Lessons from Patients:
Resilience Strategies and Behaviours

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Abstract

Taking health-related procedures and tasks outside of the relatively controlled confines of a clinical setting can present all manner of contextual challenges for patients. However, users of digital systems in this and other scenarios often manage performance and mitigate potential threats through Resilience Strategies. In this position paper, we provide a brief discussion and examples of resilience strategies in a home-healthcare context, and further describe how a mindful approach to the tactics and interventions utilised by patients and end-users could provide insights for practitioners working in this field.

Author Keywords

Resilience, Individual; Cognitive Strategies

ACM Classification Keywords

H5.m. Information Interfaces and Presentation (e.g., HCI): Miscellaneous.

Introduction

Within the human factors literature, and particularly in safety critical domains such as healthcare, there is a tendency to examine the causes and factors surrounding adverse events, such as errors that may lead to patient harm. There is less investigation of
when things "go right": instances where actors have identified and mitigated a potential threat before it contributes towards an adverse event. This adaptation to avoid negative consequences forms the central concern of Resilience Engineering, which seeks to identify and promote the aspects of a system that make a positive contribution to safety or performance [1].

Recent work into the resilience strategies of individuals [2, 3] applies the resilience engineering perspective to HCI and situated interaction. This perspective seeks to articulate the practices applied by individuals at the sharp end, which despite having a positive impact on safety or performance, largely go unreported as (i) they become incorporated into routine practice and (ii) reduce the likelihood of the types of adverse events that usually provoke investigative scrutiny. These resilience strategies take many forms, although fundamentally comprise strategies and behaviours that improve safety or performance prior to, during, or in response to a perceived threat or disturbance.

We believe our approach, though orthogonal to the main thrust of the workshop, provides a complementary perspective. We seek to better understand individual resilience and explore how it may be applied in a HCI context. To achieve this, we have been collecting and analysing such strategies using mixed methods (situated observations, interviews, lab studies and self-report methods including surveys and diary studies) across a range of tasks and settings. While the examples we have collected first-hand are primarily not healthcare related, we have also drawn on and appropriated the work of several colleagues on the CHI+MED project which includes examples of resilience strategies observed in a home-healthcare context, which we briefly discuss below.

**Resilience in Home Healthcare**

A colleague investigating the complexities associated with home haemodialysis [4] reported an observation in which a patient attached an improvised note to their dialysis machine's interface reminding them to change the sodium setting prior to a dialysis session. In this particular case, the patient identified a perceived threat and took action to reduce the risk of a memory lapse resulting in complications down the line.

In another case, a carer was observed intentionally triggering some of the alarms on a machine prior to a dialysis session by 'kinking' the lines. This action was performed in order to check that the machine was functioning properly and would alarm in the event of an issue with the lines. Again, this example reflects a resilience strategy in thinking ahead and identifying a potential risk, and taking action to mitigate the threat.

Both of these cases represent implicit behaviours that are liable to going unreported, despite their potential positive implications for safety. Indeed there are all manner of other such behaviours which may have been incorporated into routine and so are often not articulated without consideration of the implicit aspects of interaction, whether it be appropriating the alarm function of a smartphone as an aide-mémoire for medication adherence, checking all the required items for a procedure are in place and available prior to beginning, or disabling environmental distractions.

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1 www.chi-med.ac.uk
Workshop Contribution
We propose that as healthcare moves outside of traditional settings, a key emerging challenge will be in managing previously negligible or unforeseen challenges in the environment. Our work has demonstrated that users are often more adaptable and resilient than may largely be recognised in the human factors literature (where ‘human performance’ and ‘workarounds’ are often framed in a negative way). Practitioners working in this field will witness numerous instances where patients intervene with strategies to remain resilient to error and other threats; we encourage practitioners to seek out, recognise and reflect on the phenomenon of resilience strategies.

In terms of applying this knowledge, we propose lessons can be learnt in terms of task and workload management but also in the design and implementation of future systems. In some cases, this may take the form of using resilience strategies as a motivation for specific feature inclusion. In the example we initially described (the patient improvising a reminder), a prompt could be incorporated and available for the user which would ‘hardcode’ user support for prospective memory into the interface. In the second example which described a carer checking the alarming function prior to beginning a course of treatment, the resilience strategy could stimulate consideration as to whether actions such as checking fall within the scope of device design or protocol, and how they can be accommodated or facilitated.

We recognise a central point for discussion in the workshop will also be in terms of the methodological considerations of working in this area. While we are perhaps less well equipped to offer direct experience or insight here, we may be able to participate in discussions based on experience from a recent diary study which saw subjects reflecting on and reporting instances of resilience ‘in the wild’, and the development of this idea into an interactive mobile app. Having collaborated with a number of researchers in this area as part of the CHI+MED project, we may also be well placed to facilitate future collaborations, expand discussion and in any case would certainly benefit from discussions stimulated by this workshop topic.

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References

2 The instances presented here were collected as part of work for the paper cited but were unreported in the final paper.