

ASSESSING THE MATCH OF PERSON AND COGNITIVE SUPPORT TECHNOLOGY

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INTRODUCTION

In spite of the fact that the provision of assistive technology (AT) to people with cognitive disabilities is encouraged in a succession of U.S. statutes and the Convention on the Rights of Persons with Disabilities, rehabilitation professionals state that they do not have an effective process for matching consumers who have cognitive disabilities with the most appropriate cognitive support technologies (CST) for their use. The lack of CST is often associated with less independence, safety, help-seeking, health and participation in education, work, and community life. CST assessment and person-device matching requires appropriate questions and methods of assessment. Therefore, a measure for use by persons with cognitive disabilities, their caregivers and rehabilitation professionals specific to CST selection and follow-up evaluation was developed that addresses (Scherer, 2011; Scherer & Federici, 2012):

1. Characteristics and preferences of the CST user,
2. Characteristics of the social and physical environments of CST use,
3. Characteristics of the most desirable CST.

Additionally, each item is mapped to the World Health Organization's (WHO) International Classification of Functioning, Disability and Health (ICF).

METHODS

The project convened a group of 11 individuals nationwide with expertise in CST, assessment, and cognitive disability and they represented the disciplines of Neuropsychology, Rehabilitation Psychology, Clinical Psychology,

Rehabilitation Engineering, Occupational Therapy, Physical Therapy, and Speech-Language Pathology. A measure was developed based on the Matching Person & Technology Model and named the Cognitive Support Technology Predisposition Assessment (CST PA). The CST PA is divided into five primary sections:

- Physical and sensory functional capabilities (5-point Likert scale),
- Cognitive functioning (5-point Likert scale),
- Quality of life/ subjective well-being in the context of the ICF domains of Activity and Participation (5-point Likert scale),
- Personal and psychosocial characteristics (yes/no). This section is comprised of eight subscales as follows: Mood, Self-Esteem, Self-determination, Autonomy, Family Support, Friend Support, Therapist and Program Reliance, and Motivation to Use Support.
- Expectations of CST device use and the comparison of competing supports.

Ten stroke survivors receiving rehabilitation services provided by the University of Rochester Medical Center (males and females over the age of 60) completed the CST PA as did six individuals with TBI (predominantly young males) receiving rehabilitation services provided by the Brain Injury Rehabilitation Program, Unity Health System in Rochester, NY (with five caregivers/family members). All TBI and stroke participants were rated at Rancho Level VII-IX, meaning that they were:

- Consistently oriented to person and place, within highly familiar environments.
- Able to attend to highly familiar tasks in a non-distraction environment for at least 30 minutes

- Able to initiate and carry out steps to complete familiar personal and household routines
- Able to monitor accuracy and completeness of each step in routine personal and household ADLs and modify plan with minimal assistance.

RESULTS

Chi Square analyses identified differences among the respondent groups (Stroke survivor, TBI survivor, TBI family caregiver). When addressing solely cognitive functioning, stroke consumers report higher attention and memory skills than do TBI consumers. TBI consumers see themselves as higher functioning than do their family/caregivers. This is consistent with other research findings and may be affected by impaired self-awareness. The three respondent groups also differed in views of the potential CST user's subjective well-being. Stroke survivors presented a more withdrawn profile. Compared to stroke survivors, the individuals

with TBI reported more comfort with technologies and the support they receive for using them. They also characterized themselves as being more resourceful, goal-driven, active and social than stroke survivors. TBI family/caregivers, however, see them as less active and social than they view themselves.

It was also of interest to assess whether or not the CST PA distinguished among three categories of technology users: 1) Sophisticated users (e.g., computers, Smartphones, PDAs), 2) Minimal users (e.g., cell phones, CD/DVD), and 3) Non-users (only microwave ovens, regular phone). For these analyses, stroke and TBI survivors were combined. Chi Square results showed no large differences among technology use groups on self-reported cognitive functioning, which suggests that perceived cognitive functioning/need may not be a strong influence on an individual's predisposition to use a CST. Many interpretations are possible, however, including impaired awareness.

Features of the CST PA

SOME STRENGTHS:

- Very individualized
- Individual, caregiver, and professional perspectives can be compared
- Enables prioritization of goals
- Initial performance can be compared with performance following acquisition of the device.
- Can be completed with paper-and-pencil, with a computer, in an interview or by phone.
- Suitable for a wide range of supports/products, contexts of use and user demographics
- Good psychometric properties. Items are predictive of a match.
- Sensitive to clinically significant changes in subjective functioning, well-being, personal factors, and realization of benefit from support use
- Outcome indicators are built in to the assessment process
- Computerized scoring and interpretations available

IMPORTANT ADDITIONAL CONSIDERATIONS:

- Requires a commitment of at least 45 minutes to complete (longer if other forms are also used such as History of Support use) and to involving the consumer or caregiver in the process
- Requires consumers to be able to identify their problems
- Actual user performance with the support is not captured, therefore may need to use in conjunction with other tools or direct observation
- Professional ratings of psychosocial incentives to use AT require knowing the user, which may be beyond the scope of a typical AT evaluation period and might need to rely on referring agency for some of the information
- Specificity of goals to the end users circumstances hinders generalizability of results.

Regarding other capabilities, technology non-users self-reported more limitations (poor

eyesight, hearing, strength and grasping), thus indicating that they are precisely the ones who

could benefit from support from technology. Perhaps unsurprisingly, the Chi-square statistic is significant ($p < .01$) in differentiating the groups according to their current technology use. Sophisticated users report the most positive experiences with and support for technology use. Minimal users appear to use technology (such as cell phones) to connect them with others. The groups also significantly differed ($p < .01$) in their Personal characteristics, supporting the influence of this domain on the predisposition to use a new CST. On the subjective well-being scale, once again, there are clusters of respondents that have been identified by the CST PA. Sophisticated users tended to want more freedom/autonomy than did the non-users.

CONCLUSION

The CST PA is a promising new measure to facilitate the match of person with cognitive disability with an appropriate form of support. The CST PA has reliability and predictability as well as ecological validity/clinical utility.

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