

# Making Your Mind Up? The Reliability of Children's Survey Responses

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Survey tools are widely used within Child Computer Interaction however the validity and reliability of children's responses are often brought into question. This paper reports on a study on the effects of asking the same questions to the same children over a period of a week to ascertain the validity of children's responses when completing a single questionnaire. The results showed that over 50% of the children, for each question, had less than half the items they stated as having at home in their results for both questionnaires questioning the validity of either questionnaire alone. Further research will look at the differences in time gaps and use of identical questionnaire styles.

*Child Computer Interaction. Survey Methods. Technology.*

## 1. INTRODUCTION

Survey tools are widely used within the child computer interaction domain to elicit information from children as part of the design or evaluation process (Horton & Read, 2008). There are many methods which are reliant on an appropriately designed and valid survey tool such as the Fun Toolkit (Read et al, 2002), This or That (Zaman, 2009). In using surveys concerns arise over the validity of the data due to satisficing, the use of appropriate language (Borgers & Hox, 2001) and evaluator bias (Borgers et al, 2004). Studies that have been conducted with children have validated the tools for internal consistency based on a number of constructs but there is limited research into the reliability of the tools over time. This paper aims to investigate whether there is consistency in response to survey instruments within the context of children's understanding of technology within their home. This work will enable researchers to understand the limitations of children's responses and help improve the validity and reliability of existing methods.

## 2. METHOD

This research was carried out in a local primary school using 19 children aged 6 and 7 from a year 3 (KS2) class. All children within the class were given the option to take part in the study and the children were told they could stop participating in the research at any time.

The children were given a pictorial questionnaire and asked to stick pictures of the technologies they had at home on the picture of the house. A week later the children were given a written version of the same questionnaire, using the same questions and same technologies and asked to tick the technologies that they had in their homes.

## 3. RESULTS

The results from each question have then been split showing technologies that were chosen only in the pictorial questionnaire, technologies that were chosen in both questionnaires and then technologies that were only chosen in the written questionnaires. The final column shows the percentage of technologies that were chosen by each child that appeared in the results from both questionnaires.

*Table 1: Children's results from the two questionnaires*

Child	Only Pictorial	Pictorial & Written	Only Written	% on both
1	4	0	4	0%
2	2	1	5	13%
3	3	1	6	10%
4	2	3	8	23%
5	0	2	6	25%
6	2	8	0	80%
7	2	7	2	64%
8	2	3	3	38%
9	2	4	5	37%

10	8	0	2	0%
11	2	7	2	64%
12	1	9	1	82%
13	1	7	4	58%
14	3	8	3	57%
15	2	1	6	11%
16	4	7	1	58%
17	4	1	4	11%
18	2	10	2	71%
19	6	7	0	54%
			<b>mean</b>	<b>40%</b>

The results show that 53% of the children had less than half the technologies they stated to have on both questionnaires. The majority of children with less than half the technologies had significantly lower results than this. None of the children produced the same results for a question across the two questionnaires.

#### 4. DISCUSSION

This study has provided some interesting findings that do bring into question the validity of children's responses. If over 50% of the children have less than a half of the same answers on two questionnaires asking the same questions then either of these questionnaires would have produced results that look perfectly valid but are completely different and all this just one week apart. An example of this could be that one week the majority of the children could report as having computers at home where as the next week the same children state they do not. Using these findings to evidence children's computer usage could have a profound effect on an entire research study.

One area that does require further study is that of picture matching. This occurs, for example, when a child is given a pictorial questionnaire and asked if they have a computer at home. The child may have a computer but it is not the one that is pictured so because of this it is not chosen.

Not a single child on either of the questions had exactly the same result on both questionnaires. Looking at this as a comparison of the same question asked twice to the same person, none of the 19 questions resulted in exactly the same answer. If this is the case then once again how can the results from either questionnaire be valid.

Further work needs to be carried out to see if the length of time between the two questionnaires contributes to the varying results.

It is unlikely, but not impossible, that within the week between the questionnaires the households acquired all the technologies only chosen in the second questionnaire and removed the technologies only present on the second questionnaire.

#### 5. CONCLUSION

This study has highlighted some serious issues with the validity of questionnaire answers given by children from the varying results that have been highlighted. Further investigation needs to be carried out to see if any methods can be found to help reduce this problem.

It is noted that this study was carried out using two different questionnaire techniques and that it is possible this may have had an impact on the results therefore a similar study is planned following the same method but using exactly the same questionnaire each time.

#### 6. ACKNOWLEDGMENTS

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