Beyond The Smartphone: The Assessment And Reflection Of Wellbeing For Children

Tu Dinh Duong  
UCLIC, University College London,  
66 - 72 Gower St, London, WC1E 6EA, UK  
t.duong.17@ucl.ac.uk

Yvonne Rogers  
UCLIC, University College London,  
66 - 72 Gower St, London, WC1E 6EA, UK  
y.rogers@ucl.ac.uk

Ann Blandford  
UCLIC, University College London,  
66 - 72 Gower St, London, WC1E 6EA, UK  
a.blandford@ucl.ac.uk

Neil Sebire  
Great Ormond Street Hospital for Children,  
NHS Foundation Trust, DRIVE Office,  
40 Bernard St, Bloomsbury,  
London, WC1B 5BA  
Neil.Sebire@gosh.nhs.uk

ABSTRACT

Young children often find it difficult to express how they feel when not well. While there has been an increase in apps designed for assessing and mediating adult wellbeing, the same is not true for young children. Our research project is concerned with designing and exploring how novel technologies can enhance the assessment and reflection of wellbeing for children. A focus has been on how to raise awareness and interest without overwhelming the child. To this end, we have developed an interlinked tangible interface for assessment and a shared visualization to support the activity of reflection.
INTRODUCTION

How best to assess children’s health and wellbeing has become a concern globally, as increasing reports of children health issues are on the rise. While there are many existing apps and devices around that can be used for assessing mental health (e.g. iWatch, Fitbit and Headspace) they are targeted at adults. Likewise, most research in this area is for designing interventions for improving adult wellbeing [2]. There is a paucity of research on designing new technology interventions for assessing the wellbeing of children [4].

Our research is concerned with how to develop child-appropriate technology for assessing and improving the wellbeing and health of children. Many studies which have been conducted have focused on adults and the usage of smartphone and whilst smartphones are ubiquitous computing devices, they are not the only type of devices and may not be the most appropriate to children for the monitoring of wellbeing, given the growing concern that the overconsumption of smartphone and screen time usage can be a health risk to children [8].

Our current prototype is intended to be used by children, aged 7 - 12 years old as they are considered old enough to be able to self-reflect on events and experiences as a self-conscious activity [3, 7].

BACKGROUND

As inspiration, recent work exploring the use of pressure-based interaction with objects in relation to measure health-related information, has shown the potential of using a novel pressure-based tangible user interface for the self-report of pain intensity [1].

Increasing awareness through reflection is a common technique used in digital health [5]. By being aware of one’s wellbeing allows for reflection. The use of visualizations and sharing of data with caregivers and clinicians can help children learn the relationship between their behaviors and outcomes to their wellbeing allowing for the identification and decisions of changes to be made.

Furthermore a potential for the facilitation of discussion and reflection between children and others about their wellbeing could be aided by an object itself, in terms of a child speaking to the object, for instance It has been found that a robotic companion can have a peer-like purpose and how it improves hospitalized children’s well-being through a combination of emotional, relational and educational support [6]. Also, an object can be used as a way to engage children in discussing their wellbeing, the concept of expressing one’s self through objects for children can be found in sandplay therapy [9], whereby the use of objects in sand can act as a method for communication between a clinician and a child.

Having children involved and reflecting on their wellbeing, can help to improve communication between the child, caregivers and clinicians allowing for informed decisions to be made regarding a child’s care.
The challenges raised can be found in environments such as the homes where children live, but these challenges are further heightened in clinical environments such as hospitals. Whilst clinicians have an interest in the wellbeing of the children it currently is not systematically conducted in how children are asked “how they feel” by different clinicians.

THE DESIGN OF A NOVEL PROTOTYPE: WELLPACK

We have been exploring how a different type of interface, besides a smartphone app, can be used to measure wellbeing that can facilitate self-assessment among children. Our approach is to transform the measuring and monitoring involved in health assessment to be playful and engaging. To this end, we have created a prototype called WellPack that uses tangibility and physicality as design principles. Specifically, pressure sensors were used to augment a toy to enable it to become an interactive monitoring device. The child is asked to ‘squeeze’ parts of the toy (e.g. paws, ears) as to how they feel. An additional small device is embedded on the toy to provide questions for the child to follow whilst answering through the pressure sensors. This usage of tangible user interfaces is able to leverage a person’s familiarity with squeezing objects as a form of input whilst allowing us to map the answers collected from the sensors to the questions.

Children have their individual preferences regarding the devices and toys they use and play with while these are also subject to frequent changes over time. Therefore, presenting the same object/toy could mean that children lose interest in the object and therefore would lead to a loss of interest and decline in data we are able to gather to monitor their wellbeing. To this end, an adaptable system which can augment different toys or objects we hope will not only introduce a sense of play but could also lead to more engagement, longevity and resilience regarding the use of such tools in the wild and outside of the confines of a lab setting.

The data collected would then be rendered to both a private and public display for the purpose of increasing reflection, between the child, clinicians and parents. The focus so far has been to explore the feasibility of key design assumptions in the context of the emerging design space and act as a way to offer initial validation of the feasibility of the prototype.

Initially, we started our design process with low fidelity prototyping and the creation of storyboarding of scenarios. These were used to discuss with clinicians and researchers what was needed for the prototype to be used by children, such as flexibility, tangible user interfaces and visualizations to allow for the reflection on wellbeing. In addition to raising a child’s awareness about their wellbeing, it is important also to consider how informed consent is obtained from children as this data could be shared with others who may play a role in the wellbeing of children, such as parents and clinicians. This then leads to the consideration of how the data is visualized to the different stakeholders given their own different priorities for the use of the data.
DISCUSSION

The research reported here shows how the design of technology for assessing children’s health can be addressed using different interfaces instead of smartphone apps. We propose how playful and tangible interactions can be designed as an alternative approach alongside the presentation of the data that is collected to promote reflection among children that can be shared with others such as clinicians and parents.

The work has prompted us to explore further questions with the possible interactions proposed. For instance, an interesting aspect will be how will children augment their toys overtime for example during their stay in a hospital as their conditions deteriorate or improve, and how does the engagement and type of interaction differ between types of toys?

Therefore, what affordances in the tangible interactions are needed and where does the line between just playing and self-reflection begin and end? Furthermore, it will be important to explore how appropriate is playfulness as a design principle for understanding children’s wellbeing, in other words, is there a potential risk that the element of playfulness becomes more important to children than the actual measurement of wellbeing? Related to this, how would the environment change the way children use such a form of interaction for instance, what limitations and opportunities are there within either a home or hospital setting?

REFERENCES