Individual differences and navigation in hypermedia

Kristina Höök†, Marie Sjölinder‡ and Nils Dahlbäck¥

† SICS, Box 1263, S-164 28 Kista, Sweden , kia@sics.se, http://www.sics.se/~kia

‡ DSV, Stockholm University/ KTH, Electrum 230, s-164 40 Kista, Sweden

¥ IDA, Linköping University, S-581 83 Linköping, Sweden, nda@ida.liu.se, http://www.ida.liu.se/~nda

1 Introduction

This study derives from two important observations. First, that navigation in hypermedia is a difficult task, and second, that individual differences play a role in how well individual users are able to navigate in other circumstances.

Navigation in large hypermedia information structures has long been recognised as a difficult task. The expression 'lost in hyperspace' is often used to describe what happens when users loose track of where they are and where to go next.

The relationships between navigation in hypermedia and the user's cognitive abilities, is not clear. There are studies that show that previous experience is the most important factor for determining the ability to navigate in hypermedia (Karlgren 1992), while other claim that search tactics are influenced by, among other, spatial scanning abilities (Allen 92). On the other hand, Vicente and Williges found that spatial ability could be linked with whether users get lost in a hierarchical file system (1988), and Benyon and Murray found that spatial ability determined how well users performed with different interfaces to a database system (1993). Both these conditions, the hierarchical file system and the particular database system interfaces are, in fact, similar to the kind of task required when navigating in hypermedia.

So, our hypothesis was that spatial ability would be correlated with ability to navigate in a hypermedia tool.

2 The study

We observed 23 subjects who first were tested on their cognitive abilities and then were video-taped while solving six different information seeking tasks with the hypermedia on-line manual studied.

The cognitive abilities were tested using a subset of the Düremann-Sälde (Psykologiförlaget 1971) test battery:

- *verbal* ability which was tested in a synonym test.
- *logical-inductive* ability which was tested through classification of images.
- *perceptual analysis* ability which was tested through drawing imitation of images
- *spatial* ability which was tested with three different tests:
    - rotation of images where the subject should choose, by turning the images in their, the images that were identical with the image in the task.