N. CHARNESS (Convener) **Designing interventions for independent living through ICT: The PRISM clinical field trial.** *Gerontechnology 2014;13(2):73;* doi:10.4017/gt.2014.13.02.034.00 **Participants** S.J. Czaja, (USA), W.A. Rogers, (USA), W.R. Boot, (USA), H. Umemuro, (Japan) **Issue** Elderly individuals who wish to remain independent can benefit from carefully designed information and communication technology (ICT) systems to maintain social connectivity and well-being. We describe initial results from the PRISM clinical field trial which employs an internet-connected computer system designed in accordance with principles of user-centered design. Three hundred participants age 64+ years who were living alone and at risk for social isolation were randomized, half to the computer system and half to a paper-based (binder) control condition that provided similar information and social contact. **Content** We describe the goals for PRISM, its structure and components, and the process of recruiting a diverse sample from three regions in the U.S.A., as well as early positive outcomes of reduced social isolation and improved social connectivity (S.J. Czaja); we outline the use of focus group methodology and questionnaires to select PRISM features and the iterative design process used to create the hardware, software, and training components for the PRISM system (W.A. Rogers); we detail the development of one of our measurement scales, the Computer Proficiency Questionnaire, and discuss early results indicating the effectiveness of PRISM in promoting computer proficiency (W.R. Boot). Our discussant (H. Umemuro), an expert on designing ICT systems for older adults, will provide his perspectives on PRISM. **Structure** There will be four oral presentations, including commentary, followed by a panel discussion. **Conclusion** The PRISM clinical trial indicates that the risk of social isolation for older adults can be reduced and social connectivity for the elderly improved by careful design of ICT systems and of training packages based on principles of human factors and through an iterative design process. A system such as PRISM, which fits the gerontechnology matrix as an example of the intersection of ergonomics design and psychology[1], can advance the goal of promoting successful longevity in an aging population.

References
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S.J. CZAJA, W. BOOT, N. CHARNESS, A.D. FISK, W. ROGERS, J. SHARIT, C-C. LEE, S. NAIR. **The PRISM clinical field trial to enhance well-being of older adults at risk for social isolation**. *Gerontechnology 2014; 13(2):73-74;* doi:10.4017/gt.2014.13.02.037.00 **Purpose** An increasingly important public health issue is ensuring that the growing population of older adults has the capacity to live independently and enjoy a good quality of life. Technology holds promise in terms of providing support to older people and enhancing their capacity to live independently. The objective of the PRISM trial is to gather rigorous evidence about the value of a technology application, the Personal Reminder Information and Social Management System (PRISM), which is designed for older adults to support social connectivity, memory, knowledge about topics, leisure activities, and access to resources. **Method** The study design was a three-site randomized field trial. Following a baseline assessment, which included measures of demographics, health, prior technology experience, computer attitudes and proficiency, cognitive abilities, social support, and well-being, participants were randomly assigned to the PRISM condition or a Binder condition. Follow-up assessments occurred at 6 and 12 months post randomization. Participants also received a telephone interview at 18 months. **Results & Discussion** Three hundred adults (aged 64-98 years) were randomized into the trial (150 participants in each condition). The sample is predominantly female, ethnically diverse, and from lower income strata. Although the majority of the sample population had minimal or no prior computer/internet experience, we were able to train all participants in the use of PRISM. The initial data indicate that the participants assigned to the PRISM condition enjoyed using the software and perceived it as valuable. They indicated that using PRISM facilitates their ability to connect or re-connect with family and friends, access community resources, and find information about topics of interest. The data also indicate that using PRISM resulted in re-

duced feelings of social isolation and enhanced social support. Overall the data suggest that technology holds promise in terms of enhancing the well-being of older adults.

W.A. ROGERS, T.L. MITZNER, A.D. FISK, W.R. BOOT, N. CHARNESS, S.J. CZAJA, J. SHARIT. **PRISM development: Iterative design using human factors tools.** *Gerontechnology 2014; 13(2):74;* doi:10.4017/gt.2014.13.02.039.00 **Purpose** We conducted a field trial to assess the relative benefits of: (i) a computer system referred to as PRISM (Personal Reminder Information and Social Management) versus (ii) a paper-based system containing comparable information (e.g., community information, educational resources, games). To evaluate the differential effects, we had to ensure that both systems were usable by and useful for the target users (i.e., older adults at risk for social isolation). In addition, the instructions for use and the training had to be clear and effective. To that end, we employed a human factors approach to the development of the PRISM system. Human factors practitioners investigate the capabilities and limitations of people and the demands placed on them when they interact with a system. **Method** Our approach was multifaceted: (i) needs assessment with target users - we conducted a survey of older adults with computer experience to determine how they used a computer and the internet; (ii) we interviewed older adults who lack computer experience to assess their needs and interest in PRISM; (iii) we identified a prototype system to use as the starting point for PRISM and conducted a heuristic evaluation and cognitive walk-through by experts; (iv) we conducted detailed user testing of all experimental materials; and (v) we developed and tested a detailed instruction and support system. **Results & Discussion** The survey and interviews yielded content ideas and challenges to be met in the design of the system. The evaluation by experts and target users identified user needs and design recommendations that were implemented in the redesign (e.g., meaningful icons and labels, navigation demands). The need for extensive training and instructional support became clear through the development and testing process, and thus these materials were integral to the implementation process. Overall, these data illustrate how human factors assessment tools provided valuable insights for design of the field trial, a necessary first step to ensure reliable and valid behavioral assessments.

W.R. BOOT, N. CHARNESS, S.J. CZAJA, J. SHARIT, W.A. ROGERS, A.D. FISK, T. MITZNER, C-C. LEE, S. NAIR. **PRISM measure development: The design and validation of the computer proficiency questionnaire.** *Gerontechnology 2014; 13(2):74-75;* doi:10.4017/gt.2014.13.02.035.00 **Purpose** Efficient and effective computer and internet training depends on an understanding of an older adult's existing level of proficiency. However, in the development of the PRISM trial (assessing whether a specialized computer system can improve the well-being of older adults at risk for isolation), we discovered that existing measures of computer proficiency are not suitable for people targeted by the PRISM trial who do not use computers. Measures were often designed for and validated with sample populations consisting of young adults or older adults who have ample computer experience. Existing measures also contained jargon, did not focus on computer activities predicted to be important for maintaining functional independence, and focused on experience rather than proficiency. As a result, we developed a new measure of proficiency and assessed its reliability and validity within our PRISM intervention sample and a sample of older adults who have computer experience. Subscale measures focused on measuring proficiency related to computer activities that are predicted to facilitate social support, communication, information access, prospective memory, and cognitive engagement. Here we present new data from the intervention, which further validate the Computer Proficiency Questionnaire (CPQ) measurements by demonstrating increased proficiency over time after PRISM computer training and exposure. **Method** After pilot testing our new CPQ, we used baseline PRISM data (n=300) in addition to a sample of computer-proficient

older adults (n=76) to demonstrate the reliability and validity of the CPQ[1]. We also measured CPQ scores over the course of a 12-month exposure to the PRISM computer system. **Results & Discussion** We previously reported that the CPQ is a valid measure which correlates with both age and technology experience and, using discriminant analysis, can easily distinguish experienced and inexperienced computer users (>94% correct classification rate). The CPQ and each of its subscales were also found to be highly reliable (Cronbach's alpha=0.98, all CPQ subscales >0.86). To further demonstrate the validity of the CPQ, we examined changes in CPQ scores of older adults in the PRISM computer condition compared to participants in the non-computer control condition. After PRISM computer training and exposure, initial analyses indicated that PRISM participants demonstrated a significant increase in overall computer proficiency compared to the control condition as measured by the CPQ. Differential improvement in proficiency was also observed on each of the CPQ subscales. The ability of the CPQ to detect changes in proficiency as a function of training further establishes it as a valid measure, and significant changes in proficiency confirm the usefulness of the training developed for the PRISM computer system and the ease with which it can be mastered.

References

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Purpose This commentary reflects on and discusses a series of presentations reporting on the outcomes of the project that developed the Personal Reminder Information and Social Management (PRISM) system and to assess its effectiveness and usability. **Overview of the Symposium Presentations** The PRISM system was developed with the aim of maintaining the social connectivity and well-being of older adults. This symposium reports recent outcomes of a comprehensive research project on the development and evaluation of the PRISM system. The PRISM system was designed based on user-centered design principles, while using interdisciplinary collaboration that considered human factors and the opinions of psychologists and ICT engineers. The research team conducted intensive investigations related to user needs using surveys with and interviews of both project designers and potential users. The prototypes of the system as well as the related instructions were carefully tested with the help of potential users. The usefulness and usability of the system developed here was systematically evaluated by project designers using various methods with the help of a large number of potential users from diverse backgrounds. The project team has also developed a Computer Proficiency Questionnaire, a new measure of computer proficiency for appropriate evaluation of modern ICT such as PRISM. Overall, the research team has conducted the project systematically and comprehensively, while fully considering various human factors, resulting in successful system deployment. **Perspectives** Successful outcomes, reported in this symposium, illustrate the effectiveness of interdisciplinary collaboration of engineers, psychologists, and practitioners, as well as the advantages of a human-centered design approach. One of the significant points of the project was that the researchers have also focused on the affective aspects, such as whether the users enjoy using the system or their feelings of connectedness, as well as the functionality and usability of the ICT. This viewpoint should be considered as important in the development of technologies designed to increase the well-being of older adults[1].

References

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