

The Impact of Subjective Technology Adaptivity on the Willingness of Persons with Disabilities to use Emerging Assistive Technologies: A European Perspective

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The TRIPS Consortium:



Motivation

- Technology can be a facilitator for accessible and inclusive transport for disabled people
- Emerging digital technologies like augmented reality (AR) hold promising prospects for people with disabilities (Anderberg & Jönsson, 2005).
- It remains, however, an open question how persons with disabilities respond to technological demands made by these emerging technologies



Figures: Examples for emerging digital technologies that might assist people with disabilities

The digital divide

- People with disabilities are over-represented among digitally excluded people
- **Digital divide** = *the degree to which different groups have access to and use information and communications technologies* (Dobransky & Hargittai, 2006)
- **Digital capital** = *a person's technological competencies and knowledge that enables her or him to use technology* (Seale, 2013)

➔ How do disabled people assess their own personal adaptivity to technology and can this predict their views towards emerging technologies?

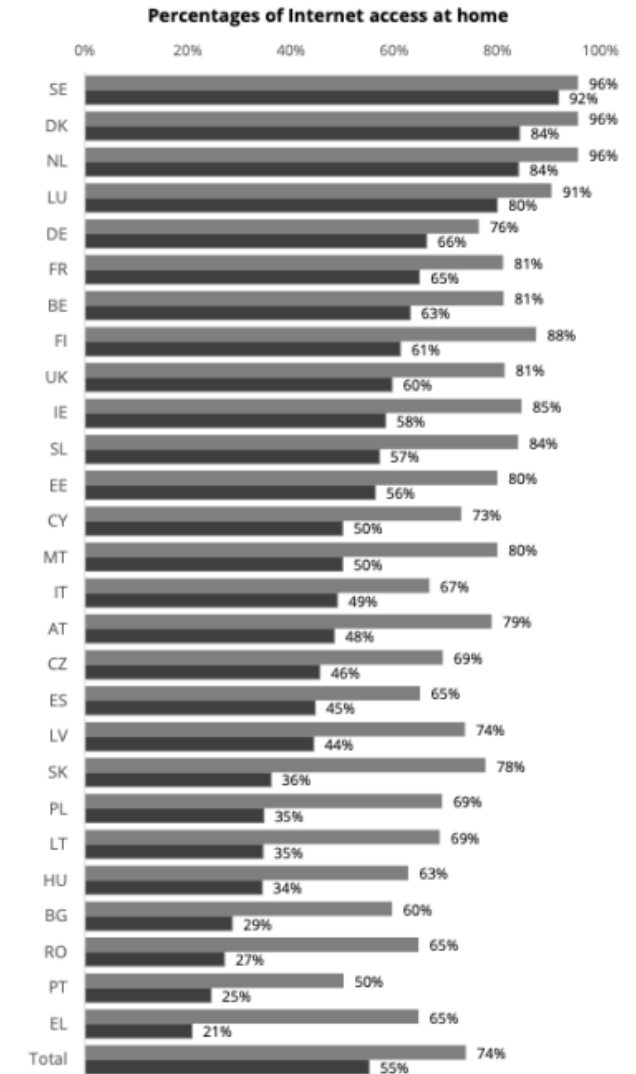


Figure: Comparison of internet access between disabled and non-disabled people in EU countries (Scholz, et. al, 2017)



Subjective technology adaptativity

- The subjective technology adaptivity index (STAI) was developed to assess perceived personal adaptivity in technological environments among older adults (Kamin & Lang, 2017)

1. What do you think about the role of technology in your life?

Tick the option that represents your views best.

	strongly disagree	disagree	neutral	agree	strongly agree
Using modern technology helps me to make important decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using modern technology helps me to master everyday life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using modern technology supports my independence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using modern technology helps me to be more efficient in my daily routines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I invest as much effort as I can until a device works as intended	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I practice with a new device until I can use it as intended	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I put in more effort when a new device is more difficult to use than expected	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure: STAI items of the survey

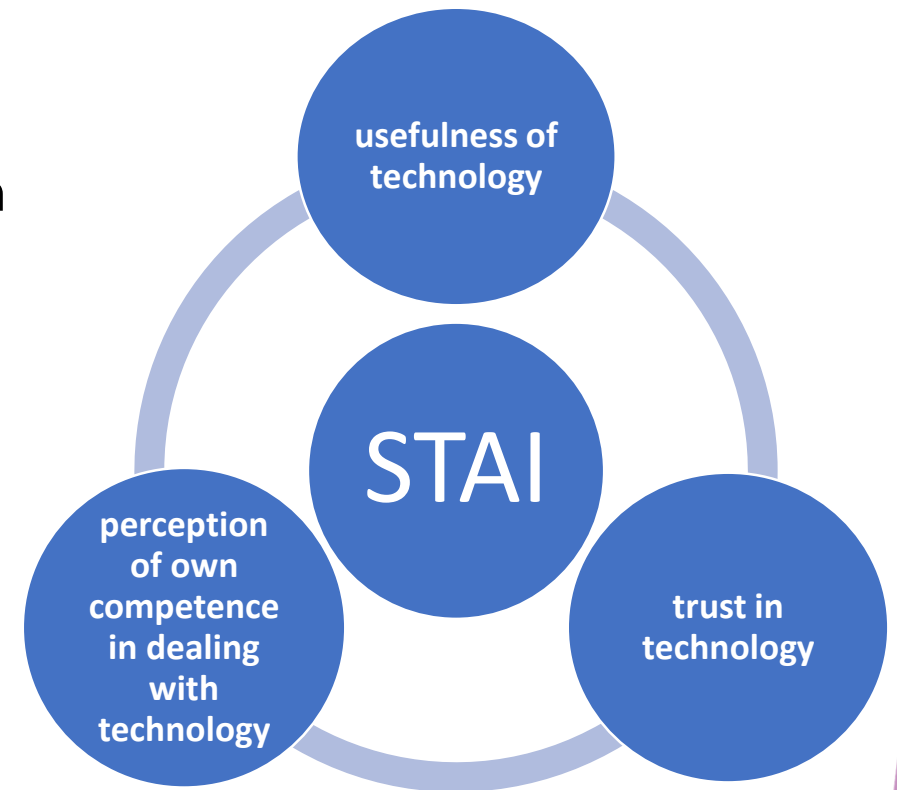


Figure: Facets of the STAI

Method

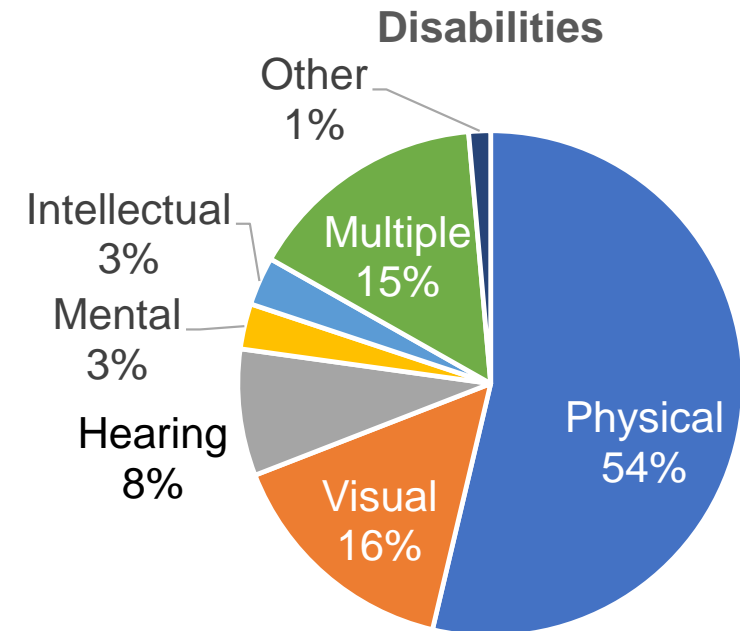
Mobility Survey

- Survey was accessible online in 12 languages from Nov. '20 to Feb. '21
- Subjective assessment emerging mobility concepts and future technologies:
 - accessible navigation systems
 - artificial intelligence alerts
 - wearables
 - robots
 - augmented reality (AR)
 - location-based alerts
- 15 Items of the Subjective Technology Adaptivity Index (STAI)



Sample

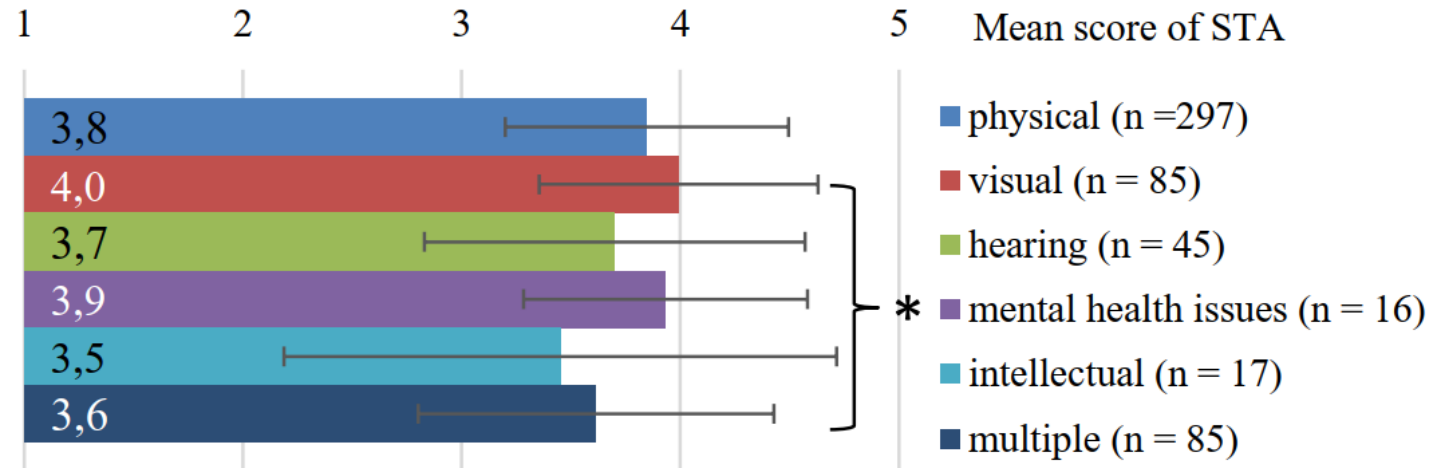
- Data of 553 persons with disabilities from 21 European countries were analyzed
- Sample was relatively gender-balanced, with 45.8% women
- The mean age was 46.4 years (SD = 15.7 years)



Findings

Subjective technology adaptivity

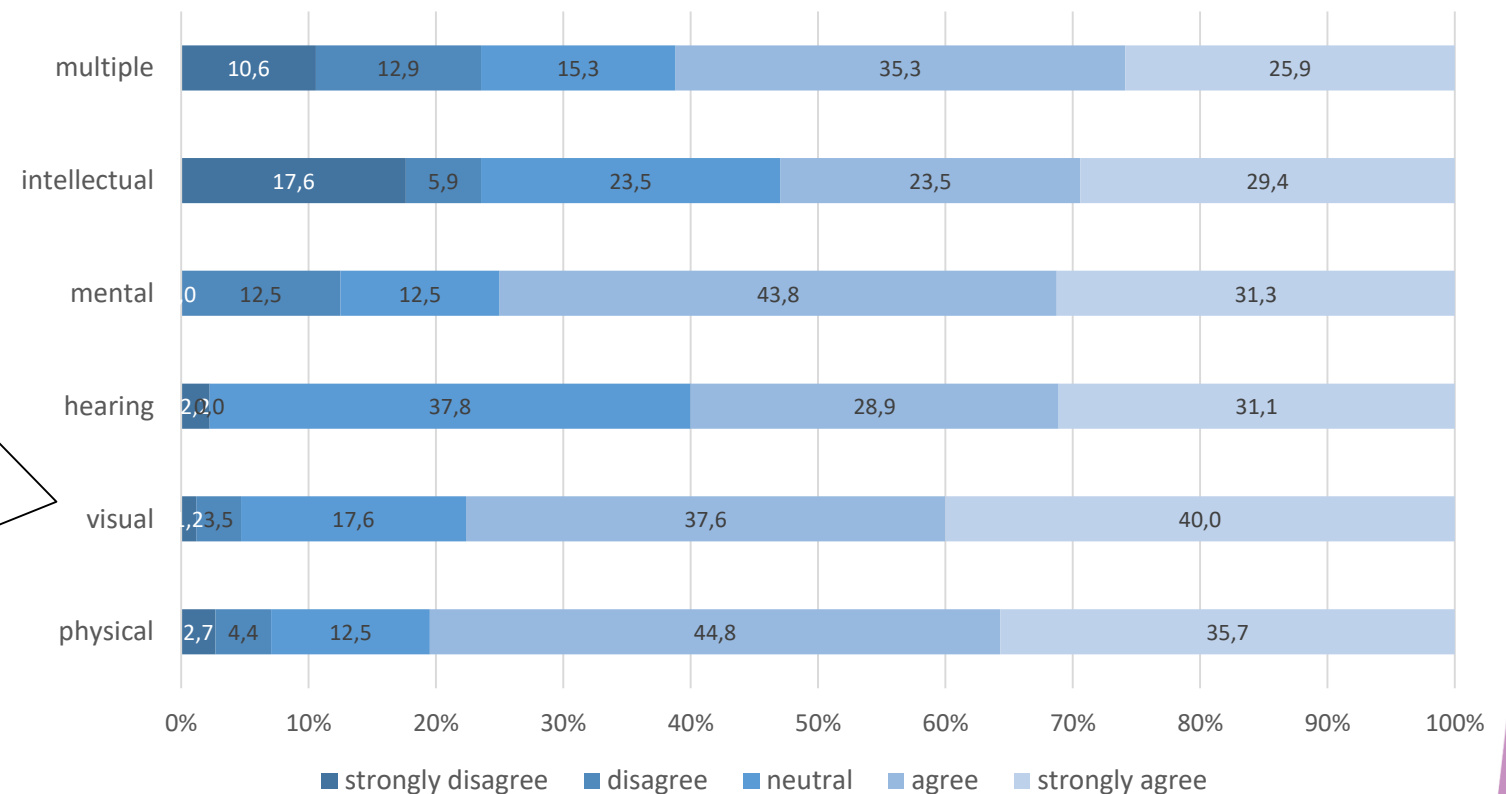
- Rather high mean score of STAI in the total sample
- Slight differences between the types of disabilities with a significant difference between people with visual impairments and those with multiple impairments



Self-assessed technology competence

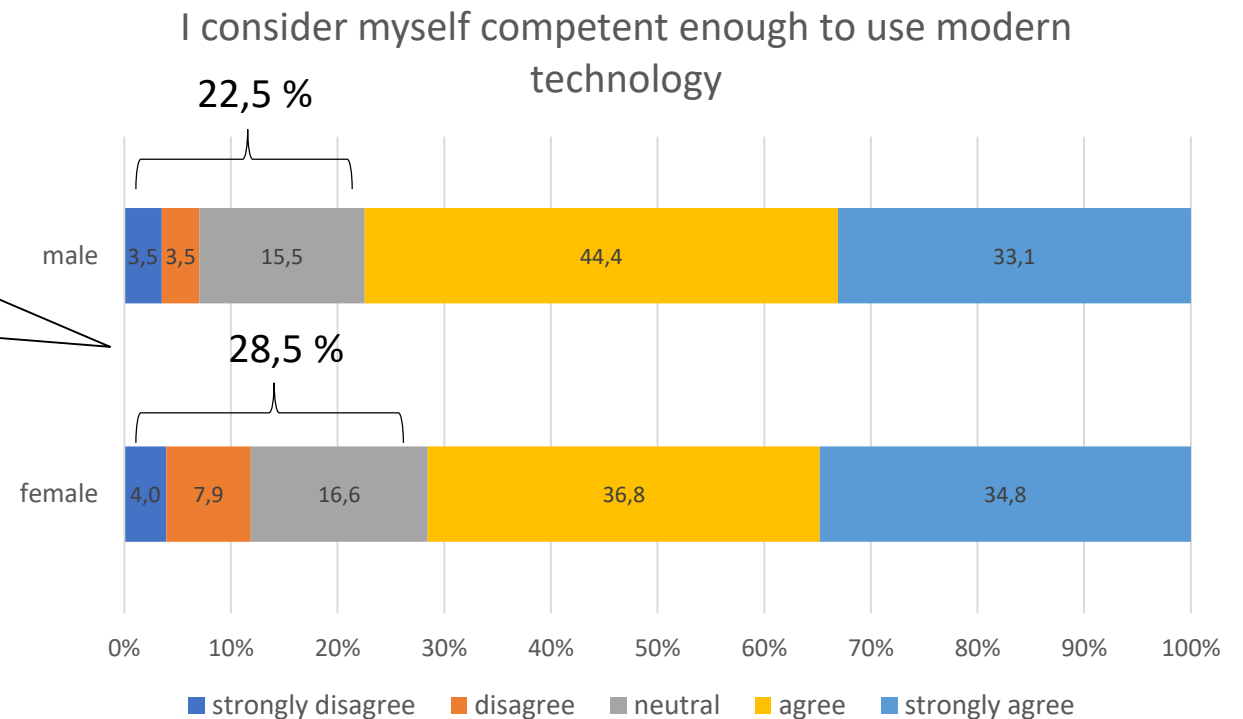
- About 3/4 of people with visual, mental or physical impairments feel competent in using modern technology
- The self-assessed competence of people with intellectual, hearing and multiple impairments needs to be strengthened

I consider myself competent enough to use modern technology



Gender issues

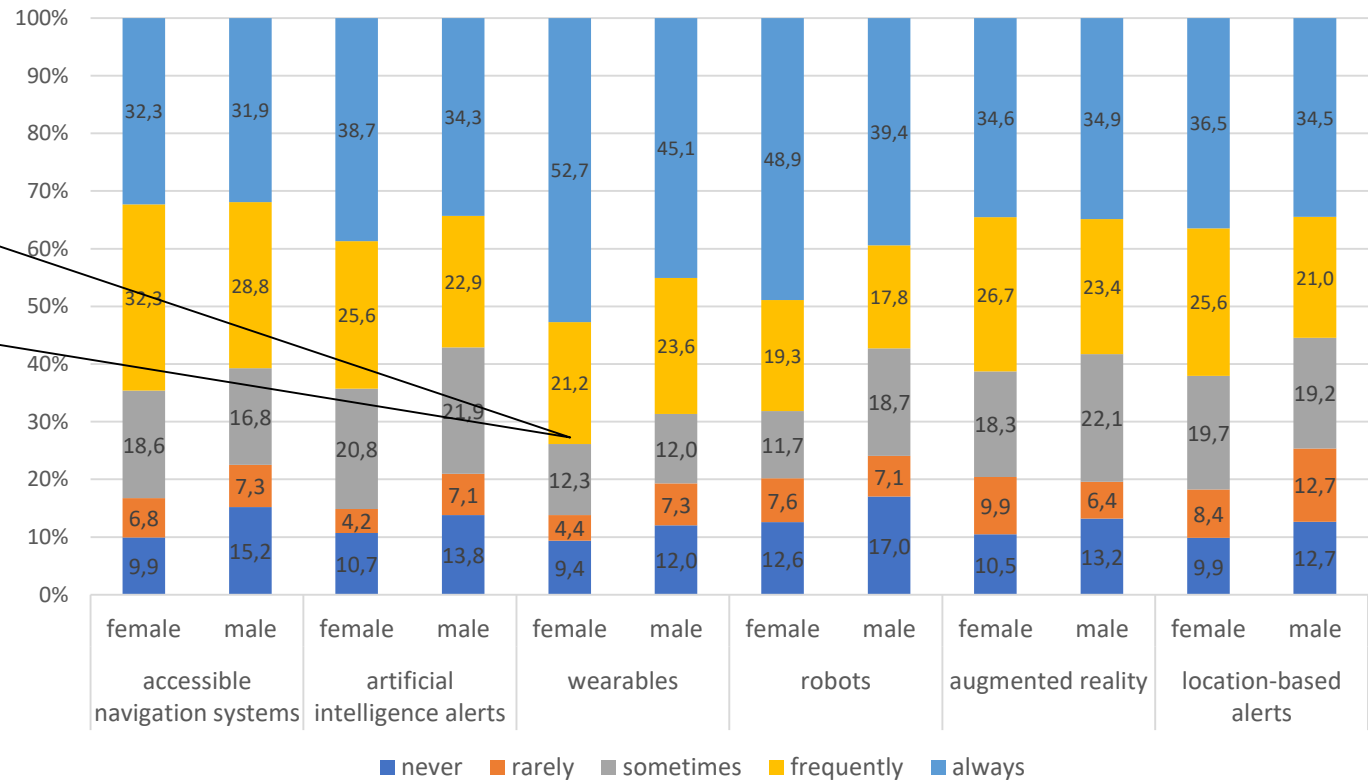
- Women tend to consider themselves more often rather not competent in using technologies.
- More research is needed to identify ways to empower women to use modern technologies.



Gender issues

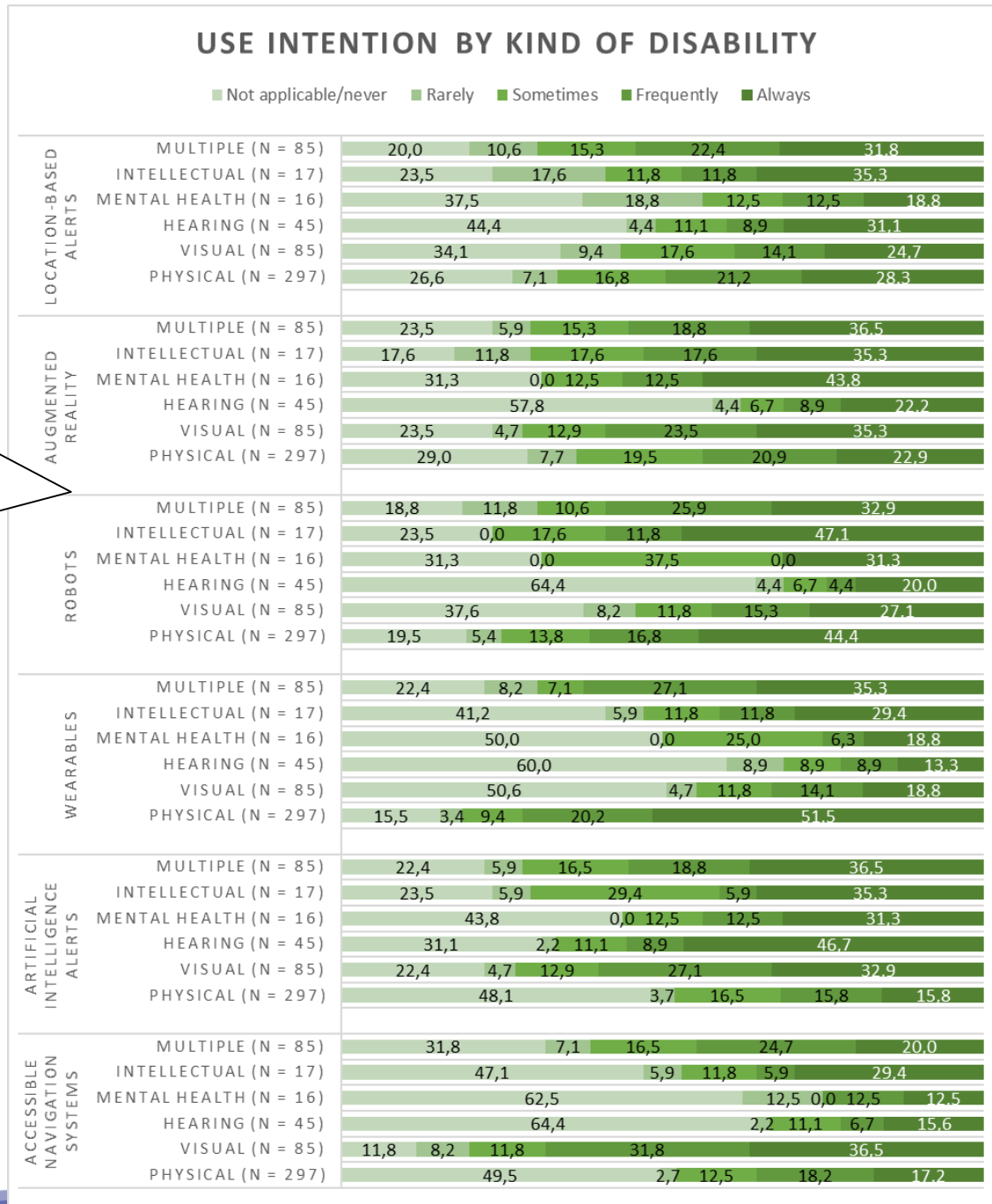
- Few gender differences.
- However, women are somehow more willing to use robots and wearables more frequently.

Use intention for emerging technologies



Use intention

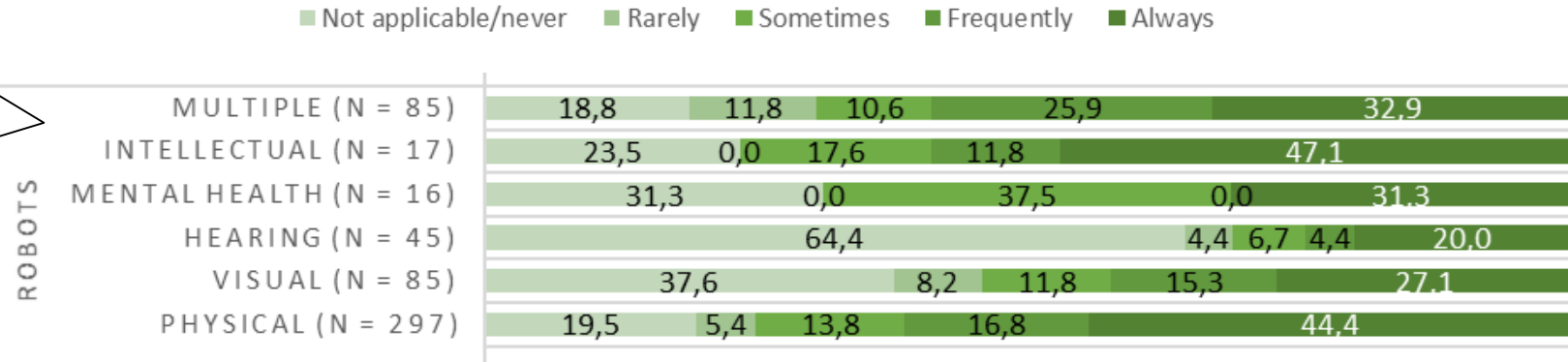
Across all AT use intention is rather low with approx. 20-60% stating “not applicable/ will never use”



Use intention

robots: Imagine having a robot personal assistant to help you with cooking, eating, cleaning, shopping, carrying stuff, playing games, chatting.

Use intention is high for people with intellectual, mental health issues and physical disabilities



Correlation between STAI and use intention for assistive technologies

- STAI predicts the use intention for all considered assistive technologies:
 - ➔ the higher the self-assessed technology adaptivity, the higher the use intention

Recommendations

- Identify ways to improve subjective technology competence of people with disabilities and to strengthen their digital capital
- Enable persons with disabilities to own smart assistive technologies to enable them to interact with smart mobility systems (increase digital literacy skills)
- Investigate, why use intention across all AT is rather low → low perceived usefulness?



References

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