

## OBJECTIVES

Although originally designed for evaluating the management of diabetes<sup>1,2</sup> the 12-item and subsequent 16-item Well-being Questionnaire (W-BQ12<sup>3</sup> and W-BQ16<sup>4</sup>) are not condition-specific measures. The W-BQ12 measuring depressed/anxious mood, energy, and positive well-being, has been validated for many patient groups.<sup>5,6</sup> The W-BQ16, with an additional stress subscale has, to date, only been validated in diabetes<sup>4</sup> but has face validity for people living with HIV. Given the dramatic changes in HIV care, well-being is an increasingly important consideration. Here we use confirmatory factor analysis (CFA) in evaluating the psychometric properties of the W-BQ16 for individuals living with HIV.

## METHOD

The study employed a survey design, with participants (Table 1) recruited from the UK and the US via the internet by Opinion Health. Participants chose to complete and return the questionnaire individually (via post) or with a researcher (via telephone).

Table 1: Participant Details

Country	Age				Gender		Years since Diagnosis				
	N	Mean	SD	Min	Max	Male	Female	Mean	SD	Min	Max
UK	128	47	9.10	25	72	99	29	12	8.30	1	30
US	127	51	11.68	25	78	104	20	19	9.40	0	36

The W-BQ16 consists of four 4-item subscales labelled Negative Well-Being (including depressed mood and anxiety), Energy, Positive Well-Being and Stress. Respondents give answers on a 4-point scale ranging from 'All the time' (scored as 3) to 'Not at all' (scored as 0). Two items from the Energy subscale are reverse scored (Item 6: dull & sluggish, Item 7: tired, exhausted). Previous work in diabetes supported the scoring of subscales as the sum of scores on all 4 items from a given subscale. Higher scores indicate that the participant has more frequently experienced depressed/anxious mood (negative-well-being), energy (after reversing the two negatively worded energy items), positive well-being and stress on the respective subscales. Subscale scores range from 0 to 12.

In order to compute a total score (General Well-Being score) we:

- (1) add the subscale scores for Negative Well-being and Stress and subtract this subtotal from 24,
- (2) add the Energy item scores and Positive Well-being scores to the result of (1).

Scores can range from 0 to 48. Higher General Well-Being scores indicate greater well-being.

## RESULTS

**Hypothesised Model:** The CFA model of the W-BQ16 hypothesises a priori that responses to the W-BQ16 can be explained by four factors: negative well-being, energy, positive well-being and stress. The current model was run using Mplus version 7 software.<sup>6</sup>

Table 2: Pearson *r* Correlations between W-BQ16 Subscales

	UK Data				US Data			
	Negative Well-Being	Energy	Positive Well-Being	Stress	Negative Well-Being	Energy	Positive Well-Being	Stress
Negative Well-Being	1	-0.496**	-0.613**	0.696**	1	-0.609**	-0.606**	0.721**
Energy		1	0.633**	-0.490**		1	0.619**	-0.619**
Positive Well-Being			1	-0.569**			1	-0.591**
Stress				1				1

Table 2 shows Pearson's *r* correlation coefficients for the W-BQ16 subscales. As predicted, negative well-being was negatively related to energy, negatively related to positive well-being, and positively related to stress. Positive well-being was positively related to energy and negatively related to stress.

## REFERENCES

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## ENQUIRIES

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Information on these and other Questionnaires: Visit [www.healthpsychologyresearch.com](http://www.healthpsychologyresearch.com)

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## RESULTS

**Model Fit: UK Data:** The fit statistics for W-BQ16 UK Model revealed a good fit to the data:  $\chi^2 [98] = 182.116$ ,  $p < 0.001$ , CFI = 0.969, TLI = 0.962, RMSEA = 0.082 [95% CI = 0.063 – 0.10] and WRMR = 0.810.

Examination of the individual factor loadings (Figure 1), found that all estimates indicated strong factor loadings and all were statistically significant (<0.001). Reliability (Table 3) for each 4-item subscale was good (>0.7) and for the total general well-being scale was excellent (>0.9).

Table 3: W-BQ16 Subscale Internal Consistency Reliability UK Data

	Alpha if Item Deleted			
	Negative Well-Being	Energy	Positive Well-Being	Stress
WBQ 1: Crying	0.842			
WBQ 2: Down	0.835			
WBQ 3: Afraid	0.840			
WBQ 4: Panic	0.820			
WBQ 5: Energy		0.777		
RWBQ 6: Dull		0.771		
RWBQ 7: Tired		0.746		
WBQ 8: Rested		0.787		
WBQ 9: Happy			0.654	
WBQ 10: Lived Life			0.696	
WBQ 11: Eager			0.724	
WBQ 12: Cope			0.689	
WBQ 13: Demands				0.851
WBQ 14: Obstacles				0.828
WBQ 15: Problems				0.799
WBQ 16: Stress				0.855
<b>Subscale Alpha</b>	<b>0.870</b>	<b>0.817</b>	<b>0.748</b>	<b>0.870</b>
<b>General Well-being Alpha</b>	<b>0.919</b>			

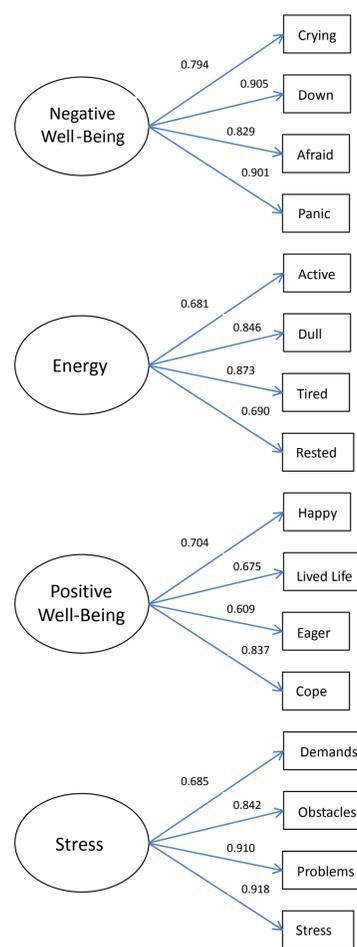


Figure 1: W-BQ16 CFA Model UK Data

**Model Fit: US Data:** The fit statistics for W-BQ16 US Model also revealed a good fit to the data:  $\chi^2 [98] = 167.311$ ,  $p < 0.001$ , CFI = 0.977, TLI = 0.972, RMSEA = 0.075 [95% CI = 0.055 – 0.09] and WRMR = 0.79).

Examination of the individual factor loadings (Figure 2), found that all estimates indicated strong factor loadings and all were statistically significant (<0.001). Reliability (Table 4) for each 4-item subscale was good (>0.8) and for the total general well-being scale was excellent (>0.9).

Table 4: W-BQ16 Subscale Internal Consistency Reliability US Data

	Alpha if Item Deleted			
	Negative Well-Being	Energy	Positive Well-Being	Stress
WBQ 1: Crying	0.811			
WBQ 2: Down	0.811			
WBQ 3: Afraid	0.836			
WBQ 4: Panic	0.820			
WBQ 5: Energy		0.861		
RWBQ 6: Dull		0.794		
RWBQ 7: Tired		0.785		
WBQ 8: Rested		0.822		
WBQ 9: Happy			0.761	
WBQ 10: Lived Life			0.787	
WBQ 11: Eager			0.759	
WBQ 12: Cope			0.787	
WBQ 13: Demands				0.852
WBQ 14: Obstacles				0.821
WBQ 15: Problems				0.810
WBQ 16: Stress				0.812
<b>Subscale Alpha</b>	<b>0.858</b>	<b>0.857</b>	<b>0.820</b>	<b>0.862</b>
<b>General Well-being Alpha</b>	<b>0.932</b>			

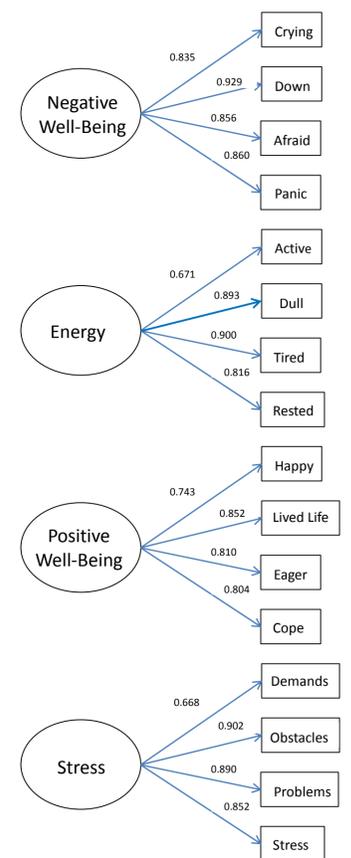


Figure 2: W-BQ16 CFA Model US Data

## CONCLUSIONS

The four-factor model of the W-BQ16 accurately represents the data and is an appropriate measure of well-being for individuals living with HIV. A generic instrument, the W-BQ16 is also suitable for the general population and other patient groups, allowing for research comparing different populations. It is suitable for use in clinical trials and in routine clinical practice to evaluate the well-being of people with HIV on different treatments.