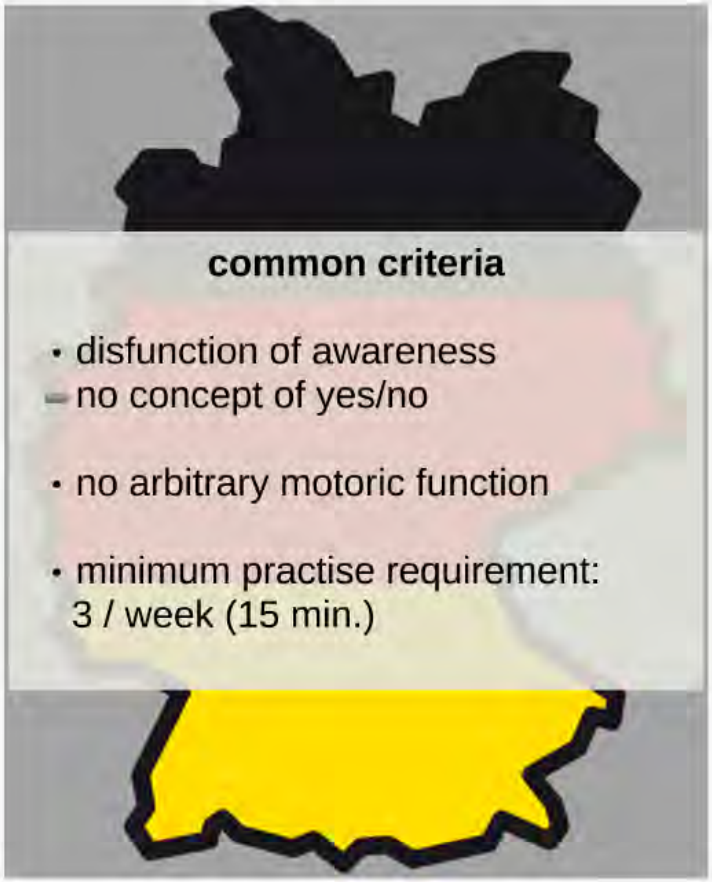


time frame: 9 to 12 week

- initial session
- intermediate session
- concluding session



reachability



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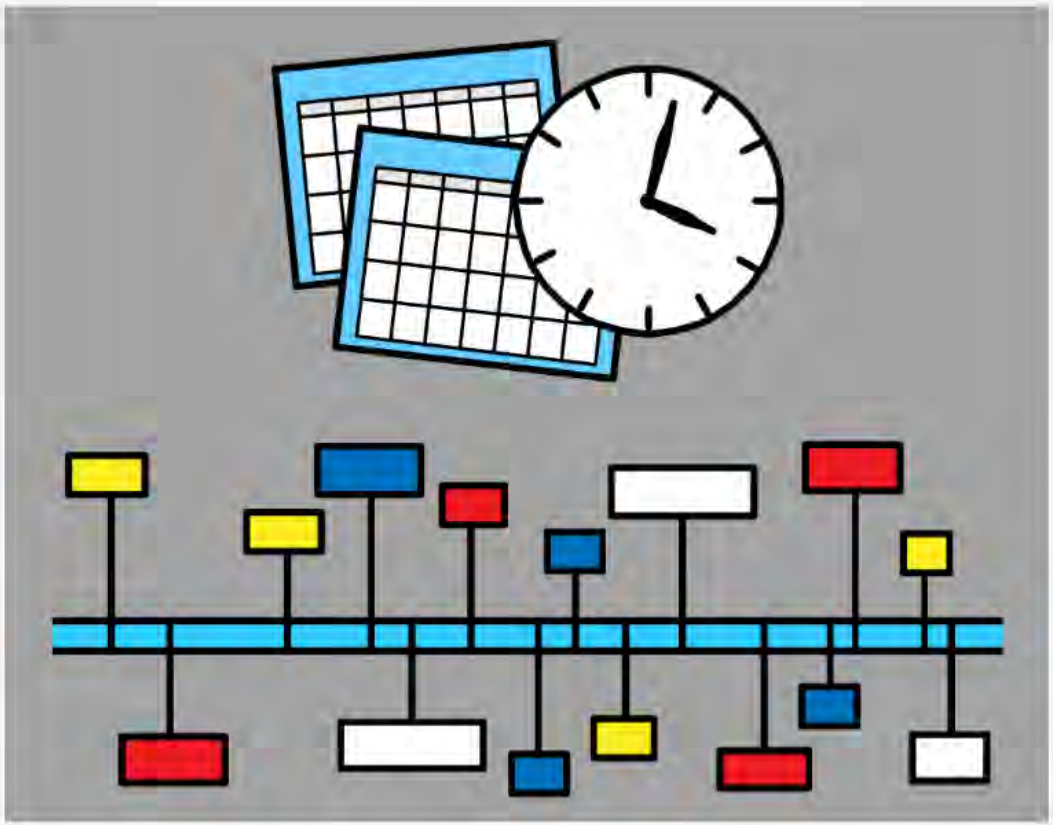

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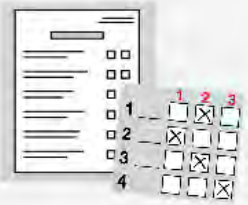


reachability

patients

age: 6;11 - 27;7

2 male / 5 female

exercise frequency: 3-7/week

involved people:
parents, occupational therapist,
speech therapist, physiotherapist,
teacher, personal assistant, nurse

assessment tool

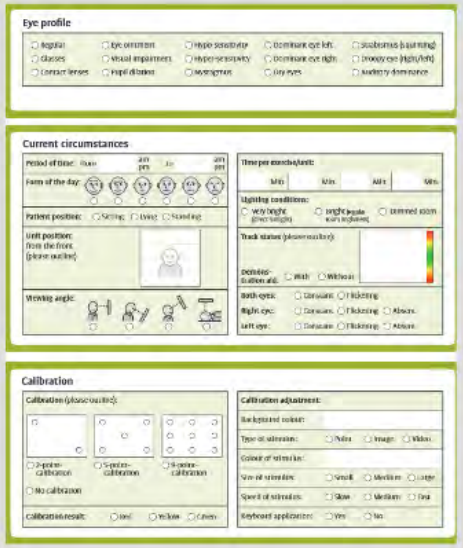
+ Tobii I12/I15
including:
Sensory Eye FX, LookToLearn,
Communicator, Gaze Viewer

assessment tool

status survey

- eye profile/calibration
- first experience with eye gaze technology
- general speech development and current competencies

+ intervention plan

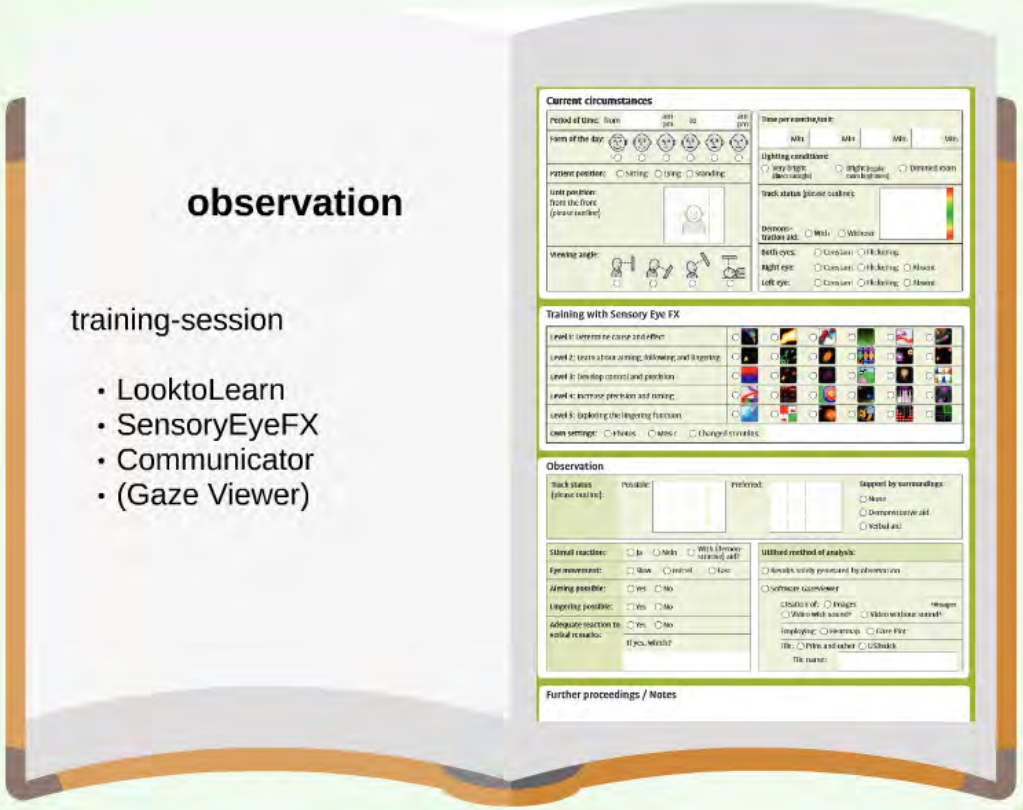


assessment tool

observation

training-session

- LooktoLearn
- SensoryEyeFX
- Communicator
- (Gaze Viewer)



assessment tool

comparison survey

- comparison eye profile/ calibration
- observation summary
- further evaluation questions

+ intervention plan

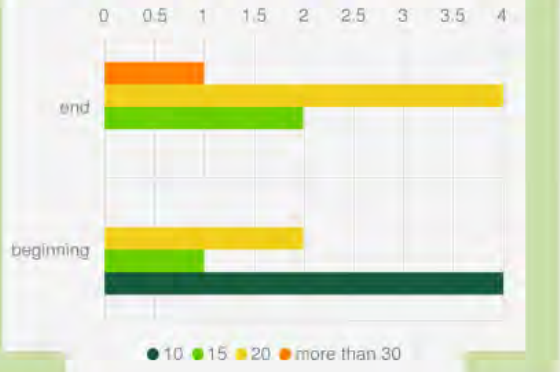
development

trackstatus

preferred field of vision

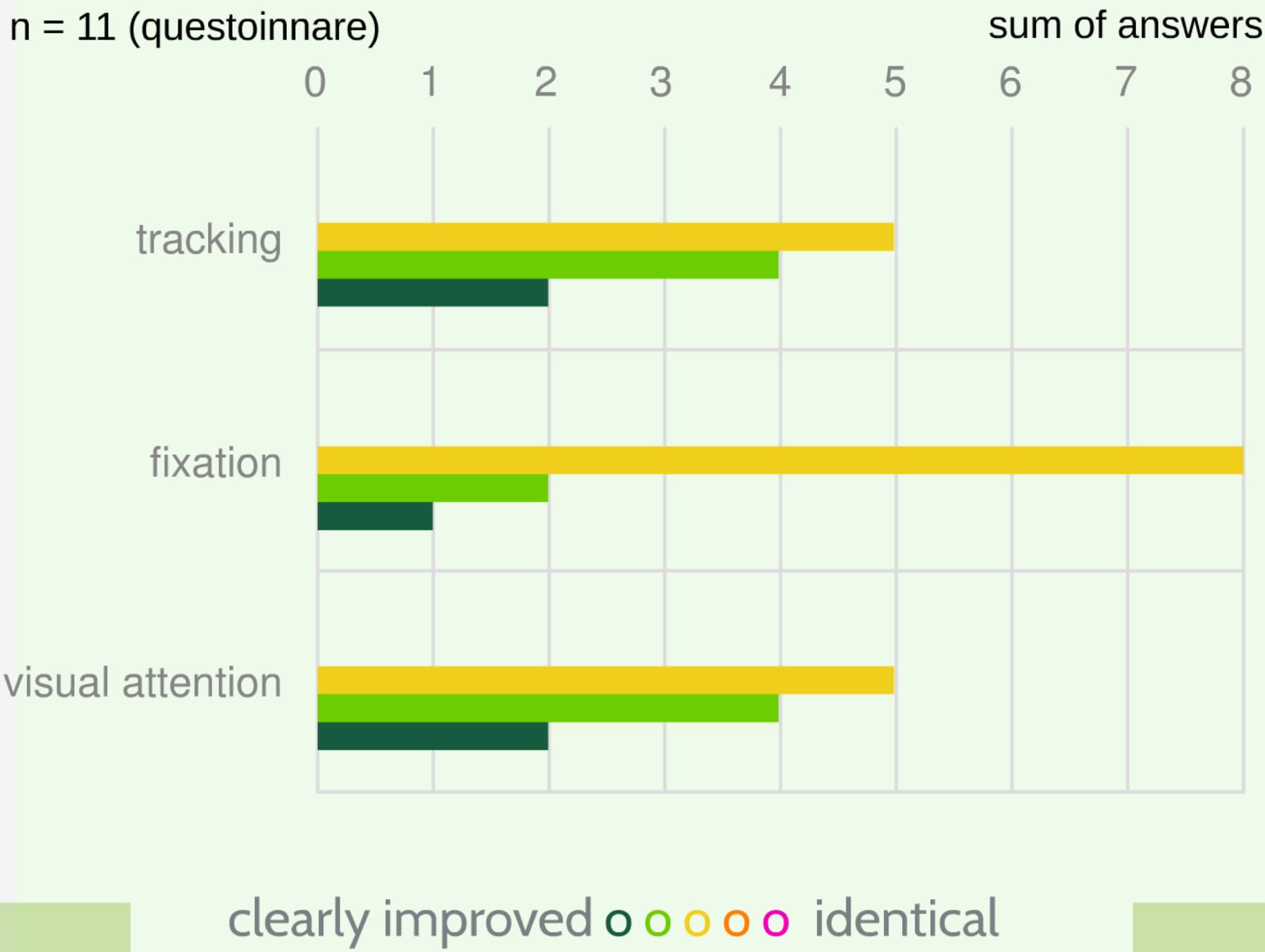
visual skills

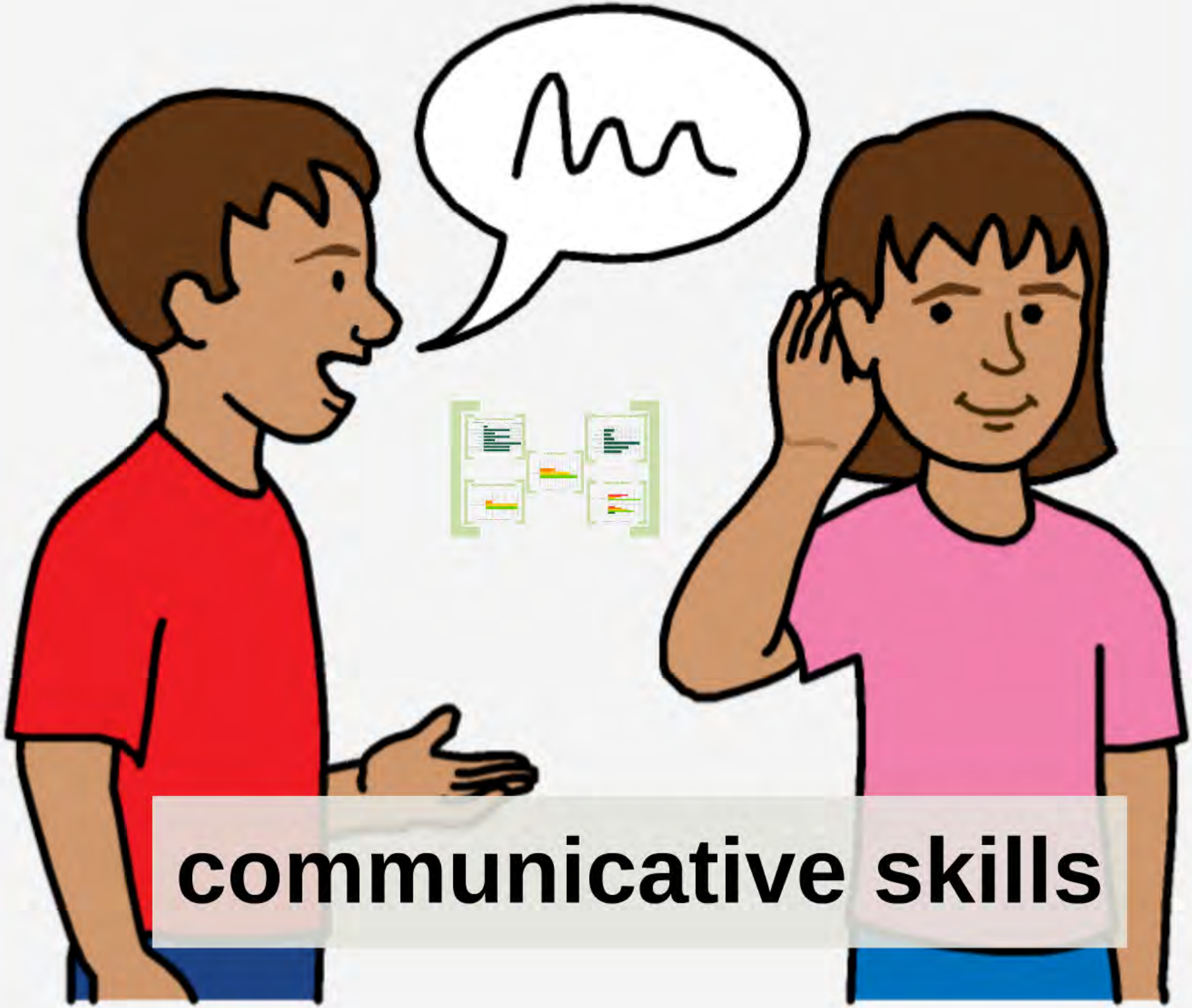
average time per unit



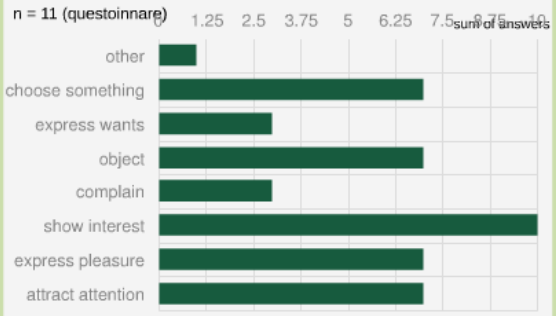
time of awareness

visual skills

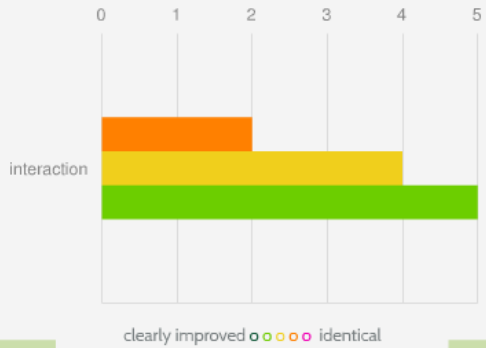



communicative skills

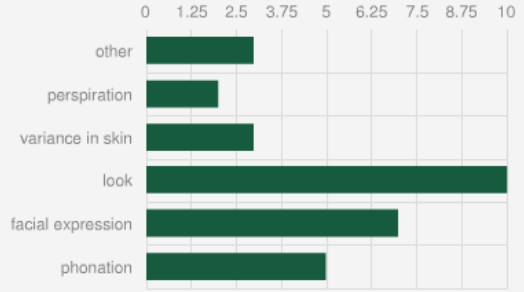
increase of communicative functions



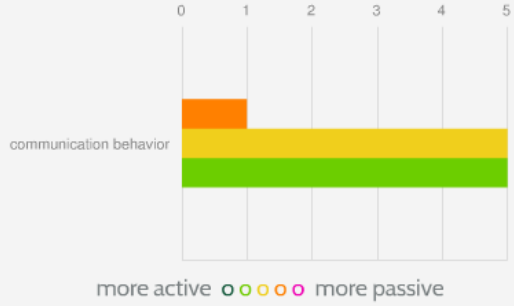
initiate interaction



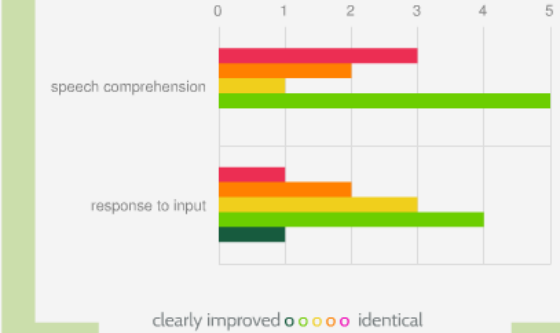
increase of communicative signals



increase communication behavior

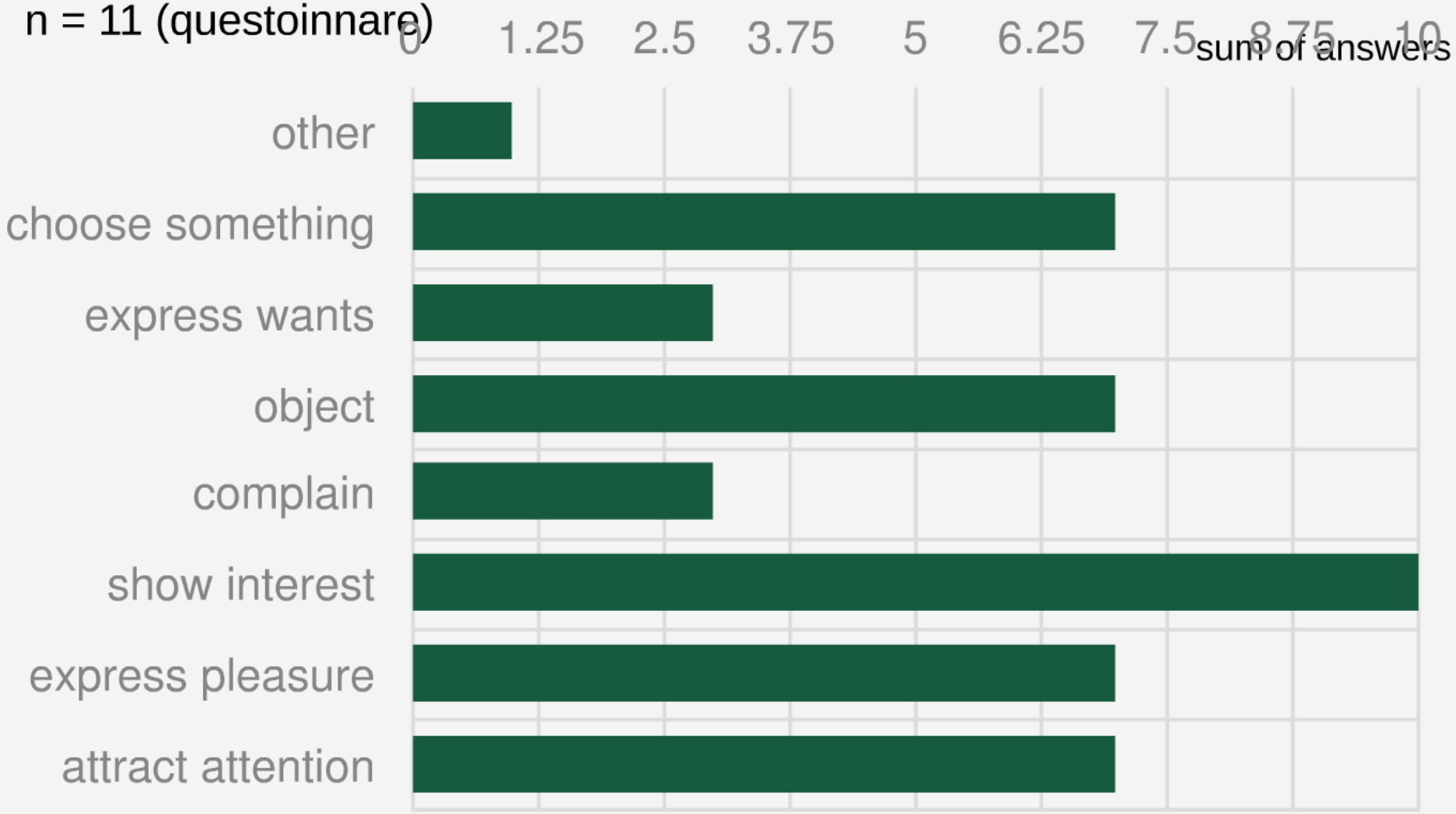


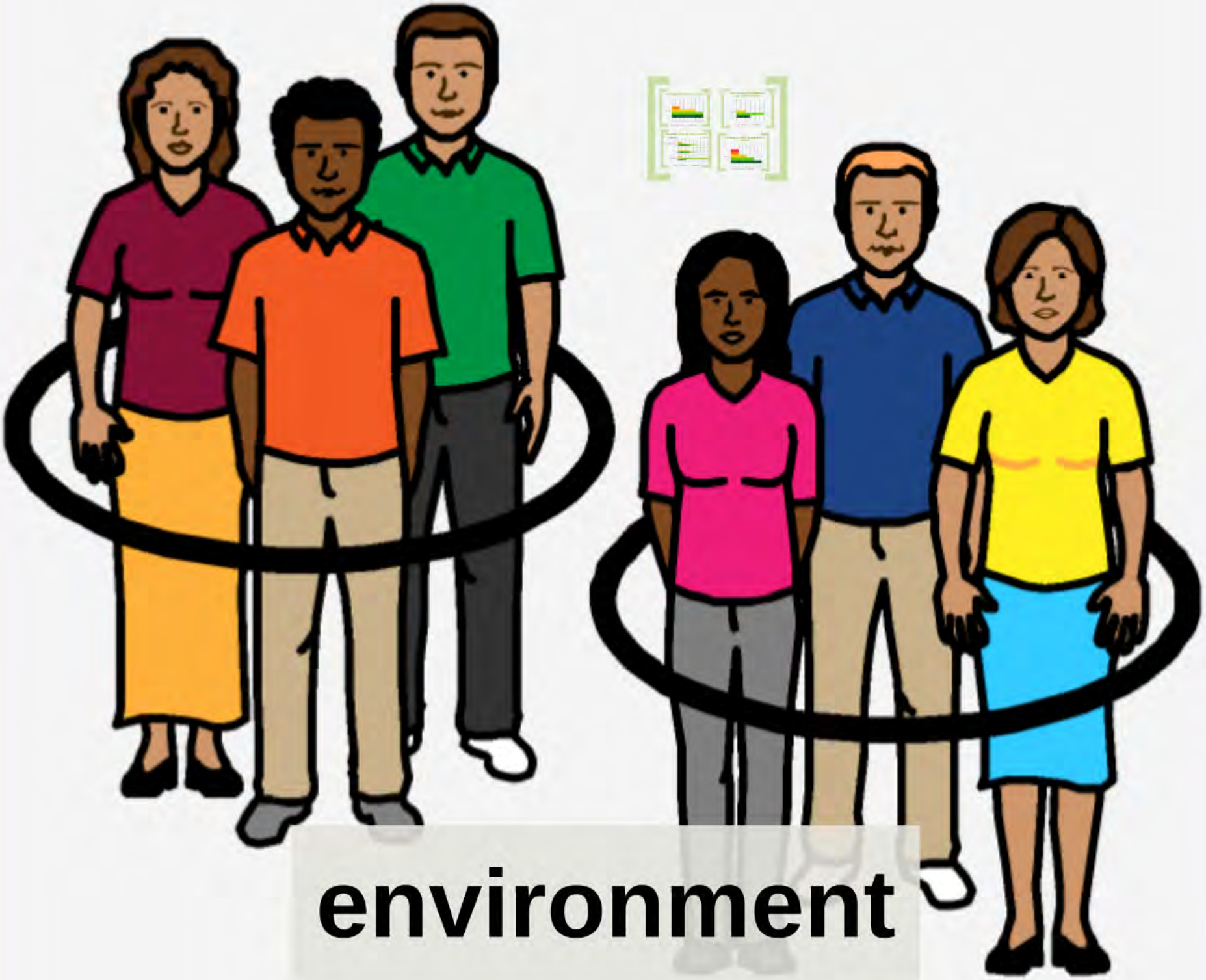
response to speech



increase of communicative functions

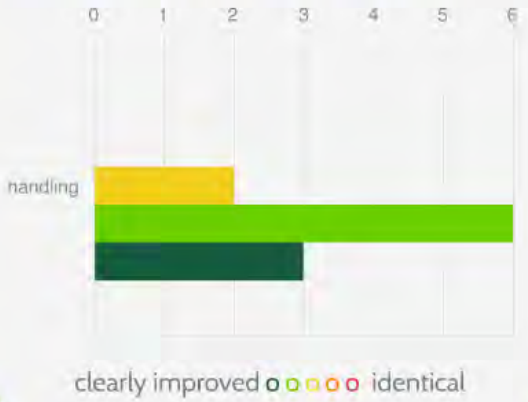
n = 11 (questoinnare)




environment

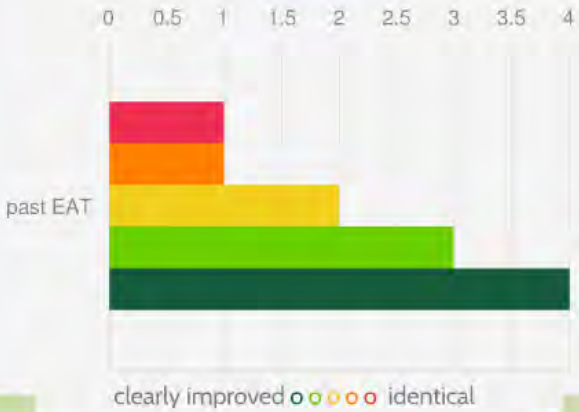
knowledge of technical correlation

knowledge about handling of eye-controlled system



knowledge about eye control system

knowledge of users communicative behavior



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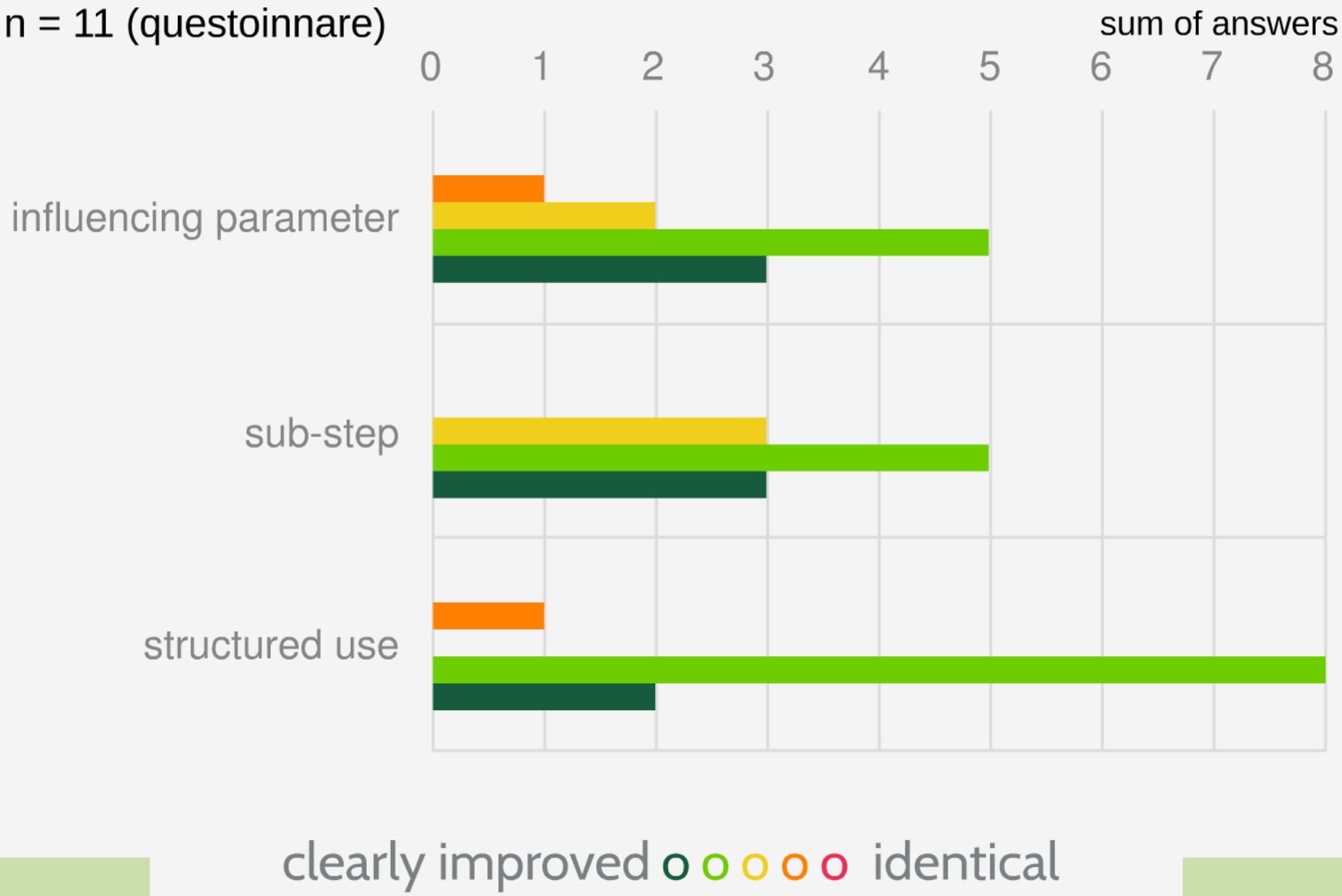


conclusion

structured and guided introduction

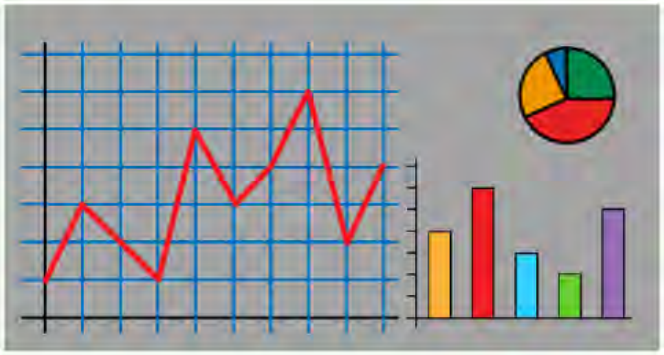
may

visualize abilities

and

empower proactive communication

findings



general

- EAT enables highly structured and transparent intervention

increased confidence referring to

- proceeding and duties
- technical correlation
- influencing variables
- practical usage
- substeps of eye gaze skills

➡ permanent use of eyecontrolled technique + defined next steps

status survey

- supports naming current status and goal setting

➡ consulting is required

observation

- facilitates: interaction, attention, evaluation and planning of trainings period

➡ independent execution

comparison survey

- enables: summary of trainings period and setting of further goals

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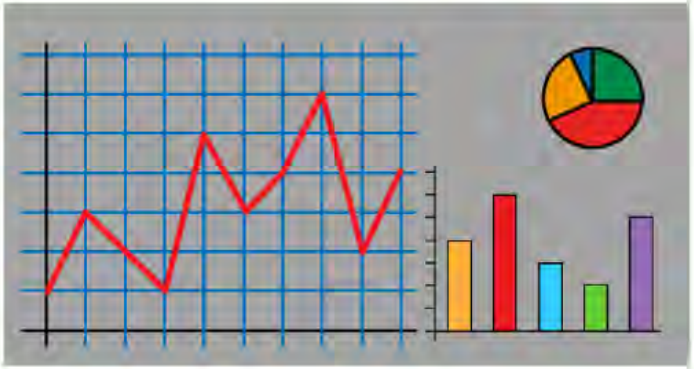

general

in using eyegaze and EAT

- skills become measurable
- information about unexpected abilities is gained

improvement

- trackstatus,
- field of vision,
- tracking,
- fixation,
- visual attention,
- time of awareness

additional improvement

- spectrum of used communication functions and signs,
- response to speech,
- knowledge of communication and patterns of behavior

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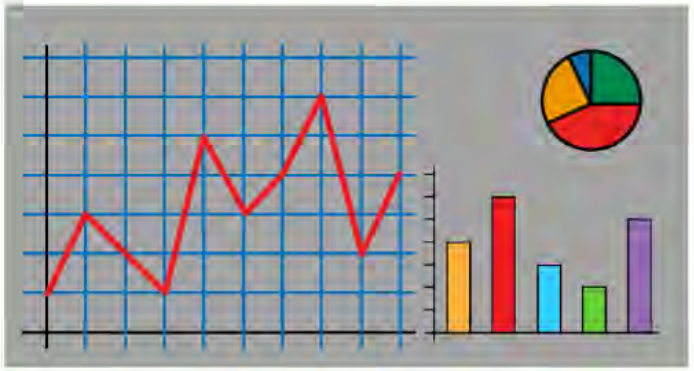

increase of

- communication attempts
- used communication functions
- preferred communicative signs

➡ perception as active communicator

➡ distinction of proactive activities & communication at this point: users reliant on his personal environment

conclusion

structured and guided introduction

may

visualize abilities

and

empower proactive communication

discussion

limitations of the design

single cases
- small group
- restricted variation in diagnoses and status

determined SGD:
- expansion to further eye-controlled systems and software

precision method:
- determining factors can not be clearly distinguished (e.g. increase of abilities caused by eyegaze-technology or interaction/intensive activities)

➡ restricted generalization
➡ further research is needed (QoL, medical status, ...)

limitation of eyegazebased technology

- costs (funding hardware + professional consulting)
- high effort for communication partner
- difference between gazeinteraction & communication as well as proactive activities & communication must be noticed!

➡ multimodal communication
- range of strategies as well as high- and light-tech solutions

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take home

eyegazecontrolled technology **IS** one option
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mindchanging (recognizing abilities, notice user as competent communication partner)

EAT
- supportive guidance, BUT coaching is required
- enables to set small, achievable goals

low effort for professional guidance
- only 2 to 5 trainings during the first six month
- reachability via phone and email

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