'Good enough for what?' Acceptance of Handwriting Recognition Errors by Child Users

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ABSTRACT
This paper describes an experiment to establish whether or not children would accept a lower rate of accuracy for handwriting recognition than the 97% reported in a study with adult users. It outlines the experimental procedure that involved the use of an automated Wizard of Oz method. Problems with the experiment are described and the results are presented.

Keywords: Pen-based computers, Handwriting recognition accuracy, Children, Usability, Wizard of Oz, Text Entry.

INTRODUCTION
In [1] Lalomia reported that for adult users, 97% accuracy was required for handwriting recognition. Previous work by the authors of this paper showed that children found the use of handwriting recognition appealing, and it was hypothesised that children would report lower rates for acceptable recognition accuracy than adults did. [2]

Experimental method
A class of children aged between 7 and 8 took part in a study in which they copied prepared texts using a pen and graphics tablet onto an experimental interface which comprised a writing space and a 'Recognise' button. On clicking the Recognise button, previously generated ASCII text was displayed on the screen. Children were asked whether or not this text was 'Good enough for the wall'. This previously generated text ranged from being an 80% correct representation of the prepared text to a 98% representation. Each child wrote onto the interface twice. In the first instance, the children attended the experiment in a random order, in the second instance children were allocated a different piece of writing to copy and this resulted in a recognition rate that was at least 6% different from the first one they had encountered. Results are only reported for 25 children (Boys = 8, Girls = 17) as one child had significant learning difficulties and five children did not complete both parts of the experiment due to absence.

Difficulties with the Experiment
The risk of was a child realising that they were being deceived was minimised by ensuring that the children wrote exactly what was on the 'script'. There were occasional differences, some children missed punctuation, but no child remarked that the generated text was incompatible with the text that they had written. Children had to write all 100 characters before they could conclude the experiment, some children got tired and were allowed to stop and return to the experiment a day later.

RESULTS
12 children said the work was good enough for the wall in both cases and 6 said it was not good enough in both cases. Seven children discriminated between the two instances, one said 96% was not good enough, but later said 84% was; the other six moved from yes to no or no to yes in the expected direction. For these seven children, there was a significant difference between the results for yes and no, and the average 'No' rate was 86%, whereas the average 'Yes' rate was 91%. Due to the imbalance of boys and girls in the class, it was not possible to comment on whether or not there was any gender bias.

DISCUSSION
The children that chose no in both cases were generally the 'brighter' children and those who chose yes in both cases were generally poor readers; it is possible that some of these latter children did not notice that the recognition had gone wrong. However, the seven children that discriminated seemed to suggest that acceptable recognition lay somewhere around 91%. Further work will attempt to validate this hypothesis.

References
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