Institution: University of Liverpool

Unit of Assessment: 11 – Computer Sciences & Informatics

Title of case study: In My Shoes: A Software Tool for Professionals assisting Children and Vulnerable Adults

1. Summary of the impact

This case describes social and health impact which arose as a result of interdisciplinary research at the University of Liverpool and the University of Manchester on the use of computer tools for communication with children and vulnerable adults. This research led to the development of the In My Shoes (IMS) computer program which is now widely used for interviewing children (for example in cases of child abuse) in local authorities across the UK. Since 2008, IMS has been used in the UK by more than 750 practitioners including psychologists, child psychiatrists, other mental health staff, health workers, educational workers, and specialists in forensic services. IMS is also used internationally in Ireland, Belgium, Sweden, and Norway, where more than 100 practitioners are already trained and are using the program in their day to day work.

2. Underpinning research

The development of IMS (which was referred to as MacInterview in some of the early research) started in 1994 and relied on inter-disciplinary research involving aspects of computer science and psychology with particular emphasis on Human-Computer Interaction (HCI). The goal was to learn how a computer tool can be used to assist with interviewing vulnerable individuals. The research team included the computer scientist Phil Jimmieson (University of Liverpool), three psychologists (Rachel Calam, who heads the School of Psychological Sciences at Manchester, David Glasgow, a forensic clinical psychologist, and Sheila Groth Larson, an educational psychologist), and child psychiatrist Antony Cox (Professor at Guys Hospital). Phil Jimmieson has been Principal Experimental Officer in the Department of Computer Science at the University of Liverpool since 1994. Jimmieson was heavily involved in the underpinning research, development, and implementation of the IMS tool. The main innovations of IMS are:

1. it pioneers a new form of interaction, the triadic interview, whereby a dialogue between clinician and child is mediated through the use of a computer tool;
2. it exploits the computational setting through the use of icons developed on paper, by children, that have then been transformed into appropriate computer-based depictions;
3. it has been evaluated in clinical practice and has been found to be superior to traditional face-to-face interviews.

The impetus for the project was the psychological observation that in interviews children have different levels of engagement, depending upon the type of interview. In particular, children respond well to computers. The goal of the research was to determine whether computational tools could be exploited by developing a new type of interview. The idea was that the focus of the interview should be shifted away from a two-way human-to-human conversation and instead becomes a triadic interview consisting of side-by-side use of the software by the child and the interviewer. The interviewing tool should serve as a prompt that allows the interviewer to guide the conversation without being confrontational. To achieve this, IMS provides a semi-structured dialogue supported by a pre-recorded spoken and visual guide, facilitated by the use of pre-defined expressive symbols (stylised icons representing the world).

An important feature is that the icons are flexible enough that children can use them to communicate their feelings and emotions, and that these icons are representative in capturing their sentiments. Thus, the following methodology was adopted: Communicative drawings were elicited from children and developed into paper-based symbols. These were then transformed into icons for the computational setting. Following sound HCI principles, evaluation of these icons was performed at a number of different points within the process, leading to revisions of the icons to ensure that they supported the intended communication in the best way possible. The icons covered people, places, thoughts, speech, and sensations. In addition to the area of HCI, the research is thus also

part of the field of "affective computing" whereby computational systems elicit, or relate to, human affects (the experience of feeling or emotion). The icons developed for use in the tool are not intended to mirror precisely concepts from the real world, but rather they are intended to be archetypes open to interpretation by the children to facilitate them in communicating their experiences and emotions.

After implementation, the tool has been evaluated by the IMS research team in a number of pilot studies, one of which involved use by trained users over a period of 12 months. The evaluation showed positive overall results, as documented in [1]. In particular, clinicians working in child therapy found a marked improvement when using the IMS tool for triadic interviews, compared with the earlier dyadic approaches to communication between the clinician and child. The improvements resulted because children interviewed with IMS felt empowered, and also felt less pressure interacting with a computer, rather than being engaged in a one-to-one personal interview. Similar positive results have been reported by a pilot study in a UK hospital where children used the tool to self-report pain [2]. In [3] the tool was evaluated to assess its validity and reliability by using the tool with children with no known disabilities who had undergone surgery. The tool was found to have good performance, showing positive correlations with standardised pain-intensity measures and high test-retest reliability. Furthermore, the evaluations showed that children with learning difficulties found the tool easy to use since the display of chosen materials acts as an external memory, and choices made can be changed without difficulty.

The development of IMS is ongoing and in 2012 a prototype of an Ipad version was released. This development is being informed by research by the Department of Computer Science at Liverpool that included a survey of In My Shoes users [4].

3. References to the research

Publications in the academic literature:

1. Calam, RM, Cox, AD, Glasgow, DV, Jimmieson, P and Groth Larsen, S (2000). Assessment and therapy with children: can computers help? Clinical Child Psychology and Psychiatry, 5(3) 329-343. DOI: 10.1177/1359104500005003004

2. Calam, RM, Jimmieson, P, Cox, AD, Glasgow, DV and Groth Larsen, S (2000). Can computer-based assessment help us understand children's pain? European Journal of Anaesthesiology, 17, 284-288. http://dx.doi.org/10.1046/j.1365-2346.2000.00655.x

3. Watson, S, Calam, RM and Jimmieson, P. (2002). Can computers help in assessing children's postoperative pain? Initial validation of a computer assisted interview. European Journal of Anaesthesiology 19,1-7. http://dx.doi.org/10.1017/S0265021502000832

4. Grasso, F, Atkinson, K and Jimmieson, P (2013). In My Shoes - A computer assisted interview for communicating with children about emotions. Proceedings of the 2013 Humaine Association Conference on Affective Computing and Intelligent Interaction (ACII 2013), 2-5 September 2013, Geneva, Switzerland, IEEE press. DOI 10.1109/ACII.2013.59

Implementation of the current version was supported between 2002 and 2005 by Instone Bloomfield Trust (£4,500) and maintenance of the system is supported since 2005 by Child and Family Training Charity (£3,500).

4. Details of the impact (indicative maximum 750 words)

The main beneficiaries of IMS are children and vulnerable adults. IMS has been used to interview children as young as 3, and is routinely used with school children of all ages. Professional users of IMS report that it is very effective in situations where a child lacks trust. It removes the need for direct eye contact between child and interviewer, helps to break the ice, and fosters a collaborative

atmosphere.

In the early 1990s, prior to the IMS project, psychologists predicted that computer assistance might be beneficial in interviewing children and vulnerable adults, but there was no detailed study about how this might be achieved. The underpinning research enabled the design and creation of such a tool and evaluated suitable mechanisms, first through paper-based pilot studies and then through a software prototype. As part of the research, the Department of Health selected 5 local authorities and the prototype was evaluated by these authorities. This pilot led the way for the widespread dissemination of IMS.

The necessity of training for practitioners was a major issue, and it was decided that the most effective mechanism for dissemination and training would be to team up with the not-for-profit organisation “Child and Family Training.” This organisation delivers training in a number of tools for working with children and families. Most of these are paper-based tools. In fact, IMS was their first (and only) computer-based tool. They have offered IMS training since 2007. In order to harness the impact of this research, Jimmieson personally leads many of the training sessions at the University of Liverpool. As of July 2013, more than 750 people have been trained in the use of IMS.

IMS is used in a wide variety of contexts. We will not discuss individual cases in detail due to confidentiality. Instead, we first outline areas in which IMS has had greatest impact, we then explain who is using IMS, and finally give details of a survey of IMS users.

In adoption and fostering cases, IMS is used by social workers to clarify the wishes and feelings of the children relating to their birth families and their carers. In schools, IMS is used to understand behavioural issues, for example, to discover the scenarios that trigger adverse emotional responses in children. IMS has been used in hospitals to decide the right dose of medication for children, because child patients often display an inability to distinguish the type and magnitude of pain due to their limited command of language. IMS has been used by forensic psychologists to interview children who may have been abused, and who have been previously unsuccessfully interviewed by more traditional means. That happens in both criminal and civil proceedings, but mostly the latter. IMS has also been used to provide evidence to a Coroner’s court, in a case where a child was the only witness to his brother’s death. Professionals that use IMS include:

- Educational, Clinical, and Forensic Psychologists;
- Teachers, Classroom Assistants, Special Educational Needs Coordinators, and Speech and Language Therapists;
- Social workers, Family Support Workers, and workers in Child and Family Court Advisory and Support Services.

Geographically, IMS is used by workers from 15 local authorities in England, 2 in Scotland, 2 in Wales, and 1 in Northern Island. The tool is also used internationally in Belgium, Ireland, Norway, and Sweden. In Norway, training in IMS has been delivered by Otta Family Counselling Services who have run 13 IMS courses since 2008. The Director of KF Otta, who heads the training in Norway and uses IMS as a family therapist, said:

> “We have had 13 courses by now (for about a hundred professionals) and two refreshing courses (a new one on Thursday). And what we often experience is that IMS is a very valuable tool to talk to children. Especially in the start of a conversation to "break the ice" and get to know each other in a natural way. Not to sit and face each other helps a lot. And we get lots of information about both problems and resources that are very important both to get to know the children in their contexts and as a tool to start and go on in therapy sessions.”

In June 2012, we conducted a survey of IMS users from the UK with 39 respondents covering 592 cases in which IMS was used in practice since 2008.

- 28.9% reported that they used IMS at least once for family placement,

- 42.1% for care proceedings and reviews,
- 47.4% in cases of child abuse and neglect and
- 63.2% to investigate the child's experience of education and school.

66% of responders indicated that IMS was a significant help in their work. Here is an excerpt from a survey response from an (Independent) Chartered Clinical Child Psychologist:

> "The bulk of my work is assessing children and families in either Public Law Care Proceedings or Private Law Contact and/or Residency proceedings between parents. I see approximately 30 families each year, often assessing all the siblings in a family. I use IMS in virtually all of my assessments of children over the age of 3. The extent to which I use IMS is testament to its usefulness to me. It forms a key part of an assessment process that I use with the majority of all children I see."

(The individual goes on to describe 6 particular ways in which IMS is useful for her work.) Details of the survey are presented in reference [4] from Section 3.

5. Sources to corroborate the impact

1. The National Training Director at the Child and Family Training Charity can be contacted to corroborate the use of IMS across many UK local authorities and in Norway.

2. The Safeguarding Officer at Cheshire East Council can be contacted to corroborate the impact of "In My Shoes" at Cheshire East Council to ascertain children's wishes and feelings before the commencement of care proceedings.

3. The Director of KF Otta (Kirkens Familierådgivning Otta) can be contacted to corroborate the impact of this research in Norway.

4. A Social Worker at Wigan Council can be contacted to corroborate the impact on adoption services.

5. An (Independent) Chartered Clinical Child Psychologist can be contacted to corroborate the type of impact that the In My Shoes tool has had on the work of Child and Family Clinical Psychologists.

6. Information about the tool, including information about the training sessions provided inconjunction with Child and Family Training is available at the In My Shoes website.