

The Suitability of Visual Analogue Scales (VAS) for Collecting Patient-Reported Outcomes (PRO) Data from International Settings

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Introduction:

The VAS is a common response scale in PRO questionnaires, which are used in multinational studies from which data is pooled. Little data exists regarding the understanding of VAS in non-Western countries and cultures. This study was therefore designed to evaluate the suitability of VAS for use in different international settings, specifically to evaluate the cognitive processes and challenges occurring when respondents from a range of countries/cultures complete a VAS.

Methods:

- A qualitative study comprising 37 adults from six international settings: UK, Mexico, Spain, Malaysia, India and South Africa.
- VAS and vignettes were prepared with input from every in-country researcher in order to deal with issues relevant to every country.
 - Two sets of instructions were written: one standardised formal, and one informal which was selected by each country as most appropriate for use – Spain, Malaysia and UK agreed on the same informal instruction whereas each other country employed a different instruction, created by the in-country researchers.
 - One pilot interview was conducted in the UK to ascertain suitability of the interview guide and VAS.
 - A widely accepted translation methodology was used to translate the VAS: 2 forward translations, reconciliation, 2 back translations, back translation review, developer review, proofreading [Wild et al, 2005].
 - Analysis focussed on identifying issues related to understanding, information retrieval, decision / judgment and response.

Results:

37 lay adults were interviewed across six countries; mean age was 46 ±19; 51.4% were male. Educational levels from the whole sample ranged from primary education only, to higher degree level education.

Overall approaches to completing the VAS:

The same classification was used as in a study by Van Osch and Stiggelbout in the Netherlands (2005). Approaches used in each study country varied considerably.

Approach used	Explanation
Sort-of	A more "guessing" or intuitive style of approach
Bisection of the line	Mentally dividing the line into two first of all (perhaps between positive and negative)
Smaller segments	Mentally dividing the line into about four or five smaller sections
Numerical	Thinking in terms of percentages or other numbers

- Sort-of approach: most popular in Mexico (n=4) and Malaysia (n=5).
- Bisection approach: popular in Malaysia (n=5) but not in other study countries.
- Numerical approach: popular in Mexico (n=4) but not in other study countries.
- UK participants preferred smaller segment approach (n=4) and also liked sort-of approach (n=3).
- Spanish participants used widest range of valuation approaches – examples of all four approaches were identified.

Most respondents benefitted from receiving instructions, although those in Spain and Malaysia thought that they were unnecessary. The UK respondents did not mind receiving an instruction although instructions generally did not provide any benefit or affect answers. Tamil respondents were visibly relieved on receiving an instruction, and there were fewer errors in results after instructions were given. Respondents in South Africa made no "errors" at all after receiving an instruction.

Overall feedback on VAS:

- Most respondents liked the VAS format.
- Several described having to think more with a VAS than with other response formats.
- Some explicitly stated that they preferred alternative formats, e.g. Likert scales, although a greater number stated that they preferred the VAS.
- Criticisms of VAS included being too vague (either for the respondent to choose an answer or for the person analysing results), confusing, or difficult to complete.
- Respondents appreciated the VAS being intuitive, less restrictive than having to choose one of a number of multiple choices, interesting, quick and simple.
- Suggestions for improvements of a VAS included marking the scale numerically, adding 4 or 5 intermediate points (with or without labels) and adding a percentage sign by the anchors.

Individual country results:

SOUTH AFRICA

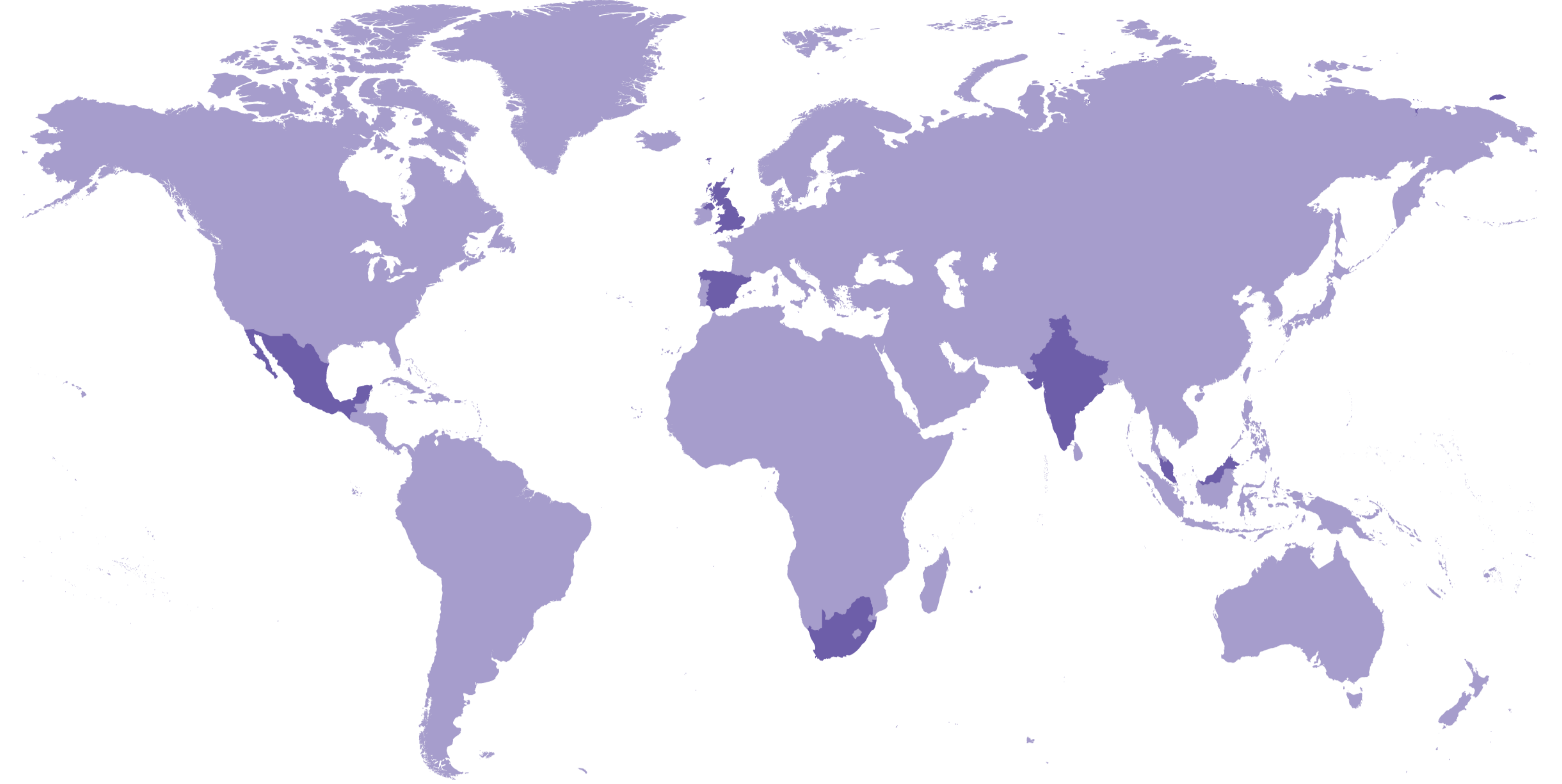
Approach	"Errors"	Understanding, confidence/ease	Respondent quotes	Vignette exercise
Out of the respondents who correctly completed the VAS: 1: combined <i>sort-of</i> and <i>numerical</i> approaches. 1: could not explain approach used.	4: assumed the extremes were the two possible response options.	Only 2 actually understood well. However, all respondents said they were sure of answers and found exercise easy.	"I thought the line was just there to link the two opposites together, I did not realise I could use the line as part of my answer."	Most responses: logical, showing understanding. 1: reversed answers.

MALAYSIA

Approach	"Errors"	Understanding, confidence / ease	Vignette exercise
5: combined <i>bisection</i> and <i>sort-of</i> . 1: <i>smaller segments</i> approach.	No errors apparent.	Good understanding. All were sure and found exercise very / quite easy.	Showed good understanding.

MEXICO

Approach	"Errors"	Understanding, confidence / ease	Respondent quotes	Vignette exercise	Any other relevant information
2: <i>sort-of</i> approach. 2: <i>numerical</i> approach. 2: combined <i>sort-of</i> and <i>numerical</i> approach. 1: <i>smaller segments</i> approach.	Some lack of accuracy.	No real problems with understanding. 2: a little unsure; found it a little confusing.	"I would have preferred to have more lines as a reference. What I did was more like guesswork."	All responses: logical.	2 found extremes unrealistic. All mentioned that the middle of the scale represented normality.



INDIA

Approach	"Errors"	Understanding, confidence / ease	Respondent quotes	Vignette exercise
Of the respondents who correctly completed the VAS: 1: <i>bisection</i> approach. 1: <i>numerical</i> approach.	3 only selected one of the two extremes. 1 of these also answered on behalf of all who lived with him. 1 marked a greater distance from an extreme the more he agreed with that extreme.	Only 2 respondents actually understood well. However, all said they were sure of responses and found task easy.	"I did not know what to do so I decided between the 2 response options and ticked the one that was closest to what I felt."	Most completed well. 1 sometimes could not answer, sometimes only selected one extreme.

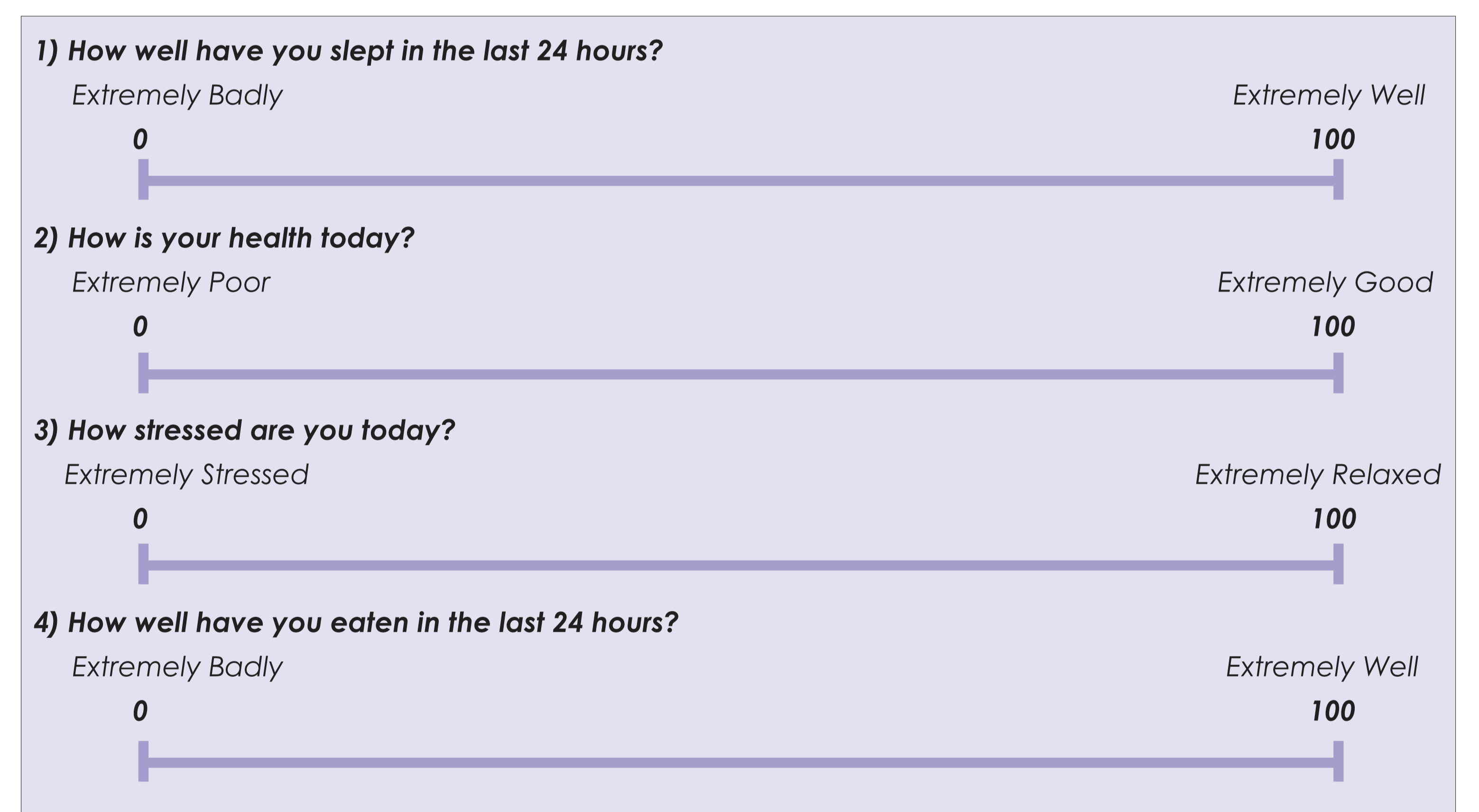
SPAIN

Approach	"Errors"	Understanding, confidence / ease	Respondent quotes	Vignette exercise	Any other relevant information
2: could not explain approach – suggested 1 sort-of and 1 numerical. 1: <i>sort-of</i> approach. 1: <i>smaller segment</i> approach. 1: combined <i>bisection</i> and <i>numerical</i> approach. 1: combined <i>bisection</i> and <i>sort-of</i> approach.	No errors apparent.	All showed good understanding. All were sure and found task easy.	"It is like responding without thinking too much, more intuitive."	Almost all responses: logical (1 respondent mixed responses for 1 vignette).	3 mentioned the middle of the scales represents normality. 1 said you cannot be 100% healthy.

UK

Approach	"Errors"	Understanding, confidence / ease	Respondent quotes	Vignette exercise	Any other relevant information
1: combined <i>smaller segment</i> and <i>sort-of</i> . 1: combined <i>bisection</i> and <i>sort-of</i> approach. 2: <i>smaller segment</i> approach. 1: <i>sort-of</i> approach. 1: combined <i>smaller segment</i> and <i>bisection</i> approach.	No errors apparent.	All showed good understanding. All: fairly or very sure. 1: thought would be difficult if precise answer was required. 1: found difficult to measure stress linearly. 1: found very easy as can take it all in without reading too many words.	"I divided it into fifths – 5 bands – and having decided where the average band was I thought I was a bit above average."	All responses: logical.	1: mentioned "normal" would be at the middle of the scales. 2: mentioned they would never mark the top extreme.

The VAS



Conclusions:

This study provides evidence that approaches to using the VAS and respondent competence in doing so vary substantially between countries. Whether or not these differences lead to systematic differences in VAS scores would require further investigation, but the results certainly appear to provide support for the FDA's assertion that the VAS may provide a 'false sense of precision'. This in turn may have implications for international studies in which data pooling or comparison across countries is required.

References:

Wild D., Grove A., Martin M., Eremenco S., McElroy S., Verjee-Lorenz A. & Erikson P. (2005). Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures: Report of the ISPOR Task Force for Translation and Cultural Adaptation. *Value in Health*, 8 (2): 94-104

Van Osch SMC, Stiggelbout AM. (2005). Understanding VAS valuations: Qualitative data on the cognitive process. *Quality of Life Research* 14(10): 2171-2175.