Chapter XXXVIII
Designing Mobile Applications to Support Mental Health Interventions

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ABSTRACT

The advent of mobile technology has brought computing to a wide range of new contexts, some of which are highly sensitive and place new constraints on the designer. In this chapter we discuss issues related to the design and evaluation of mobile software for sensitive situations, where access to the end user is extremely restricted. We focus on the specific example of technological interventions that support adolescents in mental health care settings. We examine the practical and ethical constraints placed on access to end users and contexts of use, and how this may affect approaches to design and evaluation. General design recommendations for this area are described. We consider approaches to iterative design with mental health care professionals, and how research on technological and therapeutic aspects may proceed in tandem. We identify methods that can be used when conducting evaluation in these limited situations and describe a methodology for maximising the value of such evaluation. By way of illustration, we present the design and evaluation of a mobile phone-based “mood diary” application designed for use in clinical situations by adolescents undergoing mental health interventions.
INTRODUCTION

There are a variety of well-established methods for the design and evaluation of user interfaces. Recent developments in mobile technology have brought technology into a variety of novel contexts. Because of this, there has been a focus on ethnographic and context-based approaches to requirements gathering and design. While there are new challenges posed by these contextual factors, by and large, designers can draw on adapted versions of tried and tested methods for requirements elicitation, design, usability improvement, and evaluation. Hence, questionnaires and user interviews, paper prototyping, user observation, think aloud protocols, and so on, can be applied in the design and development of new mobile systems.

In some situations, established methods are not viable because of the sensitivity of the environment or the end users. Sensitive situations, as discussed in this chapter, are situations where poor quality solutions may have a highly negative impact, and where the introduction of not just the technology, but also the designer, could be detrimental to the environment that is the target of the technological intervention. As a result of this sensitivity, one could have a system under development where there is no direct access to end users. For such situations, it is necessary to identify new methods to address the problems of design and evaluation in these circumstances. This chapter’s main focus is on identifying methods for design and evaluation in sensitive situations where access to the end user is extremely restricted. To achieve this, the chapter concentrates on one particular situation; the use of mobile software in talk-based mental health care with adolescents. An ancillary aim is to give sufficient background detail to help readers understand the significant constraints present in this area. Many of the issues raised are applicable to a wider range of sensitive situations.

This background section begins by briefly describing why adolescent mental health is a particularly sensitive situation, and discussing why mobile software has particular promise in this environment. It continues with a description of the ethical constraints the designer needs to consider. We then discuss which traditional usability evaluation methods are applicable in this situation, and discuss related research in this and similar domains. Finally, we present a characterization of the end users; both the adolescent clients and the therapists. The chapter then moves on to present a range of design and evaluation recommendations. In particular, we present a multistage methodology for developing mobile software in this sensitive situation, and end by describing a case study that demonstrates the benefits of this process.

Mental Health: A Sensitive Situation

Mental health is one of the most pressing concerns for public healthcare systems worldwide. A large-scale international study has identified mental illnesses as the second leading cause of disability and premature mortality in the developed world (Murray & Lopez, 1996). The past 50 years have witnessed major advances in the treatment of mental illnesses. One significant report concluded that the efficacy of mental health treatments is well documented, and that a range of effective treatments exist for most mental disorders (Surgeon General, 1999). Treatment generally takes the form of talking, listening and learning, physical treatment (drugs, ECT, biomedical), and/or social interventions. This chapter focuses on listening-and-talking-based intervention methods. Many studies have concluded that talk-based methods are equally as effective as drug-based interventions in the treatment of many disorders (Surgeon General, 1999).

When designing technology for mental health care (MHC) environments, researchers have to carefully consider and characterize both the adolescent client and the therapist. Both are sensitive to the introduction of new technologies in a therapeutic setting. Adolescence is the transitional period between childhood and adulthood, and is a time when professional support for dealing with mental illness is in greatest need. However, most adolescents with mental health problems do not receive professional help and those who do can find it difficult to engage with the available ser-