Author's response to reviews

Title: Can self-reported disability assessment behaviour of insurance physicians be explained? Applying the ASE model

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Author's response to reviews: see over
Subject
Submission of a manuscript

Dear Madam, Sir

We hereby submit our revised paper “Can the disability assessment behaviour of insurance physicians be explained? Applying the ASE model”. A detailed reaction to the reviewers’ comments is enclosed with this letter.

We believe that our manuscript has improved considerably as a result of the reviewers’ suggestions.

We hope that you will find this revised manuscript acceptable for publication in your journal.

On behalf of all authors,
Yours faithfully,

Ms. R. Steenbeek, PhD
Reaction to reviewers’ comments

Reviewer 1: Uwe Matterne

We would like to thank the reviewer for her valuable comments. Below, we explain how we have addressed the points that were raised. We believe that our manuscript has improved considerably as a result.

General comments

*Prediction rather than explanation:*
Our concepts were based on the ASE-theory of Behaviour, which is an extension of the Theory of Planned Behaviour. We use the term ‘explained’ in the title instead of ‘predicted’ because in the ASE-theory Attitude, Social Norm, and self-Efficacy are ‘determinants’ of Intention, and, indirectly via Intention, of Behaviour. Because our study is a transversal (with self-reported measures), we agree that the relations between the measured ASE-concepts in our study are not ‘causal relations’, but only ‘associations’. We addressed this point in the last paragraph of the introduction.

*The method section needs major revision so that it reads more clearly:*
We revised the methods section and hope that it no longer lacks clarity.

Specific comments

1. **The research question is not well defined, not clear what was done before.**
We agree with the reviewer. We now present a clearer explanation of what was done before and what led to the objective of the present study (introduction). We redefined the aim of the study and research questions (see the last paragraph of the introduction). The aim is twofold. First, we try to find a model with a good fit. In this model we explore how self-reported behaviour of insurance physicians is associated with Attitude, Social norm, Self-efficacy and Intention while taking account of the moderating roles played by Knowledge and Barriers. Second, we will interpret the relationships found and how these could be related to variation in assessment behaviour of insurance physicians.

In addition to the extra information we can say that the paper we refer to (Steenbeek et al. [27], renumbered) is now available (BMC Public Health 2011, 11:1) and it includes an additional file with the translated questionnaire.

2. **Problems with unfamiliarity of Lisrel lingo.**
Lisrel was translated into SEM vocabulary throughout the article. Also see under 13 (ovals versus rectangles and error terms).

3. **More explanation about the measures: how were they measured?**
We replaced figure 1 with a figure from Steenbeek et al [27, renumbered]: the ASE model with the number of all measures (additive scales and HOMALS dimensions) in the ASE blocks. This figure was the result of the first part of this study and the starting point for the present paper.

We added text in the Methods section for the description of how the measures were measured (heading: construction of measures). We explained the term ‘additive scales’ and why we used object scores of HOMALS dimensions.
We shortened the Methods section by transposing all the details of the ASE constructs’ measurement to a new Appendix 1 (renumbered). Instead, we now describe the essentials of the content of the measures in a more succinct way (heading: content of measures).

For a more detailed description of the content of the measures and how they were measured we refer in the text of the Method section to Steenbeek et al. [27, renumbered].

4 Choice of measures.
We included text about the choice of theory in the Introduction (TPB, ASE) and how this led to the choice of the ASE model.

We choose to measure intention at a higher level: to what extend do insurance physicians intend to perform disability assessments according to the standards (of their professional organization, the disability legislation, and of their employer UWV). We added text in the present paper in the Methods section to clarify this point. In Steenbeek et al. [27, renumbered] we explained that self-efficacy was adjusted to behaviour performed during the assessment interview, so the questions were specific and not general. We added text in the present paper in the Methods section to clarify this point.

5 Objective behind the use of homals dimensions
As indicated at point 4, we explained the objective behind the use of the homals dimensions in the Methods section (heading: construction of measures).

6 Term additive scales
As indicated at point 4, we explained the term ‘additive scale’ in the Methods section (heading: construction of measures).

7 Use of individual scales to represent latent constructs
We did not reverse individual scales and dimensions so that higher scores always meant higher values, e.g. more sufficient information. That is the reason why some individual scales and dimensions can have positive factor loadings and other negative. We added this point in the Methods section (in the subsections ‘Construction of measurements’ and ‘Analysis’).

Originally, we did not reverse the direction of factor scores. This is the reason why a higher factor score for Social Norm meant ‘less influence attached to the opinion of others’ in the original manuscript. However, because of the comments on this subject by Reviewer 1, in this revised manuscript we decided to reverse the direction of the factor score of Social Norm. In this way all factor scores of the ASE-constructs now indicate a higher score on the meaning of the ASE-construct.

We explain the reversion of the factor score of Social Norm in the text of the Methods section, and in Table1 by adding the word ‘reversed’ after the observed variables on which Social Norm loaded. As a consequence, the signs of the loadings were reversed. Furthermore, in the text of the Results and Discussion sections we corrected our interpretation of the relationships of Social Norm with other variables accordingly.

8 Intention
As indicated at point 4, Intention was operationalized as the intention to perform disability assessments according to the professional standards. These standards regard three aspects of intention of insurance physicians in the Netherlands, which concern
their core business: a) stimulate recovery, return to work, self-perception and reintegration b) assess residual capacity, sickness, disorders, limitations and handicaps, c) collect a consistent and verified account of daily activities of the client. We added an explanation in the Methods section.

9 Behaviour and other constructs
As we remarked in the first paragraph at point 7, we did not reverse the direction of the individual scales and dimensions in the measurement models. That is the reason why some individual scales and dimensions can have positive factor loadings and other negative. We added this point in the Methods section (in the subsections ‘Construction of measures’ and ‘Analysis’). The interpretation of each ASE concept takes the direction of each measure into account.

10 Not clear what WIA/WAO/Wajong refer to
This is now explained in the introduction.

11 FAL
To describe their findings insurance physicians in the Netherlands use the Functional Ability List (FAL). On this list the physician enters the client’s scores for limitations and abilities. These findings serve as the input for the labour expert in determining the extent to which the client is able to earn income and able to work. As an instrument the FAL comes within the statutory framework of disability assessments in the Netherlands. This is now explained in the introduction.

12 Analysis section
We revised the analysis section to make clearer what was actually done. We do not see which details reviewer 1 wants to omit from the manuscript.

Indeed, there were too few subjects and too many scales and dimensions to use a full structural model with latent variables. Instead, for each latent construct a single measurement model was estimated and the derived factor scores were then used as observed variables (indicators). Factor scores are calculated by Lisrel as individual scores on basis of the factor loadings and the individual scores of the observed scales and dimensions. We added this point in the Analysis section.

We did not save the factor loadings but the factor scores. These factor scores were then used in a path model, contrary to a structural model with latent variables. We revised the text in the Analysis section to make these points more clearly. Throughout the whole text we replaced the words ‘structural equation model’ or ‘structural model’ into ‘path model’ if a path model was referred to.

The alternative approach Reviewer 1 suggests, i.e. to construct composite scores for the ASE constructs, is in our opinion not possible, because the scales and dimensions are not suited to form one consistent composite scale for a ASE construct, i.e. the individual scales and dimensions cannot be regarded as items that can meaningfully be added to each other. We explained this point in the text of the Analysis section.

13 Ovals, rectangles, insufficiency figure 3 (old number)
Because we used the exogenous variables (background variables) and endogenous variables (the scale score for Self-efficacy and the factor scores for the other ASE-constructs) as observed variables (in Lisrel lingo: the theta delta matrix and theta epsilon matrix were set to zero) the convention in a path model is to use rectangles in
figure. We explain this point in the text of the Analysis section with reference to Jöreskog and Sörbom.
We added standardized measurement error terms and Comparative Fit Index in Table 1.

As Reviewer 1 suggested, we added a new Table 2 (renumbered) with the correlations between the exogenous variables (phi-matrix in Lisrel lingo). In the Results section we now mention the significant correlations in the text. Furthermore, explained variances of the endogenous variables were already mentioned in Table 3 (renumbered). We added text about the explained variances at the end of the Results section, with reference to Table 3 (renumbered), explicitly for Intention, Behaviour process and Behaviour assessment. We deleted Figure 2 (old number) because this figure added very little information in addition to Table 3 (renumbered). We added in Figure 2 (the renumbered old Figure 3) the disturbance terms of the endogenous variables and the model fit parameters. We think that Table 1 now contains the necessary information on the measurement models and that Table 2 (renumbered) and Table 3 (renumbered), in combination with Figure 2 (renumbered) present the necessary information for the path model.

14 Missings
In the methods section we refer to Steenbeek et al. [27, renumbered] for details about the imputation of missing values (we added the word imputation).

15 Lambda 1.05
Reviewer 1 is right to point at the factor loading of 1.05 of Intention on ‘Basic premises: client’s account and home circumstances’. In so called Heywood cases [42] (new reference) a factor loading of > 1.0 is possible, especially in a saturated measurement model with three loadings. One strategy is to ignore it, as we did in our manuscript. However, after inspection of the factor scores, we observed that the Lisrel program had reversed the poles of the factor score of Intention. As a consequence, what we considered as the plus pole, was actually in the factor scores the minus pool and vice versa. We were not aware of this peculiarity of the Lisrel program, which to our knowledge cannot be found in literature. As a consequence, we interpreted the minus and plus pools of Intention wrongly. We apologize for this mistake. In the text of the Result and Discussion sections we corrected our interpretation of the relationships of Intention with other variables accordingly. After consultation of a statistician at the EMGO Institute (D. Knol, Phd), we corrected the measurement model for Intention by fixing the standardized measurement error of this scale at 0.05 to avoid a Heywood case. We stressed his point in the Analysis section.
As a consequence, the positive factor loadings of Intention on the scales changed a little bit and so did the measurement model fit (Table 1). In this Table we now mention that the measurement error of the concerning variables was fixed at 0.05 to avoid a Heywood case. Because the factor score of Intention is now in the right direction, with the plus pole indicating a higher score for he underling scales, directions (and some values) of coefficients from other (exogenous and endogenous) variables towards Intention and from Intention to Behaviour Process changed. We revised Table 3 (renumbered), Figure 2 (renumbered) and Appendix 2 (renumbered) are in line with these changes.
16 Disturbance terms (page 18, about line 15)
Reviewer 1 is right in pointing out that the description of the associations is confusing. We meant associations between disturbance terms of endogenous variables (“off diagonal parameter in the Psi matrix” in Lisrel lingo). We corrected the text of this paragraph in the Results section.

17 Removing ‘indirectly’ in the Discussion section (page 19)
We used the term ‘indirectly’ because Figure 2 (renumbered) shows that intention has a direct effect on Behaviour Process and Behaviour process has a direct effect on Behaviour assessment. We understand that in this context ‘indirectly’ is confusing, especially without reference to Figure 2 (renumbered). Therefore, we deleted ‘indirectly’ and referred to Figure 2 (renumbered).

18 Feedback loop
Indeed we interpreted in the Discussion section the path from behaviour assessment to self-efficacy as a feedback loop in the sense of a non-recursive model (Figure 2, renumbered). We agree that models with reciprocal direct effects of endogenous variables need to be interpreted with caution, because the correlation between the estimates of these direct effects (‘correlations of parameter estimates’ in Lisrel lingo) tend to be high. However, in our final model we did not specify direct effects of two endogenous variables on each other. Furthermore, the correlations of estimates were below 0.7. In addition we determined that the correlations of the parameter estimates were also <0.7: large correlations may indicate that the model is nearly non-identified and some of the parameters cannot be determined from the data. We added text about the investigation of the correlation of the parameter estimates in the Analysis section, including reference [38]. We investigated several possible models. When direct effects from Self-efficacy to Behaviour assessment and vice versa were specified, the correlation of their parameter estimates turned out to be 0.91, leading to unreliable results of the parameter estimates. In addition, we investigated whether a direct effect of Self-efficacy on Behaviour assessment gave the same or an even better fit of the model than the reverse direct effect. This was not the case: the Chi-square of the model with a direct effect of Self-efficacy on Behaviour assessment was significantly higher than the model with the reversed direct effect (Chi-square 42.5 versus 37.5, with the same number of degrees of freedom). We added text about this point in the Results section and in Appendix 2 (renumbered). Nevertheless we agree with Reviewer 1 that one has to be careful with the interpretation of loop effects. Therefore we adjusted the sentence in the Discussion section ‘This is a striking feedback mechanism in the model’ into ‘This seems to indicate a striking feedback mechanism in the model’.

19 Conclusion
We agree with Reviewer 1 that the results from this study did not confirm the relevance of the ASE model in this setting in full respect. Therefore, we changed the first part of the conclusion into: ‘In conclusion: we found associations in a path model between Attitude and Intention with self-reported Behaviour on the process and content of occupational disability assessments by insurance physicians. However, the results from this study do not confirm the relevance of the Attitude-Social norm- self-Efficacy model in full respect in this setting. Important associations from the ASE
model were not supported by the data collected in this study. Nevertheless, they provide some evidence of its relevance of the ASE model in this setting.’

20 Comprehensive discussion
Reviewer 1 missed a comprehensive discussion of the studies’ findings in respect of its implications. We added a sentence about this topic in the Conclusion section. We feel that more discussion is too speculative. We should first confirm that our measurements of assessment behaviour actually predict variation in assessment outcomes. A next step would be to investigate how behaviour of insurance physicians can be influenced in order to limit systematic inter-doctor variation in assessment outcomes.

21 Title and abstract
Reviewer 1 remarked: ‘Explained refers to explained variance in outcome (dependent variable) here behaviour and intention. However, no such information is given in the article’. We understand that the explained variances of Table 3 (renumbered) were not explained clearly enough for Reviewer 1. Therefore, we explicitly mention the most important explained variances in the Results section with reference to Table 3 (renumbered). We further refer to our answers at the General Remarks 1 of Reviewer 1.

According to Reviewer 1, the first sentence of the Background section in the Abstract is misleading. We agree that this sentence is not accurate enough and we changed the sentence accordingly by replacing the phrase ‘the outcomes of occupational disability assessment’ by ‘occupational disability assessment behaviour’. In addition, we added the words ‘self reported’ in the Title and throughout the Abstract in connection with ‘Behaviour’.

As Reviewer 1 suggested we deleted the term ‘behavioural traits’ and replaced it by ‘behaviour’.

As Reviewer 1 suggested we deleted the term ’intermediary’ and replaced it by ‘moderating’.

As Reviewer 1 suggested we deleted the word ‘validated’ by deleting the first sentence of the Methods section in the Abstract. Instead we added to the last sentence the words ‘to confirm the ASE model’. In addition we replaced the word ‘validated’ at the end of the Background section in the paragraph with regard to the aim of the study.

As Reviewer 1 suggested we revised the Conclusion section of the Abstract so that the text is concordant with Figure 2 (renumbered) and the findings.

Minor essential revisions
As Reviewer 1 suggested, we adjusted the legends for the figures and explained exactly what coefficients are displayed.
Reaction to reviewers’ comments

**Reviewer 2: France Legare**

We would like to thank the reviewer for the valuable comments. Below, we explain how we have addressed the points that were raised. We believe that our manuscript has improved considerably as a result.

We can inform you that the paper we refer to Steenbeek et al. [27, renumbered] is now available (BMC Public Health 2011, 11:1) and it includes an additional file with the translated questionnaire.

2. *Theory of planned behaviour end the definition of the constructs are not clear*
   Our concepts were based on the ASE-theory of Behaviour, which is an extension of the Theory of Planned Behaviour. We included text about the choice of theory in the Introduction (TPB, ASE) and how this led to the choice of the ASE model. We also explained the relation with the measures in the Introduction.

3. *Not clear if the constructs were operationalized in accordance with the TPB.*
   The theory was added to the introduction. Steenbeek et al. [27, renumbered] is now available with detailed information about the construction and content of the measures. In this paper we added two paragraphs in which we give a summary of the construction en content of the measures.

4. *The methods section needs revisions and the structure improvement.*
   We carried out a major revision of the methods section. We replaced figure 1 with a figure from Steenbeek et al [27, renumbered]: the ASE model with the number of all measures (additive scales and HOMALS dimensions) in the ASE blocks. This figure was the result of the first part of this study and the starting point for the present paper. We added text in the Methods section for the description of how the measures were measured (heading: construction of measures). We explained the term ‘additive scales’ and why we used object scores of HOMALS dimensions.
   We shortened the Methods section by transposing all the details of the ASE constructs’ measurement to a new Appendix 1 (renumbered). Instead, we now describe the essentials of the content of the measures in a more succinct way (heading: content of measures).
   Throughout the whole text we replaced the words ‘structural equation model’ or ‘structural model’ into ‘path model’ if a path model was referred to.

5. We adjusted the discussion and conclusion to the changes in the methods and results.

7. See our remarks under 2 and 3.

8. We adjusted the title to “Can self-reported disability assessment behaviour of insurance physicians be explained? Applying the ASE model.” We use the term ‘explained’ in the title, because in the ASE-theory Attitude, Social Norm, and self-Efficacy are ‘determinants’ of Intention, and, indirectly via Intention, of Behaviour. Because our study is a transversal one (with self-reported measures), the relations...
between the measured ASE-concepts in our study are not ‘causal relations’, but only ‘associations’. We addressed this point in the last paragraph of the introduction. We adjusted the abstract and hope you will find it more informative.

9. We did extensive editing in order to make the manuscript easier to read.

**Major Compulsory Revisions:**

**Abstract**

We revised the abstract. As suggested, the results section of the abstract describes only results now.

1) **Constructs based on TPB?**
   See also above. We hope that the new introduction contains the information that you asked for.

2) **Behaviours unclear**
   We added figure 2 from Steenbeek et al. [27, renumbered] (figure 1 in the present paper). This figure, in combination with the revised methods and appendix 1 should give sufficient information. We understand that this manuscript was difficult to read without access to the paper we often referred to [27, renumbered]. We hope that you find the clarity improved.

3) Why are the constructs of attitude and social norm not aligned with the behaviours of interest?
   We choose to measure Atitude at a higher level: the attitude of insurance physicians towards the standards of their professional organization, the disability legislation, and their employer UWV. In the same way, we looked to what extend insurance physicians were influenced by the norms of their colleagues and their work environment concerning the disability assessments. In Steenbeek et al. [27, renumbered], now accessible, we explain more thoroughly how the various constructs of the ASE-model are aligned.

4) **Response rate**
   The reviewer suggests to move information about the response rate to the results section. Normally, we would agree. However, this information was already published in Steenbeek et al. [27, renumbered] and presented here because it is necessary information. We put it in the methods section because we preferred to focus on new results in the results section.

5) **Response rate overstated.**
   In total we wrote to 750 insurance physicians. Not all the physicians belonged to our target group; we knew that before we mailed the invitations. We estimated the number of insurance physicians belonging to the target group from databases. Our estimation was that the target group consisted of 450 insurance physicians: insurance physicians actively employed by UWV in May 2008 who had performed work disability assessments of long-term sick-listed employees in 2007 or in preceding years. We added this text to the paragraph about the response rate.
6) **Section on ‘measurements of observed variables’ is confusing**
The whole section on measurements of observed variables was moved to an appendix. Instead, we now describe the essentials of the content of the measures in a more succinct way (heading: content of measures). We hope that it is less confusing now.

7) **Construct of knowledge**
Our construct of Knowledge consists of the insurance physician’s perception of possessing sufficient 1) medical information about the client (e.g. from the occupational physician and the general practitioner) and 2) medical knowledge. And indeed, one may argue because of the moderating role of Knowledge, that this concept is related to the concept of ‘salient belief of the perception of control’. Though the ASE-model has been based on the TPB, they are not the same, e.g. the concept of ‘salient belief of the perception of control’ as such is not used in the ASE-model. In the now accessible, mentioned paper [27, renumbered] we explain more thoroughly the differences between TPB and ASE. In this revised manuscript we explain the most important elements of the differences between the ASE-model and the TPB, with reference to relevant literature, in the Introduction section.

8) **The construction of intention is misleading**
Intention was operationalized as the intention to perform disability assessments according to the professional standards. These standards regard three aspects of intention of insurance physicians in the Netherlands, which concern their core business: a) stimulate recovery, return to work, self-perception and reintegration b) assess residual capacity, sickness, disorders, limitations and handicaps, c) collect a consistent and verified account of daily activities of the client. We added an explanation in the Methods section.

9) **Review by a biostatistician for the Analysis section**
One of the reviewers was a statistician. Furthermore, we consulted a biostatistician at the EMGO+ Institute (D. Knol, Phd) to adapt one measurement model (see our answer to Reviewer 1, at point 15). We adjusted this section and hope it is more accessible now.

10) **Provide a Table 1 for participants characteristics**
We refer in the results section to the published paper Steenbeek et al. [27, renumbered] for further details about participants’ characteristics. We decided not to add a copy of an already published table, but summarized the main characteristics in the text.

11) **Comparison with similar studies is misleading**
See our answers about the theory and the measurements of the ASE-constructs above.

12) **Conclusion not valid**
The conclusion was indeed not fully justified. We adjusted the text of the conclusion into the following:

‘In conclusion: we found associations in a path model between Attitude and Intention with self-reported Behaviour on the process and content of occupational disability assessments by insurance physicians. However, the results from this study do not confirm the relevance of the Attitude - Social norm- self-Efficacy model in full respect in this setting. Important associations from the ASE model were not supported by the data collected in this investigation. Nevertheless, they provide some evidence of its
relevance of the ASE model in this setting. Further research is needed to determine whether the ASE variables measured at the level of insurance physician are associated with the outcome of the occupational disability assessments for the clients.
Reaction to reviewers’ comments

**Reviewer 3: Jeremy Miles**

We would like to thank the reviewer for his valuable comments. Below, we explain how we have addressed the points that were raised. We believe that our manuscript has improved considerably as a result.

*Problems with LISREL language*

Lisrel was translated into SEM vocabulary throughout the article.

*AGFI rarely recommended*

We meant CFI instead of AGFI in the Methods section (see Results section *‘Final model: fit parameters’*). We changed ‘AGFI’ in ‘CFI’ in the Methods section.

“As analysis of the covariance matrix resulted…”

Reviewer 3 is completely right with this remark. We deleted the text: ‘As analysis of the covariance matrix resulted in non positive matrices’.

‘(i.e. KM matrix)’..not helpful

We agree with this remark of reviewer 3 and deleted ‘(i.e. KM matrix)’ in the text.

*Table 1: there are seven columns in the first part of the table and six columns in the second part.*

This is indeed the case. The fit measures of the model were combined for Barriers and Knowledge, because we used one measurement model for these two constructs. Therefore, the columns under Barriers and Knowledge have only one fit measurement. We explained this in the text and in the Table 1 as well (see the asterisk in Table 1).