université de BORDEAUX

Perceived Needs for Assistive Technologies in Older Adults and their Caregivers

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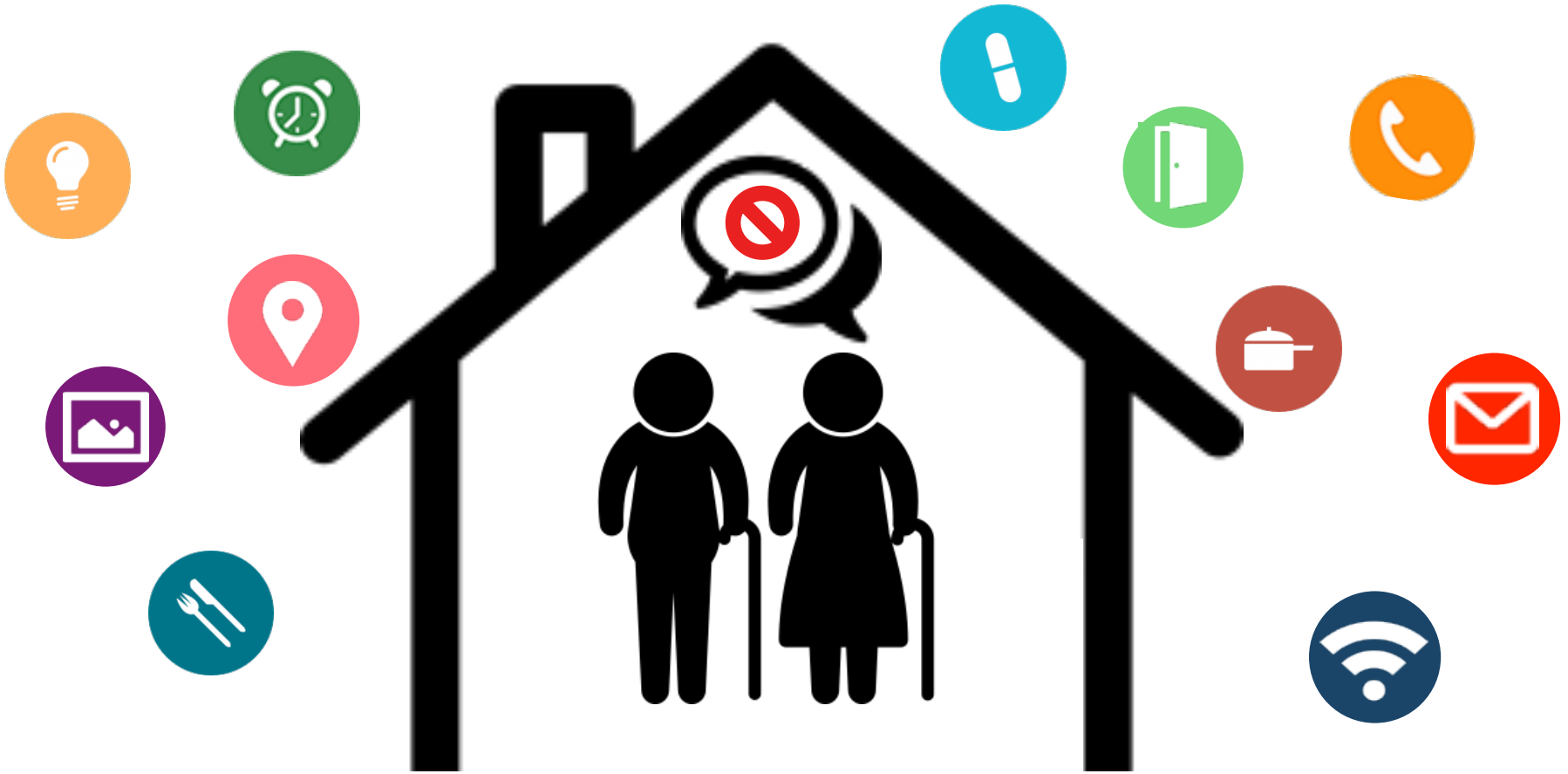
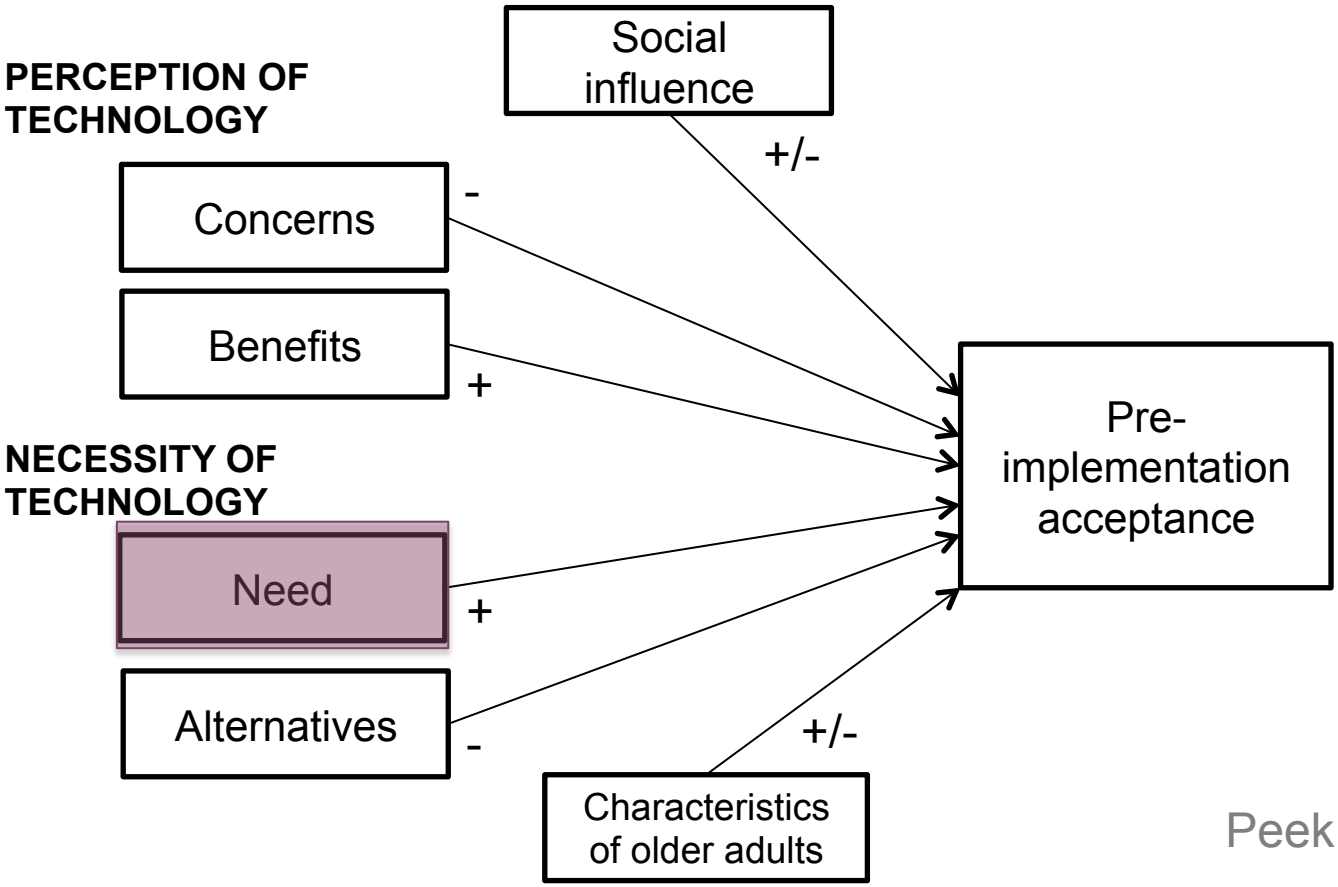
Assistive Technologies and Aging



(Fisk & Rogers, 2011; Chen & Chan, 2014)

Model of technology acceptance



Peek et al. 2014

- Technology need is a factor influencing technology acceptance
- AT need is related to the self-perceived everyday difficulties

Aging effect on self-perceived everyday functioning

- Older adults underestimate their difficulties in everyday functioning as well as in cognitive and physical functioning
- Accurate estimation by caregivers

Gold, 2012

- ➔ Older adults *vs.* Caregivers discrepancy
- ➔ Due to psychological coping strategies for accepting age-related losses

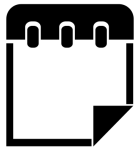
SOC Model, Baltes et al., 1999

Similarly, AT needs are they underestimated by older adults ?

Assistive Technologies for aging

Three domains of Assistive Technologies (AT) for aging in place

- Everyday activities
  - Medication (e.g. pillbox)
  - Appointments (e.g. calendar)



- Safety
  - Fall prevention (e.g. light path)
  - Domestic accidents (e.g. Stove monitor)

- Social participation
  - Social interaction (e.g. digital picture frame)
  - Social Entertainment (e.g. peer-gaming)

Aim of study

Study the perceived AT needs and their accuracy among older adults and caregivers

① Evaluate older adults' technology need according to the domain of assistance (i.e. everyday activities, safety, social participation)

② Compare AT needs between older adults and caregivers

③ Compare the accuracy of AT needs w.r.t the cognitive and physical losses between older adults and caregivers

Method

- 50 older adults and their formal caregivers

Gender	9 males and 41 females	
Marital Status	31 widowed and 19 in couple	
Age	81.2	(6.1)
MMSE score	26.3	(2.1)
Self-perceived IADL (/45)	27.0	(7.8)
Cognitive functioning (DRS-2 + FAB) /162	146.6	(9.3)
Physical functioning (Mobility + Body Mass + Sensory) /25	17.2	(4.4)

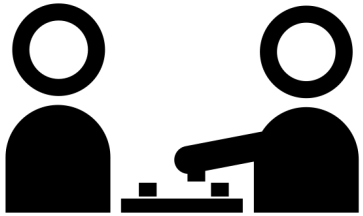
- Measure → assessment of technology needs

Assessment of AT needs

- **Everyday activities**
  - medication adherence
  - meal preparation
  - appointment reminders
  - notification about local events

- **Safety**
  - light path for night displacement
  - emergency response system for critical situations
  - supervising electric appliances
  - alerting a caregiver

- **Social participation**
  - simplified mailing system
  - video telephoning system
  - sharing of digital pictures with family
  - social games with peers



Assessment of AT needs

Step 1: You (your recipient) put(s) a dish in the oven and leave the kitchen

Step 2: One hour later, an alarm sounds and a message appear on your assistive device: “Your oven is on for more than one hour. Do you want to turn it off ?”

Step 3: You press on “yes” or “no”. In case no answer is provided, the oven is automatically turned off.

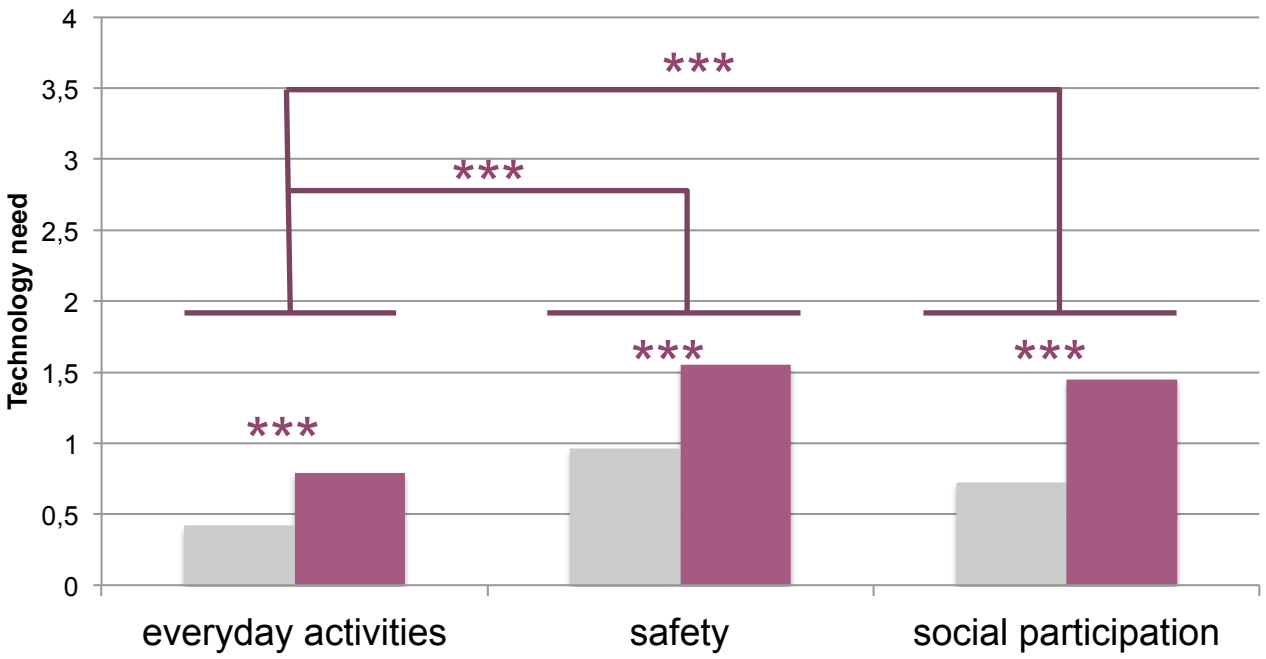
Would you like to have this device in your home (your care-receiver’s home) ?

☐1. Yes ☐ 0. No

Scores

- Everyday activities /4
- Safety /4
- Social Participation /4

Results - AT needs



- Older adults express fewer needs than their caregivers (respondent effect $p<.001$)
- Needs are higher for both safety and social participation (AT domain effect $p<.001$)
- No significant effect of Respondent factor and AT domain factor ($p>.05$)

Results – Cognitive and physical functioning

- Significant mediating effects of Cognitive and Physical functioning on AT needs (ANCOVA analysis)

- No correlation for older adults

- **Correlations for Caregivers**
  - **Everyday activities** → AT needs are ***negatively*** related to ***cognitive decline*** of older adults
  - **Safety and social participation** → AT needs are ***positively*** related to ***physical decline*** of older adults

Discussion - conclusion

AT needs

① Are higher **for Safety and Social Participation** domains (compared to everyday activities domain)

② Are **higher in caregivers** than in older adults

③ Are more accurate for caregivers than for older adults

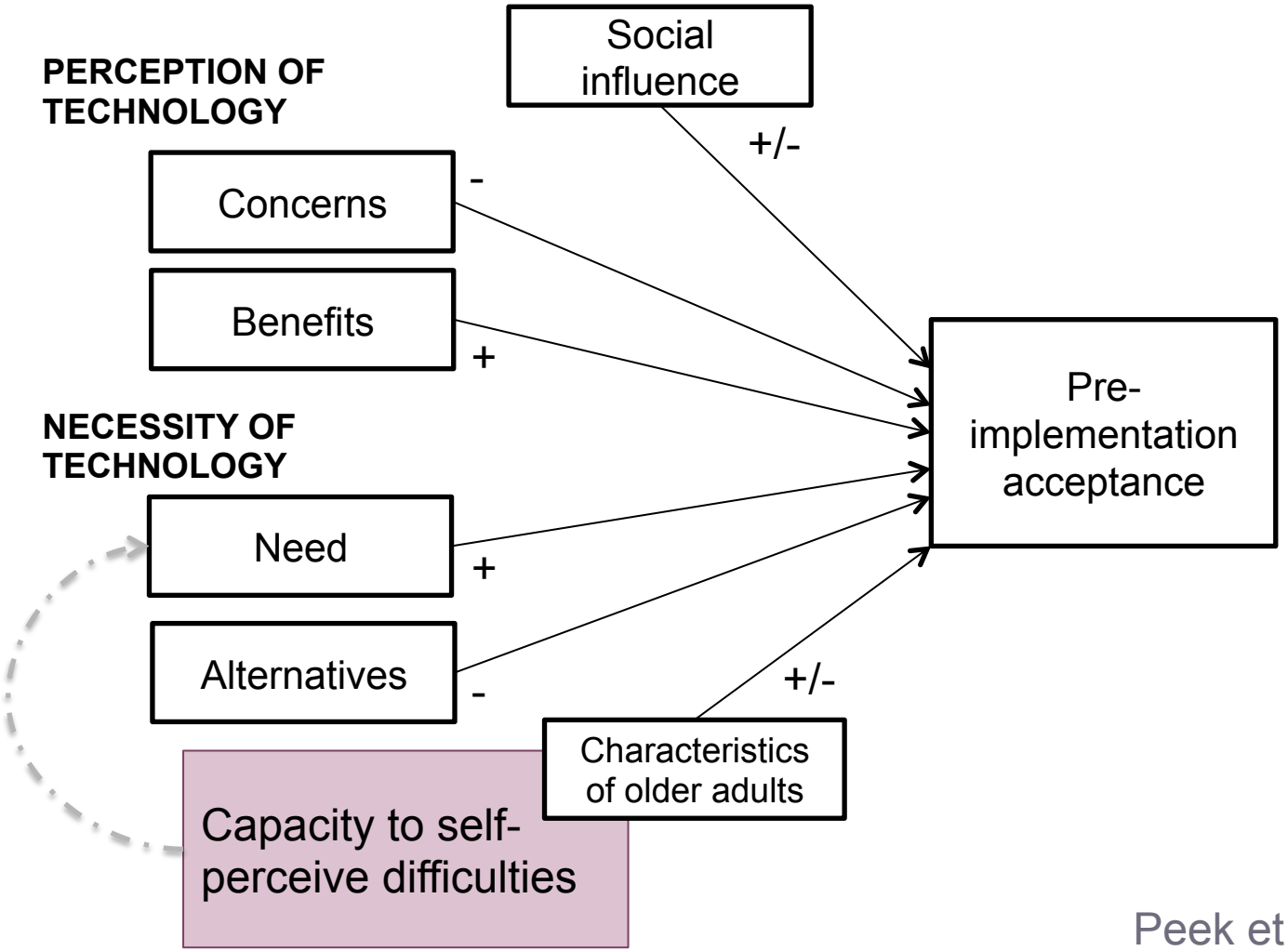
Low AT needs expressed by older adults could explain low AT adoption

Future work - Perspectives

- Future work
  - Using richer visual media such as videos rather than script and pictures

- Perspectives
  - Include peer-evaluation when assessing AT need like promoted by participatory design
  - Promoting educational program stressing awareness of need as well as technology benefits

Model of technology acceptance



Peek et al. 2014

References

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