

# Appendix B: Eye Control Questionnaire Summary

## Introduction

This is a summary of the views of a small number of professionals, eye control users and potential eye control users which were gathered in order to provide information for a document that is being written relating to User Requirements for COGAIN, a European Network of Excellence Project concerned with eye control technology. It was never intended the responses would be used for quantitative analysis. Rather, it was intended that the response would give an insight into the *range* of views held by those involved and potentially involved. In this respect, the questionnaires have been an unqualified success. Despite the small numbers, the range and richness of the views expressed by people with extensive experience, whether as end users or those supporting them, provides an invaluable insight into the relevant issues and the tasks that consequently need to be undertaken under the COGAIN Project. The ACE Centre is extremely grateful for the time taken, the depth of thought and the honesty of all respondents, some of which responded in great detail using their assistive devices.

## Range of respondents

There were 16 respondents - 5 professionals, 11 people with disabilities (or others writing on their behalf).

**Technology Used** - Of the 11 people with disabilities represented, 3 are existing users of eye control systems; 5 are switch users; 1 uses a keyboard + trackerball and 1 uses a headmouse + dwell select. 1 uses no technology at present (Under 5, with spastic quadriplegia, registered blind).

**Ages** - 2 were under 5 years old; 2 were aged between 5-11 years; 7 were adults

**Range of disabilities** - The range of disabilities included cerebral palsy (various forms), ALS, Traumatic Brain Injury (TBI)

**Professionals** - Collectively, the professionals have experience working with a wide range of end users, including Stroke, Head Injury, Motor Neurone Disease, Spinal Injury, Multiple Sclerosis, paralysis, ME, Cerebral Palsy, SMA and Wernig-Hoffman.

Please note that those people with disabilities who are not long-term eye control users are referred to as '**Potential** eye control users.'

## Range of software/applications used

**Eye control users** - The eye control users use their systems for Word-processing, social communication (e.g. Speaking Dynamically Pro), emailing, Internet, Instant messaging, games.

**Potential eye control users** - The potential eye control users use their systems for Word-processing (1 Dasher user), social communication (e.g. EZ Keys) emailing, Internet, Instant messaging, games, activating toys, powered mobility, environmental control.

### **Additional applications that potential eye control users would like to do through the computer**

- 'Emails, Internet, communicate - present methods are incredibly slow.'
- 'Indicate choice', 'some degree of independence.'
- 'Would like to make it easier for him to access all the available technology - access is exhausting for him to do very much.'

### **Reasons for wanting to use additional applications (both eye control and non eye control users)**

- The reasons related primarily to the need for independence, but also included privacy and to reduce the shortfall between potential and performance.

### **Current estimated typing speeds**

Various speeds in terms of words per minute (wpm) were offered. Obviously, not too much should be read into these figures, because they are only rough estimates and the numbers of users are very small:

- Eye control users range of speed: 6-20 wpm
- Other access methods: 1-19 wpm (50-100 wpm with voice recognition)

### **Opinions of eye control users on how they felt eye control compared with other access methods**

Of the 3 eye control users, two said it was the only option they had. The other said it was easier than using switches. One user emphasised the increase in speed that had been achieved through Eye control:

- 'It's the only option I have used or could use. Plus, I am faster with my eye than I ever was when my fingers used to work.'

### **Opinions of potential eye control users on how they felt eye control would compare with their existing access method, in general**

Where an opinion was expressed (6 out of 8) they felt that eye control would be 'better' or 'much better.' Reasons given included:

- 'His eye pointing is very good so I would hope that it would be easier and quicker.'
- 'Less effort, greater choice, more control.'
- 'Her head control is good but becomes unreliable when she is trying to press a switch.'
- 'From the limited testing I have done...potential for increasing my access speed, especially when my body gets tired.'

However, there were certain concerns expressed. These included:

- Potential difficulties in ensuring the correct positioning of the eye control device.
- Outdoor use.

### The potential benefits of writing, specifically using eye control for potential eye control users

Of the 8 potential eye control users who expressed an opinion, 2 thought it would be 'beneficial', 4 thought it would be 'very beneficial' and one thought it would be 'not very beneficial' (he already accesses the computer effectively with mouse and keyboard). Their reasons were related to enabling greater choice, ease of use, independence and speed. Comments included:

- 'It would allow her to have complete flexibility over what she wants to say.'
- 'It is likely to be easier quicker and more accurate.'

### The benefits and perceived potential benefits of using eye control for email

As described earlier, facilities exist to enable users of both eye control systems and other forms of access technology used by respondents to use email.

**Eye control users** - The reasons why emailing was important to them included the following from eye control users:

- 'I keep in contact with people daily and it gives me an outlet to feel I can still make a difference in somebody's life.'
- 'Because I'm giving you my thoughts.'

**Potential eye control users** - Reasons given why emailing was important to potential eye control users included:

- 'Indispensable for running a business from home.'
- 'I feel she would enjoy keeping in touch with friends and family (especially when she is staying overnight at school).'

### The benefits and perceived potential benefits of access to the Internet using eye control

As described earlier, facilities currently exist to enable users of both eye control systems and other forms of access technology used by respondents to access the Internet.

**Eye control users** - 2 of the 3 eye control users use their systems to access the Internet. One feels it is 'beneficial', the other 'very beneficial.' Their reasons included the following:

- 'It's my way of keeping up with what's going on in the outside World.'

**Potential eye control users** - Of the 8 users of other forms of access technology, 4 thought it would be 'very beneficial', 1 'quite beneficial', 1 'not very beneficial.' 1 'not beneficial' and 1 did not comment. Reasons for considering it to be beneficial included:

- accessing the news, taking up hobbies, news groups, chat groups and distance learning.

The one reservation was from a headmouse user who thought that eye control might be slower for Internet access.

**Professionals** - Of the 5 professionals, one thought that the facility to access to the Internet using eye control was 'quite beneficial' and the other 4 thought it would be 'very beneficial.' Their reasons included:

- on-line banking, shopping, accessing information, speed and simplicity.

### The perceived potential benefits of powered mobility using eye control

At present, as far as we are aware, powered mobility using eye control is not an option that is commercially available. However, the views of respondents were extremely informative.

**Eye control users** - Of the 3 eye control users, one did not comment, one feels it would be 'beneficial', the other 'very beneficial.' Their reasons included the following:

- "Freedom from always asking others for help"
- "I am not moving around a lot in my chair"

#### Potential eye control users

Of the 8 users of other forms of access technology, 2 thought it would be 'very beneficial', 1 'not very beneficial', 3 'not beneficial', 1 was 'unsure' and 1 did not comment. Reasons for considering it to be beneficial included:

- increased independence,

The reservations related to safety issues:

- Problems with looking at the computer and direction at the same time, problems due to a visual impairment, problems with outdoor use.

**Professionals** - Of the 5 professionals, 4 thought that the facility to control a wheelchair using eye control would be 'not beneficial' and the other 1 said they did not know. Their reasons for it not being beneficial included:

- Safety issues, as 'the eyes need to be used all the time for various purposes', or errors could be made if the user 'slid down the chair' or was 'under stress'

### The potential and perceived potential benefits of environmental control using eye control

As described earlier, facilities currently exist to enable users of both eye control systems and other forms of access technology used by respondents to control their environment.

**Eye control users** - Of the 3 eye control users, one did not comment. Another, who already uses eye control for their environment, feels it is 'beneficial.' The other, who does not have eye control over their environment, feels it would be 'very beneficial.' Their reasons included the following:

- "Freedom"
- "I'm doing things on my own"

**Potential eye control users** - Of the 8 users of other forms of access technology, 4 thought it would be 'very beneficial', 2 'not beneficial', one was able to use standard technology already and the other did not comment. Reasons for considering it to be beneficial included:

- Increased independence, privacy.
- 'He has more control over his eyes than his hands so it is likely to be easier, quicker and more accurate. It would increase the options available to him.'

The reservations related to:

- potential difficulties with reliability and reduced portability.
- 'It would be a lot easier but reliability would be a big concern. My independence is very important and I simply would not trust it. My environmental control system is extremely portable. I cannot see an eyegaze system ever being as portable.'

**Professionals** - Of the 5 professionals, 4 thought that the facility to control the environment using eye control is 'very beneficial' and the other 1 said they thought it was 'quite beneficial.' Their reasons for it being beneficial included:

- Control of the TV, the ability to keeping up with events, allow the user to be 'wireless' and enable them to call their caregiver, if required.

### The benefits and perceived potential benefits of social communication using eye control

As described earlier facilities currently exist to enable users of both eye control systems and other forms of access technology used by respondents to communicate socially.

**Eye control users** - Of the 3 eye control users, one did not comment. The two others already use their systems for social communication. One feels it is 'beneficial' and the other feels it would be 'very beneficial.' Their reasons included the following:

- "It allows me to still be a part of my family's lives. Plus, I can still give advice and help others."
- "Communication is a daily need because I need to say things on my mind"

**Potential eye control users** - Of the 8 users of other forms of access technology, 6 thought it would be 'very beneficial', 1 was unsure because it depended on how their child's verbal skills developed and the other did not comment. Reasons for considering it to be beneficial included:

- Greater freedom
- Improve communication with the family, less dependence on the caregiver.
- 'Can you imagine what it must be like to have something to say and no way to say it. If you can communicate, you can take part and have some control over your life.'
- 'I would like to be able to participate in conversation spontaneously and be able to communicate with my children effectively.'

**Professionals** - Of the 5 professionals, all 5 thought that the facility to communicate socially using eye control was 'very beneficial.' Their reasons for it being very beneficial included:

- 'Medically necessary to communicate physical needs'

- 'Communication is a fundamental need for everyone'

### Additional requirements of eye control technology

**Existing eye control users** - The existing users of eye control systems are clearly very positive and enthusiastic about what they are able to achieve with their eye control systems, overall. The following comments were made in response to a question relating to any additional requirements they might have of eye control technology, over and above they are achieving already.

- 'Environmental control' (This eye control user acknowledges that this could be done via eye control but it hasn't been purchased yet).
- 'Move from <social communication application> into <eye control application> myself.'
- 'Play more video games', 'turn the volume up and down.'
- 'If anything, I would like it to be more portable.'

**Potential eye control users** - Suggestions relating to their additional requirements of eye control technology, other than those covered in the questionnaire, included:

- Portability - 'Portable and connected to a laptop, so that the user wasn't tied to a PC indoors.'
- Control of positioning - 'Operation of an indoor static chair for changes in position. Changing the position of a profiling bed.'
- 'All aspects of daily living.'

**Professionals** - Suggestions relating to their additional requirements of eye control technology, that they felt were not being provided at the moment, included

- Leisure - 'Playing PC games.'
- 'Arithmetic for children.'
- 'Alarms and assistance devices.'

### Final additional comments

Respondents were invited to make any further comments they wished relating to issues that had not been covered in the questionnaire.

**Existing eye control users** - An existing user of an eye control system left no doubt as to its importance to them:

- 'I would have no desire to live without this eye control system.'

**Potential eye control users** - Additional comments included:

- A request for information - 'How do we find out about the suitability of different products?'

**Professionals** - Additional comments included:

- The need to overcome potential technical problems, including: conflicts between Windows and the eye control system software; involuntary movement; problems caused by natural and certain artificial

lighting; robustness; snagging cables; difficulties in the setting up and calibration process; the need for gradual implementation to avoid eye strain; training and practice for the user - 'Its not a natural way of looking.'

- A need for the user to be able to calibrate and re-calibrate independently - 'as and when the user wishes.'