Author’s response to reviews

Title: A Danish Version of the Life-Space Assessment (LSA-DK) – Translation, Content Validity and Cultural Adaptation Using Cognitive Interviewing in Older Mobility Limited Adults

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Author’s response to reviews:

Dear Dr. Pérez-Zepeda

We thank you for the opportunity to resubmit a revised version of our manuscript "A Danish Version of the Life-Space Assessment (LSA-DK) – Translation, Content Validity and Cultural Adaptation Using Cognitive Interviewing in Older Mobility Limited Adults" (BGTC-D-19-00542). We highly appreciate the reviewers’ comments. We have followed the reviewers’ recommendations when revising the manuscript and have marked all changes in the manuscript. Please find our response to specific comments below.

Best regards

Mette Merete Pedersen

Response to reviewers

Reviewer 1:

Comment 1:

I am wondering why the authors did not interview healthcare providers who may be administering the Life-Space Assessment tool in clinical practice? What if there are errors
related to the people delivering the tool? You may expect that the people administering the questionnaire will need to address questions from interviewees. This should be discussed within the manuscript.

Reply 1:

Thank you for this very relevant question. Before conducting the cognitive interviews, two health care professionals, who had conducted pilot interviews using the Life-Space Assessment, were interviewed and hereafter observed while using the Life-Space Assessment in older medical patients. Also, Dr. Brown, one of the University of Alabama at Birmingham (UAB) investigators who was part of the team who developed the assessment, was interviewed. These interviews were conducted to identify potential challenges that previous interviewers had faced as well as strategies for overcoming these challenges. Based on these interviews and observations, new aspects were added to the Danish version of the manual. These changes were accepted by the UAB team.

Hereafter, we chose to focus on the informants’ understanding of the questionnaire to get an insight into their comprehension of the questions and how they chose to answer each question. The reviewer is right in pointing out the relevance of looking at the interviewers’ comprehension of the questions and their potential challenges when administering the LSA. However, at the time of performing the cognitive interviews, only two health care professionals had pilot tested the translated version (version B2A) and therefore no health care professional had thorough experience in using the questionnaire. There may be potential errors related to the people delivering the tool and the people administering the questionnaire will need to address questions from interviewees. The LSA manual takes these issues into account and provides a thorough explanation of how to administer the questionnaire. Also, new explanations were added to the Danish version of the manual, based on the cognitive interviews, to overcome the challenges that the reviewer mentions. As stressed in the manuscript (lines 342-342) it is important that the interviewer is trained in and familiar with the manual before conducting interviews.

Action taken:

We have added several lines regarding the potential for errors related to the interviewers in the “strengths and limitations” section in lines 397-399:

Finally, although the LSA manual provides a thorough explanation of how to administer the questionnaire and how to probe, it cannot be ruled out that errors related to the people administering the LSA can occur.

Comment 2:

Since the authors want to implement the Life-Space Assessment tool in clinical practice, the authors should comment on the feasibility of doing so, particularly in the Danish context.
Reply 1:

The translated version of the LSA (LSA-DK) has been used as an add-on in a randomized controlled study in older adults admitted for acute illness (N=55) to evaluate the criterion validity of the instrument (ongoing), and we have encountered no challenges in administering the LSA-DK – none of the patients in this study have expressed difficulties in understanding or answering the questions and the researchers have found the LSA easy to use. The LSA-DK takes approximately 10 minutes to administer.

Action taken:

None.

Comment 3:

Based on some of the responses from interviewees, it sounds like some challenges with responding to questions may be context dependent based on differing responses across outpatient rehabilitation, medical wards, and assisted living. I think the authors should comment on this and how it was addressed in the manual.

Reply 3:

This is a very relevant comment. The LSA was originally developed for community-dwelling older adults and it has been validated in this context in the USA. As the reviewer implies, we did find that some of the challenges were context dependent. In the manuscript we have stressed that using the LSA in assisted living facility residents is not recommended (lines 373-74). Also, one of the additions to the manual (presented in Table 2) addresses respondents in one bed-room apartments (An explanatory text was added to the manual: “The example in the parenthesis can be used to clarify ambiguities to the respondent. For example it would be appropriate to say ”for example your kitchen or your bathroom” in Level 1 for respondents living in one-bedroom apartments”). In addition, changes that were not specified in the manuscript were made to the manual as indicated in lines 291-294: The remaining recommendations encompassed explanations and probes added to the manual to facilitate informant comprehension of the questionnaire and guide interviewers in how to use the questionnaire. We do acknowledge that this does not clarify all context dependent changes for the reader. Therefore, we have taken the following action:

Action taken:

In the paragraph “Recommendations for revision to questionnaire and manual”, lines 288-295
The remaining recommendations encompassed explanations and probes added to the manual to facilitate informant comprehension of the questionnaire and guide interviewers in how to use the questionnaire.

Was changed to

“The remaining recommendations, some of which were context dependent, encompassed explanations and probes added to the manual to facilitate informant comprehension of the questionnaire and guide interviewers in how to use the questionnaire. For example, it was added that for respondents in hospital wards the interviewer should stress that the questions refer to the 4 weeks preceding hospital admission”.

Comment 4:

Lines 38-39: "Further, physical performance tests are often performed in stable environments where real life distractions are reduced." - I am not sure that this is accurate, speaking directly about accelerometry. These devices can be administered in acute care (e.g., see PMID: 29077906) which could be argued that is not a stable environment. I suggest revising this statement.

Reply 4:

We thank the reviewer for pointing this out. We do not consider accelerometry as a physical performance test, but rather a method for assessing physical activity. However, we do acknowledge that the sentence is confusing.

Action taken:

We have deleted this sentence from the manuscript:

Further, physical performance tests are often performed in stable environments where real life distractions are reduced.

Comment 5:

For the levels of the Life-Space Assessment questionnaire, can the authors please provide these in a table format? I think it may be easier to refer back to for readers of the manuscript.

Reply 5:

Thank you for this suggestion. We have followed the reviewer’s recommendation and added the LSA levels in a table (Table 1).
Reviewer 2:

Comment 1:

Could you please elaborate a little bit on the 'cognitive interview' If there are alternatives for this methodology on content validity studies, if it has been used previously for the same LSA but for other languages or for other tools in Danish. What can be concluded when using this method compared to others. Moreover, why it would be necessary to do it in an adaptation, why the translate back translate would not be enough.

Reply 1:

Thank you for the opportunity to elaborate on the use of cognitive interviewing in this study. As stated in the manuscript, cognitive interviewing is a widely acknowledged and increasingly used method in development, validation and cultural adaption of patient-reported outcome measures. By prompting study participants to provide information about item comprehension the response process, cognitive interviewing aims to identify breakdowns that contribute to response error (Willis 2005), which may be especially relevant in groups (i.e. older persons) for whom questionnaire completion may pose particular difficulties (Drennan 2003). Cognitive interviewing may be used in parallel to translation and pretesting of questionnaire to help identify and thereby minimize the risk of systematic measurement bias (Harkness 2004).

In the current study, we used cognitive interviewing in a post-hoc fashion to inform interpretation of results and to assist with future question improvement including identification of inadequate item formulation (e.g., complex wording) (Willis 2008). To our knowledge, cognitive interviewing has only been used in one study to assess content validity of LSA in other languages. Also, cognitive interviewing has been used previously in the cultural adaption of other instruments in a Danish context, i.e. The Tilburg Frailty Indicator (Andreasen 2014), and the Views of Informal Carers' Evaluation of Services-Short Form (Ross 2018). Behavioral coding has been proposed as an alternative to cognitive interviewing; however, cognitive interviewing has been shown to be a more robust technique and more likely to identify potential response errors than behavioral coding (Thrasher 2011).

References:


Thrasher J, Quah ACK, Dominick G, Borland R4, Driezen P5, Awang R6, Omar M6, Hosking W7, Sirirassamee B8, Boado M9, Miller K10.


Action taken:

For clarification, we have added information to the “Cognitive Interviewing” paragraph on page 7, lines 116-123.

The following

Cognitive interviewing (CI) was used in the content validation of the LSA to identify problems and potential errors when administering LSA-DK [27]. Cognitive interviewing is useful when in doubt about the informants’ understanding of the wording of a question or how informants will interpret and answer questionnaires [28].

Was changed to
Cognitive interviewing (CI) was used in the content validation of the LSA to identify problems and potential errors when administering LSA-DK [27]. Cognitive interviewing is a widely acknowledged method in the development, validation and cultural adaptation of patient-reported outcome measures [27–29]. Cognitive interviewing may be used in parallel to translation and pretesting of questionnaires to help identify and thereby minimize the risk of systematic measurement bias [30]. Cognitive interviewing is useful when in doubt about the informants’ understanding of the wording of a question or how informants will interpret and answer questionnaires [28]. Also, it has proven to be a robust technique for the identification of response errors [31].

Comment 2:

It would also be very helpful if the authors describe briefly the process of validation that in their vision should be done in similar tools.

Reply 2:

This is a very interesting question. We would suggest following the COSMIN recommendations. The COSMIN initiative (founded in 2005) of an international multidisciplinary team of researchers with a background in epidemiology, psychometrics, medicine, qualitative research, and health care has provided a consensus-based taxonomy of measurement properties (i.e reliability, validity and responsiveness). According to the COSMIN Taxonomy of Measurement Properties https://www.cosmin.nl/tools/cosmin-taxonomy-measurement-properties/) content validity is considered to be the most important measurement property and should therefore be assessed first. Hereafter the internal structure of the instrument should be considered. And finally, the remaining measurement properties should be considered, e.g. reliability, criterion validity, and responsiveness.

Action taken:

None

Comment 3:

In this same line, why not performing in this same study criterion validity and reliability tests?

Reply 3:

Thank you for this very relevant question. According to the COSMIN Taxonomy of Measurement Properties (https://www.cosmin.nl/tools/cosmin-taxonomy-measurement-properties/) “Each measurement property requires its own type of study to assess it”. Therefore, we have only assessed the content validity of the instrument in the present study. Also, as indicated above, COSMIN states that “Content validity is considered to be the most important
measurement property because first of all it should be clear that all content (e.g. items, tasks, observations or parameters) of an outcome measurement instrument is relevant, comprehensive, and comprehensible with respect to the construct of interest and target population”.

Thus, we have only looked at content validity in the present study. However, we are in the process of examining other measurement properties of the instrument. Among others, the translated version of the LSA (LSA-DK) has been used as an add-on in a randomized controlled study (N=75) to evaluate the criterion validity of the instrument (ongoing).

Action taken:
None.

Comment 4:
In the introduction it is well addressed the mobility problem of older adults and its importance for health in this age group. What other tools are available for this matter? Are there any specific Danish tools on this matter? Is there a gold/reference standard?

Reply 4:
There are several other tools available for assessing mobility in older adults, e.g. the Timed Up And Go test, the De Morton Mobility Index, tests of gait speed, the Short Physical Performance battery, and movement sensors. All of these instruments are used in Denmark (translated versions). However, as stated in the introduction all of these instruments assess mobility on the activity level of the ICF, and none assess mobility of the participation level. Also, the LSA differs from commonly used measures in being a patient reported outcome (PRO). To our knowledge, there is no gold standard as such, but the most commonly used measure of mobility is a simple gait speed test. It can be argued, however, that a true gold standard would be direct observation.

Action taken:
None

Comment 5:
I think the quotes in the results section could be shortened and maybe place them in supplementary materials.

Reply 5:
We agree with the reviewer and have shortened the quotes. If the reviewer prefers the quotes in an appendix, we are happy to provide this instead.

Action taken:
Quotes have been shortened.

Comment 6:
Is the final version available already? Did the authors of the LSA approved the last version? Would you consider this version as the definitive one? Is this version ready to perform reliability tests and criterion validity studies?

Reply 6:
Yes, the final version is available and was submitted with the manuscript. The developers of the LSA approved this version, which has been clarified in the manuscript. Thus, the LSA-DK is ready to perform reliability tests and criterion validity studies. As mentioned above, we are in the process of evaluating the criterion validity of the instrument (ongoing).

Action taken:
Added to line 112: was approved by the developers of the instrument

Comment 7
I think it is worth to discuss how other LSA tools in other languages or other tools looking at mobility have performed similar validation studies and compare your results to them. In this same section I would suggest to extend what will the next steps be for this research.

Reply 7:
We thank the reviewer for this comment and agree with the reviewer that the comparison of our study to other validation studies performed in other languages is unclear. The consensus-based standards for the selection of health measurement instruments (COSMIN) initiative recommends evaluating the content validity of an outcome measurement instrument before evaluating other measurement properties, as lack of content validity can affect all other measurement properties. Nevertheless, studies evaluating the content validity of translated LSA versions are still sparse. To our knowledge, only two studies have evaluated the content validity of translated versions of the LSA in community-dwelling elderly Brazilians (Simões 2018) and in French-Canadian users of power mobility devices (Auger 2009). Similar to our study, Auger et al used cognitive interviewing methods to evaluate the questionnaire.
Regarding the next steps for this research, it would be relevant to evaluate the criterion validity of the LSA-DK (ongoing work) as well as the reliability and the responsiveness.

Action taken:

The following was added to the discussion, lines 304-310:

The consensus-based standards for the selection of health measurement instruments (COSMIN) initiative recommends to evaluate the content validity of an outcome measurement instrument before evaluating other measurement properties, as lack of content validity can affect all other measurement properties [40]. Nevertheless, studies evaluating the content validity of translated LSA versions are still sparse. To our knowledge, only two studies have evaluated the content validity of translated versions of the LSA [20, 41]. Similar to our study, Auger et al [20] used cognitive interviewing methods to evaluate the questionnaire.

Similarly, a future step in the evaluation of the LSA-DK will be to investigate other measurement properties, i.e. criterion validity, reliability and responsiveness [40].

Comment 8

In the conclusion, I think it is not possible yet to suggest that the tool could be used in clinical settings, until it has completed its validation.

Reply 8:

Action taken:

We changed the conclusion from this wording:

In conclusion, the Life-Space Assessment was translated into Danish and content validated based on cognitive interviews. Adaptations were made to support that the translated version (LSA-DK) can be implemented in clinical practice and used in the assessment of mobility in older Danish adults. Future studies should investigate the reliability as well as the criterion and construct validity of the LSA-DK.

To this wording:

In conclusion, the Life-Space Assessment was translated into Danish and content validated based on cognitive interviews. Adaptations were made to support that the translated version (LSA-DK) can be used in the assessment of mobility in older Danish adults. Before implementing the LSA-DK in clinical practice, however, further studies should be performed to investigate the reliability as well as the criterion validity of the LSA-DK.