Session 4470 (Symposium)

THE DEVELOPMENT OF A SMART REMINDER SYSTEM TO PROMOTE ADHERENCE TO TECHNOLOGY-BASED INTERVENTION AND ASSESSMENT

Chair: Walter Boot
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The overarching aim of the National Institute on Aging funded Adherence Promotion with Person-centered Technology (APPT) Project is to promote adherence to technology-based solutions designed to enhance the early detection and treatment of cognitive decline. The goal is to build and evaluate adaptive, tailored, and integrated technology-based adherence support systems for mobile software platforms that assess and train cognitive skill. The symposium describes the various steps of the development process of the APPT smart adherence support system. N. Charness will present an overview of the APPT project, its aims, and the clinical trials designed to assess the effectiveness of the APPT smart reminder system compared to typical reminder systems. S. Chakraborty will present detailed analyses of past cognitive intervention data to inform understanding of who is likely at risk for poor adherence and how adherence lapses might be predicted in advance to provide just-in-time adherence support. D. Carr will present an exploration of motivating factors for participants to engage in research, and these motivations will be tapped to help develop motivational messages for the APPT adherence support system to be used in the two planned clinical trials. M. Dieciuc will provide additional insights into motivations for engaging in home-based cognitive assessment and training derived from a focus group study. Finally, S. Zhang will describe the results of an initial pilot study examining the effectiveness of motivational reminder messages that match vs. mismatch participants' own motivations. All results inform the design of the APPT system to maximize adherence.

AIMS OF THE ADHERENCE PROMOTION WITH PERSON-CENTERED TECHNOLOGY (APPT) PROJECT

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The APPT project supports the early detection and treatment of age-related cognitive decline and dementia by 1) enhancing adherence to cognitive intervention and assessment protocols, 2) improving understanding of barriers to long-term adherence, and 3) developing algorithms for predicting and preventing adherence failures. Two randomized controlled trials will test an adaptive technology support system predicted to boost adherence to cognitive protocols over a period of six months within samples of older adults with and without cognitive impairment. These studies will provide insight into the benefits of adherence support, and individual difference factors that should shape the adherence protocol, informing the process of identifying individuals who would benefit from additional support and predicting and preventing extended adherence failures before they happen. These studies should improve early detection and treatment of cognitive decline, extend functional independence, and improve lives of those with cognitive impairment as well as the lives of their families.

MACHINE LEARNING APPROACHES TO UNDERSTANDING AND PREDICTING PATTERNS OF ADHERENCE

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In cognitive training of older adults, adherence is a major challenge, but appropriate just-in-time adaptive interventions can improve adherence. To understand adherence patterns and predictors of adherence lapses, we aggregated data from two previous trials (N > 230) involving home-based cognitive interventions. This dataset, detailing 40,000 intervention interactions, contains information about intervention engagement and measures of objective and subjective cognitive performance, demographics, technology proficiency, and attitudes. Exploratory analyses were conducted to understand patterns and predictors of faltering adherence, using classification models, together with feature selection to remove redundant variables. Adherence behaviors in a week were predictive of quitting the following week. Game parameters such as the time of play were weak indicators of future playing patterns, whereas game success was a strong predictor of adherence. These and other useful observations will be incorporated in the design and development of the smart reminder system to be deployed in the APPT project.

FACTORS THAT MOTIVATE OLDER ADULTS TO PARTICIPATE IN RESEARCH: TYPOLOGIES AND IMPLICATIONS

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A key challenge for scholars who study aging is identifying a pool of research volunteers willing to participate. Toolkits and strategies acknowledge the differences in recruitment needed for older adults relative to younger adults, but there is little information about variations among older adult research volunteers. Based on a community sample of older adults age 60+, this study evaluates differences across seven specific motivators across three broad categories: values/altruism, personal growth/improvement, and immediate gratification. We then identify and evaluate four typologies of older adult volunteers based on the combinations of motivations the older adults in our sample identify as important to participation in research studies. Based on these analyses, we describe how our results might inform recruitment and retention practices in aging studies. Further, we will discuss how these results will help shape our technology-based reminder system with a greater understanding of motivations.