Assistive Technology For Totally Blind — Barriers to Adoption

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Abstract. Assistive technology for people with disabilities has improved. Adoption and usage of assistive technology has been positively analyzed by various researches. However, the negative socio-psychological attributes that hinder technology adoption has not been emphasized very much in academic research. Highlighting and discussing these attributes can help in improving assistive technology adoption. Using perspectives drawn from interviews of blind users heavily reliant on assistive technology, this paper details the impact of socio-psychological barriers in assistive technology usage for completely blind people.

Interview responses add credence to the original literature findings which indicate that certain socio-psychological attributes in the case of totally blind people are barriers to assistive technology adoption and usage. The results highlight need for further research to understand these attributes in case of low to medium intensity users of assistive technology. The results also contribute toward expansion of current technology adoption models to give them an increasingly balanced outlook.

Keywords: Assistive Technology Adoption, Totally Blind People, Socio-Psychological Attributes

1 Introduction

Studies have highlighted the importance of conventional technology in order to improve overall quality of life, also through the use of virtual [1] or mobile technology [2]. Conventional technologies have enabled many new service offerings and care and cure methods in health care, even in the case of patients with severe medical conditions [3]. The most important technologies include electronic health records [4] and mobile health care applications [5].

There is little differentiation between technologies in general and assistive technology, all technology is assisting humans in their life. However, in health care the term “assistive technology” has often a special meaning. Riemer-Reiss and Wacker [6] have said that “assistive technology devices enable individuals with disabilities to participate in society as contributing members”. Advancement in assistive technology has provided better enablement of improved quality of life for people with disabilities [7], [8].
Within the last decade, various assistive technology adoption models have highlighted attributes that have an impact on assistive technology adoption for people with disability. These models include Human Activity Assistive Technology (HAAT) [9], Needs, Analysis and Requirements (NARA) [10], USERfit Method [11], Matching Person to Technology (MPT) Model [12] and the Comprehensive Assistive Technology (CAT) model [13].

The CAT model provides a comprehensive overview of targeting needs and desires for assistive technology adoption, and was originally used as a base-model to examine and detail the socio-psychological barriers to technology adoption. While CAT model was found to be useful artifact for Assistive Technology adoption, its little consideration to negative socio-psychological attributes necessitated minor additions, which are detailed by Sachdeva [14].

In this paper, the target population is totally blind people who are heavy users of assistive technology. A totally blind person often relies on assistive technology for better orientation, mobility [15], information gathering, social inclusion [13], and eventually, enhancing the quality of life [8]. In this context, a heavy user of assistive technology is a totally blind person who uses assistive technology for an average of over 6 hours every day.

The socio-psychological implications of blindness have been carefully studied by various researches [16], [17], [18]. However, co-relation between socio-psychological attributes and technology adoption for totally blind people has not been interpreted from a user-perspective. Through three interviews, this paper cross-examines behavioral attributes that impede assistive technology adoption. This research uses the proposed addition framework to the CAT model [14] as the base model.

The rest of this paper unfolds as follows: Section 2 highlights and explains the socio-psychological attributes that impede assistive technology adoption. Section 3 discusses the methodology used for this research. Section 4 shows finding from the interviews, shared as narratives surrounding the core constructs highlighted in Section 2. Where necessary, similarities and differences in findings are drawn. Section 5, the final section of this paper ends in conclusion and discussion, where emphasis has been maintained on discussing the possibilities of further research to understand this issue. The conclusion focuses on theoretical and practical contributions.

2 Background

2.1 Socio-Psychological Barriers to Assistive Technology Adoption

Assistive technology provides numerous benefits for people with disability. According to Hersh [13], assistive technology can be used to overcome the social, infrastructure and other barriers experienced by disabled people that prevent their full and equal participation in all aspects of society. Similarly, Carr, Gibson and Robinson [19] have pointed out that assistive technology allows people to continue in their normal roles and meet their expectations of life despite their physical impairment and disability. However, in the case of visually impaired and blind people, while assistive
technology is very useful, its implementation and accessibility has been often questioned [20].

Within this paper, special emphasis has been laid on assistive technology, focusing on the essential components of technological advances that can enable totally blind people to improve their quality of life. Some of the more common assistive technologies that are used by totally blind people include Screen readers [21], Braille printers [22], Personal digital assistants (both Braille and Speech operated) as well as audible tactile signs and warning surfaces.

The base framework highlights socio-psychological attributes that are likely to hinder assistive technology adoption for blind people. While the model extension is targeted towards totally blind people, its relevance to other disabled groups has not been tested, and detailed discussion on the topic is out of scope for this paper.

![Diagram](image-url)

**Fig. 1.** Model for socio-psychological barriers in assistive technology adoption for totally blind people [14].

The attributes in Fig. 1 are defined as follows:
Social Conditioning is defined as the sociological process of training individuals in a society to respond in a manner generally approved by the society in general [23]. Due to the social paradigms surrounding blindness (as a disability), the unintentional negative social conditioning promotes a sense of positive discrimination, pity and sympathy for blind people. These factors can make (blind) people self-conscious, potentially hindering adoption of assistive technology.

Control over surroundings & Expectations: While blind people wish to have control over their surroundings [24], [25], these wishes don’t always translate into reality, leading to frustration and anxiousness in assistive technology usage [26], [27]. Similarly, high expectations from assistive technology usage, followed by frustration or even failure could result in loss of trust towards technology, thus affecting assistive technology adoption.

Frustration and Anxiousness: Quite often, one of the major reasons for lack of assistive technology is frustration from lack of understanding or ease of use. While personal characteristics (motivation to learn and use) can alter the level of frustration and anxiousness associated with assistive technology usage, people with no vision face certain difficulties with technologies that people without vision take for granted.

Social Embarrassment: As highlighted in the study conducted by Shinohara and Tenenberg [27], (totally) blind people prefer to be aware of their surroundings in the way of knowing the time, location and other useful information. However, curiosity and unwanted attention from others, as well as lack of empathy, can lead to heightened self-attention [28], thus hindering assistive technology usage. Social embarrassment is also a major deterrent to assistive technology adoption for totally blind people.

A combination of these socio-psychological factors can hinder assistive technology adoption.

3 Method

3.1 Research Question and Interview Design

The research questions that guided this study were as follows:

- Does a totally blind user heavily reliant on assistive technology resist adoption and usage of technology because of negative socio-psychological factors?
- What positive traits help totally blind people to overcome the hindrances introduced by negative socio-psychological attributes?
- To what levels are totally blind people affected by social conditioning, expectations, frustration and anxiousness as well as social embarrassment when trying to use or using technology.

Given the limited understanding of socio-psychological barriers to assistive technology use in the case of blind people that are heavily reliant on assistive technology, it was considered that case-studies – specifically semi-structured interviews - would provide the best sources of information. Yin [29] suggests
reporting the case studies in the form of narratives, based on a clear conceptual framework. Stake [30] also supports narrative-based analysis as it optimizes the opportunity of the reader to gain an experiential understanding of the case. Based on this, a semi-structured questionnaire was designed for this interview. This questionnaire is presented in Appendix 1.

3.2 Participants

In order to understand the issue from varying perspectives, three participants were contacted and interviewed for this study. They were selected as a convenience sample [31], and the names used in the reporting are not real.

The first participant – John – is a high school student who has been blind since birth. Due to his young age, he had grown up in an environment which was conducive to assistive technology usage. He is heavily reliant on technology in order to carry out daily activities and spends over 60 hours every week using computers and mobile phones.

The second participant – Steve – is a mature student who is active in organizational activities related to welfare of people with visual impairment. His studies and active role in organizational activities necessitate heavy use of technology, and Steve often records over 45 hours of computer and mobile phone usage every week.

The third participant – Bill – is an online entrepreneur. His work involves spending over 65 hours every week networking and working online. Bill has been blind since the age of 36 (partially blind for a few years before that) and has previously worked with people with disability.

3.3 Data Collection and Analysis

This study used the theoretical framework in Figure 1 to create a semi-structured interview for participants. Based on the model, a list of 17 questions was constructed. These questions included basic fact-finding questions about personal life (name, age etc.), followed by well-directed, yet open questions discussing hindrance to assistive technology adoption.

For this study, each participant was separately interviewed through Skype. The interviews took between 25 to 90 minutes. During the interviews, the interviewer took notes actively, while the call was being automatically recorded. Along with the audio recordings, the hand-written notes provided a valuable point of reference for data analysis. The interviewer felt it necessary to discuss the premise of the interview with the participants before interviewing them, primarily because of the sensitive nature of the interview. When one focuses on the negative aspects of socio-psychological features that might be personal to the interviewees, it is in the best interest of everyone to discuss the premise and possible implications of the interview openly.

While it is impossible to predict outcome of the scenario where the premise was not discussed, the interviewer found that the opening up discussion before the actual interview allowed deeper discussion, and as a result, the interview responses were
thorough. Moreover, the interviewees showed no signs of inconvenience or feeling uncomfortable at any point. The responses, combined with pre-interview discussion provided some interesting observations, which will be discussed in the next section.

The interview analysis was carried out after the interviews, and focused on finding commonalities and differences in the interviewee responses. The data analysis attempted to explain the impact level of socio-psychological attributes that might hinder assistive technology adoption and use. The data was analyzed through inductive reasoning and was divided into the four socio-psychological attribute classifications:

- Social conditioning
- Expectations and control over surroundings
- Frustration and anxiousness
- Social embarrassment

The findings for this study were organized around the themes that emerged from the analysis. The narrative comments have been edited slightly for coherent readability.

4 Findings

4.1 Basic facts of the interviewees

Interviewing participants separately provided an opportunity to speak to them freely about how they are constrained in assistive technology use. As can be seen in Table 2, the three participants had varying age and professions; however, the similarities in their visual impairment provides useful base for analyzing their responses. This study focuses on the socio-psychological barriers that hinder assistive technology adoption in case of totally blind users heavily reliant on technology, and thus to stay relevant, only the responses directly related to this issue have been shared.

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<thead>
<tr>
<th></th>
<th>John</th>
<th>Steve</th>
<th>Bill</th>
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<tbody>
<tr>
<td>Age</td>
<td>18</td>
<td>41</td>
<td>52</td>
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<tr>
<td>Occupation</td>
<td>Student</td>
<td>Student</td>
<td>Online Entrepreneur</td>
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<td>Status of Blindness</td>
<td>Blind since birth</td>
<td>Blind since birth</td>
<td>Blind since the age of 34</td>
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<td>Current Location</td>
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<td>Finland</td>
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4.2 Social Conditioning

Those with developmental disabilities are pitied because it is often believed that people with disabilities feel unhappy, suffering, or are unable to live normal lives and meaningful lives [32]. In the research, Ntibea [32] found that the common social attitude toward people who were blind were pity and sympathy. This brings up a very important question:

Would a totally blind person heavily reliant on assistive technology resist or reject further adoption or use assistive technology based on (negative) social conditioning?

Negative social conditioning can be a detrimental factor for any group of people, regardless of their condition. In case of totally blind people, it is important to understand the role social conditioning plays in affecting assistive technology adoption and usage. Quite often modern technology in its most basic form is not accessible to totally blind people. Only after modifications (such as tactile surfaces) and enhancements (such as screen readers) can totally blind people use these devices comfortably. Based on this, participants were asked about their opinions on if modern devices were adjusted to the needs of sighted people, and if they had been on the receiving end of negative reactions regarding technology use from sighted people.

The responses, interestingly, differed across the interviewees:

[John] “Personally, it was easy for me to understand the logic of computers. I started when I was 10 year old. These days, I have stopped thinking about the logic...and regarding our use of technology – ignorance is expected, and it doesn’t bother me.”

[Steve] “Modern computer and mobile devices are made for ‘healthy young sighted-people’. Most developers are unable to consider needs of other groups...in some online chat rooms; people are surprised that I can use computers...Technical issues don’t make me frustrated, but they can be a problem sometime – when I cannot access information or my screen reader is too old for some net application”

[Bill] “The look and feel of iPhone is designed for the sighted world. But it works just fine for me...I don’t feel that I am marginalized...technology is adaptable, but lacks consistency.”

As can be seen, the look and feel of these devices did not faze the participants, though lack of consistency and minor oversights in design did cause problems. The participants generally anticipated ignorance regarding their use of assistive technology, and the comments to follow highlight the impact of this ignorance on their assistive technology usage:

[John] “Those who don’t know enough about technology wonder how I do what I do. This is something blind people encounter all the time, and not just with technology. People’s reaction (or ignorance) does not bother me...absolutely not...because the knowledge is not widely available.”
Recently, when I switched from conventional phone to a touch-screen phone, I started to do things differently. I became more self-conscious, because the things I did were not familiar to me. I found myself wondering “what were others thinking?” But, this made no difference in my technology use – I am simply more aware!"

[Steve] “The nurses were surprised when I was using SMS (texting). People think that we cannot use technology, and when they see us using it, they are surprised and shocked. There are exceptions, but few. This happens so often that it doesn’t bother me anymore.”

[Bill] “I am pretty knowledgeable…and people know my capability, so even sighted people come to me. And I am not conscious of using technology in public, which might very well be a coping strategy. I have to have a belief in myself!”

While the participants might have felt self-conscious in some instances, their feelings not affect their dependence and use of assistive technology. It can be argued that due to the high frequency of intrigue, the participants were de-sensitized and hence could continue living their daily life without any dramatic changes. As Bill pointed out, the de-sensitization could very well be a coping mechanism, thus allowing him to use assistive technology in public without feeling self-conscious.

Social conditioning can also have an effect on the personalities of the target population, thus affecting their attitude toward continued technology usage. In this case, it was inquired whether the participants preferred assistive technology or manual assistance (from other people) to carry out daily tasks. The responses were mixed, but gravitated towards preference for assistive technology.

[John] “I always prefer assistive technology, and don’t like asking for help unless I absolutely have to!”

Based on this data, it can be interpreted that social conditioning has not impacted heavily on the lives of John, Steve and Bill. Can the same be said for other blind users who are heavily reliant on assistive technology?

### 4.3 Expectations and Control over Surroundings

Expectation from technology is one of the major drivers of assistive technology adoption [33]. Berry [34] noticed that the perceptions of both beginner and expert blind-web users differed considerably. However, one theme central to both subgroups was the expectations from technology. Matching these expectations necessitates creating a sense of control over surroundings. Actions are determined by the need to achieve best possible results by controlling our surroundings, and this applies to totally blind people as well. Berry [34] also noticed that the two user groups performed differently when their expectations from technology were challenged – the beginner users would get frustrated and give up, whereas the expert users would try and navigate through the problems to find results. One of the aims of this study is to
ascertain whether Berry’s analysis would hold true for heavy adopters of assistive technology in this day and age.

How do totally blind users heavily reliant on assistive technology behave (towards assistive technology) when their expectations of assistive technology are challenged?

To start with, participants were asked about their expectations from assistive technology. The opinions on this were divided…while two participants were now realistic about expectations from technology; Bill was frustrated as the technology did not meet his expectations:

[Bill] “Absolutely, I expect more than it gives me. I am incredibly frustrated most of the time…The things that I do are very complicated. Technology does not simplify what I do, it makes life accessible. With technology, I can work; make money, and stand tall as an individual. But it does cause stress and frustration and constant learning curve.”

In case of blind users, high adoption and continued assistive technology usage could be promoted if the users felt positively about the technology. On the other hand, if the users felt neutral or negative towards the role of assistive technology, they would possibly resist adoption and continued usage. Interestingly, while John was realistic about his expectations from assistive technology, he was apprehensive of adopting new technology:

[John] “When I started, my expectations were high – computers were new to me. But as I used them more, my expectations grew more realistic. I am trying to live with how things are progressing. But still, I am more inclined to stay with my solutions. If there is something new, I might adopt it slowly, as I have no reasons to change my plans.”

This attitude highlights some resistance to new technology, which raises an important question – are blind people generally apprehensive of new technology? Could they fear adoption due to fear of steep learning curve? It would seem that blind people do find it difficult to switch to new technologies, but when the technology works, like in the case of Bill and iPhone, the transition to a better assistive technology is welcomed!

Interestingly, trust plays a major role in technology adoption and acceptance [35-36], and since assistive technology adoption is based on the same fundamentals, the logic of trust can be extrapolated. Lack of trust towards technology can hinder assistive technology usage even for the more regular users. When asked whether the participants trusted the technology they used, the responses highlighted an interesting trend – Technology can be trusted, but with a small caveat – as long as the processes are followed, technology will fulfill its function. However, in case this trust was to be challenged, the participants had different reactions. Interestingly, one of the participants did not even consider trust to be an issue:

[Bill] “I don’t have any choice, do I? Generally, I avoid sites that could affect my computer (by giving it viruses), and I don’t even use torrents and other game sites…if someone is going to rip me off, they will rip me off anyway…can’t do anything about it!”

[John] “With things that could go wrong, and when there is a risk – I am quite self conscious and try to be more aware of what I am doing. Still, I don’t ask for help.”
While these users have a realistic of expectations from assistive technology, even failure in certain circumstances has not dented their assistive technology adoption. This can be explained due to participants’ high level of experience with technology, as well as the lack of other options that could help them solve problems independently. Interestingly, throughout the interview, Bill gave some conflicting answers in terms of his trust towards technology, with the following excerpt that sums up his dilemma:

[Bill] “If I want to save data for future use, I can do it on a notepad (in computer), but then there are data theft risks. What if someone gets into my computer?”

While Bill had previously said that he does trust technology, his most recent statement highlight possibilities of data theft and misuse. The conflicting nature of these statements is difficult to explain, but it can be argued that since Bill knows about potential pitfalls about technology, which simply makes him more aware, and not apprehensive of technology.

4.4 Frustration and Anxiousness

Lack of trust in technology, failure when expectations are high and negative social conditioning - all these factors (and more) can lead to frustration and anxiousness. Coupled with that, personal attributes such as lack of patience or understanding, as well as lack of commitment that limits time spent on using assistive technology can affect assistive technology use. As part of this study, one important question that needed practical consideration is:

Do frustration and anxiousness affect totally blind users who regularly use assistive technology? Does this frustration effect hinder assistive technology adoption and use, and if so, how?

Interestingly, the discussion surrounding frustration and anxiousness had inadvertently come up when talking about other issues within this interview. The results were almost always synchronous – all participants had faced frustration and anxiousness when using, or trying to use assistive technology. Some participants had faced frustration from failure of technology, and some had faced frustration and anxiousness from lack of availability and accessibility, which in part can be blamed on the context and environment in which these participants operated. Generally, when inquired about their frustrations when using assistive technology, participants were forthright with instances where they had faced issues which were beyond their control:

[John] “Occasionally I get frustrated with technology; I guess every blind person does. Even though assistive technology has progressed in recent years, there are still some applications that I can’t use! It’s a frustration because I would really need these programs and applications.

Things are simpler with mobile phones. On some occasions, the battery on my laptop died when I was in school...as I didn’t have the power cable. And I was stuck as all my notes and books were in there. These instances often occur more at school than at home.”
“When I need a website but it is not accessible, I get frustrated. Like sometimes, when a program or application is updated, and I cannot access it anymore, as it is not compatible with my screen reader...especially if I have not been informed before.

When technology fails, I prefer assistance from others. ‘Computers and helping aids are there to help, and not a project in themselves.’ I don’t take up any new technology unless something needs changing. I only change computers when needed. Moreover, I try and improve the system only if I have time and interest.”

“Lack of consistency in technology causes me numerous problems. Something as simple as chip and pin machines that accept debit cards should be standardized. I have to learn different layouts of same technology. I am frustrated by the fact that I don’t have people around me, which would help me in doing things that are outside my (and technology) control. For example, I recently lost my debit card, and now I have a new one. They have sent my pin number through, and of course, I cannot see it. And because of the way the number is printed, I cannot use a scanner to read it either. It is impossible!

...I have been incredibly frustrated most of the time with technology. Recently, JAWS keeps hanging, and my new laptop is slow as well. What I do online is very complicated...and to use access technologies for that is even more complicated. Technology has a constant learning curve...and price for all this is frustration, stress.”

Multiple instances of frustration and anxiousness related to assistive technology use highlight complexities in user-behavior towards (assistive) technology. While all participants are continually challenged by lack of consistency, availability and accessibility in assistive technology, they continue to rely on it for their daily living. In certain cases, frustration and anxiousness has given rise to resourcefulness. On multiple occasions, John emphasized:

“But still, I am not stuck; I try and find other (technical) solutions independently.”

4.5 Social Embarrassment

Embarrassment avoidance drives people to avoid situations or scenarios which might be awkward or uncomfortable [37]. When people feel socially embarrassed, they are more likely to resist or reject technology usage [38-39]. Similar inferences can be drawn in the case of totally blind people. It is pertinent to study social embarrassment in relation to assistive technology adoption as this could improve assistive technology adoption. However, the level to which heavy users of assistive technology (in this context – totally blind people) face social embarrassment is yet unknown; which leads to the question:

Do totally blind people heavily reliant on assistive technology feel social embarrassment due to their condition, and does this embarrassment hinder their dependence on assistive technology?
Imagine a scenario where one has been told off for using their mobile phone in public, as the noise from the text-speech disturbs others. The text to speech synthesis functionality of assistive mobile devices could be considered disruptive in public. A few too many instances of being cautioned could hinder further use of these devices in public, thus impeding assistive technology adoption and use. A major possibility of social embarrassment is feeling guilty when seeking help from others, or relying on others for assistance. Interestingly, none of the participants felt guilt or awkwardness when seeking assistance from others. Their perception on seeking outside help was positive, but in one particular case, the participant found absence of assistance frustrating.

[Steve] “I was supposed to go shopping today with my assistant, but now I cannot as he is ill. Now, I am not sure when I can go to the shops next, and it is frustrating as I can’t do it myself. But that’s life! I will have to wait to fix a schedule.”

It does raise an important question about whether basic needs for blind people can be catered for using technology. As it turns out, they can, and Bill commented that he relied on online shopping to order food to his home. The participants also mentioned that they hardly felt uncomfortable using assistive technology in public. If anything, curiosity from others was well received, as it allowed the blind users to showcase assistive technology to people who knew nothing about it:

[John] “I really like to explain things, and if people are genuinely curious in things that I do – they are not limiting themselves. If people are curious, I am more than glad to explain what I am doing. But sometimes, when they are curious and pointing fingers, I don’t like it.”

[Steve] “When you get the unexpected attention, you get a chance to share some important information with others. I was able to explain to doctors and nurses (who were previously unaware) that blind people can indeed use computers. Then they can share information with their colleagues. It helps spreading awareness.”

Based on the participant responses, it can be inferred that social embarrassment does not play a strong role in directly hindering assistive technology adoption and use. The participants are heavy users of assistive technology, and based on their responses, it seems likely that they turn around the negative scenarios by creating more awareness about assistive technology and blindness.

5 Discussion and Research Implications

Assistive technology has provided totally blind people an opportunity to improve their quality of life. Throughout the interview phase, it was realized that for some people, assistive technology is the sole means of independent living – whether through choice or otherwise. But technology use and socio-psychological attributes are inter-related. This research was carried out to highlight the impact of negative socio-psychological attributes on the lives of totally blind people that were heavily reliant on assistive technology. Interestingly, all participants showed some frustration regarding assistive technology use, which was borne out of inconsistencies in technology application and
lack of accessibility. These participants had faced multiple instances of frustration, but their attitude highlighted resilience and resourcefulness in dealing with these frustrations. Regardless of the frustrations and anxiousness, these users continued to rely on assistive technology for daily living.

The perception surrounding technology was that it was built for ‘healthy young sighted people’. This perception was backed by the idea that these technologies had minor oversights, which affected usage for totally blind people. While the participants didn’t highlight any extreme cases of negative social conditioning, it was evident that as blind people, they received a lot of interest from sighted people who were unaware of their abilities to use technology. In most cases, the participants used these situations to educate and spread awareness about assistive technologies. Moreover, social embarrassment was never highlighted to be an issue when using or wanting to use technology.

Positive expectation of assistive technology is a strong factor in increasing adoption and continued use. While the participants tried to be realistic in their outlook towards assistive technology, they highlighted certain lack of control over their daily life which was in part related to lack of accessibility and failure of technology. As a result, the participants showed resistance to anything new, until it was very necessary. This behavior certainly limits assistive technology adoption, and should be investigated further in order to find out if its effects could be mitigated through training, even in the case of heavy users of assistive technology.

One thing that particularly stood out in this research was the resilience and resourcefulness showcased by the participants. Whenever the participants were challenged by technology, or struggled in reaching their outcomes, they tried other means. One of the obvious choices was to resolve issues using assistive technology in a different way, and John, in particular, tried all things possible to avoid asking for help. This need and struggle for independence increases reliance on assistive technology. However, the other participants were also willing to try different solutions before seeking help from other individuals.

While this research is not an exhaustive representation of all totally blind population, it highlights interesting similarities and differences in heavy users of assistive technology. This research delved further into socio-psychological attributes pertaining to technology usage for totally blind people. The interviews allowed a better understanding of how (perceived) negative socio-psychological attributes impact on assistive technology adoption. This research could further benefit from case studies that look at low and medium-intensity blind users in order to better understand their attitudes towards assistive technology. From a practical perspective, this research offers opportunities to better train and help heavy users of assistive technology to balance their expectations with the technology available. This research also provides enough justification for developers to work on creating an ‘equal’ technology for everyone.

References


Appendix 1

Interview Questions (Semi-structured)
1. Could you please state your name, age and occupation?
2. Could you please tell something about your condition…how long have you been blind?
3. How often do you use computer and mobile phone?
4. Depending on the answer to Q3…
Please explain why you use these devices, and tell me how they are useful to you. Please explain reasons for not using these devices. Do you feel you would like to use them more often, and if so, what is stopping you right now?

Social Conditioning
5. How do you feel about the fact that modern devices including computer and mobile phones are adjusted to the needs of normal sighted people?
6. How do you feel when other people consider you less capable of using computer and mobile phones?
7. Do you feel self-conscious when trying to use these devices?
8. For accomplishing most things in your daily life, do you prefer to rely on other people or assistive technology? Would you be more likely to adopt technology if there were less people to assist you?

Control over Surroundings and Expectations
9. Do you have high expectations from computer and mobile phone usage? If yes, what kind of expectations do you have?
10. Do you expect computer and mobile phones to simplify your life?
11. Do you trust the technology you use (for example, internet banking, and text messages)? If no, why not?

Frustration and Anxiousness
12. Do you feel any kind of frustration or anxiousness when you use computers and mobile phones?
13. What happens when these technologies fail to help you? Do you look for alternate technology solutions or do you seek assistance from other individuals?

Social Embarrassment
14. Is it easy to navigate through TV channels or does someone else help you with it? How does that make you feel?
15. If other people assist you, do you feel bad about being dependent on them?
16. Does curiosity and unwanted attention from people hinder you from comfortably using technology?
17. Does it bother you to use your phone in public?