IMAGES OF AGEING IN THE AUSTRIAN AAL CONTEXT- PROJECT OVERVIEW AND MAIN RESULTS

O. Kada [1], A.-T. Mark [1], S. T. Kamin [2], F. Damm [2], J. Brenneisen [2] & F. R. Lang [2]

[1]*Carinthia University of Applied Sciences, School of Healthcare Management, Austria,*
[2]*Institute of Psychogerontology, University of Erlangen-Nuremberg, Erlangen, Germany*

ABSTRACT: Age stereotypes in society have wide-reaching consequences in terms of health and well-being of older people. Hence, an ongoing reflection of age stereotypes underlying the development of gerontechnology is crucial in terms of preventing the construction of new dependencies. Therefore, FFG benefit studies and projects as well as AAL projects with an Austrian lead were analyzed in the present study (bmvit: benefit, project number: 868214). Three studies were conducted employing qualitative and quantitative methods. Images of aging represented in the project documents were analyzed using qualitative and quantitative content analysis regarding the addressed user groups and their needs, the developed technical solutions and the model of selective optimization with compensation, and age stereotypes represented in language. In an experimental vignette study, the effects of use cases with technical solutions in the sense of compensation (emergency alert) vs. optimization (training) on aging (self-) stereotypes in students and older people were investigated. Finally, an online survey was conducted in order to explore the perspective and old-age images of Austrian project team members. The triangulation and integration of the results of the three studies showed that indeed positive developments have taken place. At the same time, the comprehensive analysis also points up to possibilities to enhance the Austrian AAL landscape.

1 INTRODUCTION

Age stereotypes have wide-reaching consequences in terms of health and well-being of older people. According to age stereotype embodiment theory, age stereotypes are internalized (self-stereotypes) and become self-relevant as soon as the person considers himself or herself as “old” ([6]). Negative age self-stereotypes reduce life expectancy by 7.5 years; these direct and indirect effects of self-perceptions of aging on survival are stronger than effects of e.g. functional health or socioeconomic status even when age, functional health, gender, and socioeconomic status are controlled for [6]. Technology development needs to be guided by differentiated age stereotypes considering developmental losses as well as benefits and hence creating contexts for individual developmental regulation. The life-span model of selective optimization with compensation (SOC) provides a useful theoretical basis for developing and evaluating gerontechnology and avoiding the creation of new dependencies and loss of capacities due to disuse [4, 7].

Therefore, benefit studies and projects as well as AAL projects with an Austrian lead were analyzed in the present project in terms of underlying age stereotypes. In order to consider

different perspectives of the research phenomenon, three studies were conducted employing qualitative and quantitative methods. The results of these three studies are integrated in terms of meta inferences.

2 STUDY 1: AGE STEREOTYPES REPRESENTED IN PROJECT DOCUMENTS

The objectives of study 1 were the analysis of user groups addressed and their supposed needs (a), of characteristics used to describe typical users (b), of the focus of technology development from a SOC perspective (c), and of linguistically represented age stereotypes (d).

2.1 METHOD

2.1.1 MATERIAL

In sum, 128 benefit studies/projects and AAL projects with an Austrian lead could be identified, of which 93 were dedicated to the development and/or testing of technological solutions.

2.1.2 SAMPLE

Due to the variance of available project documents (ranging from abstracts and other short information only to detailed reports and publications) and the heterogeneity of the project documents, the number of projects and documents analyzed differs for each research question: (a) *n* = 91 projects, (b) *n* = 40 projects, (c) *n* = 58 projects (1.999 pages), and (d) *n* = 58 projects (46,541 words).

2.1.3 METHODS OF DATA ANALYSIS

Targets groups were analyzed using qualitative content analysis, whereby inductive procedures were applied [8]. The technical solutions were classified using TAALXONOMY [4]. Characteristics used to describe typical users in use cases and personas were analyzed using qualitative and quantitative content analysis. The focus of technology development was analyzed from the perspective of the context-theoretical SOC model [4] using qualitative content analysis, developing deductive main categories and inductive sub-categories. Linguistic inquiry and word count analysis (LIWC2015, [9]) was employed to analyze age stereotypes represented in language. For all methods applied, intercoder/interrater reliability ranged from Cohen's κ = .808 – 1.000.

2.2 MAIN RESULTS

Older people in general and community dwelling older people were the most frequently mentioned target group (44%), older people with care needs including caregivers were addressed in 13.2% of the projects, and older people with specific disabilities and diseases were the target group in 36.3% of the projects. Formal and informal caregivers (3.3%) and older people in the workplace (3.3%) were less frequently addressed.

The top three TAALXONOMY categories were T08 "information & communication" (67.0%), T06 "vitality & abilities" (61.5%), and T01 "health & care" (50.5%), whereas T04 "mobility & transport" (16.5%), T05 "work & training" (7.7%) was the least frequent category applied based on the available project documents.

Typical users in personas and scenarios were described in in terms of technology use (97.5%), social contacts (90%), living situation (82.5%), hobbies/activities (82.5%), physical health (77.5%), cognition (60%), and finances (32.5%). Users were described as dynamic and actively shaping their development in 22.5% of the personas/scenarios.

Using the context-theoretical SOC model, two main deductive categories were applied, namely "contexts for loss-based selection and compensation (LC)" and "contexts for elective selection and optimization (EO)". More than one category could be assigned per project. In 53% of projects the focus of technology development was loss-based, in 21% of projects developmental gains were the main focus, whereas in 26% of the projects losses and gains were addressed.

Linguistic analysis revealed that health and illness related words (e.g., medication) were often used in lexical proximity to user descriptions (mean percent: $M = 4.00$), whereas words related to social and leisure activities (e.g., vacation) were used less frequently ($M = 1.01$). Positive emotion words (e.g., happiness; $M = 3.32$) were used more often than negative emotion words (e.g., fearful; $M = 1.08$). Words in relation to risks (e.g., dangerous; $M = 0.71$) were used less frequently than works related to optimism (e.g., success; $M = 0.99$).

3 STUDY 2: VIGNETTE EXPERIMENT – AGE STEREOTYPES ELICITED IN USERS

Study two was dedicated to the analysis of effects of use cases with technical solutions in the sense of compensation vs. optimization on aging (self-) stereotypes of potential users.

3.1 METHOD

3.1.1 SAMPLE

In sum, 213 older people (mean age: 74.6 ± 5.56 years) and students (mean age: 34.3 ± 12.80 years) participated in the online vignette experiment.

3.1.2 MEASURES

Participants' ageing stereotypes were measured using the AgeCog subscale "ongoing development" [10]. Then, study participants were randomly assigned to one of the two experimental conditions. The vignette of an older person experiencing increasing physical exhaustion was presented. In the compensation condition the person starts to use an emergency alert app when facing this problem, in the optimization condition the person starts to use a fitness app in order to counteract the physical decline. The post-test comprised i.a. a single item measuring the estimated duration of the person continuing to live independently, the Ageing Semantic Differential – ASD [10], and the AgeCog subscale "ongoing development" (age stereotypes and future self-views; [10]). Cronbach's α ranges from .65 to .91 for the scales.

3.1.3 METHODS OF DATA ANALYSIS

Repeated measures ANOVA and independent sample t-tests were performed.

3.1.4 MAIN RESULTS

Effects were mixed and rather small. Independent of the experimental condition (main effect n.s.) a negative time effect on the perceptions of ongoing development in old age was

detected, F(1, 209) = 16.831, $p < .001$, especially in the group of older people, interaction: F(1, 209) = 4.096, $p = .044$. In the optimization condition the estimated duration of the person presented in the vignette continuing a self-determined life was rated 1.6 years longer, t(205) = -3.735, $p < .001$ (fig. 1).

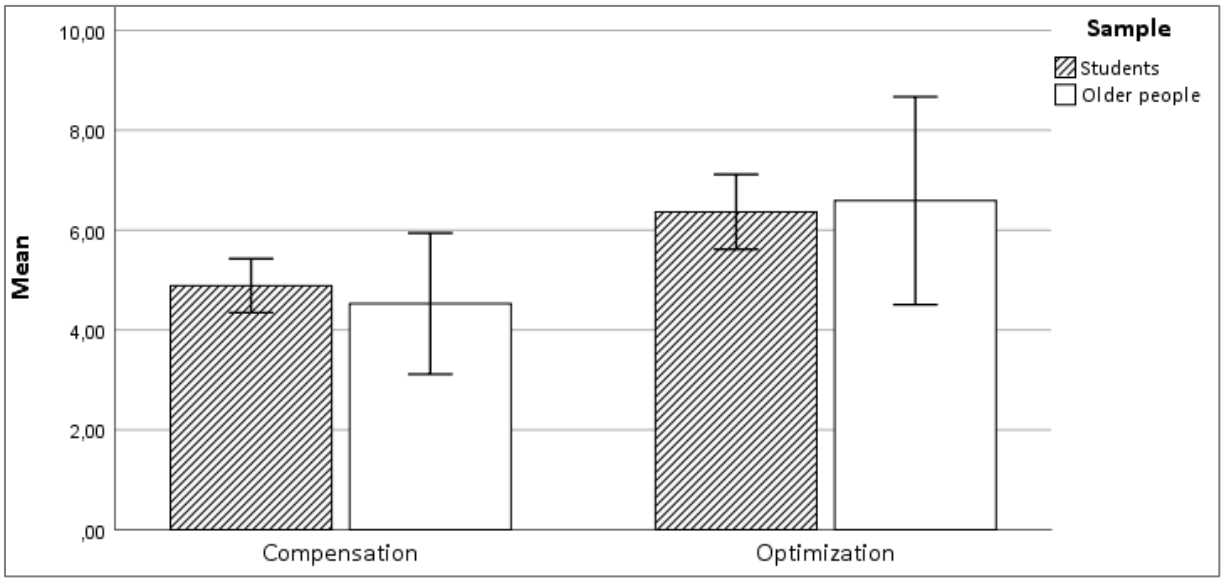

Figure 1: Estimated duration of continuation of self-determined life
Note. Errors bars: 95% CI

4 STUDY 3: AGE STEREOTYPES IN PROJECT TEAM MEMBERS

Study three aimed at the exploration of a) experiences with and participation of project team members from different disciplines in Austrian benefit and AAL projects, and b) of their views on aging (age stereotypes and future self-views).

4.1 METHOD

4.1.1 SAMPLE

Fifty-three Austrian project team members from technical and non-technical disciplines participated in the online survey (47% females, age: $M = 45.6$, $SD = 11.27$).

4.1.2 MEASURES

The questionnaire measured a) project related aspects: e.g., perceived participation, interdisciplinary cooperation, integration and application of gerontological knowledge, user participation (Cronbach's α = .63 – .86), and b) aging (self-)stereotypes: ageing related cognitions (AgeCog scales [10]), and domain-specific age stereotypes [2, 3]. Cronbach's α ranges from .74 to .88 across these scales.

4.1.3 METHODS OF DATA ANALYSIS

Descriptive analysis and dependent sample t-tests were performed.

4.1.4 MAIN RESULTS

In most projects several methods of user integration were used, especially usability tests (83%). Interdisciplinary cooperation was perceived positively ($M = 3.64$, $SD = .052$ on a 4-point

scale). Integration/application of gerontological knowledge was reported less frequently (*M* = 2.3, *SD* = .079 on a 4-point scale). Respondents reported positive age stereotypes, with the lowest ratings for the technology domain (fig. 2). The ability of older people to keep up with technological progress was rated comparably low, whereas the own ability to do so in old age was rated significantly higher, t(51) = -7.02, $p < .001$. Respondents rated themselves in old age more positively than older people in general in most domains. Regarding the AgeCog scales, ageing was associated with physical losses (*M* = 2.99, *SD* = 0.62) rather than social losses (*M* = 2.57, *SD* = 0.63) and ageing was positively perceived as a time of ongoing personal development (*M* = 2.94, *SD* = 0.62) and self-knowledge (*M* = 3.08, *SD* = 0.60). Again, future self-views were significantly more positive than ratings for older people in general, except for physical losses. E.g., respondents expected more ongoing development for themselves, t(36) = 5.05, $p < .001$.

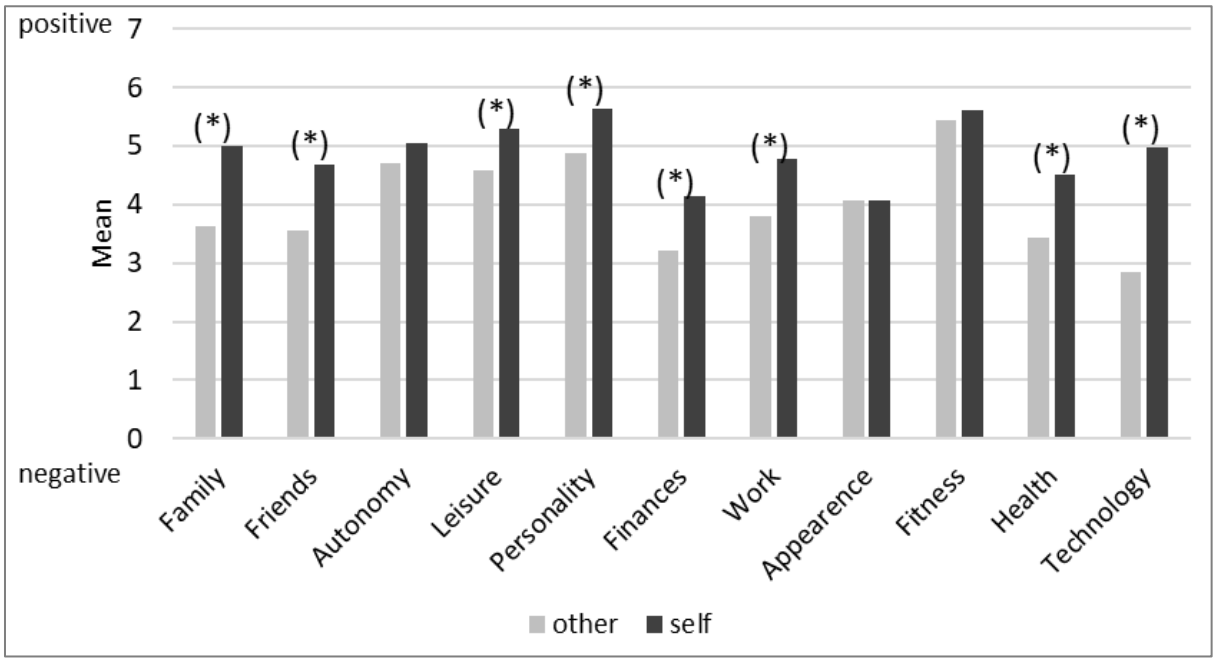

Figure 2: Domain-specific age (self-)stereotypes
Note. (*) indicates significant differences between stereotype and self-view

5 DISCUSSION AND META INFERENCES

The triangulation and integration of the results of the three studies showed that indeed positive developments have taken place, e.g. technology development considering the potentials of aging and hence creating contexts for elective selection and optimization, representation of positive aspects of ageing in the documents and the endorsement of user involvement and interdisciplinary cooperation by Austrian project team members. At the same time, the comprehensive analysis also points up to possibilities to enhance the Austrian AAL landscape. E.g., (health) deficits and their compensation were often prioritized and gerontological knowledge and theories not yet integrated sufficiently. There are, of course, some limitations that warrant discussion. The heterogeneity of information and available documents per project may have led to bias in study 1, study 2 can be criticized for the low

statistical power, and the sample in study 3 is likely to be biased in favor of AAL community members with rather positive age views. Nevertheless, the present study is the first one to investigate ageing stereotypes in technology development employing multiple qualitative and quantitative methods.

6 REFERENCES

[1] Gluth, S., Ebner, N. C. & Schmiedek, F. (2010). Attitudes toward younger and older adults: The German Aging Semnatic Differential. International Journal of Behavioral Development, 34(2), 147-158.

[2] Kamin, S. T., & Lang, F. R. (2013). The subjective technology adaptivity inventory (STAI): A motivational measure of technology usage in old age. Gerontechnology, 12(1), 16–25. https://doi.org/10.4017/gt.2013.12.1.008.00

[3] Kornadt, A. E., Hess, T. M., Rothermund, K., (2018). Domain-Specific Views on Aging and Preparation for Age-Related Changes—Development and Validation of Three Brief Scales, The Journals of Gerontology: Series B, gby055, https://doi.org/10.1093/geronb/gby055

[4] Lang, F. R., Rohr, M., & Williger, B. (2011). Modeling success in life-span psychology: The principles of selection, optimization, and compensation. In K. L. Fingerman, C. Berg, J. Smith, & T. Antonucci (Eds). Handbook of Life-Span Development (pp. 57 - 85). New York: Springer Publishing Company.

[5] Leitner, P., Neuschmid, J. & Ruscher, S. (2015). TAALXONOMY. Entwicklung einer praktikablen Taxonomie zur effektiven Klassifizierung von AAL-Produkten und Dienstleistungen. Guidebook. Online verfügbar: https://www.taalxonomy.eu/wp-content/uploads/Downloads/benefit%20846232-TAALXONOMY-D4.3-Guidebook.pdf

[6] Levy, B. (2009). Stereotype embodiment: a psychosocial approach to aging. Current Directions in Psychological Science, 18(6), 332-336.

[7] Lindenberger, U. (2007). Technologie im Alter: Chancen aus Sicht der Verhaltenswissenschaften. In P. Gruss (Ed.), Die Zukunft des Alterns: Die Antwort der Wissenschaft (pp. 221-239). München: Beck.

[8] Mayring, Ph. (2014). Qualitative content analysis. Theoretical foundation, basic procedures and software solution (free download via Social Science Open Access Repository SSOAR, URN: https://nbn-resolving.de/urn:nbn:de:0168-ssoar-395173).

[9] Pennebaker, J.W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015). Linguistic Inquiry and Word Count: LIWC2015. Austin, TX: Pennebaker Congomerates.

[10] Wurm, S., Tesch-Romer, C., & Tomasik, M. J. (2007). Longitudinal Findings on Aging-Related Cognitions, Control Beliefs, and Health in Later Life. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 62(3), P156-P164. https://doi.org/10.1093/geronb/62.3.P156

Contact Author:
FH-Prof.in Mag.a Dr.in Olivia Kada
Carinthia University of Applied Sciences | Department of Healthcare Management
o.kada@cuas.at | +43 (0)5 90500-4124