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# Who actually wants to use ‘the killer app’? Perceptions of Location Based Services in the Young and Old

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**Abstract**

This paper describes the results of two qualitative studies which assessed the perceptions of Location Based Services (LBS) with two UK user groups: a family with a behavior-disordered teenager, and a selection of older adults. Whilst both groups had the opportunity to use, adapt to and experience the LBS technology fully, perceptions of ‘cool’ and ‘trendiness’ affected judgments of it, and subsequent usage intentions.

**Author Keywords**

Location Based Services; Technology use; Design

**ACM Classification Keywords**

J.4 [Social and behavioral sciences]: Psychology

**Introduction**

The studies reported in this paper come from a larger body of work dedicated to the investigation of location-based services [8]. Location-based services (LBS) are able to pinpoint the geographical position of a product or individual, but are now most often deployed on mobile devices using GPS to locate a person. There has been huge growth in the LBS industry, and the emergence of LBS technology in more mainstream

settings has caused people to take notice and question its unobtrusive nature [2]. This technology is now recognized as being applicable to a variety of different user groups, not just the lone worker population for which it was predominately designed. Vulnerable, young, disabled and older groups are now a focus for LBS marketing campaigns [3]. The perception of LBS in different contexts is also changing. Previously 'uncool' uses of the technology such as 'tagging' people when on parole [5] has become cool by association, with the tag becoming a status symbol rather than a stigma [6].

Interestingly, when LBS technology emerged, many researchers and social commentators described it as the 'killer app' [4]. The uptake, however, has certainly not been as great as expected. It could be argued that the potential for information loss or the public's growing appreciation of privacy has slowed the success of LBS [1]. More recent use of LBS on social networking sites also suggest it is being used in different contexts [7]. Services such as Facebook Places and Foursquare are now enabling their users to specify where they are, what they are doing, and who they are with (Figure 1).

This use of LBS may be inherently linked to the social norms of public disclosure using social networking sites, and the ability to tell people the 'cool' locations we are at, at any time. Whilst LBS are becoming more familiar in some contexts however, psychological research into its users has been lacking. The two studies described in this paper highlight how 'cool' design can impact on adoption and use of LBS. In particular a service delivered through a technology that is considered 'cool' appeals more and is accepted by the user. Cool design also appears of more importance to the younger



**Figure 1.** 'Checking in' via Facebook Places on a smart phone

generation. The method and results are described and implications for design discussed.

## **Method**

In order to understand how LBS technology is perceived, two studies were conducted with actual LBS users. Both studies explored the perceptions and feelings towards LBS, and utilized in depth interviews with participants which were thematically analysed.

### *Study 1*

Participants were two parents (1 male, 1 female) of a 16-year-old male teenager with ADHD and Aspergers Syndrome. The family had been using an LBS system for approximately 4 months. The LBS technology was provided via a Blackberry phone running a tracking and safety traffic light system (see Figure 2). This enabled users to raise an alert if in danger.

### Study 2

Participants comprised of 13 older adults (mean age of 82) who had experience using LBS as part of previous mobility study they had participated in at Northumbria University. In that earlier trial participants were given the use of 'i-Locate', a location tracking pack worn on the arm (see Figure 3).



**Figure 2.** LBS alert system on a Blackberry



**Figure 3.** i-Locate LBS system

In both studies, participants took part in a semi-structured interview, and were encouraged to discuss their current use, as well as considerations for future use of the LBS technology.

### Findings

#### Study 1

The family case study provided some important insights into how LBS might be introduced into the lives of families with children who have psychological disorders. The main themes discovered related to two aspects of family life; first, the impact that behavioural problems had on the family before LBS use, when the teenage son would become lost, get in trouble, and lack concentration. The second aspect which became clear was the way the LBS technology impacted on the family as a whole, and improved not only navigational problems, but more interpersonal family relationships.

Importantly, the familiarity of the mobile phone enabled this system to be adopted by the family quickly and seamlessly. Whilst the parents had occasional technical trouble with the Blackberry, their son was more 'savvy' and taught them how to use it. The parents also reported that their son liked having a new and expensive mobile phone, but did not show it off to friends, respecting its utility. It was an acceptable and 'trendy' piece of technology to carry around, and was deemed so useful that at the time of the study, he family were planning to continue their use of LBS as their son progressed to high school.

## Study 2

In contrast to the successful adoption of LBS in the family setting, the older adults were far more concerned about privacy and being tracked. The physical design of the i-Locate also caused a number of problems. Participants felt that LBS was not best suited to them, and failed to see how it could be integrated into their existing routines. A few participants even failed to complete the study in full because they either forgot to wear the tracking device, or they didn't remove it from its packaging.

The familiarity with this kind of technology was an issue for participants, and in general, it was not deemed 'cool' or usable for them. The older adults described other preferred methods they used to keep in touch with friends and family (e.g. diaries and phone calls). Of those that did feel they might use this kind of technology, it would be because they may become disoriented or fall and injure themselves. There was no appreciation for the novelty of LBS, and the consideration of the technology being incorporated into a cool accessory such as a mobile phone was not desirable to them either.

## Discussion

The different designs of the LBS technology trialed in these studies exemplify how aspects of 'cool', and in particular context, can be important when adopting a new system. Whilst the older adults didn't feel that their i-Locate packs were helpful or suited to their lifestyles, the family using the LBS system on a mobile phone enjoyed its benefits and familiarity. The design of the hardware which was used to track these people made a huge difference to their evaluation of it, with

the teenage user perceiving the modern technology as 'cool'. This newer trend of LBS use on mobile phone applications is a good example of the way LBS has been adopted into the mainstream, without necessarily the associated privacy or security concerns. This may be the only way that LBS will truly become the 'killer app' it has been described as, adopted on the premise of being the socially acceptable way to track friends and family.

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