S.J. CZAJA (Convener). Healthcare technology and older adults: Issues and potential solutions. Gerontechnology 2010;9(2):78; doi:10.4017/gt.2010.09.02.006.00 **Participants**: *S. BEACH (USA), R. SCHULZ (USA), D. BOUWHUIS (NETHERLANDS), S.J. CZAJA (USA), N. CHARNESS (USA); H. BOUMA (NETHERLANDS)*, discussant. **ISSUE** Technology is pervasive in the healthcare arena and is increasingly being used for service delivery, in-home monitoring, interactive communication, transfer of health information and peer support. The intent is to create tools to help patients take a more proactive role in their own healthcare to improve health outcomes and decrease healthcare costs. There is little research on the usability of these tools for older adults who already experience health disparities and who will need to interact with these tools as the incidence of chronic illness increases with age. **CONTENT** This symposium will discuss findings from the United States and the Netherlands regarding difficulties older adults experience using healthcare technologies and potential interventions to enhance the usability of these tools for older people. The technology applications include telehealth applications and internet health information. Issues discussed will include privacy and factors influencing the adoption of telehealth applications, trust in e-health, and interface design. **STRUCTURE** Scott Beach will provide findings regarding potential trade-offs related to loss of privacy in quality of life technology applications from samples of middle-aged and older adults with and without a disability. Richard Schulz will present findings from a survey of older adults and wheelchair users that assessed preferences regarding key attributes of technologies that could provide assistance with daily activities. The findings provide broad parameters for the design of technology to enhance autonomy in older adults and disabled individuals. Don Bouwhuis will provide findings regarding the successful operation, acceptance, and adoption of telehealth technologies. Data collection methods included interview, questionnaires and observation of older adults with the technologies. Sara Czaja will present findings from a study that examined the ability of family caregivers of dementia patients to use the Internet to find information relevant to care provision and factors that influenced choice of websites and trust in Internet health information. Neil Charness will provide findings from a study that tested interventions to reduce the stress that older adults experience when adopting technology applications. The individual presentations will be followed by a discussion led by Herman Bouma. **CONCLUSIONS** The findings suggest that the use of healthcare technologies may be challenging for older people and problems with interface design influence the acceptance and adoption of technology. This issue is important as the incidence of chronic illness and disease increases with age. However, findings also suggest that many of these problems could be addressed by using a user-centered design approach.

Keywords: telehealth, Internet, privacy, technology adoption

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S. BEACH, R. SCHULZ, J. DOWNS, J. MATTHEWS, K. SEELMAN, L. PERSON MECCA, K. COURTNEY. Monitoring and privacy issues in quality of life technology applications. Gerontechnology 2010;9(2):78-79; doi:10.4017/gt.2010.09.02.007.00 **Purpose** To explore potential trade-offs related to loss of privacy in quality of life technology (QoLT) applications. We examine attitudes towards releasing various types of personal health information to different recipients using

recording methods of varying intrusiveness, traded off against different levels of potential benefit (increased function; prevention of nursing home placement), for participants with varying levels of current disability including manual and power wheelchair users. **Method** Two sample surveys were conducted with baby boomers (45-64) and older adults (65+) both with and without disability: (i) a national web-based survey (n=1,518) focused on general acceptance of sharing health-related information with five targets (family, doctor, researchers, insurance company, government) and recording via sensors (no video), video without sound, and video with sound; (ii) a mail survey (n=690) of local gerontology and national wheelchair registry members exploring more explicit privacy trade-offs in QoLT applications (recording with sensors, video except bedroom/bathroom, video throughout the home; sharing with family, doctor, insurance company versus maintaining independence and increased function). **Results & Discussion** The national web survey showed less acceptability for sharing or recording information about toileting behavior compared to other behaviors, for sharing information with the government and insurance companies compared to other recipients and for recording the information using video compared to sensors. Respondents who reported ADL disability were significantly more accepting of all forms of sharing and recording of information than those reporting only IADL difficulties, who were in turn more accepting than non-disabled adults. Results from the registry survey also showed reduced acceptance of sharing information with insurance companies and with video monitoring, particularly throughout the home, regardless of functional benefits or prevention of nursing home placement. Respondents with ADL difficulties currently using a power wheelchair were somewhat more willing to make these privacy trade-offs. These data provide initial evidence for implicit trade-offs involved in the adoption of quality of life technology and have important implications for the design of QoLT applications. Ultimately, quality of life technology will need to be designed in ways that allow individual autonomy and control in deciding when, with whom and how, personal health information may be collected, stored and shared.

Keywords: privacy; monitoring; quality of life technology; disability

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R. Schulz, S. Beach, J. Downs, J. Matthews, K. Seelman, L. Person Mecca, K. Courtney. Design preferences for technologies that enhance functioning among older and disabled individuals. Gerontechnology 2010;9(2):79-80; doi:10.4017/gt.2010.09.02.008.00 **Purpose** To assess preferences regarding key attributes of hypothetical technologies that could provide assistance with ADLs, IADLs, or transfers. **Method** Sample survey of adults (n=690) recruited from a local gerontology registry and a national wheelchair user registry. Respondents completed a structured interview to assess preferences regarding the efficiency of each technology when compared to human help, training requirements, daily maintenance requirements, and the impact of technology on opportunities for social interaction. The analyses focused on the role of respondent disability level (none, IADL disability only, ADL disability), wheel-chair use (none, manual, power), and the interaction of disability and wheelchair use on respondent attitudes. **Results & Discussion** For all types of assistance provided by the technology, the acceptance rate for technologies that took a little longer than humans to perform a given task was high (90%); however, acceptance rates dropped to 58% when the technology took twice as long as a human to perform the same task. Most respondents (66-75%, depending on the task performed by the technology) reported that 2-3 hours of training would be acceptable in learning to use a new technology; acceptability ratings dropped to 34-39% when the required training time increased to 5-10 hours. The majority of respondents (91-94%, depending on the task) were willing to spend a 'few minutes per day' on maintenance of technology, but only slightly more than half (54-57%) were willing to spend an hour per day on maintenance. Acceptance of technologies that would reduce opportunities for social interaction was very low (26%). When we examined these preferences by the functional status of respondent we found that persons with ADL disability and wheelchair users were more accepting of technologies requiring higher investment of time than the non-disabled persons or non-wheelchair users. No interaction effects were found. These findings provide broad parameters for the design of technology to enhance autonomy in older and disabled individuals. Technologies that reduce

opportunities for human contact have low levels of acceptability and should be avoided. Our data also suggest that there are critical thresholds that significantly reduce the acceptability of technologies. A large proportion of potential users are unwilling to accept technologies that have high training demands, high levels of maintenance, or technologies that perform tasks more slowly than a human would. The fact that individuals with disabilities and persons who are wheelchair users are more willing to accept high demand technologies suggests that these preferences may change as individuals acquire firsthand experience with disability, thus increasing the perceived benefits of such technologies and offsetting greater inconvenience costs.

Keywords: technology preferences, disability, wheelchair use

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D. Bouwhuis, L. Meesters. Telecare and the quality of experience. Gerontechnology 2010;9(2):80; doi:10.4017/gt.2010.09.02.009.00 **Purpose** Though there are strong economic and technological arguments to introduce telecare applications, especially among older people as this would benefit prevention and increase self-sufficiency, the actual introduction meets with frequent mishaps. In order to investigate the factors that affect successful operation, acceptance and adoption several studies were performed that looked into the functioning of telecare technology. It was attempted to identify factors that predict acceptance of telecare technology, that go beyond the current Technology Acceptance Model (TAM)[1]. **Method** Data was collected according to a triangulation scheme that allowed the study of various aspects of installation, use, experience and ultimately adoption by the client. Participating clients were interviewed, filled in questionnaires and were observed carrying out the operations required for the telecare application. When the results indicated problems in the user interface, a redesign was made and evaluated a second, or a third time. **Results & Discussion** It was shown that acceptance does not at all imply adoption of the technology in the routine of daily life, even while acceptance is verbally stated explicitly[2]. In addition, there appear to be factors that work in the short term and in the long term. Early instruction, coupled with ease of use (usability) is a fairly good predictor of use on a somewhat longer term. A major problem is the poor interface quality while a further issue is the interoperability of devices involved in telecare, which is much lower than in run-of-the-mill consumer products. This leads to all sorts of practical problems in the home, where devices function apparently unexpectedly, or not at all. Even the current (3d) version of the TAM[3] falls short of covering important aspects that govern the usage decision for telecare. It is clear that technological features should figure more heavily in the model while the TAM also does not describe the permanent use of technology. In connection with that, the experience of the user of telecare is much more emotionally involving than, say, a computer or photocopier. A critical issue then emerges from these, and similar findings, which is the need for a measure of Quality of Experience, for which some approaches are proposed in the literature[4]. Interestingly, including Experience factors into a version of the TAM allows us to make rather good predictions of technology/telecare rejection, significantly better than the supposed positive factors for acceptance.

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Keywords: telecare, usability, technology acceptance

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S. Czaja, C. Lee, J. Sharit, S. Nair. The use of the Internet to support family caregivers of older adults. Gerontechnology 2010;9(2):81; doi:10.4017/gt.2010.09.02.010.00 **Purpose** To assess the information needs of family caregivers of patients with dementia and perceptions about and use of the Internet as a source of information about care giving. In addition, data were collected on the ability of caregivers to find information about the provision of care. **Method** The sample consisted of 69 older adults, aged 50-85 years who were currently, or had recently, provided care to a family member with dementia and had some computer and Internet experience. Caregivers completed a questionnaire about their information needs and sources of, and satisfaction with, information sources. They were then asked to use the Internet to find information related to three problems related to care provision. They recorded their answers to the problems which were scored according to the completeness and accuracy of their response. They were then asked to complete questionnaires about trust in Internet-based health information and factors that influenced the choices of websites they used to find answers to the problems. **Results & Discussion** Overall, the results indicated that many caregivers have difficulty finding information they needed to help them provide care for their loved one. For example, about 40% of the sample indicated that they had insufficient information about community resources and treatments for dementia. Only about half of the sample reported using the Internet as a source of information. Common sources of information included physicians, television, friends and relatives. The findings from the problem solving exercise indicated that the participants had difficulty searching the Internet for information. Specifically, several of the participants were unable to answer the queries. Furthermore, accuracy for the three problems among the participants who did attempt to answer the queries was, on average, less than 50%. In addition, participants indicated they had difficulty finding useful websites, and understanding the information within websites. However, most of the sample (92%) believed that the Internet contained useful information for caregivers and that they would use the Internet to find information. Factors that influence trust in Internet based health information included that source and date of the information as well as the design of the interface. In summary, the Internet can serve as a valuable resource for caregivers and there are numerous websites that provide information about aging and care giving. However, findings from this study indicate that caregivers may be unaware of websites that may be beneficial to them and may have difficulty using websites that are available due to complex and confusing interfaces.
Keywords: care giving, e-health, website design, technology
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N. Charness, K. Dijkstra, R. Yordon. Reducing stress for older adults who interact with telehealth technology. Gerontechnology 2010;9(2):81-82; doi:10.4017/gt.2010.09.02.011.00 **Purpose** Rising costs for hospital/inpatient care have led to an increased interest in telehealth applications, both to control costs and to ensure that patients take greater responsibility for their own healthcare. Telehealth interventions typically involve technologies for transmitting information between the patient (e.g., via a PDA or smartphone) and a care provider. Such as, transmission of vital sign information from the patient and therapeutic counseling from the provider (e.g., via videoconferencing). In the case of older adults, familiarity with such technology is usually very low, given that only about 40% of older adults in the United States in 2007 reported using computers and the Internet. Thus, a potential barrier for widespread deployment of telehealth technologies is the concerns of older patient populations about the use of such technology. In our prior work we have shown that older adults enter a laboratory setting with higher levels of arousal (blood pressure, heart rate) than do younger adults but that they respond more effectively than younger adults to relaxation training[1]. In this study we tested interventions to reduce the stress that older adults experience when working with technology such as PDAs and videoconferencing. We used guided relaxation techniques that were successful in reducing blood pressure in combination with modeling coping strategies using a videotape showing an older actor performing the tasks. **Method** Younger (n=119) and older (n=109) participants were randomized to four conditions: control, relaxation, modeling of coping, relaxation plus modeling. They participated in two sessions, a week apart, to learn to perform a PDA task and a videoconferencing task. **Results & Discussion** We focus here on the

immediate benefits of relaxation versus relaxation + modeling coping strategies, comparing measures at entry to the lab and just before commencing learning the PDA or videoconferencing tasks. We observed significant ($p<0.05$) beneficial main effects for treatments on heart rate (M1=79.9, M2=75.3), systolic blood pressure, (M1=123.1, M2=119), and diastolic blood pressure, (M1=78.1, M2=75.7), though the positive impact was equivalent for relaxation alone or in combination with modeling, for young versus old, and across days/tasks. Main effects were also observed, as expected, for age groups (older having higher systolic and diastolic blood pressure). Consistent with our earlier studies, relaxation training had a positive benefit on physiological measures and is worth administering to older adults to help them cope with stressful training to use telehealth technologies. The modeling of coping strategies did not differentially boost this benefit.

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Keywords: stress, aging, telehealth, relaxation

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