

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

## ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Connor-Davidson Resilience Scale: Validation study in a Portuguese sample
<b>AUTHORS</b>	Faria-Anjos, Joana; Heitor dos Santos, Maria; Ribeiro, Maria Teresa; Moreira, Sergio

## VERSION 1 - REVIEW

<b>REVIEWER</b>	Maria Åberg Department of Public Health and Community Medicine/Primary Health Care, Institute of Medicine at Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden
<b>REVIEW RETURNED</b>	09-Nov-2018

<b>GENERAL COMMENTS</b>	<p>General comment:</p> <p>This is a thorough well-written and work-intensive investigation. The objective was to evaluate the psychometric properties and convergent validity of the first Portuguese version of the Connor-Davidson Resilience Scale. I do not believe it would be of considerable interest to the clinical community but be referred to as a well-performed validity study for future Portuguese population resilience studies.</p> <p>The rationale for the study is quite easy to grab, and the order of presentation is logical and conceivable to understand even if the methodology is complex.</p> <p>Overall, I think the results are convincing. There are however three minor points that need to be addressed.</p> <p>Minor points, to consider in a revised Ms:</p> <ul style="list-style-type: none"><li>• The table legends are far too short. My opinion is that it should be possible to understand a table just by reading the table text. Also the Ms contains very many abbreviations which should be summarized somewhere.</li><li>• The RECT sample is now rather old, soon 10 years. Why was this validity study not performed earlier?</li><li>• In most countries the military forces perform structured surveys regarding stress resilience. Is there any such reference/conscription data in Portugal?</li></ul>
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<b>REVIEWER</b>	Olalekan Lee Aiyegbusi University of Birmingham, UK
<b>REVIEW RETURNED</b>	18-Nov-2018

<b>GENERAL COMMENTS</b>	<p>General comments</p> <p>The authors have conducted an important study. I commend them for doing a factor analysis which is not often done. However, the manuscript needs considerable revisions. There are typographical errors which need to be corrected.</p> <p>Comments</p> <p>Article summary</p> <ul style="list-style-type: none"> <li>- Page 3, line 20: I do not understand what the authors mean by this phrase "Has two different samples, resulting in using least convectional psychometric analysis." I suggest they rephrase and use a different word to 'convectional'.</li> </ul> <p>Introduction</p> <ul style="list-style-type: none"> <li>- Page 4, line 28: Remove the words 'according to' as you are not referring to an author's quote here. Replace with 'Based on'.</li> <li>- Page 4, line 39: Change 'has been' to 'was'</li> <li>- Page 4, line 46: Remove the phrase "Due to this specificity of the scale studies" and replace with 'The CD-RISC is a generic measure which can be applied.....'.</li> <li>- Page 4, lines 50-57: Please stick to past tense throughout. The study you are referring to was in the past. So use the words 'demonstrated', 'suggested', 'showed'.</li> <li>- Page 5, lines 25-28: The authors refer to subsequent studies with different findings but did not provide references to any of these. Please reference these studies here.</li> </ul> <p>Method</p> <ul style="list-style-type: none"> <li>- Page 6, line 7: Remove the words 'has been analyzed' and replace with 'was reviewed'. Committees review study proposals they do not analyze them.</li> <li>- Page 6, line 10: Please change the word 'obtained' to 'granted'.</li> <li>- Page 6, lines 3-33: I understand that ethical approvals need to be mentioned but this section is too long. Is there any way the authors can summarize this paragraph? Is it really important to mention all the approvals for the previous studies here?</li> </ul> <p>Patient and public involvement</p> <ul style="list-style-type: none"> <li>- Page 6, lines 43-45: Again the authors should stick to past tense here. Please change the sentence to 'All the participants, from both research projects, were informed of the investigation and gave their signed informed consent.'</li> </ul> <p>Instruments</p>
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- Page 7, line 43: Please note that what you collect is 'data' and not 'measures'. Measures are administered not collected. Amend the sentence so it reads 'Besides the CD-RISC Scale, we also collected data for a set of other measures relevant to each project objective.'

- Page 7, line 48: Amend as described above

- Page 10, line 9: Amend to 'were translated through a process of Survey procedure

- Page 10, line 24: Which questionnaire are you referring to here?

- Page 10, line 30: How were these 55 participants selected?

- Page 10, lines 35-37: This sentence is confusing - please clarify. Which survey was collected electronically? Do you mean the CD-RISC was completed using paper format?

- Page 10, line 52: Remove the phrase 'in this sense'. It is unnecessary.

- Page 11, lines 5-14: Please revise and split this into two sentences. It is currently too long and difficult to understand.

- Page 11, line 16: Remove 'more specifically'

- Page 11, line 47: Change 'our' to 'or'

- Page 12, lines 17-25: Are these decisions based on published evidence? If so please cite appropriately.

#### Results

- Page 13, line 22: Remove 'by' and change to 'composed of 11 items'. Amend for the entire manuscript.

- Page 13, line 44: 'how people perceive they can rely on others...' Please change to 'how people perceive their reliance on others....'

- Page 16, lines 24 onwards and pages 17, 18: The authors have merged reporting their findings with discussions. The information is important. However this section is just for reporting your results. The entire section has to be revised.

I suggest the authors to look at how the result and discussion sections were written in the paper by Connor & Davidson (Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC) 2003).

#### Discussion

- Page 18, lines 47-51: Please remove 'in line with this' and move the sentence to the top so it starts your discussion section.

- Page 18, line 51: Please remove 'in fact'. It is redundant and serves no function.

- Page 18, line 53: I think you mean 'construct' here. The word 'constructed' makes no sense in this sentence.

	<p>- Page 19, lines 8-19: Remove this paragraph. It has been reported in your method section.</p> <p>- Page 19, lines 21-30: Again this is repeating the method section. Instead, briefly summarise your results and discuss them. Some of the references to existing literature in your Result section should be moved here. See the how this section was written by Connor &amp; Davidson 2003.</p> <p>- Page 20, line 45: This is an academic manuscript. Please remove the exclamation mark.</p> <p>- Page 21: The authors used a lot of unnecessary adverbs and words such as 'in fact'. Please remove these redundant words. Academic papers need to be precise and concise.</p> <p>- The authors have not included a section on limitations of the study.</p>
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<b>REVIEWER</b>	Wouter van Ballegooijen Vrije Universiteit Amsterdam
<b>REVIEW RETURNED</b>	23-Nov-2018

<b>GENERAL COMMENTS</b>	<p>I was asked to look at the statistics so I'll focus on that. First I'd like to say that it's always a good idea to test whether a questionnaire behaves in the same way in a new population, so I think this is an important paper.</p> <p>The study aims need to reflect what you're doing. Psychometric properties is a broad term, so specify it to structural validity.</p> <p>To me the sequence of EFAs and CFAs is a bit puzzling. Performing EFA and CFA on the same data seems pointless and I suggest to drop the EFAs entirely. Start with testing the known factor structure on 1 sample using CFA. Test a few alternative models, such as a bifactor model or a model with higher-order factors (if that makes sense based on theory). Based on factor loadings and residuals you can see whether you should drop or add a factor. Also check modification indices to optimise the model. When you've obtained the optimal model, test it among the other sample and you're done.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Maria Åberg

- The table legends are far too short. My opinion is that it should be possible to understand a table just by reading the table text. Also the Ms contains very many abbreviations which should be summarized somewhere.

ACTION: The table legends were changed.

The abbreviations were summarized at the end of the Ms.

- The RECT sample is now rather old, soon 10 years. Why was this validity study not performed earlier?

RESPONSE: The scale was initially translated and used in the RECT project when the validity test was taking place. The scale was then used on the HIEAS project. The authors decided to wait for the data collection of the second study to benefit from the use of two different samples in the validity tests.

• In most countries the military forces perform structured surveys regarding stress resilience. Is there any such reference/conscription data in Portugal?

RESPONSE: We didn't find any references to studies with stress resilience in military forces.

Reviewer: 2

Reviewer Name: Olalekan Lee Aiyegbusi

"The authors have conducted an important study. I commend them for doing a factor analysis which is not often done. However, the manuscript needs considerable revisions. There are typographical errors which need to be corrected".

ACTION: All suggested revisions and clarifications were done in the Ms and submitted with track changes.

"The authors have not included a section on limitations of the study".

ACTION: A title on limitation and further directions' section was included.

Reviewer: 3

Reviewer Name: Wouter van Ballegooijen

RESPONSE: To study the psychometric properties of the CD-RISC was performed using a method proposed by Green and colleagues' (2014). As mentioned in the paper, this method is particularly suited for our type of data. Once we have two different samples, it allows to I) understand the specific behavior of the items in each of the two samples and only then II) test the factorial structure of the scale with the complete sample. Note that we did not use the EFA and the CFA on the same data. We used two EFAs, one on each sample, and then one CFA on the two samples together. We also note that understanding the specific performances of the items is particularly important in this case as previous evidence about the psychometric properties of the CD-RISC scale has revealed inconsistent findings.

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Olalekan Lee Aiyegbusi University of Birmingham, UK
<b>REVIEW RETURNED</b>	25-Jan-2019

<b>GENERAL COMMENTS</b>	Comments I am pleased to see that the authors have taken my comments on board. However, they still need to do some work on the
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manuscript. There are a few minor issues and more importantly, they have misinterpreted one of my earlier comments.

Specific comments

Comment 1: The authors have misinterpreted my comments on separating results from discussions. What they have done is simply cut a section from the result section and paste in the discussion section (pages 20 - 22). Whereas, I expected them to separate sentences that reported results from those that discussed it. I have revised the first paragraph from the 'cut and pasted' text to demonstrate what I meant. They need to revise the rest of the text that was 'cut and pasted' into the discussion this way. I hope it is now clear.

Sample text from the manuscript: "The results for the self-efficacy factor show a significant negative association with the two measures of stress considered - perceived stress ( $r=-0.32$ ) and vulnerability to stress ( $r=-0.34$ ). This result is consistent with the idea that people with high efficacy beliefs are able to overcome obstacles and focus on opportunities, and are more able to perceive stressful situations as challenging rather than as problematic events (Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005). Also, the results show positive correlations between the self-efficacy factor and two additional variables, namely, subjective happiness ( $r=0.31$ ) and mental health ( $r=0.35$ ). Again, this is consistent with the literature where self-efficacy beliefs are considered to regulate positive and negative emotions. In this sense, people with higher self-efficacy beliefs are less distressed and feel more capable of dealing with the problematic situations (Bandura, 1997). Recent studies have found that self-efficacy is indeed positively correlated with happiness (e.g. Erozkan, Dogan, & Adiguzel, 2016) and satisfaction with life (e.g. Luszczynska et al., 2005)."

My revision:

This should go in the result section - "The self-efficacy factor showed a significant negative association with the two measures of stress considered - perceived stress ( $r=-0.32$ ) and vulnerability to stress ( $r=-0.34$ ). There were positive correlations between the self-efficacy factor and two additional variables, namely, subjective happiness ( $r=0.31$ ) and mental health ( $r=0.35$ )."

This should go in the discussion section - "The negative association we found between the self-efficacy factor and the measures of stress is consistent with the idea that people with high efficacy beliefs are able to overcome obstacles and focus on opportunities, and are more able to perceive stressful situations as challenging rather than as problematic events (Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005). The positive correlations between self-efficacy and happiness and satisfaction with life are consistent with the findings in literature that self-efficacy beliefs may regulate positive and negative emotions. In this sense, people with higher self-efficacy beliefs are less distressed and feel more capable of dealing with the problematic situations (Bandura, 1997). Recent studies have found that self-efficacy is indeed positively correlated with happiness (e.g. Erozkan, Dogan, & Adiguzel, 2016) and satisfaction with life (e.g. Luszczynska et al., 2005)."

Comment 2: Survey procedure (Page 10). Please revise as "For the RECT data a survey was conducted between April 2009 and May 2010. The questionnaires were administered in paper and pencil format. This was done either face to face or administered in

	<p>a classroom context. The CD-RISC scale was completed by 421 participants while 55 participants completed the additional convergent validity measures.</p> <p>For the HIAES data a survey was conducted between November 2012 and June 2013. The survey had two parts: The first part of the survey was completed electronically while the participants completed the Connor-Davidson Resilience Scale (CD-RISC) in paper and pencil format. Additionally, for a subsample of 260, anthropometric measures and blood samples were collected."</p> <p>Comment 3: Which questionnaire(s) were used in the survey referred to in the paragraph above, "The survey had two parts: The first part of the survey was completed electronically....."</p> <p>Comment 4: Future directions and research limitations section (Page 24). Please remove 'Most importantly'. Start the sentence with 'Our study.....'</p> <p>Please remove 'In this sense, on the psychometric side'. Start the sentence with 'Future studies.....'</p> <p>Remove ' On this regard, we reinforce that'. Start the sentence with 'A limitation of .....</p>
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**VERSION 2 – AUTHOR RESPONSE**

Reviewer 2	<p>The authors have misinterpreted my comments on separating results from discussions. What they have done is simply cut a section from the result section and paste in the discussion section (pages 20 - 22). Whereas, I expected them to separate sentences that reported results from those that discussed it.</p>	<p>These sections were edited accordingly (transcription bellow):</p>
Reviewer 2	<p>Survey procedure (Page 10). Please revise as</p> <p>"For the RECT data a survey was conducted between April 2009 and May 2010. The questionnaires were administered in paper and pencil format. This was done either face to face or administered in a classroom context. The CD-RISC scale was completed by 421 participants while 55 participants completed the additional convergent validity measures.</p> <p>For the HIAES data a survey was conducted between November 2012 and June 2013. The survey had two parts: The first part of the survey was completed electronically while the participants</p>	<p>This section was edited accordingly (transcription bellow):</p> <p>For the RECT data a survey was conducted between April 2009 and May 2010. The questionnaires were administered in paper and pencil format. This was done either face to face or administered in a classroom context. The CD-RISC scale was completed by 421 participants while 55 participants completed the additional convergent validity measures.</p> <p>For the HIAES data a survey was conducted between November 2012 and June 2013. The survey had two parts: The first part of the survey with sociodemographic information and</p>

	completed the Connor-Davidson Resilience Scale (CD-RISC) in paper and pencil format. Additionally, for a subsample of 260, anthropometric measures and blood samples were collected."	H&LS, MHI-5 and SHS scales was completed electronically while, on a second part, the participants completed the Connor-Davidson Resilience Scale (CD-RISC) in paper and pencil format. Additionally, for a subsample of 260, anthropometric measures and blood samples were collected."
Reviewer 2	Which questionnaire(s) were used in the survey referred to in the paragraph above, "The survey had two parts: The first part of the survey was completed electronically....."	This was clarified in the survey procedure section (transcription bellow): "The survey had two parts: The first part of the survey with sociodemographic information and H&LS, MHI-5 and SHS scales was completed electronically while, on a second part, the participants completed the Connor-Davidson Resilience Scale (CD-RISC) in paper and pencil format. Additionally, for a subsample of 260, anthropometric measures and blood samples were collected."
Reviewer 2	Future directions and research limitations section (Page 24). Please remove 'Most importantly'. Start the sentence with 'Our study.....' Please remove 'In this sense, on the psychometric side'. Start the sentence with 'Future studies.....' Remove ' On this regard, we reinforce that'. Start the sentence with 'A limitation of .....	This section was edited accordingly (transcription bellow): "Our study extends the possibility to measure and investigate resilience in Portuguese communities using a rigorously validated scale. Future studies with this community can explore further the three factors structure of the CD-RISC and test for the convergent validity with new samples. A limitation of the current paper is the difference in test power between the two samples used to do the convergent validity."

### VERSION 3 - REVIEW

<b>REVIEWER</b>	Dr Olalekan Lee Aiyegbusi University of Birmingham UK
<b>REVIEW RETURNED</b>	10-Mar-2019

<b>GENERAL COMMENTS</b>	The authors have addressed all my comments. Well done!
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