J.L. FOZARD, H-W. WAHL (Conveners). ***Role of cohort effects and technology generations in gerontechnology.*** *Gerontechnology 2012;11(2):105;* doi:10.4017/gt.2012.11.02.157.00 **Participants**: *L. NYGARD (*Sweden*), R. SACKMANN (*Germany*), O. WINKLER (*Germany*), K. CLAßEN (*Germany*), F. OSWALD (*Germany*), H-W. WAHL (*Germany*), L. SCHMIDT (*Germany*), H. BOUMA (*Netherlands*).* **ISSUE** To properly employ technology to meet the needs of aging people it is necessary to understand where scientific information about aging comes from and how it can best be used to identify the needs for technology adapted to aging persons. **CONTENT** Longitudinal research is a major resource, because this research design is able to address intra-individual change in developing individuals. Moreover, it is a truism that the changes in the man-made environment over time are occurring at an ever increasing pace; at the same time changes in knowledge about human aging is also accelerating. Accordingly, the dynamics of interactions between aging individuals and their environments are in constant flux, a dynamic mostly treated under the concepts of cohort effects. It is said that major areas of human functioning such as intelligence, the design of social relations, and attitudes and values critical for human development (including technology) are not only influenced by human aging (the course of a lifetime), but also by changing micro- and macro-environmental characteristics such as increasing quantity and quality of early life education or better health treatment throughout the lifespan. The analysis of cohort change is closely intertwined with longitudinal aging research The longitudinal pathways of successive cohorts of individuals has been used as a major, though not the only, tool to disentangle aging from cohort effects. The goals of this symposium however are to conceptually and empirically analyze how major contributions of key longitudinal evidence - particularly evidence of cohort effects- is able to infuse gerontechnology. **STRUCTURE** To achieve these goals, contributions from the USA, Sweden, Germany, and The Netherlands are provided and discussed. **CONCLUSION** Cohort and technology generation considerations continue to be of importance for the interpretation of gerontechnology-related findings as well as application, and training.

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L. NYGÅRD, C. MALINOWSKY, A. KOTTORP. ***Cohort effects in technology use.*** *Gerontechnology 2012;11(2):105-106;* doi:10.4017/gt.2012.11.02.305.00 **Purpose** To discuss potential cohort effects in people with mild cognitive impairment (MCI) or dementia as users of everyday technology. **Method** The discussion is based on findings and suggestions from research and from ongoing studies with older adults with and without cognitive impairment or dementia. **Results & Discussion** It is often taken for granted that older adults are less enthusiastic users of everyday technology (ET) such as remote controls and cell phones. Different reasons are given, such as retirement, disability, low in-come, or lack of interest[1]. Chronological age itself may be a factor in why new ETs that could be useful are not considered relevant. This is called the 'ageing turn'[2]. Similar patterns would be expected for people with MCI or dementia. We investigated the perceptions of relevance and difficulty in using ETs and the ability to manage them, in sample groups with an age range of 52 to 98 years old, with and without MCI or dementia. We found the ability to use ET differentiated the groups, suggesting ability to use ET is a marker for early cognitive decline. However, age did not significantly contribute to the ability to manage ET[3]. Moreover, technology changes rapidly and we don't know how older adults, with and without cognitive impairment, follow these trends. We then also compared data from two cohorts (2002-03 n=157; 2008-09 n=118) concerning perceived relevance and difficulties in using ETs. We investigated if perceptions of ETs' relevance has changed, and if ETs that were new and unfamiliar in 2002 and thereby perceived as difficult (e.g. DVD-players) became more relevant and less difficult as they became more common in 2008-09: We also looked at differences in stability or change between samples with MCI or dementia and controls. Other studies underscore how important familiarity and very frequent use of objects are, but it cannot be taken for granted that old products will be favoured[4]. Participants with dementia strongly emphasized that they will not accept a product

that "looks like 1940"; the aesthetic and modern appearance of the product is very important[5]. Together, these studies suggest we need to consider the interaction between cognition, age, familiarity, context, and meaning to better understand older adults as users of technology. Better knowledge of older adults with and without MCI or dementia as users of technology will inform the development and adaptation of technology to meet their needs.

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R. SACKMANN, O.WINKLER. ***The concept of technology generations revisited: New insights from sociology.*** *Gerontechnology 2012;11(2):106-107;* doi:10.4017/gt.2012.11.02.508.00 **Purpose** The project aims to identify patterns and processes of technology generations. For this purpose we checked whether a new internet generation is distinguishable from the known formations of a mechanical generation, a household appliance generation and a computer generation. **Method** The study uses the data set IKT (Information and Communication Technology) 2004 and 2009 of the Statistical Bureau of Germany 2009 (12 000 households each), the SOEP (Social-Economic Panel) 2001/03 and 2010, and the SHARE (Survey on Health, Ageing and Retirement in Europe) data set 2004 and 2009. Each data set was checked for generational differences in terms of possession of technological equipment and patterns of usage, esp. with regard to the longitudinal development. Regression techniques were applied to the analysis. **Results & Discussion** In a preliminary analysis we checked whether the established pattern of four existing technology generations still shows differences with regard to the "first-level digital divide" (online access yes/no) and the "second-level-digital divide" (different patterns of usage of 'onliners'). We found that even in 2010 there were significant differences between technology generations in private internet access, even after controlling for gender, income, and family position. There are no significant differences between onliners of different technology generations with regard to the use of email and search machines. However, results show that significant differences between onliners of technology generations prevail with regard to the use of social webs. We also tried to test, whether apart from the computer generation of cohorts born after 1964, a new internet generation of people born after 1980 can be differentiated. We did not find significant differences between these two generations with regard to first-level digital divide, however we did find second-level digital divide differences between the two technology generations with regard to the use of social webs. Whereas the results towards the establishment of a new technology generation in the form of an internet generation seem to be relevant for gerontechnology in the long-term, the results towards first and second-level digital divide of current older technology generations seem to be more relevant for present gerontological work. Technology concepts for private homes of elderly citizens will have to take into account persistent barriers to internet usage of technology generations formed by mechanical and electro-mechanical equipment. However once these generations are convinced to go online, techniques that are similar to older known forms like email (letter) and search machines (encyclopaedias) are adopted quickly. Current research into

both older and younger technology generations with respect to social webs the second-level digital divide has a different character because these are novel ways to use technology. If the aim is to promote their use for seniors–which is suggested in a number of application fields–far more attention should be paid to the development of new techno-social formats that are more neutral to generational patterns. Longitudinal data is needed to further clarify the relationship between the intention to use technology and the behaviour actually shown.

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K. CLAßEN, F. OSWALD, H-W. WAHL. ***Cohort effects in technology acceptance.*** *Gerontechnology 2012;11(2):107-108;* doi:10.4017/gt.2012.11.02.294.00 **Purpose** The project aims to identify cohort differences between two so-called technology generations[1]. In particular, the older mechanical generation and the younger household-appliance generation are differentiated in terms of technology attitudes and evaluation. The internationally renowned Technology Acceptance Model[2,3]

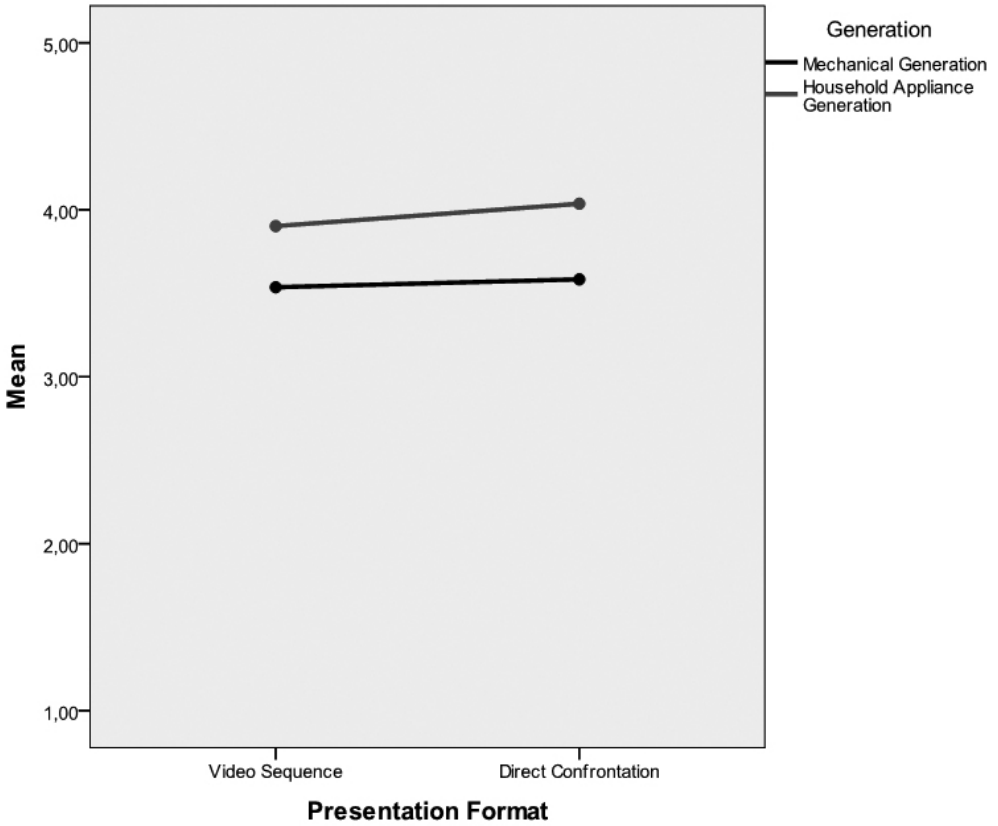

Figure 1. Interaction of technology generation and presentation format in Perceived Ease of Use for the video game console

(TAM; version 3) in a modified version served as the theoretical background. **Method** The study included 357 German participants aged 60 to 99, representing the two technology generations mentioned above. Three technological devices representing respectively the areas of care and prevention, household tasks, and leisure activities were selected: (i) a sensor mat featuring an alarm option in case of falls as well as turning on the bedside lamp when getting up, (ii) a robotic vacuum cleaner, and (iii) a video game console. The original TAM-questionnaire was translated into German and adapted to the needs for the study. Standardized video sequences explaining the function of each of the three technological devices were compiled; in addition, a standardized assessment of psychological and health aspects was done. The confrontation with technology was step-wise: (i) video sequences followed by a technology evaluation, (ii) a general questionnaire, and (iii) a direct confrontation followed by a technology evaluation. Multivariate analyses of variance were conducted to test for technology generation differences as well as for interaction effects (e.g. gender, technological device). Structural equation modelling was used to gain a more complex view of the interplay of variables. **Results & Discussion** Generally, the two technology generations did not differ in the rated perceived usefulness of the three technological devices (*Figure 1*); $F(1,287)=0.11$, $p=0.74$. However, the household appliance generation rated the three devices higher in their ease of use; $F(1,282)=9.99$, $p<0.01$). Device specific analyses of variance showed that particularly the robotic vacuum cleaner; $F(1,293)=6.95$, $p<0.01$) and even more the video game console; $F(1,297)=14.94$, $p<0.001$) were responsible for the technology generation differences in perceived ease of use. Structural equation modeling additionally underscored that the adapted TAM3 fitted the data well. Findings underscore that affiliation to technology generations is important to explain variability in technology acceptance. Longitudinal data is needed to further clarify the relationship between the intention to use technology and the behavior actually shown.

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Purpose The project aims to better understand the impact of cognitive factors as well as additional psychological constructs on the performance of everyday technology tasks with different diffusion rates in the current cohort of older adults. Three devices were chosen for this purpose: a blood pressure meter, an age-appropriate mobile phone,

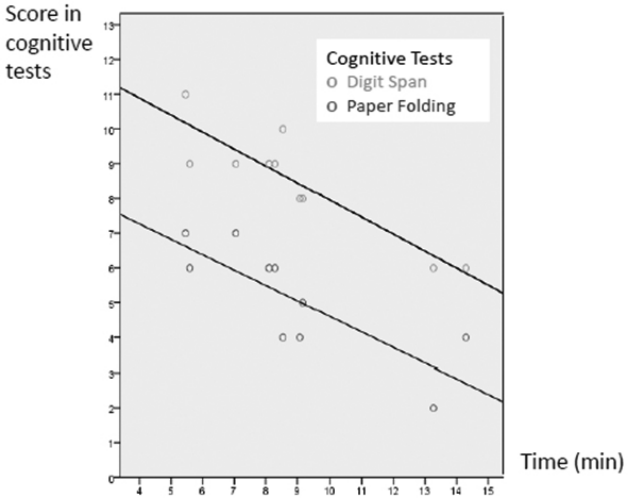

Figure 2. Relationship of scores in two cognitive tests and the time needed for the technology tasks

and an e-book reader. First targeted are cognitive abilities such as cognitive flexibility, visuospatial abilities, and working memory in participants without cognitive loss and in those with mild cognitive impairment. Second, the role of technology experience, technology attitudes and personality-related variables (e.g. self-efficacy or obsolescence) is examined. **Method** In a feasibility study[1] the participants (mean age 62) were videotaped while handling the devices in order to assess their performance and any occurring difficulties. To test whether a standardized evaluation would be possible, the 33 video sequences were evaluated by two independent observers. As well as measurements of cognitive abilities (e. g. paper-folding test[2] or trail-making test[3]), self-efficacy, obsolescence, attitudes towards technology, life-long technology experience, and the subjective experience with the devices were assessed in a questionnaire. Partial correlations were used to test the relationship of cognitive abilities and the technology performance while controlling for age. Regression analyses were conducted to assess the contribution of cognitive abilities, the psychological constructs and interaction effects (e.g. cognition and complexity of the device). **Results & Discussion** The feasibility study revealed significant correlations between successful handling of the technological tasks and the performance in cognitive tests as well as personality and attitude dimensions. Participants with high levels of self-efficacy, interest and acceptance of technology as well as participants low in obsolescence performed better in terms of the number of errors made and the time needed for the tasks (*Figure 2*). Cognitive flexibility and visuo-spatial abilities were important factors for successful performance; this effect was most pronounced in the mobile-phone-related tasks. These results will be built upon in an ongoing study with a total of 80 participants.

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