Differences for Users With and Without Major Depressive Disorder: Usability of a Behavioral Intervention Technology for Increasing Antidepressant Medication Adherence

Colleen Stiles-Shields, MA1, Enid Montague, PhD2, Jenna Duffecy, PhD3, David C. Mohr, PhD1
1Center for Behavioral Intervention Technologies, Department of Preventive Medicine, Feinberg School of Medicine, Northwestern University, Chicago, IL;
2Department of Medicine, Division of General Internal Medicine and Geriatrics, Feinberg School of Medicine, Northwestern University, Chicago, IL

Abstract
The current research investigated the usability of Medlink, a behavioral intervention technology (BIT) designed to increase antidepressant medication adherence. Lab based usability sessions were conducted with adults prescribed a chronic medication with and without a diagnosis of Major Depressive Disorder (MDD). Quantitative and qualitative data indicated unique user needs for adults with MDD.

Introduction
Major depressive disorder (MDD) is a psychiatric condition that creates a high societal burden in terms of morbidity, suffering, mortality, and cost. Primary care is the de facto site for the treatment of MDD, yet outcomes are poor. Two reasons are poor patient adherence to antidepressant medications (ADMs) and the failure of physicians to provide guideline-congruent care to patients taking ADMs. Medlink, a mobile smartphone delivered intervention, aims to improve the treatment of MDD in primary care by providing ADM adherence monitoring and guideline-congruent support to both the patient and physician. The purpose of the current research was to evaluate Medlink with potential end users in order to understand how the design was congruent with user needs, capabilities, and limitations. A secondary goal of this evaluation was to ascertain if user needs for users with MDD might differ from needs of users without MDD.

Method
The Medlink prototype included a cellularly enabled pill dispenser, where the device records when the pillbox has been opened and signals the mobile phone application. The system also included a mobile phone application that provided alerts for missed medication, weekly assessment of depressive symptoms and side effects, didactic content, and visualizations of adherence and side effects. Lab based evaluation of Medlink was conducted with 23 adults currently prescribed a chronic medication (73.9% female; M Age = 40.7 ± 13.9); 12 participants met criteria for MDD (M PHQ-9 = 17.4 ± 4.1). The system usability scale (SUS), technology acceptance scale, qualitative feedback, video analysis of tasks and errors, and performance in task-based scenarios were utilized as data to inform assessment of usability, and user capabilities and needs with MDD as compared to non-depressed users.

Results
Qualitative feedback and video analysis suggested mood changes while interacting with features associated with assessing depressive symptoms and side effects for users with MDD. While there was agreement across groups regarding usability of the prototype (assessed by the SUS), users with MDD reported significantly more difficulty explaining why the system may be beneficial to others (p = .01) and less confidence that most people would learn how to use the system (p = .01). Changes to Medlink have been made to enhance features related to describing usefulness and increasing self-efficacy.

Conclusion
Results suggest that users with MDD might respond differently to features assessing their mood. Additionally, they may require more tailored feedback and tutorials to increase adoption of these applications. The findings of the current study are informing the design of the Medlink intervention, as well as information and interaction components associated with the system’s design.

References