Author's response to reviews

Title: Examining the impact of familiarity on faucet usability for older adults with dementia

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Responses to reviews

Reviewer #1 (Version: 1 Date: 6 November 2012)

Major Compulsory Revisions

This is an interesting paper presenting highly relevant research which has implications for both future research and practice. I was impressed with the explanations of terms that people from other fields may be unfamiliar with.

Thank you!

However in its current form, the manuscript is too long. You may lose readers who have less of an interest in your topic than I do.

Text has been cut to shorten the manuscript by five pages.

I include some suggestions below:

Your Introduction is too long. For a geriatric journal you can probably summarise the numbers regarding prevalence in one paragraph: most readers are familiar with the problem. I don’t think it is necessary to separate numbers for developing and developed countries as this is not related to your study aim.

The Introduction has been shortened; references to developing countries have been removed.

I suggest rewriting the whole Results section: you discuss your results in your Discussion as well and those sections actually present your results clearer than your Results section. Also you present a lot of new results in your Discussion (and also your Abstract) that should be in your Results section.

Text from the Discussion section has been moved to the Results section. A figure including more details on the errors data (Figure 3) has been included to present that data; corresponding text has been removed from the body. If the reviewer would clarify what new results are presented in the abstract, we will rework appropriately.

Consider if you need the qualitative data: does it add much to your other data? Also is the satisfaction outcome measure of great interest: most people will say there are satisfied when asked?

As with most studies that involve people with dementia, a mixed methods approach is quite helpful as qualitative data is used to help interpret qualitative findings, especially when it comes to self-reported data. We feel the satisfaction measure is of interest as it represents some interesting findings regarding self-reported ratings by people with dementia. This is an area that has very little research, as the general consensus is that memory impairments compromise the validity of these measures. However, research (including this study) is starting to show that reliable data may be elicited if the methods are appropriate. As such, the satisfaction measure presented here is as much to demonstrate the applicability of the verbal administration of a single, simple Likert question as it is to ascertain people’s self-perceived difficulties with using a faucet. Moreover, the data from the satisfaction question suggests that self-perceived difficulty using faucets increases as dementia worsens. To our knowledge, this is the first quantitative measure of its kind.
A paragraph like “The proportion of trials...” on page 21 is not necessary, you can refer to your tables in the text when you discuss what they present. The Results section may benefit from the use of subheadings.

This paragraph has been altered and moved to the Results section. The Results and Discussion sections have been reworked to be more succinct.

Discussion: Move all new results to your Results section. Start with a brief summary of your results, 1 or 2 paragraphs only.

Text has been moved from the Discussion to the Results section.

Discuss the limitations to your study (as you have done, but move this section forward).

The limitations section has been given a separate heading to help readers identify it more easily. We thank the reviewer for their suggestion, however, to ensure that the discussion section flows appropriately, we have decided to leave it at the end of the Discussion section.

Compare your results to other studies.

We would like to do so, but are not aware of any comparable studies.

Describe the implications of your findings for future research (what other objects that are used on a daily basis, could be tested using your methodology?) and for practice (which faucets do you recommend for use in certain settings?).

Possible future research is touched upon in the Conclusions section. The sentence “The methods described in this work could be adapted for the analysis of use of any product by people with dementia; the measures presented here for gauging effectiveness, efficiency, and satisfaction could be used in high-tech or low-tech product use analysis.” has been added to the Conclusions section. We feel that (unfortunately) recommendations for practice are beyond the scope of this work as it has only examined faucets in use in a washroom setting, which is discussed in the final paragraph of the overall faucet use section of the Discussion.

I think the Discussion should be half the size that it is now.

We have cut text from the Discussion section.

Minor Compulsory Revisions

4. There are some minor typos/ words missing throughout the manuscript:

page 6, halfway: add the word ‘a’ to ‘as satisfaction is reflection’

page 7, first sentence of second paragraph: is impact the correct word? Should this be impair?

page 14, halfway: ‘then it is likely requires too much effort’, delete ‘is’

page 35, conclusion: ‘product use would provide a great deal insight’ add the word ‘of’

These changes have been made.
Reviewer #2 (3 January 2013)

Major revisions

The work has been carefully conducted and the paper is well written.

Thank you!

The major limitation of the work is the fact that participants use one of the faucets in the trial every day. This is discussed, but not under limitations of the study and the key question is does this invalidate the study (or at least the primary hypothesis)? This needs to be clearly addressed.

We agree that this is certainly a limitation of the study, however, we don’t feel it invalidates the study. The participants did use other types of faucets in shared areas of the facility, such as infrared and single lever, just not as often as the dual levers in their own washrooms. Moreover, they have been exposed to all the different faucet types (excluding the plastic wand) over their lifetimes, albeit they likely had more exposure to the dual lever and crosshead designs. Data from the study shows that people were able to use the other faucet types and the dual didn’t stand out hugely over the crosshead and infrared (the next most successful designs).

We have attempted to ensure readers are aware of this limitation through statements such as “It is important to note that the participants used dual lever faucets in their rooms at the long-term care facility where this study was conducted. While the dual lever used in this research was a different model than the one in the participants’ rooms, daily exposure to a dual lever design could have had a non-trivial (priming) effect on the faucet familiarity and may have impacted study results.” in the first paragraph of the section discussing overall faucet use and “Exposure to the faucets within the long-term care facility could have priming effects, particularly the use of dual-lever faucets in the participants’ private washrooms at the residence.” in the Limitations section.

Major essential revisions

I am not sure that it is appropriate to include the reference to incomplete countermeasures in the tile. (I will comment on this more later).

The title has been changed to "Examining the impact of familiarity on faucet usability for older adults with dementia"

The manuscript is rather long. It would benefit from being edited down. For example, I do not consider it necessary to include so much background on the impact of dementia in the introduction and quite often there is some discussion about the pros and cons of an approach included in each of the other sections. The description of the usability / familiarity scale could be simplified.

We have cut text from the Introduction and Methodology.

The methods are appropriate. I am unsure about the need for a counterbalanced measured design on two counts. I understand that a balanced Latin square design might be appropriate and would justify a smaller sample size.
Secondly the majority of the subjects have dementia and the study was carried out over 50 days, I think. This should be discussed in limitations of the study.

Justification has been added to the last paragraph of the study procedure section of the Methods. The first sentence has been rewritten to “A counterbalanced study design is the preferred method for testing usability because it employs a balanced presentation of the conditions being tested to minimise possible confounding factors”. The second last sentence has been expanded to read "The presentation order of the faucets was unique for each participant to negate possible data trends caused by priming or fatigue."

If the above does not adequately address the reviewer's concerns, we welcome the reviewer to provide specific feedback on what he or she would like to see.

Page 19 - last para. I did not understand the point about treating participants as clusters.

Our statistician needed was a method that would calculate standard deviations and other descriptive statistics for correlated data, and treating the data for each patient as a cluster meant that she could use a ready-made procedure in SAS to do that. Otherwise she could/would have programmed it from scratch. Since the clustering aspect is related to the SAS software rather than a necessary data treatment procedure (other software might accomplish the same thing without the need to introduce this concept), we have removed this sentence from the paper to avoid confusion.

Page 20 - Second para. I am not sure inference is the appropriate term here. It is quite reasonable to group the mild and aware subjects together.

“Inference” has been changed to “analysis”.

Results

It would be clearer to structure these in the same order as the methods. Usability, Effectiveness and Efficiency.

The measures of usability (effectiveness, efficiency, and satisfaction) are now presented in the same order throughout the paper.

Table 2 seems over complicated to me and I found it difficult to follow the two halves (assistance / errors).

We have inserted vertical separators to make the data separation clearer.

Figure 3 Graphs a and b seem redundant

For Figure 3, each of the graphs represents results from the three different groups, namely a) is the aware/mild group, b) the moderate group, and c) the severe group.

Page 23 The response rate of the to the difficulty question is discussed but not the findings.

This has been amended by moving associated text from the Discussion to the Results section.

Discussion

It would be clearer to structure these in the same order as the methods. Usability, Effectiveness and Efficiency.

The discussion is rather long and the text could be more concise.
The measures of usability (effectiveness, efficiency, and satisfaction) are now presented in the same order throughout the paper. Text has been removed from the Discussion and parts have been rewritten to try and make this section more succinct.