


***Mapping the Cognitive Support
Technology Predisposition
Assessment (CST PA) to the ICF***

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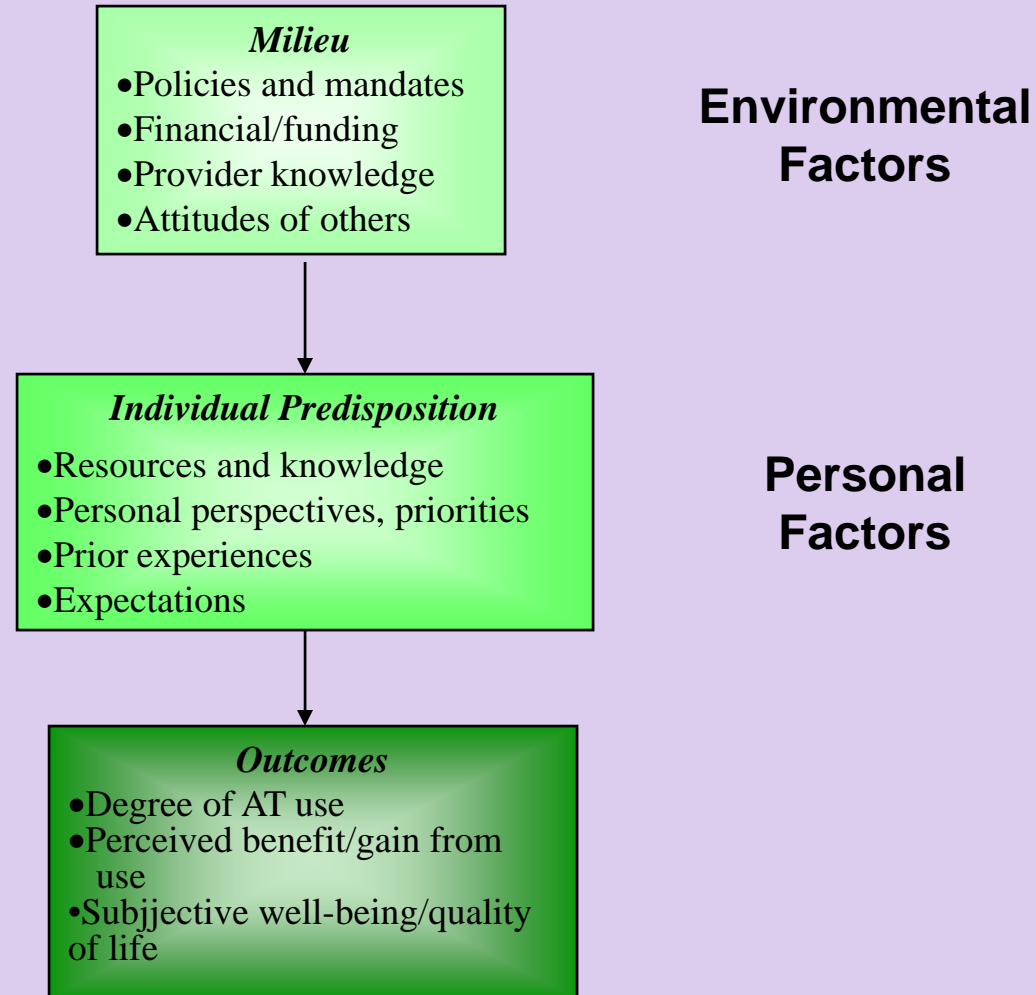
The Matching Person & Technology (MPT) Model emphasizes 3 primary areas to address in order to reduce inappropriate technology use or non-use →

Influences on Use of Assistive Technology ²⁹		
Milieu	Personality	Technology
Use		
Support from family, peers, or employer	Proud to use device	Goal achieved with little or no pain, fatigue, discomfort, or stress
Realistic expectations of family or employer	Motivated	Compatible with, or enhances the use of other technologies
Setting/environment fully supports and rewards use	Cooperative	Is safe, reliable, easy to use and maintain
Pressure for use from family, peers, or employer	Optimistic	Has the desired transportability
Realistic expectations of the device	Good coping skills	Best option currently available
	Patient	
	Self-disciplined	
	Generally positive life experiences	
	Has the skills to use the device	
	Perceives discrepancy between desired and current situation	
	Willing to challenge self	
Nonuse		
Lack of support from family, peers, or employer	Fear of losing own abilities or becoming dependent	Perceived lack of goal achievement or too much strain or discomfort in use
Unrealistic expectations of others	Embarrassed to use device	Requires a lot of setup
Setting/environment disallows, prevents, discourages, or makes use awkward	Depressed	Perceived or determined to be incompatible with the use of other technologies
Requires assistance that is not available	Unmotivated	Too expensive
Medical status inhibits or limits use of device	Uncooperative, resistant, hostile, or angry	Long delay for delivery
Unrealistic expectations of the device	Intimidated by technology	Other options to device use are available
	Overwhelmed by changes required with device use	Has been outgrown
	Does not have skills for use	Is inefficient
	Training not available	Repairs or service not timely or affordable
	Poor socialization and coping skills	

American Medical Association. (1996). *Primary Care for Persons with Disabilities: Access to Assistive Technology: Guidelines for the Use of Assistive Technology: Evaluation, Referral, Prescription*, p. 23.

Influences on Activities & Participation

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The MPT Model was First Operationalized by the ATD PA

- Baseline and follow-up forms to assess the match of person and AT
 - Items emerged from actual experiences of AT users, non-users
 - Evidence exists for reliability and validity (cross-culturally)
 - Used to predict **predisposition** to the use of one or more AT devices
 - Used to assess outcomes: **use** & quality of the match of user and AT
- 66 items (in 4 sections) can be completed in 20-45 minutes
- Can be used as a self-report measure or interview guide
- Can be completed as a pencil-and-paper measure or electronically (see your CD)
- NIH grant research resulted in a CD containing the forms, manual, plus many other materials
- Computerized scoring and interpretations are available
- Evidence exists that it predicts predispositions to AT use and subsequent satisfied use.

5 Scales in the CST PA

- Subjective view of physical and sensory capabilities (9 items)
 - Reliability : Chronbach's alpha = .91
- Subjective view of cognitive functioning (6 items)
 - Reliability: Chronbach's alpha = .81
- Subjective well-being (14 items)
 - Reliability : Chronbach's alpha = .83
- Technology use and experiences (12 items)
 - Reliability : Chronbach's alpha = .98
- Personal characteristics (33 items)
 - Reliability for *quiet and retiring*: Chronbach's alpha = .77
 - Reliability for *active, angry and goal-driven*: Chronbach's alpha = .80

Characteristics of the **person**

Personal factors are the particular background of an individual's life and living... These factors may include **gender**, **race**, **age**, other health conditions, fitness, lifestyle, habits, upbringing, **coping styles**, **social background**, education, profession, **past and current experiences**, **overall behavior pattern and character style**, **individual psychological assets** and other characteristics...

ICF Short Version, p. 23-24

Personal Factors

ATDPA Section C subscales

ICF Classification

Attitudes and support from family, friends

Support from family (e310, 410),
Support from friends (e320,420)

Temperament

Personal, Temperament & personality (b126)

Mood

Emotional functions (b152)

Autonomy and self-determination

Making decisions(d177), Higher cognitive functions (b164), Attitudes (e4)

Self-esteem

Personal, Emotional functions (b152)

Readiness for technology use

Incentive to act (b1301), Forming an opinion (b1645)

Mapping the ICF & ISO 9999 with AT assessment items

CST PA item	ICF Code	ISO 9999 class	CST examples
Use of fingers/grasping	Grasping (d4401)	24.18.03 Devices for grasping	Gripping thongs, operating sticks, Wrist and Ankle Cuff, Action Life Glove, Featherlite Reacher
Mobility (getting around; not getting lost)	Moving around in different locations (d460)	12.39 Assistive products for orientation	BrailleNote GPS, Garmin Magellan Mobile GPS, TalkNav
Attention/ Distractibility	Attention functions (b140), Focusing attention (d160)	05.12.09 Assistive products for training in attention; Equipment for developing concentration	General alarms, white noise machines, ChatterBlocker, WatchMinder 2, The Listening Program
Remembering information about people or events; where I put things	Memory functions (b144), Thinking (d163)	05.12.03 Assistive products for memory training	Voice recorders, cue cards, color coding, Visual Assistant, Best Intentions, Names & Faces
Managing appointments and doing things on time	Orientation to time (b1140), Higher-level cognitive functions (b164)	05.15.09 Assistive products for training in the understanding of time	Schedule charts, The Jogger, Schedule Assistant, PEAT, Time Teacher, Picture Planner
Solving problems that come up in daily life	Problem solving (b1646), Solving problems (d175)	05.12.18 Assistive products for training in problem solving	Brainfood game, Pocket Compass, COGS, The 4th R—Reasoning

Research Questions for the *Cognitive Support Technology Predisposition Assessment (CST PA)*

- 1. Do the CST PA scales distinguish respondent type?**
 - a. Participants with TBI**
 - b. Participants with stroke**
 - c. Caregivers of persons with TBI**
- 2. Does the CST PA distinguish among 3 categories of technology users?**
 - a. Sophisticated users (e.g., computers, PDAs)**
 - b. Minimal users (e.g., cell phones, CD/DVD)**
 - c. Non-users (only microwave ovens, regular phone)**

Participants

All consumer participants are Rancho Level VII - IX

6 consumers with TBI

5 caregivers/family of consumers with TBI

10 stroke survivors

8 caregivers/family of stroke survivors (a partnership clinical approach was used and consumer and caregiver responses were not distinguished*)

Remember....

- *TBI = predominantly young males*
- *Stroke Survivors = male and female and over 60*

The modular nature of the assessments allows the use of one, two, or more forms -- and sections of forms.

For example, the 14-item *subjective well-being scale* can be used by itself, as can the 12-item *technology use and experiences scale*.

Subjective Well-Being

- A. Personal care, household activities
- B. Communication skills
- C. Physical comfort & well-being
- D. Overall health
- E. Social involvement
- F. Freedom to go where you want to go
- G. Achievements in education
- H. Employment situation
- I. Emotional well-being
- J. Family relationships
- K. Close, intimate relationships
- L. Autonomy, self-determination
- M. Fitting in, belonging, feeling connected
- N. Having the opportunity/ability to take part in what I choose

Analyses Conducted

Frequencies

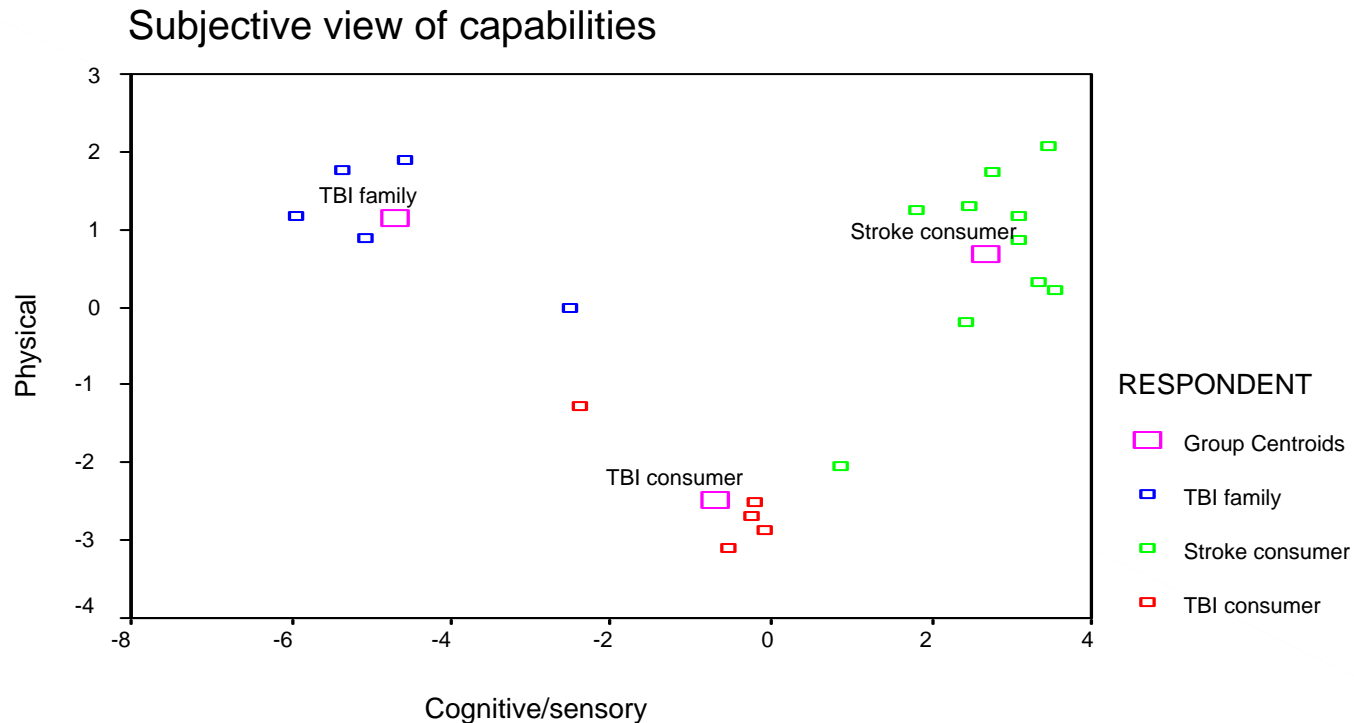
Scatter plots

Cluster analyses



Subjective view of capabilities

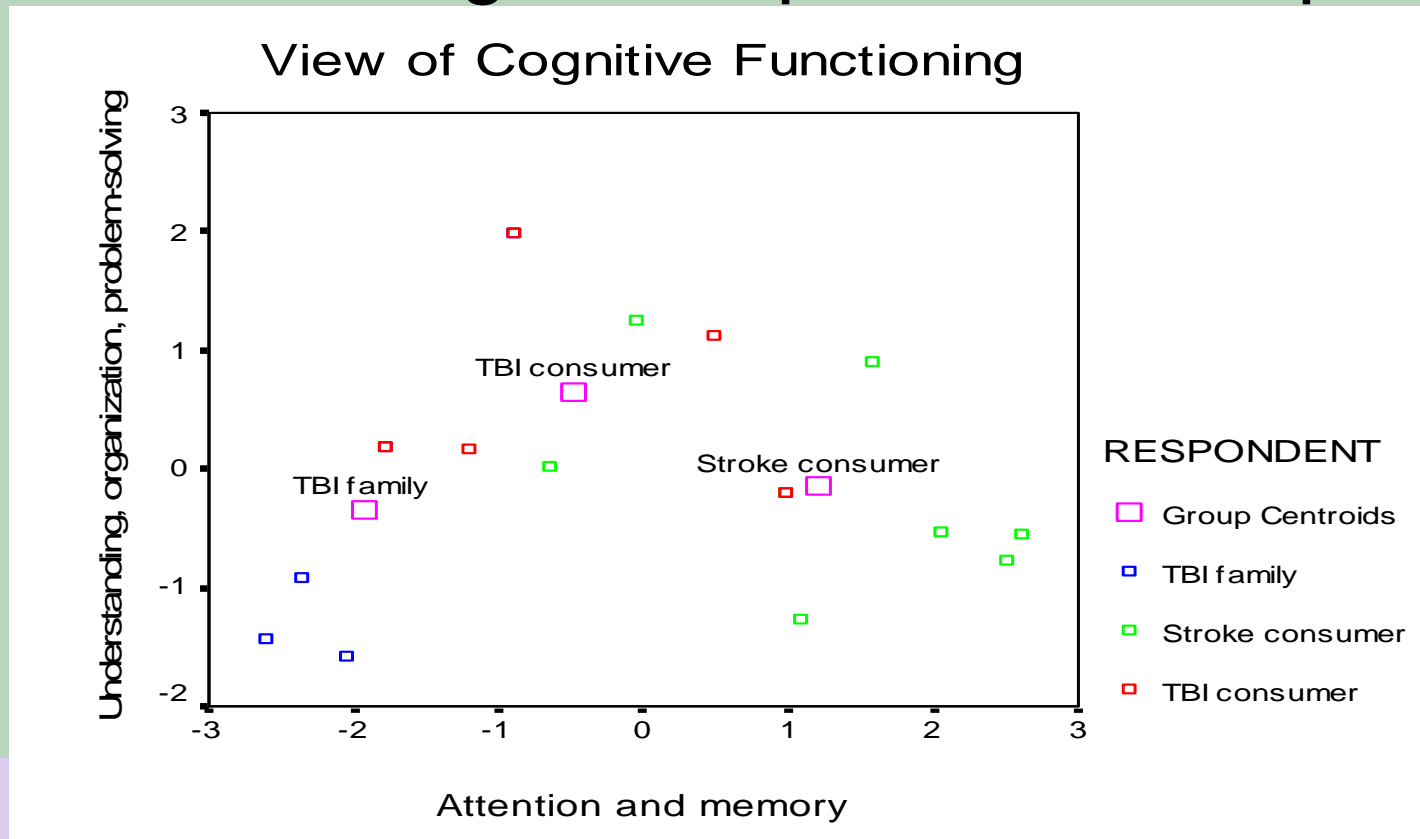
According to Respondent Group



While statistically insignificant, there are distinctions among the three groups in their views of the potential user's physical and cognitive capabilities

Subjective view of cognitive functioning

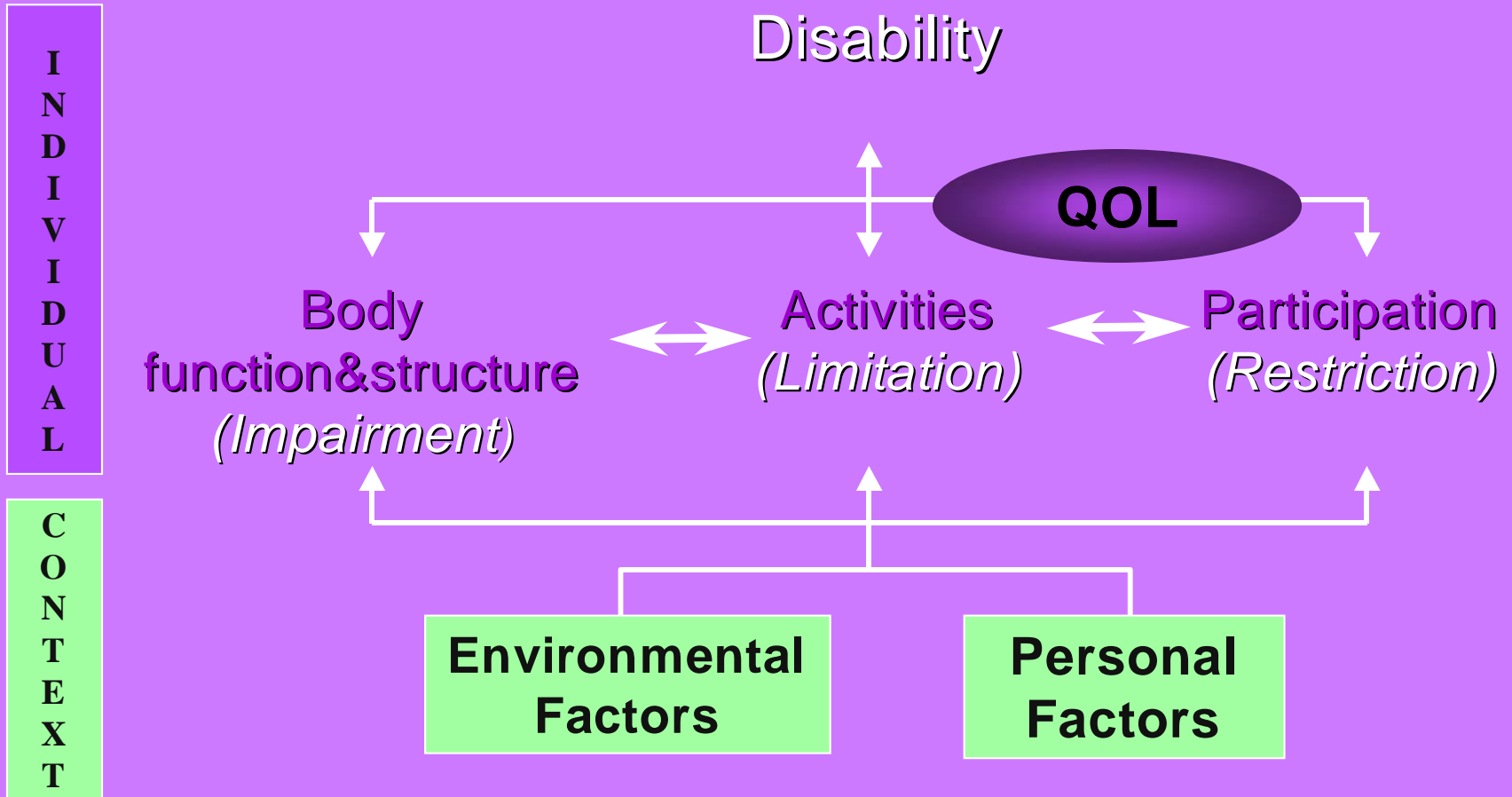
According to Respondent Group



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 TBI family/caregivers.

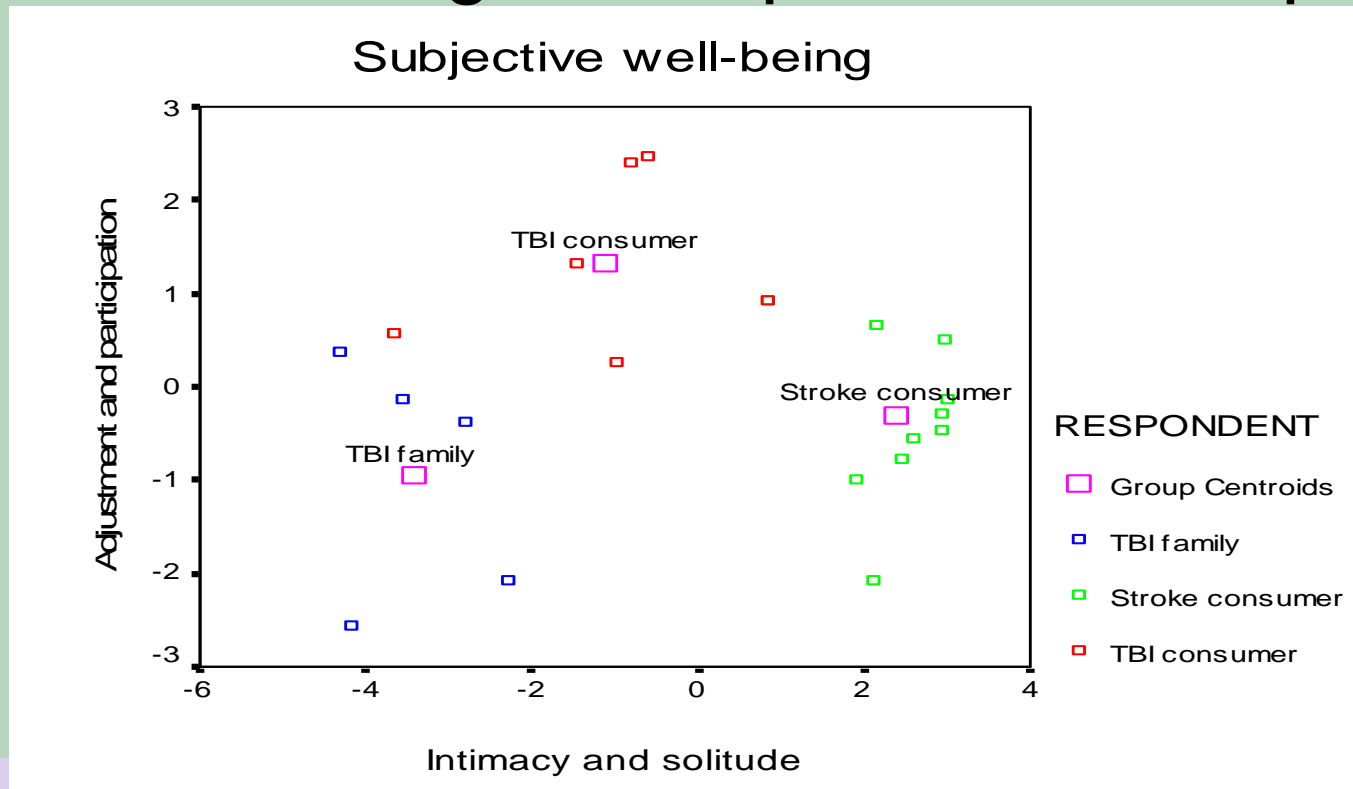
The WHO's ICF Classification

Quality of Life = Performing Activities + Participating in Life Areas



QoL/Subjective well-being

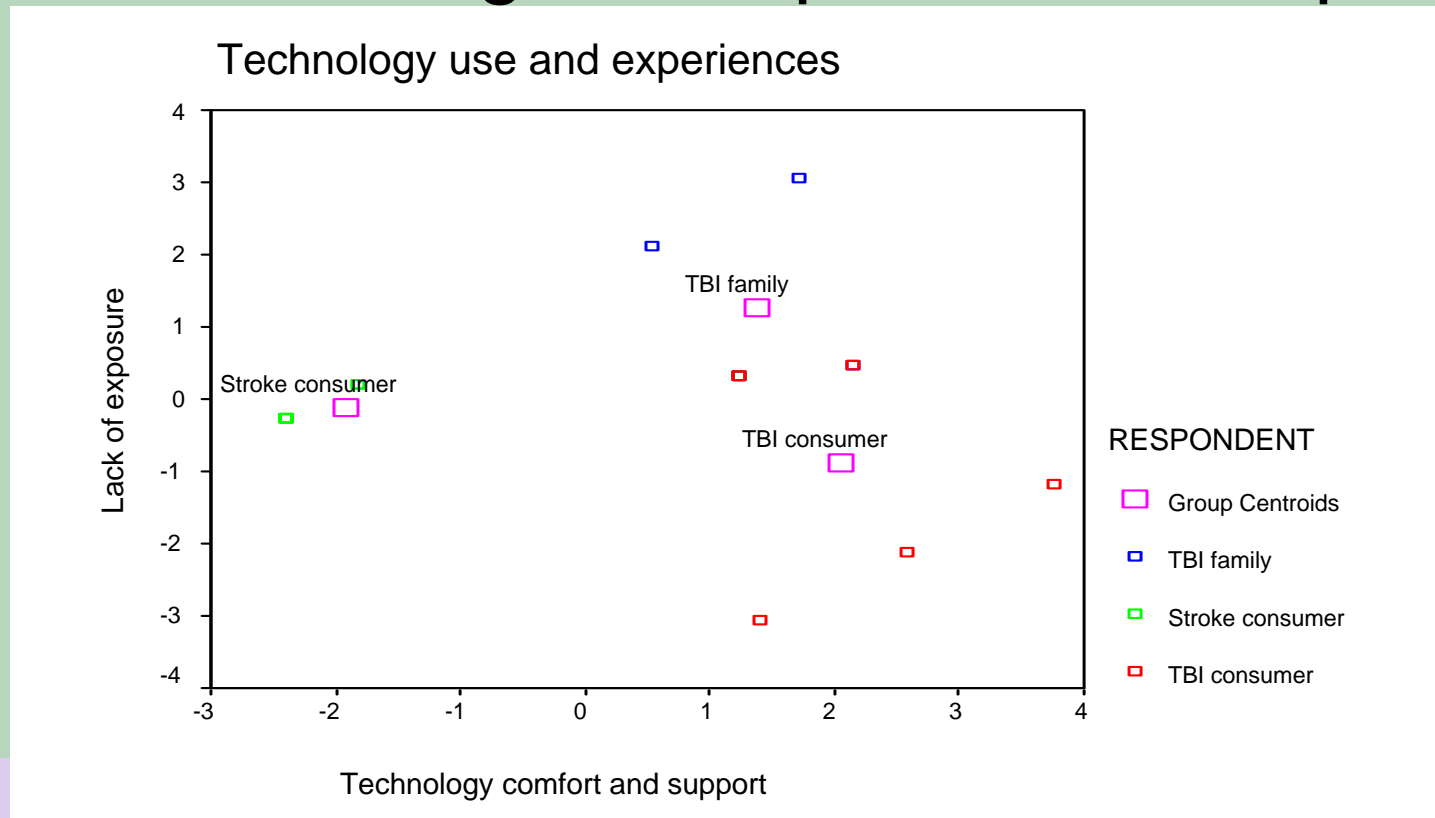
According to Respondent Group



The three respondent groups differ in views of the potential user's subjective well-being. Stroke survivors present a more withdrawn profile.

Subjective technology use and experiences

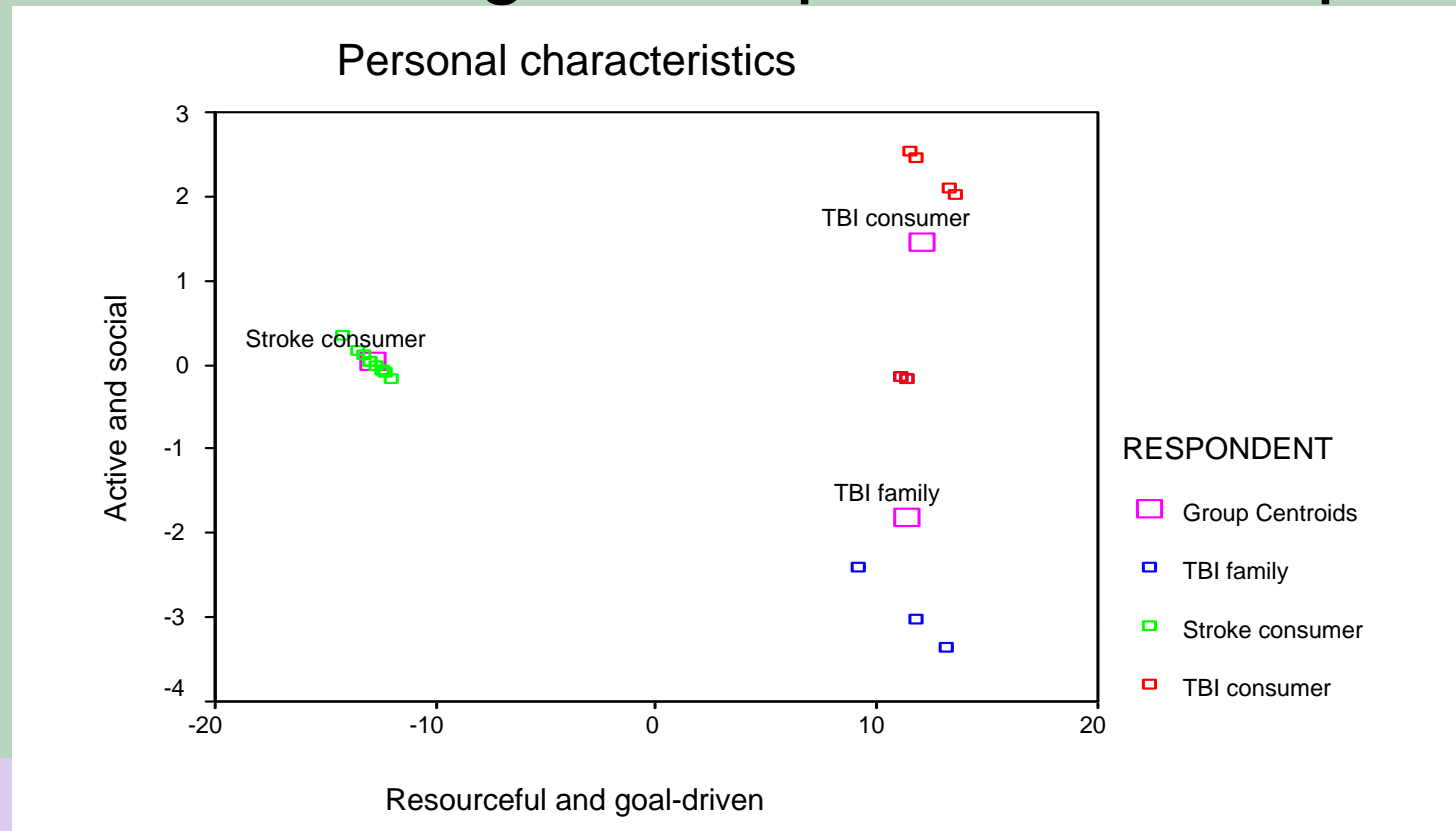
According to Respondent Group



TBI and stroke respondents differ in their self-reported comfort with technologies and the support they receive for using them.

Subjective view of personal characteristics

According to Respondent Group



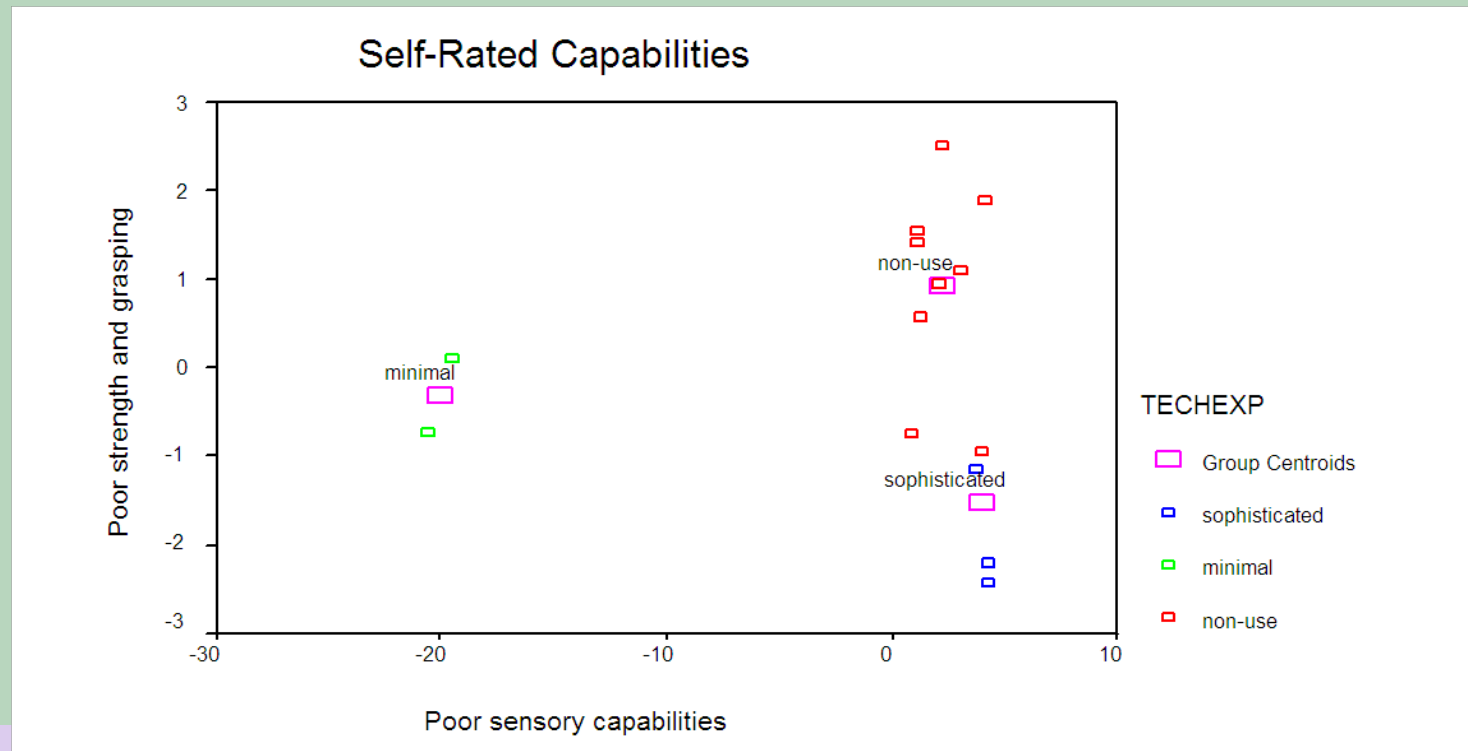
TBI respondents report more resourcefulness, being more goal-driven, active and social than stroke survivors do. TBI family/caregivers, however, see them as less active and social.

Analyses conducted according to degree of technology use addressed only those with TBI or stroke, and not caregivers/family



Subjective view of physical and sensory capabilities

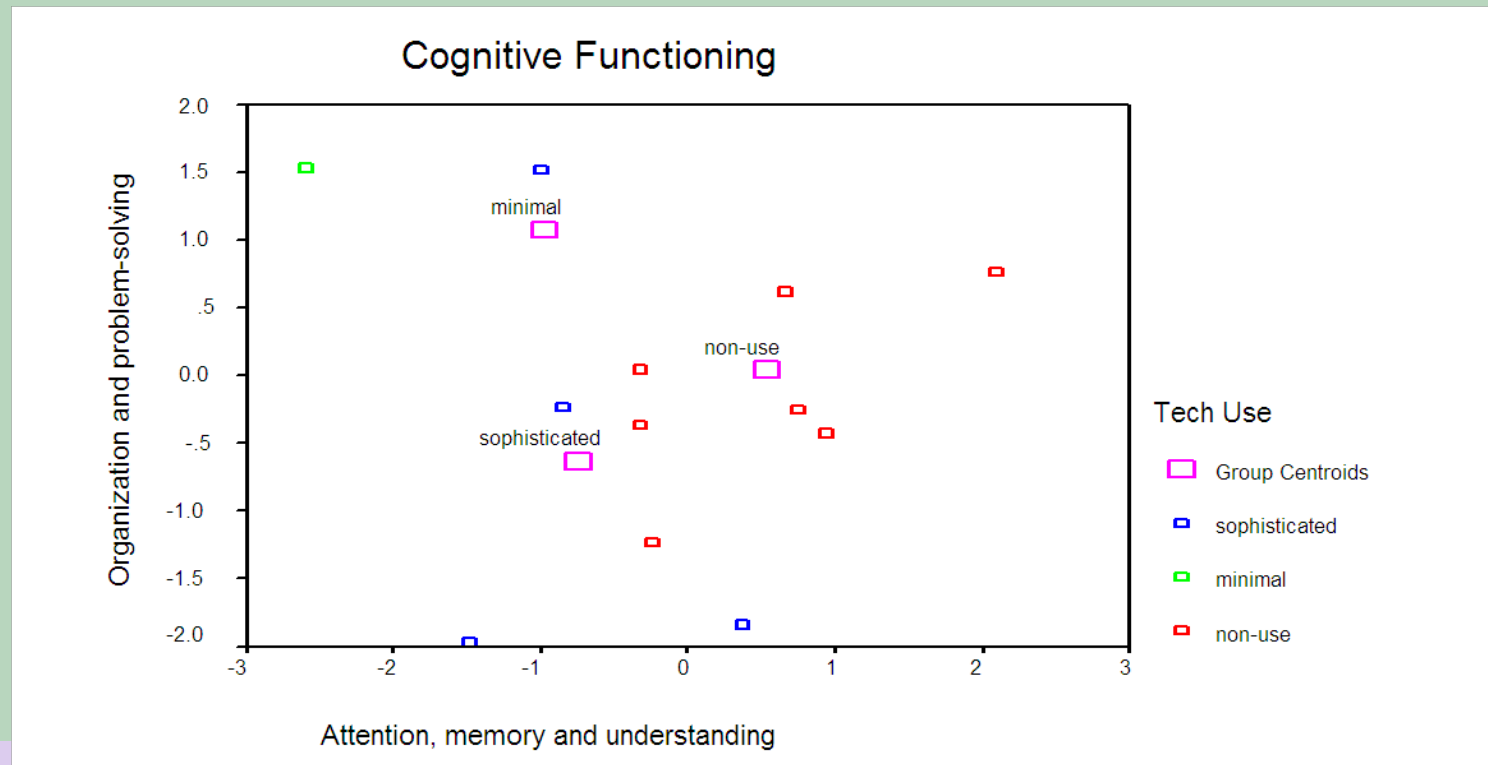
According to Technology Use



The Chi-square statistic is significant ($p < .01$). Technology non-users appear to be significantly involved (poor eyesight, hearing, strength and grasping) – precisely the ones who could benefit from support from technology.

Subjective view of cognitive functioning

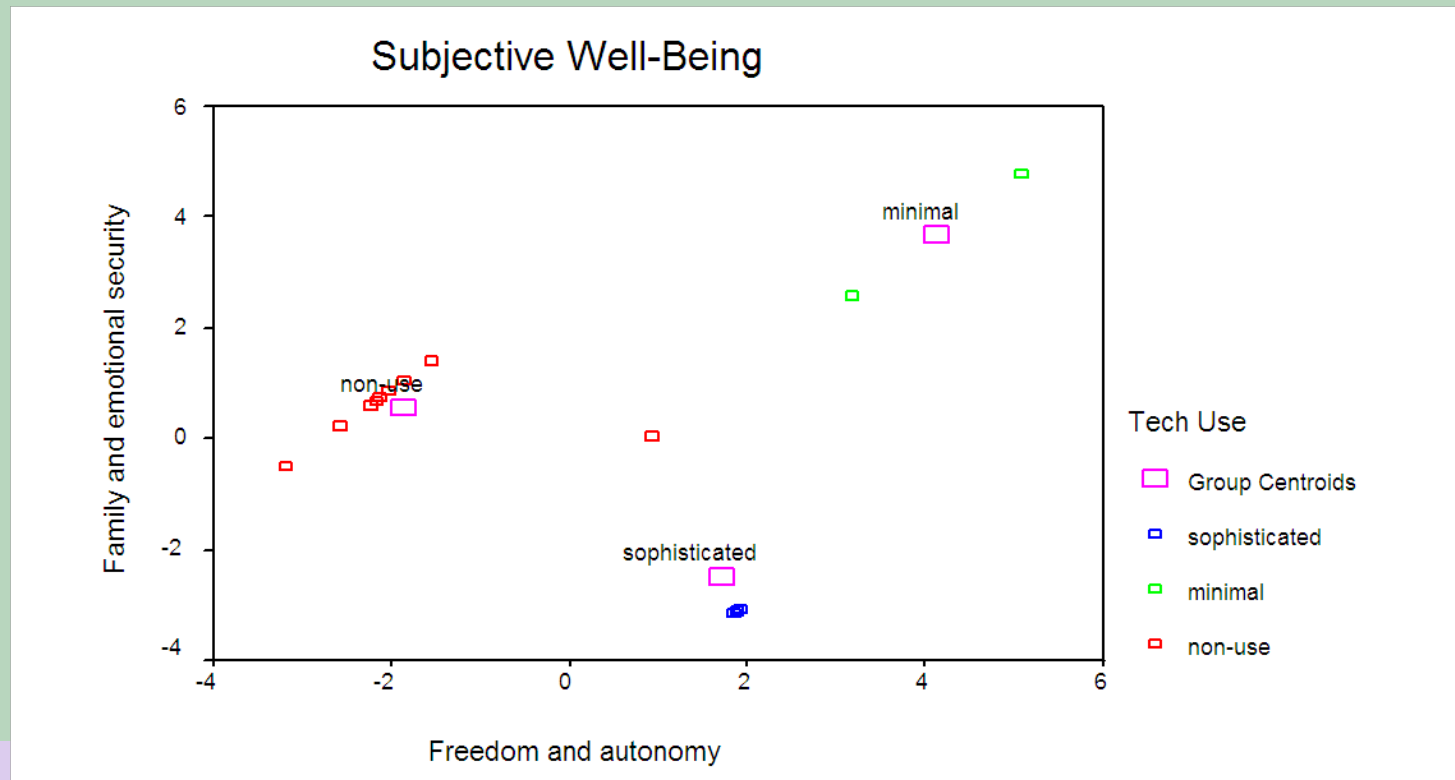
According to Technology Use



There are no large differences among groups, which suggests that perceived cognitive functioning/need may not be a strong influence on predisposition to use a CST. Many interpretations are possible, including unawareness of need.

Subjective well-being

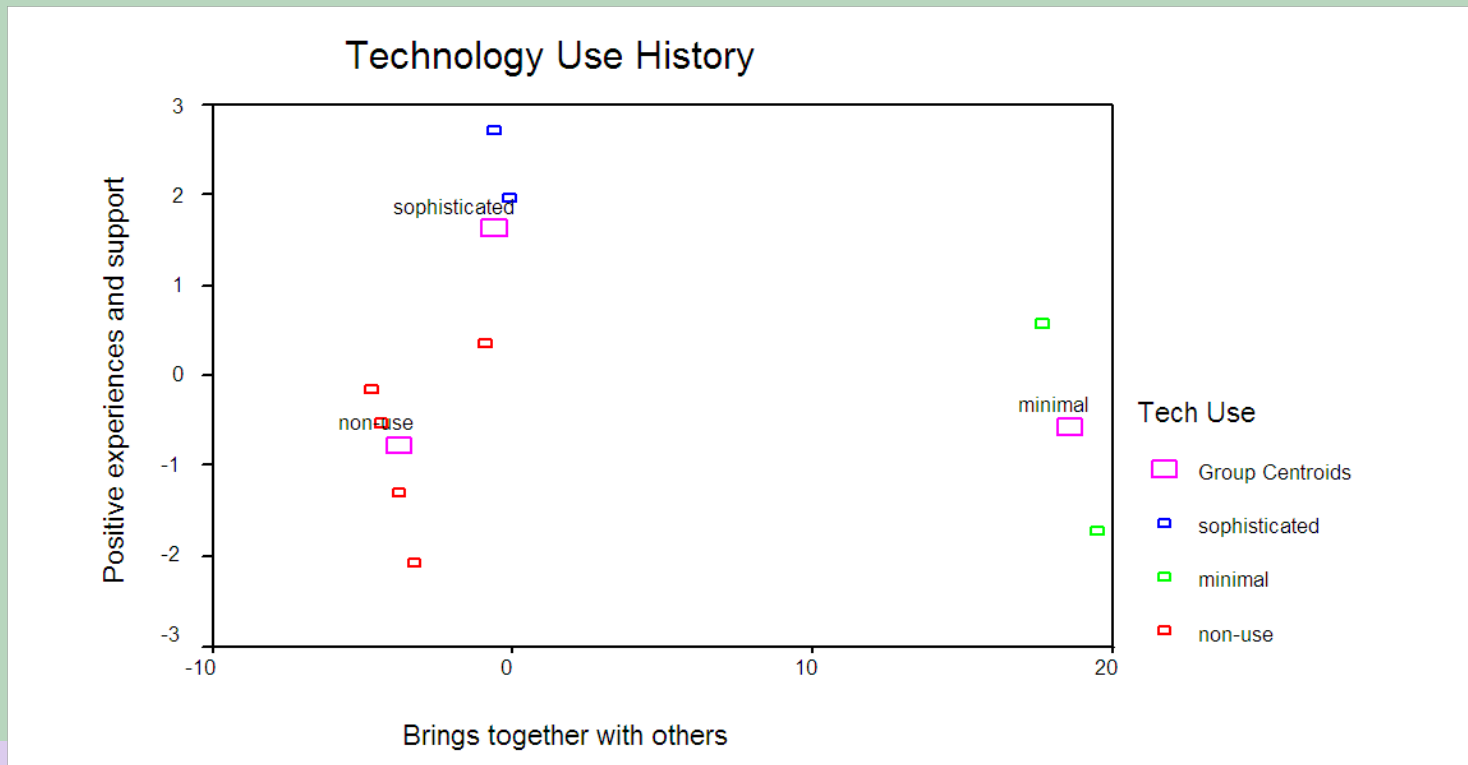
According to Technology Use



Once again, there are clusters of respondents that have been identified by the CST PA. Sophisticated users tend to want more freedom/autonomy than non-users.

Subjective technology experiences

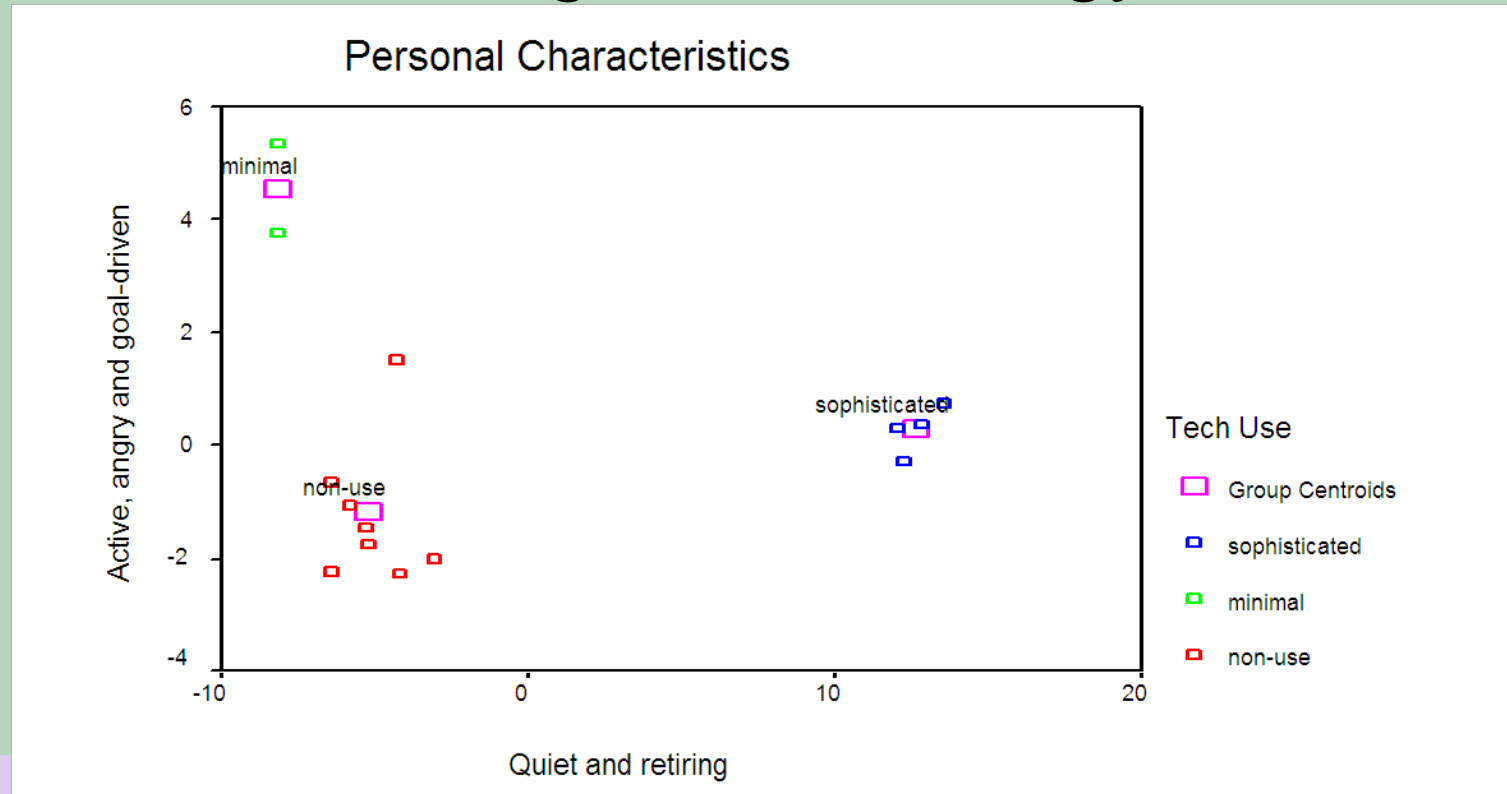
According to Technology Use



Perhaps unsurprisingly, the Chi-square statistic is significant ($p < .01$). Sophisticated users report the most positive experiences with and support for technology use. Minimal users appear to use technology (such as cell phones) to bring them together with others.

Subjective view of personal characteristics

According to Technology Use



The Chi-square statistic is significant ($p < .01$), suggesting that personal characteristics influence predisposition to use a CST.

CONCLUSIONS

- The small N means only tendencies can be discussed, in spite of some statistical significance
 - The CST PA distinguishes among types of technology users and, thus, has the potential to guide treatment planning
- Scherer's 3 primary influences on assistive technology use apply to persons with cognitive disabilities →
- The results support the value of the prototype's structure and format and further developing and testing the CST PA

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