

## Psychometric evaluation of the 12-Item Well-Being Questionnaire (W-BQ12) for use with people with macular disease (MD)

Jan Mitchell and Clare Bradley

Health Psychology Research, Dept of Psychology, Royal Holloway, University of London, Egham, Surrey, TW20 0EX, UK.

### Introduction

#### Macular Disease (MD)

- Chronic, progressive eye disease leading to loss of central vision with peripheral vision retained
- Mainly affects people > 50 years, particularly women
- Prevalence of 18.5% in those > 85yrs<sup>1</sup>
- Incidence increasing<sup>2</sup>
- Leading cause of new blind and partially sighted registrations in UK
- No treatment currently available for majority
- New treatments under development in phase II/III trials
- Psychological measures suitable for people with MD are needed to evaluate new treatments and rehabilitative interventions

#### 12-Item Well-Being Questionnaire (W-BQ12)

- Short form of 22-item parent instrument<sup>3</sup> originally designed for World Health Organisation study of diabetes treatments
- Focuses on cognitive symptoms of mood states, avoiding items concerning somatic states
- 12-item version improved structure and balance and reduced redundancy<sup>4,5</sup>.
- Psychometric properties confirmed in 8 European languages for use with people with diabetes<sup>6,7</sup>

### Method

- The W-BQ12 was incorporated in the Macular Disease Society Questionnaire (MDSQ), a 16-page survey of the experiences of members of the Society
- Modified for completion by people with MD
  - Arial 16 bold font
  - All text justified to left
  - Solid upper case avoided where possible
  - Headings and information enclosed in boxes
- MDSQ sent to random sample of 2,000 members of MD Society known to have MD
- 1420 returned completed MDSQ (response rate 71%)
- Mean age 76 yrs, mean duration of MD 7.34 yrs

### Results

As expected, three 4-item subscales were identified by factor analysis (as shown in Table 1):

Negative Well-being (NWB)

Energy

Positive Well-being (PWB)

#### References

- Mitchell P, Smith W, Attiebo K, et al. (1995). Prevalence of age-related maculopathy in Australia: The Blue Mountains eye study. *Ophthalmology* 102, 1450-1460.
- Evans J, Wormald R. (1996). Is the incidence of age-related macular degeneration increasing? *British J. Ophthalmol.* 80: 9-14.
- Bradley C. (1994). The well-being questionnaire. In: Bradley C. (ed). *The Handbook of Psychology and Diabetes: A Guide to Psychological Measures in Diabetes Research and Practice*. Chur, Switzerland: Harwood Academic Press.
- Riazzi A, Ishii H, Barendse S, et al (1999). Well-being questionnaire (W-BQ): Translation and psychometric development of a short form (W-BQ12) in Japanese. *Proceedings British Psychol. Soc.* 7(1): 34.
- Bradley C. (2000). The 12-Item Well-being Questionnaire. *Diabetes Care* 23 (6): 1.
- Plowright R, Witthaus E, Bradley C. (1999). Evaluating the 12-Item Well-being Questionnaire for use in multinational trials. *Quality of Life Res* 8(7): 650.
- Pouwer F, Snoek FJ, van der Ploeg et al. (2000). The Well-being Questionnaire: Evidence for a 3-factor structure with 12 items (W-BQ12). *Psychol. Med.* 30: 455-462.

### The 12-Item Well-Being Questionnaire

Please circle a number on each of the following scales to indicate how often you feel each phrase has applied to you in the past few weeks: 3 = "all the time" and 0 = "not at all"

	all the time	not at all
1. I have crying spells or feel like it .....	3	2 1 0
2. I feel downhearted and blue.....	3	2 1 0
3. I feel afraid for no reason at all.....	3	2 1 0
4. I get upset easily or feel panicky.....	3	2 1 0
5. I feel energetic, active or vigorous.....	3	2 1 0
6. I feel dull or sluggish.....	3	2 1 0
7. I feel tired, worn out, used up or exhausted.....	3	2 1 0
8. I have been waking up feeling fresh and rested.....	3	2 1 0
9. I have been happy, satisfied or pleased with my personal life.....	3	2 1 0
10. I have lived the kind of life I wanted to.....	3	2 1 0
11. I have felt eager to tackle my daily tasks or make new decisions.....	3	2 1 0
12. I have felt I could easily handle or cope with any serious problem or major change in my life.....	3	2 1 0

Please make sure that you have considered each of the 12 statements and have circled a number on each of the 12 scales

W-BQ12 © 096 (latest rev. 1/99) Prof Clare Bradley, Dept of Psychology, Royal Holloway, University of London, Egham Surrey, TW20 0EX

Table 1. Principal components analysis  
Unforced, Varimax rotation

Subscale	Item	Factor 1	Factor 2	Factor 3
Negative Well-being	1	-.155	<b>.774</b>	.084
	2	-.263	<b>.715</b>	.275
	3	-.130	<b>.815</b>	.078
	4	-.127	<b>.819</b>	.199
Energy	5	.420	-.032	<b>-.668</b>
	6	-.079	.227	<b>.800</b>
	7	-.126	.222	<b>.810</b>
	8	.461	-.118	<b>-.538</b>
Positive Well-being	9	<b>.763</b>	-.237	-.161
	10	<b>.791</b>	-.130	-.051
	11	<b>.768</b>	-.111	-.342
	12	<b>.676</b>	-.203	-.177

A forced 1-factor solution was also obtained. All items load onto the single factor at between -0.576 (item 1) and 0.728 (item 11).

#### Reliability Analysis

Cronbach's alpha coefficients show highly satisfactory levels of reliability for the 3 subscales and for the total General Well-being scale (GWB)

Scale	Alpha
Negative Well-being	.83
Energy	.78
Positive Well-being	.81
General Well-being	.87

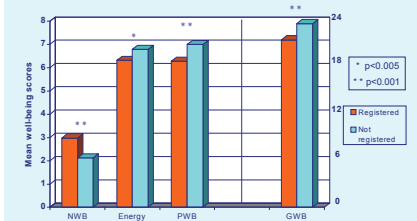
#### Acknowledgements

Funding was provided by the MD Society and Alcon Laboratories. Our thanks also go to the MD Society Council for its support and to the members for their participation

### Construct validity. Subgroup differences

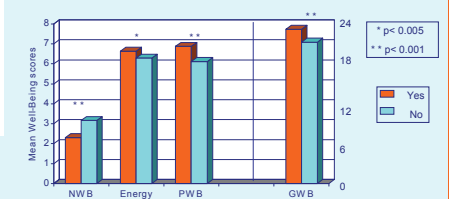
- Registered blind/partially sighted versus not registered

Figure 1. Poorer Well-being in those registered blind/partially sighted versus those not registered



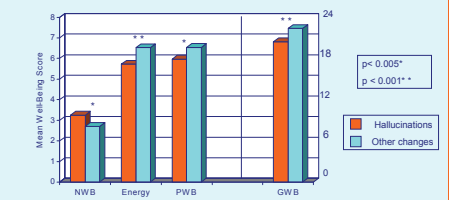
- Not satisfied with diagnostic consultation versus satisfied

Figure 2. Poorer Well-being scores in those answering 'No' to the question 'Did you feel that the interview with the Eye Specialist was satisfactory?' versus 'Yes'



- Hallucinations experienced versus other visual changes. Visual changes such as flashing lights, changing coloured patterns and hallucinations are a common experience in MD. Hallucinations were expected to be the most worrying of the visual changes.

Figure 3. Poorer Well-being scores in those experiencing hallucinations versus those reporting other visual changes



### Conclusions

- The W-BQ12 has excellent psychometric properties for use with people with MD
- The W-BQ12 is a short measure (a particular asset for this population) which will be useful for measuring psychological outcomes in medical and rehabilitative interventions for people with MD.
- Sensitivity to subgroup differences suggests it will also be sensitive to change.
- With PWB and Energy subscales as well as the NWB subscale, it will be valuable in measuring psychological benefits as well as costs in medical and rehabilitative interventions

The W-BQ12 is available from the copyright holder and co-author, Professor C. Bradley, at the address above.