



## Hearing at Home – Introduction to the project

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## Outline

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# Motivation

## Situation

- ◉ Actually “communication society”
- ◉ Hearing impairment reduces the ability to participate dramatically
- ◉ Over 30 % of the elderly above 60 suffer from and over 50% above 70 suffer from hearing impairment!<sup>1</sup>
- ◉ The home environment is the main area of life for the elderly

## Solution:

→ **Central Home Information and Communication (HIC) platform (using STB and TV technology) to enable equal participation**

<sup>1</sup> Tesch-Römer (2001). Schwerhörigkeit im Alter. Heidelberg: Median-Verlag von Killisch-Horn GmbH



## Approach of Hearing at Home

- Combine different Supportive Audio Signal Processing (SASP) strategies on a TV/STB/PC hardware platform used as the central Home Information and Communication platform (HIC-Platform):
  - I-SASP -> Individual Supportive Audio Signal Processing to compensate individual hearing loss
  - G-SASP -> Global Supportive Audio Signal Processing for context sensitive processing, e.g., noise reduction
  - SYNFACE -> Support speech understanding by lip-reading from a synthetic face
- Technical work will be complemented by user needs analysis and usability studies.

## Partners of HaH

### Partners

- **OFFIS** (Germany)
- **Hörtech** (Germany)
- **KTH** (Sweden)
- **VIATAAL** (The Netherlands)
- **TID** (Spain)
- **PROSYST** (Germany)
  
- Coordinator: OFFIS
- EU-Funding: 1.700 Mio €

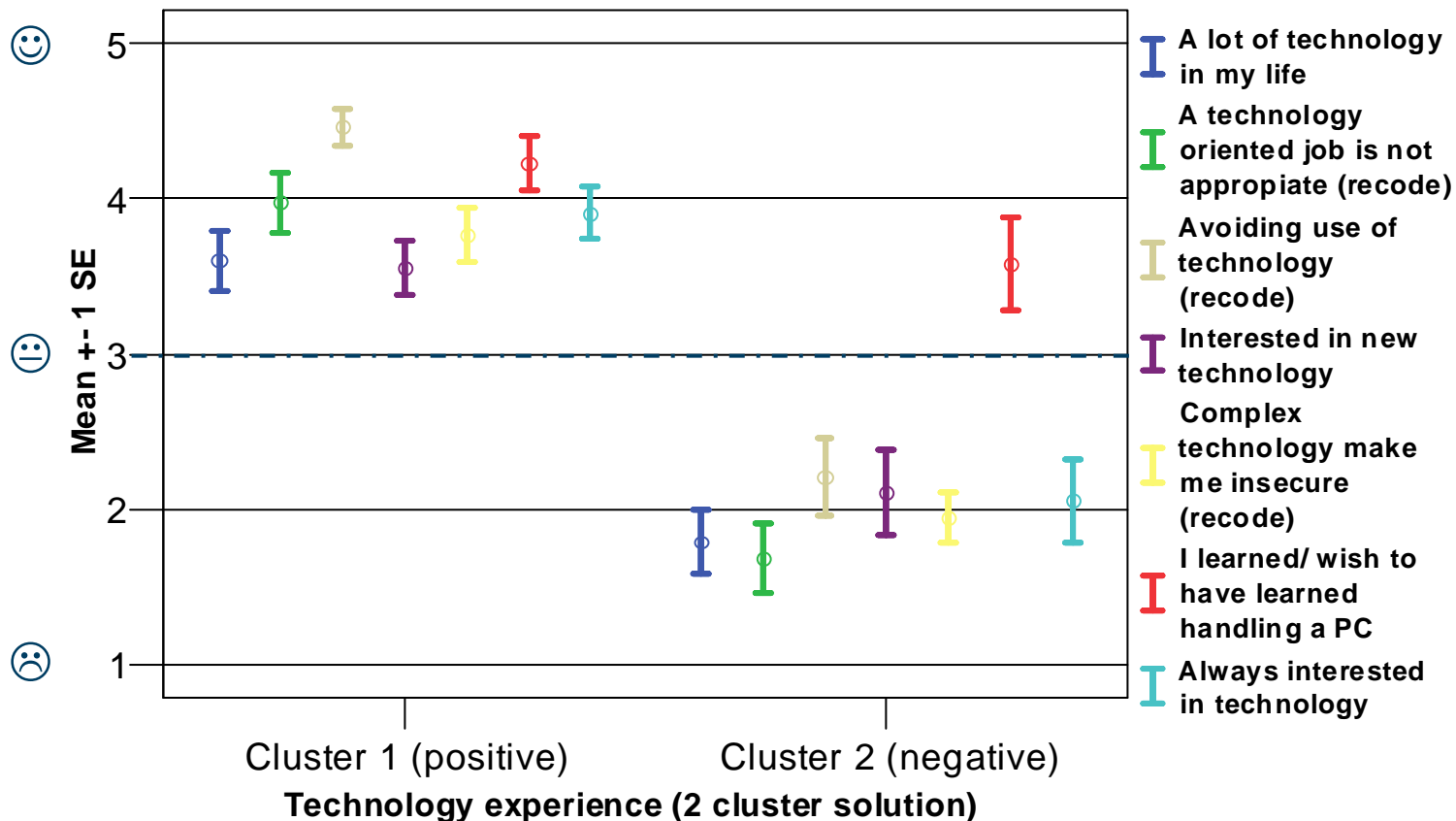


## User-driven Technology

User study:

- 62 participants with a mean age from 69 years (SD: +/-10,4) into three age groups: "young old" (50-64 yrs.; 35%), "middle-old" (65-74 yrs., 31%), and "old-old" ( $\geq 75$  yrs., 34%).
- 47% female, 61% are using hearing aids; 76% of the HA-users were bilaterally aided.
- Two groups of hearing loss (HL): PTA (mean 0.5, 1, 2, and 4 kHz for both ears).  
**Group 1: 38 dB [SD +/- 4.5dB] (44%)** and  
**Group 2: 56 dB [SD +/- 9.4dB] (56%)**

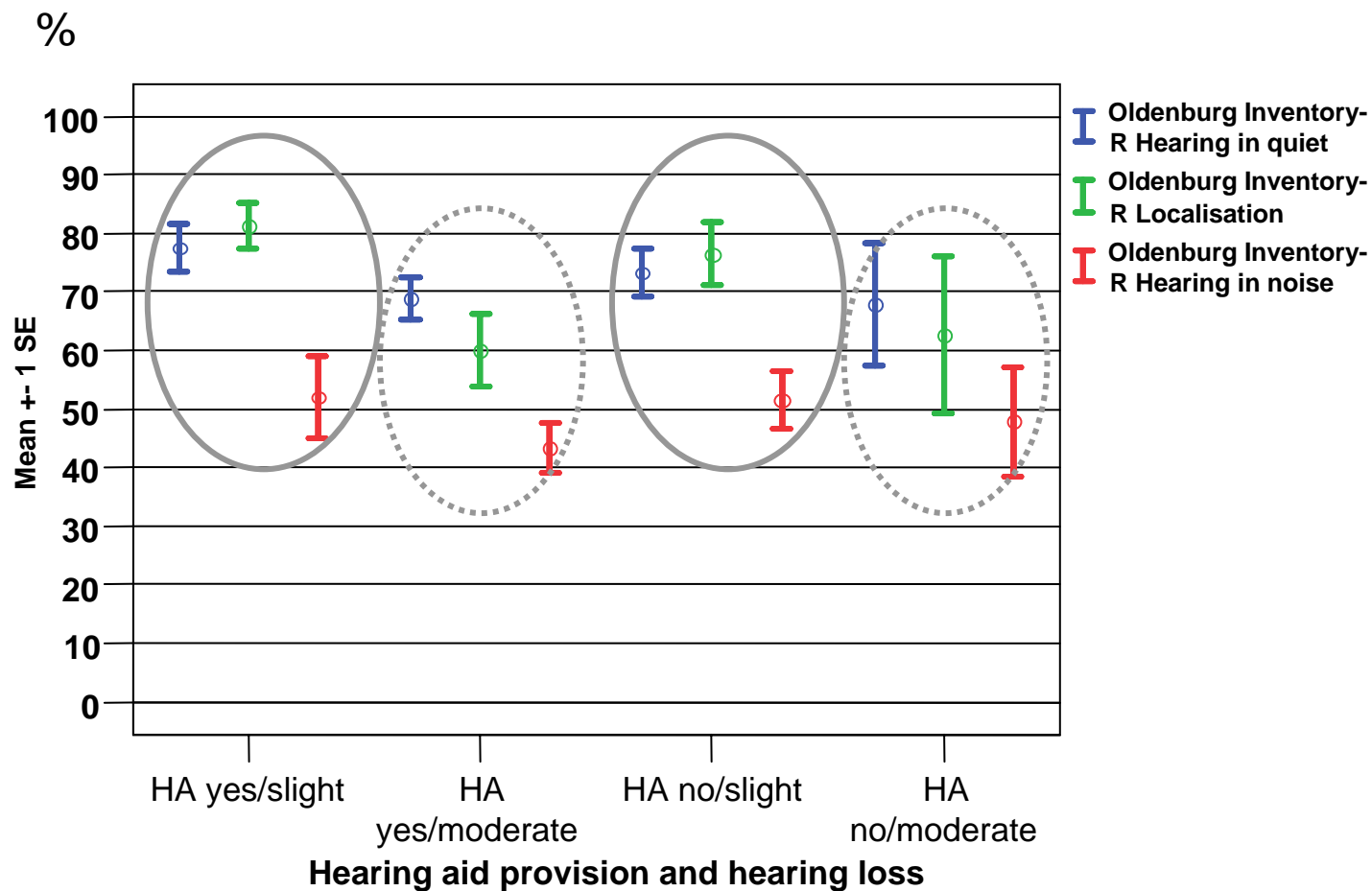
# Results: Experience with Technology\*



\* the method based on Mollenkopf, H. & Kaspar, R. (2004): Technisierte Umwelten als Handlungs- und Erlebnisräume älterer Menschen. In: G.M. Backes, W. Clemens & H. Künemund (2004). Lebensformen und Lebensführung im Alter, pp. 193-221. Wiesbaden: VS Verlag für Sozialwissenschaften.



## Oldenburg Inventory-R: Subjective Hearing Ability by Hearing Aid Provision and Hearing Loss (0% to 100%)

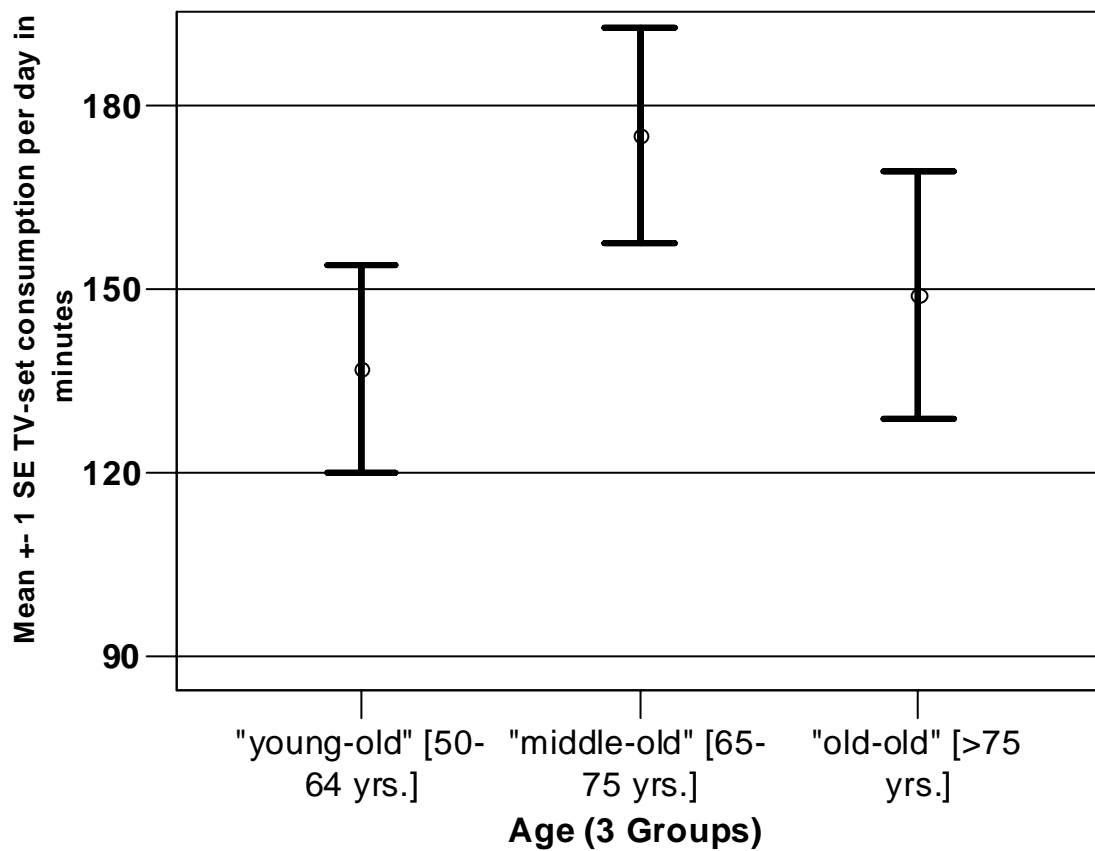


## Results: Usage of Television

- ◎ 92 % of the interviewees have a TV-set in the living room and 85% indicate that the living room is the most important room where they watch television.
- ◎ Over 90% of the interviewees reported that they have no problem with the basic functions of the TV-set (bass/ treble and handling the remote control)

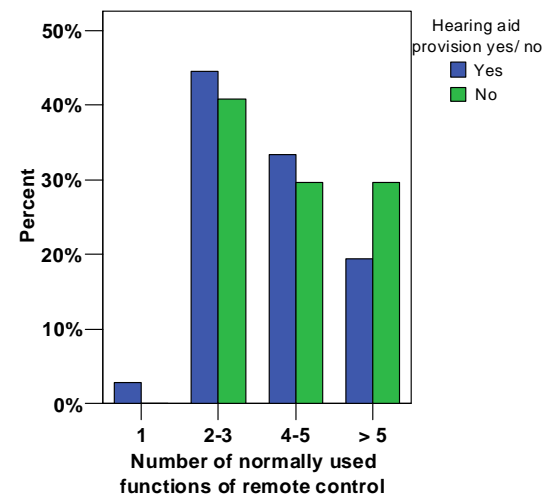
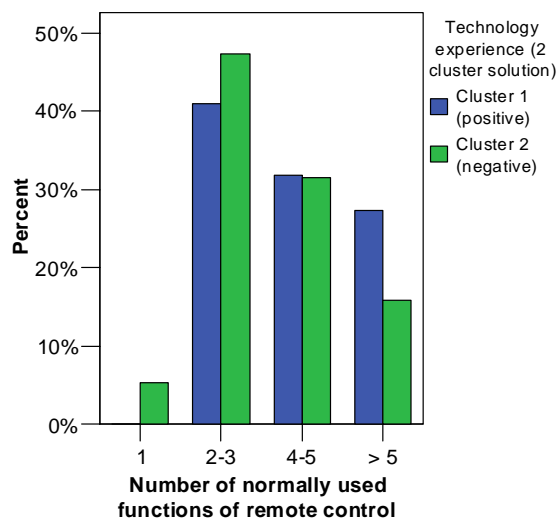
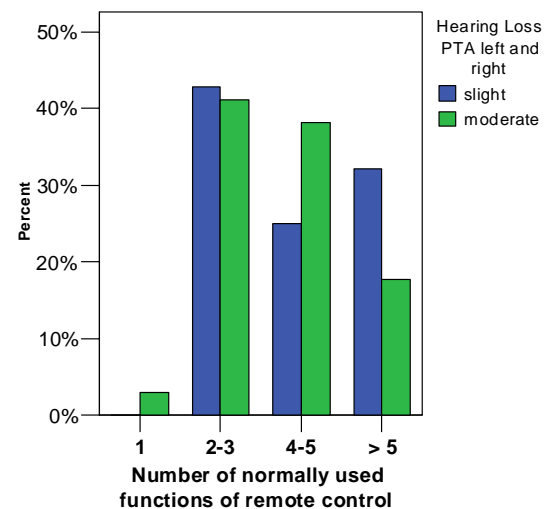
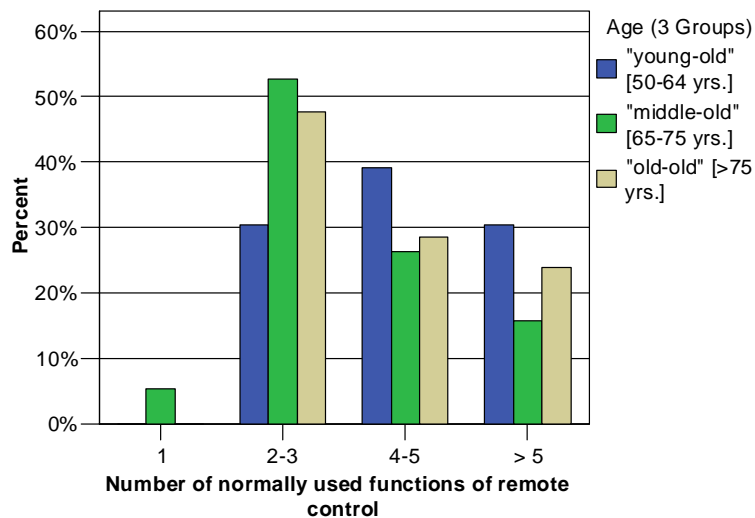


## Duration of TV consumption (age)





# RC Usage



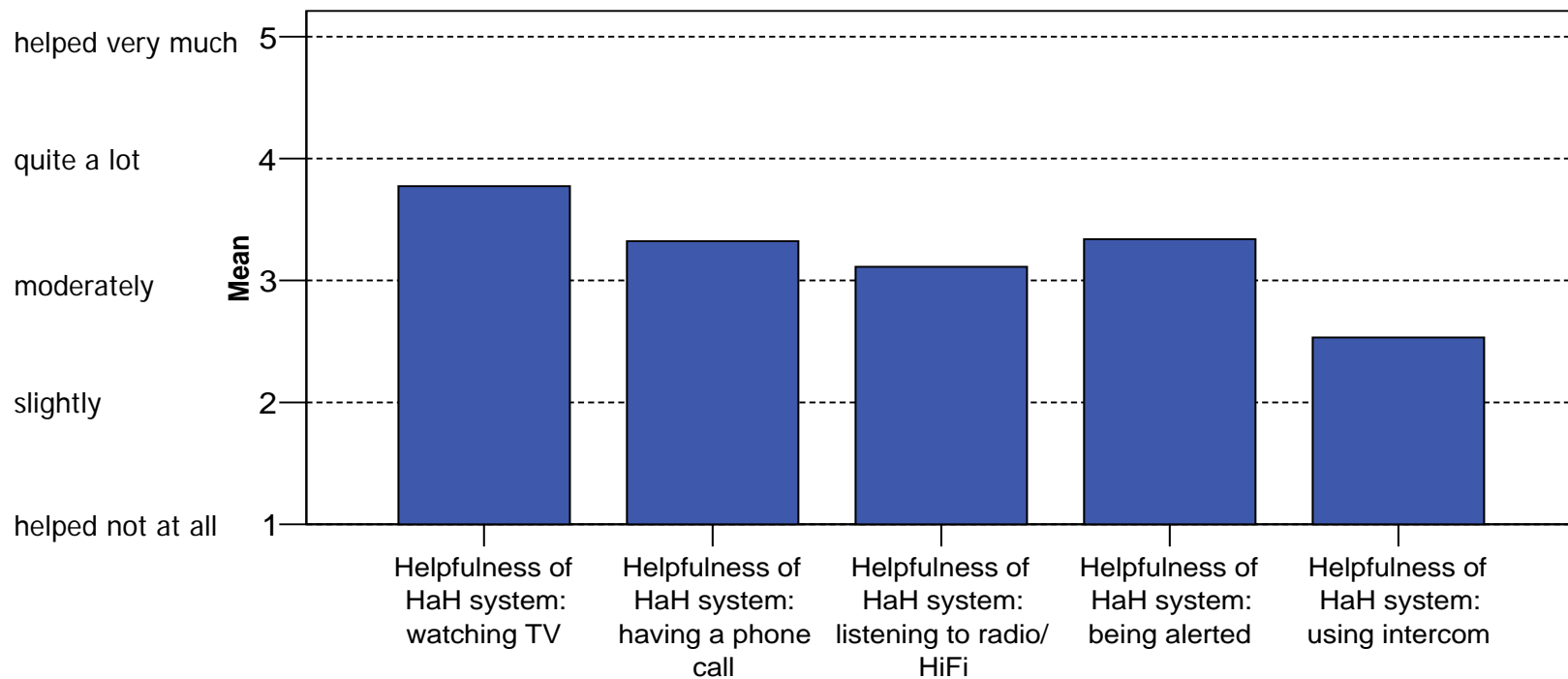


## Use of telephony: Summary of the results

- Phone is deemed important for social contacts (92%) and information gathering or making appointments (79%).
- There is a wide range in the number of calls per day. The mean is almost 5 with a standard deviation of 6.8 (the median is 3 calls a day or 25 minutes).



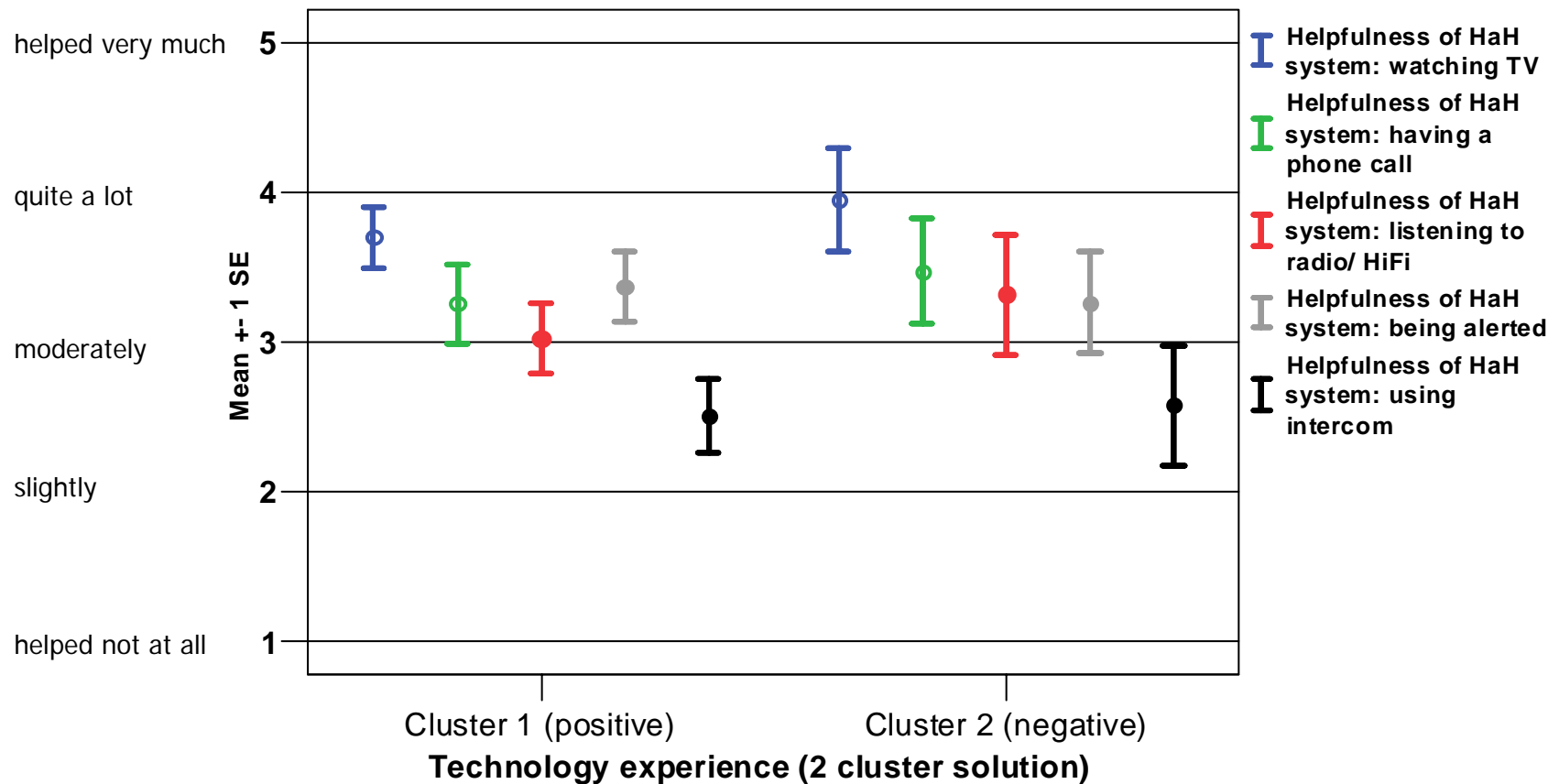
## HaH: Helpfulness (sound processing) in general (all groups)



- 52% prefers automatic sound control, 48% prefers a manual sound control



# H@H: Helpfulness in general (experience with technology): no differences





## HaH: Helpfulness in general (hearing loss)

