

Appendix Table A1. Psychometric properties of the Convenience domain.

Parameters	Rasch model	First iteration	Final iteration
Disordered thresholds	No	No	No
Number of items	-	16	16
Person separation index	>2.0	2.78	2.80
Person reliability	> 0.8	0.89	0.89
PCA, variance by 1 st factor	>50%	59.3%	59.3%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	2.3, 6%	2.3, 5.9%
PCA, % raw variance explained by items		30.4%	30.1%
Item fit (infit MnSq)	< 1.5	None	None
Item fit (outfit MnSq)	< 1.5	CV 9 (2.00) CV 10 (1.75)	None#
Local item dependency II	> 0.3	3 pairs, 2.5%	3 pairs, 2.5%
DIF**	<1.0 logits and p<0.05		Mode of administration: CV (1.24, p < 0.001)
Targeting, difference between person & item means	<1.0 logits	0.58	0.52

CV 9 = The amount of time needed when attending your eye appointment; CV 10 = Having to travel a long way to attend your eye appointment

#The misfit of the two items were resolved by diagnosing misfit through unpredictable individual responses (total n = 5) and giving errant responders a weighting of 0.

II LID dealt with using the process outlined in the methods. LID item pairs: Final iteration: 1/9, 4/16, 5/16. Percentage refers to proportion of LID pairs of total number of correlated items.

**DIF was assessed for age, gender, best eye visual acuity (BEVA), disease group, and ocular comorbidity.

PCA, principal component analysis; MnSq, mean square; DIF, differential item functioning; CV, Convenience

Appendix Table A2. Psychometric properties of the Economic domain.

Parameters	Rasch model	First iteration	Final iteration
Disordered thresholds	No	No	No
Number of items	-	17	17
Person separation index	>2.0	1.89	1.91
Person reliability	> 0.8	0.78	0.78
PCA, variance by 1 st factor	>50%	60.7%	60.8%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	3.3, 7.7%	3.3, 7.7%
PCA, % raw variance explained by items	-	9.7%	10%
Item fit (infit MnSq)	< 1.5	EC 11 (1.69) EC 2 (1.61)	EC 2 (1.66) †
Item fit (outfit MnSq)	< 1.5	None	None
Local item dependency II	> 0.3	4 pairs, 2.9%	4 pairs, 2.9%
DIF**	<1.0 logits and p<0.05		Mode of administration: EC 12 (-1.19, p < 0.05) EC 13 (-1.16, p < 0.01) EC 16 (-1.15, p > 0.05)
Targeting, difference between person & item means	<1.0 logits	0.55	0.53

EC 2 = Limitation on the types of jobs you can do e.g. jobs that require a driving licence, lots of reading or computer work; EC 11 = The cost associated with seeing your eye specialist.

†Item 2 was retained as it was an important item within the domain.

II LID dealt with using the process outlined in the methods. Item pairs: Final iteration: 5/6; 4/8; 1/2; 6/7.

Percentage refers to proportion of LID pairs of total number of correlated items.

**DIF was assessed for age, gender, best eye visual acuity (BEVA), disease groups and ocular comorbidity.

PCA, principal component analysis; MnSq, mean square; DIF, differential item functioning; EC, Economic

Appendix Table A3. Psychometric properties of the Social domain.

Parameters	Rasch model	First iteration	Final iteration
Disordered thresholds	No	No	No
Number of items	-	28	28
Person separation index	>2.0	2.78	2.79
Person reliability	> 0.8	0.89	0.89
PCA, variance by 1 st factor	> 50%	56.9%	56.9%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	3.1, 4.8%	3.1, 4.8%
PCA, % raw variance explained by items	-	17.1%	17.1%
Item fit (infit MnSq)	< 1.5	SC 17 (1.55) ‡	None#
Item fit (outfit MnSq)	< 1.5	SC 27 (1.66) ‡	None#
Local item dependency II	> 0.3	5 pairs, 1.3%	5 pairs, 1.3%
DIF**	<1.0 logits and p<0.05		Mode of administration: SC 12 (1.16, p < 0.01) SC 17 (-1.22, p < 0.01) SC 27 (-1.79, p < 0.01)
Targeting, difference between person & item means	<1.0 logits	2.06	2.06

SC 17 = Maintaining your roles and responsibilities in community organizations (e.g. church groups, volunteering groups); SC 27 = with your family members being over protective.

‡SC 17 had poor discrimination (0.50); SC 27 had poor discrimination (0.54).

#The misfit of the two items were resolved by diagnosing misfit through unpredictable individual responses (total n = 3, for each misfitting item) and giving errant responders a weighting of 0.

II LID dealt with using the process outlined in the methods. LID item pairs: Final iteration: 14/21; 9/10; 13/14; 4/16; 3/6. Percentage refers to proportion of LID pairs of total number of correlated items.

**DIF was assessed for age, gender, best eye visual acuity (BEVA), disease groups and ocular comorbidity.

PCA, principal component analysis; MnSq, mean square; DIF, differential item functioning; SC, Social

Appendix Table A4. Psychometric properties of the Visual Symptoms domain.

Parameters	Rasch model	First iteration	Final iteration
Disordered thresholds	No	Yes	Yes
Number of items	-	20	20
Person separation index	>2.0	2.48	2.43
Person reliability	> 0.8	0.86	0.85
PCA, variance by 1 st factor	>50%	48.5%	51.3%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	2.8, 7.2%	2.4, 6.3%
PCA, % raw variance explained by items		30.2%	30.6%
Item fit (infit MnSq)	< 1.5	VS 19 (1.95) ‡	VS 19 (1.80) ‡
Item fit (outfit MnSq)	< 1.5	VS 13 (2.05) ‡ VS 19 (1.99) ‡ VS 4 (1.54) ‡	VS 19 (1.71)
Local item dependency II	> 0.3	6 pairs, 3.1%	6 pairs, 3.1%
DIF**	<1.0 logits and p<0.05		BEVA: VS 16 (1.09, p < 0.05) Disease groups: VS 5 (-1.19, p < 0.001) VS 6 (1.53, p < 0.001) VS 19 (1.99, p < 0.0001) Mode of administration: VS1 (1.19, p < 0.01) VS 9 (-1.22, p < 0.05) VS18 (-1.27, p < 0.01)
Targeting, difference between person & item means	<1.0 logits	0.03	-.01

VSF 4 = Floaters in your vision; VSF 5 = Distorted vision (lines you know are straight appear curved or distorted); VSF 6 = Loss of your peripheral vision; VSF 13 = Difficulty distinguishing colours; VSF 16 = Double vision; VSF 19 = Tunnel vision.

‡VSF 4 had poor discrimination (0.44); VSF 13 had poor discrimination (0.42); VSF 19 had poor discrimination (0.41)

II LID dealt with using the process outlined in the methods. LID item pairs: Final iteration: 6/19; 6/7; 4/9; 5/9; 4/10; 7/19. Percentage refers to proportion of LID pairs of total number of correlated items.

‡Item 19 was retained as it was an important item.

**DIF was assessed for age, gender, best eye visual acuity (BEVA), disease groups, and ocular comorbidity.

PCA, principal component analysis; MnSq, mean square; VS, Visual Symptoms; DIF, differential item functioning; BEVA, best eye visual acuity

Appendix Table A5. Psychometric properties of the Ocular Comfort Symptoms domain.

Parameters	Rasch model	First iteration	Final iteration
Disordered thresholds	No	No	No
Number of items	-	5	5
Person separation index	>2.0	1.80	1.80
Person reliability	> 0.8	0.76	0.76
PCA, variance by 1 st factor	>50%	55.3%	55.3%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	1.5, 13.6%	1.5, 13.6%
PCA, % raw variance explained by items	-	19%	19%
Item fit (infit MnSq)	< 1.5	None	None
Item fit (outfit MnSq)	< 1.5	None	None
Local item dependency II	> 0.3	None	None
DIF**	<1.0 logits and p<0.05	None	None
Targeting, difference between person & item means	<1.0 logits	1.10	1.10

IIID dealt with using the process outlined in the methods. LID item pairs: None. Percentage refers to proportion of LID pairs of total number of correlated items.

**DIF was assessed for age, gender, best eye visual acuity (BEVA), disease groups and ocular comorbidity.

PCA, principal component analysis; MnSq, mean square; DIF, differential item functioning

Appendix Table A6. Psychometric properties of the General Symptoms domain.

Parameters	Rasch model	First iteration	Final iteration
Disordered thresholds	No	No	No
Number of items	-	6	6
Person separation index	>2.0	1.63	1.66
Person reliability	> 0.8	0.73	0.73
PCA, variance by 1 st factor	>50%	54.8%	54.8%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	1.6, 12.2%	1.6, 12.2%
PCA, % raw variance explained by items		24.9%	24.8%
Item fit (infit MnSq)	< 1.5	GS 6 (1.62) ‡	GS 6 (1.60) ‡
Item fit (outfit MnSq)	< 1.5	GS 6 (1.77) ‡	None
Local item dependency II	> 0.3	None	None
DIF**	<1.0 logits and p<0.05		Mode of administration: GS 1(1.87, p <0.001)
Targeting, difference between person & item means	<1.0 logits	1.37	1.35

GSF 6 = Hallucination/vivid dreams

‡GSF 6 had poor discrimination (0.41)

‡Item 6 was retained as it was an important item.

II LID dealt with using the process outlined in the methods. LID item pairs: None. Percentage refers to proportion of LID pairs of total number of correlated items.

**DIF was assessed for age, gender, best eye visual acuity (BEVA), disease groups, and ocular comorbidity.

PCA, principal component analysis; MnSq, mean square; GS, General Symptoms; DIF, differential item functioning

Appendix Table A7. Psychometric properties of the Activity Limitation domain.

Parameters	Rasch model	All items	First iteration †	Second iteration ‡	Final iteration †
Disordered thresholds	No	No	No	No	No
No. of items	-	86	71	62	47
PSI	>2.0	7.56	7.02	6.65	5.61
Person reliability	> 0.8	0.98	0.98	0.98	0.97
PCA, variance by 1 st factor	>50%	72.1%	72.3%	70.8%	70.5%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	10.2, 3.3% (15 reading items loaded > 0.4)	8.07, 3.1% (9 items related to driving loaded > 0.4)	6.2, 2.9 (11 items related to lighting loaded > 0.4)	4.6, 2.9%
PCA, % raw variance explained by items		29.2%	31.3%	28.8%	22.9%
Item fit (infit MnSq)	< 1.5	AL 78 (2.58)	AL 78 (2.37)	AL 76 (2.20)	AL 65 (1.53) #
		AL 50 (1.74)	AL 50 (1.67)	AL 75 (2.12)	
		AL 76 (2.23)	AL 76 (2.08)	AL 50 (1.63)	
		AL 56 (1.58)	AL 75 (1.89)	AL 67 (1.86)	
		AL 75 (2.13)	AL 82 (1.79)	AL 77 (1.83)	
		AL 67 (1.97)	AL 67 (1.78)		
		AL 77 (1.88)	AL 77 (1.73)		
		AL 82 (1.86)	AL 84 (1.64)		
		AL 84 (1.82)			
		AL 83 (1.54)			
Item fit (outfit MnSq)	< 1.5	AL 79 (1.53)			
		AL 31 (9.19)	AL 31 (7.77)	AL 31 (5.13)	
		AL 78 (1.94)	AL 78 (1.61)	AL 76 (2.03)	
		AL 50 (2.51)	AL 50 (2.16)	AL 75 (1.70)	
		AL 76 (2.28)	AL 56 (1.84)	AL 50 (2.07)	
		AL 56 (2.14)	AL 67 (1.54)	AL 67 (1.54)	
		AL 75 (1.64)	AL 6 (1.77)	AL 77 (1.64)	
		AL 67 (1.82)	AL 77 (1.58)	AL 56 (1.71)	
		AL 77 (1.84)		AL 6 (1.53)	
		AL 6 (1.76)			
		AL 49 (1.68)			
		AL 52 (1.59)			
		AL 55 (1.55)			
Local item dependency II	> 0.3	188 pairs, 5.1%	112 pairs, 4.5%	65 pairs, 3.4%	34 pairs, 3.1%
DIF**	<1.0 logits and p<0.05	BEVA: AL 3 (- 1.00, p < 0.0001)	BEVA: AL 50 (1.28, p < 0.0001)	BEVA: AL 46 (-1.06, p < 0.05)	Disease group: AL 46 (-1.04, p > 0.05)
		AL 6 (1.07, p < 0.001)	AL 78 (-2.23, p > 0.05)	AL 50 (1.24, p < 0.0001)	AL 68 (-1.32, p < 0.0001)
		AL 7 (- 1.75, p < 0.05)	AL 79 (-2.06, p < 0.05)		
		AL 50 (1.36, p < 0.0001)	AL 80 (-1.83, p < 0.05)	Disease group: AL 50 (1.04, p < 0.0001)	Mode of administration: AL 40 (1.02, p<0.05)
		AL 78 (- 2.16, p > 0.05)	AL 82 (-1.16, p < 0.05)	AL 68 (-1.12, p < 0.0001)	AL 62 (1.24, p < 0.001)
		AL 79 (- 2.03, p < 0.05)	AL 83 (-1.06, p > 0.05)		
		AL 80 (- 1.77, p < 0.05)	AL 84 (-2.18, p < 0.05)	AL 76 (1.76, p < 0.0001)	

		AL 82 (- 1.10, p < 0.05)	AL 85 (-1.33, p > 0.05)	AL 77 (1.20, p < 0.0001)
		AL 83 (- 1.07, p > 0.05)	AL 86 (-2.19, p < 0.05)	
		AL 84 (- 2.18, p < 0.05)		
		AL 85 (- 1.31, p > 0.05)	Disease group:	
		AL 86 (- 2.18, p < 0.05)	AL 68 (-1.21, p < 0.0001)	
Targeting, difference between person & item means	<1.0 logits	-0.06	.0	0.26
				0.66

AL 3 = Reading a large print book; AL 6 = Reading in dim light conditions; AL 7 = Reading musical notes; AL 31 = Pouring a drink; AL 49 = Seeing in poorly lit surroundings; AL 50 = Seeing at night; AL 52 = Seeing in bright sunlight; AL 55 = Adjusting to bright light after the lighting has been rather dim; AL 56 = Adjusting to dark indoor lighting after being in bright light; AL 67 = Playing blind sports, e.g. blind cricket, blind tennis; AL 75 = Riding a bike in the daytime; AL 76 = Riding a bike in the dark (but with a flash light/bicycle light/headlight); AL 77 = Riding a bike in twilight or more than sufficient street light; AL 78 = Riding motorcycle/moped; AL 79 = Driving during the day; AL 80 = Driving in unfamiliar areas; AL 82 = Noticing when the car in front of you is speeding up or slowing down; AL 83 = Driving towards oncoming headlights; AL 84 = Changing lanes in traffic; AL 85 = Driving at dusk or dawn; AL 86 = Seeing road markings clearly when driving.

†After removing reading items; ‡After removing the driving items; † After removing the lighting items

#After deleting items 67, 75, 76 and 77, the misfit of 3 items were resolved by diagnosing misfit through unpredictable individual responses and giving errant responders a weighting of 0.

||LID dealt with using the process outlined in the methods. LID item pairs: Final iteration: 3/5; 4/5; 39/40; 3/4; 37/38; 7/8; 45/46; 10/12; 35/37; 7/14; 35/38; 8/14; 15/20; 6/8; 6/7; 26/27; 10/11; 6/14; 27/34; 31/33; 15/16; 16/43; 1/5; 25/26; 11/13; 19/13; 11/12; 21/26; 26/34; 17/22; 20/40; 9/25; 3/36; 14/45. Percentage refers to proportion of LID pairs of total number of correlated items.

**DIF was assessed for age, gender, best eye visual acuity (BCVA), disease groups, and ocular comorbidity.

PCA, principal component analysis; MnSq, mean square; DIF, differential item functioning; BEVA, best eye visual acuity; AL, Activity Limitation

Appendix Table A8. Psychometric properties of the Health Concerns domain.

Parameters	Rasch model	All items	First iteration	7-item scale	Final iteration***
Disordered thresholds	No	No	No	No	No
Number of items	-	48	41	7	32
Person separation index	>2.0	4.01	3.64	2.75	3.54
Person reliability	> 0.8	0.94	0.93	0.88	0.93
PCA, variance by 1 st factor	>50%	59.1%	58.7%	69.8%	59.9%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	5.8, 5% (7 items on concerns about the disease progression loaded > 0.4)	4.1, 4.2% (5 items on concerns about disease progression loaded > 0.4)	1.7, 7.5%	4.2, 5.3%
PCA, % raw variance explained by items	-	16.4%	15.4%	22.7%	13.3%
Item fit (infit MnSq)	< 1.5	HC 29 (2.05) HC 30 (2.06) HC 38 (2.00) HC 45 (1.90) HC 31 (1.72) HC 36 (1.64) HC 16 (1.70) HC 34 (1.56) HC 41 (1.52)	HC 29 (2.19) ‡ HC 30 (1.98) ‡ HC 38 (1.84) ‡ HC 45 (1.82) ‡ HC 31 (1.71) ‡ HC 44 (1.58) ‡ HC 16 (1.64) ‡ HC 36 (1.62) ‡ HC 11 (1.62) ‡ HC 41 (1.61)	None	HC 39 (1.60) #
Item fit (outfit MnSq)	< 1.5	HC 29 (2.61) HC 30 (2.13) HC 38 (2.05) HC 45 (1.83) HC 31 (1.81) HC 36 (1.72) HC 34 (1.55)	HC 29 (3.48) HC 30 (2.05) HC 38 (1.84) HC 45 (1.77) HC 31 (1.79) HC 44 (1.65) HC 36 (1.64) HC 41 (1.64) HC 34 (1.57) HC 11 (1.53) HC 41 (1.64)	None	None
Local item dependency II	> 0.3	38 pairs, 3.3%	23 pairs, 2.8%	None	17 pairs, 3.4%
DIF**	<1.0 logits and p<0.05	BEVA: HC 29 (1.44, p > 0.05) HC 38 (1.30, p < 0.05) HC 41 (1.04, p < 0.001)	No DIF for age and gender	None	BE VA: HC 41(1.81, p < 0.0001) Mode of Administration: HC 13 (1.21, p < 0.001) HC 39 (-1.85, p < 0.05) HC 40 (-1.35, p < 0.001) HC (41, p < 0.0001)
Targeting, difference between person & item means	<1.0 logits	0.38	0.49	-0.43	0.55

HC 11 = Having accidents (motor vehicle related); HC 16 = Delay in getting a diagnosis; HC 29 = Losing your driver's license; HC 30 = The way you are treated by

your eye care practitioner; HC 31 = How well your eye treatment is working; HC 34 = Not getting enough information or explanation from medical staff; HC 36 = Passing eye condition onto your children; HC 38 = Starting a family or having more children; HC 41 = Putting other people in danger by driving; HC 44 = The way people react to you; HC 45 = Becoming separated from the person you are with.

‡HC 11 had poor discrimination (0.57); HC 16 had poor discrimination (0.88); HC 29 had a very poor discrimination (0.64); HC 30 had poor discrimination (0.69); HC 31 had poor discrimination (0.88); HC 36 had poor discrimination (0.52); HC 38 had poor discrimination (0.39); HC 44 had poor discrimination (0.71); HC 45 had poor discrimination (0.33) and the item wording was confusing.

***As the 5-item scale showed high agreement with the HC scale, the items were retained within the HC scale.

#After deleting HC 11, HC 16, HC 29, HC 30, HC 31, HC 36, HC 38, HC 44 and HC 45, item 39 showed slight misfit. Item 39 was retained as it was an important item.

||LID dealt with using the process outlined in the methods. LID item pairs: final iteration: 3/4; 4/5; 3/6; 3/7; 10/15; 4/7; 3/5; 4/6; 21/23; 16/17; 6/7; 2/8; 22/23; 17/29; 13/18; 14/15; 21/22. Percentage refers to proportion of LID pairs of total number of correlated items.

**DIF was assessed for age, gender, best eye visual acuity (BEVA), disease groups, and ocular comorbidity.

PCA, principal component analysis; MnSq, mean square; DIF, differential item functioning; BEVA, best eye visual acuity; HC, Health Concerns

Appendix Table A9. Psychometric properties of the Mobility domain.

Parameters	Rasch model	First iteration	Final iteration
Disordered thresholds	No	No	No
Number of items	-	23	23
Person separation index	>2.0	4.31	4.40*
Person reliability	> 0.8	0.95	0.95
PCA, variance by 1 st factor	>50%	69.5%	69.5%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	3.8, 5.1%	3.8, 5.1%
PCA, % raw variance explained by items	-	30.2%	29.9%
Item fit (infit MnSq)	< 1.5	MB 21 (1.65) MB 22 (1.55)	MB 21 (1.52) †
Item fit (outfit MnSq)	< 1.5	MB 6 (6.38) MB 22 (1.62)	None#
Local item dependency II	> 0.3	17 pairs, 6.7%	17 pairs, 6.7%
DIF**	<1.0 logits and p<0.05	No DIF by age and gender	BEVA: MB 12 (1.45, p < 0.0001) Disease groups: MB 13 (-1.04, p < 0.001) Mode of Administration: MB 4 (-1.02, p < 0.01) MB 10 (1.65, p < 0.0001) MB 18 (-1.26, p < 0.001)
Targeting, difference between person & item means	<1.0 logits	1.11	1.06

MB 6 = Walking around your home; MB 12 = Navigating in dim light; MB 13 = Crossing a street or road;
MB 21 = Going on long journeys; MB 22 = Travelling somewhere independently.

*Precision improved after fixing the misfitting items

†Item 21 was retained as it was an important item; #Misfit of two items was resolved by diagnosing misfit through unpredictable individual responses (n = 30) and giving errant responders a weighting of 0.

II LID item pairs; Final iteration: 1/2; 1/5: 2/3; 2/4; 3/4; 4/12; 7/9; 7/8; 8/9; 14/15; 14/17; 14/18; 15/17; 18/19; 21/22; 22/23, 15/18.

**DIF was assessed for age, gender, best eye visual acuity (BEVA), disease groups and ocular comorbidity

PCA, principal component analysis; MnSq, mean square; DIF, differential item functioning; BEVA, best eye visual acuity; MB, Mobility

Appendix Table A10. Psychometric properties of the Emotional domain.

Parameters	Rasch model	First iteration	Final iteration
Disordered thresholds	No	No	No
Number of items	-	60	53
Person separation index	>2.0	4.07	4.27
Person reliability	> 0.8	0.94	0.95
PCA, variance by 1 st factor	>50%	56.6%	61.5%
PCA, Eigenvalue for 1 st contrast & % unexplained variance in 1 st contrast	<3.0, <5.0%	4.1, 3.1%	4.1, 3.1%
PCA, % raw variance explained by items	-	23.8%	23.7%
Item fit (infit MnSq)	< 1.5	EM 4 (3.46) ‡	None#
		EM 66 (2.19) ‡	
		EM 18 (2.15) ‡	
		EM 16 (1.90) ‡	
		EM 37 (1.66) ‡	
		EM 23 (1.64) ‡	
Item fit (outfit MnSq)	< 1.5	EM 4 ((5.32)	None#
		EM 66 (2.21)	
		EM 18 (2.16)	
		EM 16 (1.92)	
		EM 37 (1.88)	
		EM 31 (1.53)	
Local item dependency II	> 0.3	37 pairs, 1.7	16 pairs, 1.1%
DIF**	<1.0 logits and p<0.05	No DIF for age and gender	None
Targeting, difference between person & item means	<1.0 logits	1.93	2.31

EM 1 = Feel hopeful; EM 3 = Feel appreciative; EM 4 = Feel surprised; EM 5 = Feel relieved; EM 6 = Feel fortunate; EM 7 = Feel grateful; EM 16= Feel shocked by what your eye specialist have told you about your eyes; EM 18 = Feel reluctant to talk about your eye problem; EM 23 = Have trouble accepting that your eye problems are permanent; EM 31 = Feel disoriented; EM 37 = Feel unlucky; EM 66 = Feel stuck with your eye condition and treatment.

‡ EM 4 had a very poor discrimination (-2.28), it was a confusing item that showed misfit with both positive and negative items; EM 16 had poor discrimination (0.50) and missing value (17%); EM 18 had a poor discrimination (0.08); EM 23 had a poor discrimination; (0.68); EM 37 had a poor discrimination (0.42); EM 66 had a poor discrimination (-.25); †Item 5 was retained as it was an important item

#After deleting items EM 4, EM 16, EM 18, EM 23, EM 31, EM 37 and EM 66, remaining item fit of one item was resolved by diagnosing misfit through unpredictable individual responses and giving errant responders a weighting of 0.

II LID dealt with using the process outlined in the methods. LID item pairs: Final iteration: 25/26; 38/43; 32/40; 26/27; 25/27; 6/43; 52/53; 6/7; 39/42; 49/58; 22/58; 4/5; 16/33; 14/15; 34/58; 39/51; Percentage refers to proportion of LID pairs of total number of correlated items.

**DIF was assessed for age, gender, best eye visual acuity (BEVA), disease groups, and ocular comorbidity.

PCA, principal component analysis; MnSq, mean square; DIF, differential item functioning; EM, Emotional

Appendix Table A11. Rasch-based psychometric properties of Reading, Driving, and Lighting scales.

Parameters	Reading	Driving	Lighting
Number of items	15	8	11
Response categories ordering	Ordered	Ordered	Ordered
Precision (PSI)	3.91	2.72	3.43
Item infit MNSQ > 1.5	0	0	1
Item outfit MNSQ > 1.5	0	0	1
PCA analysis % variance explained by measure	78.1%	83.5%	71%
PCA analysis eigenvalue 1 st contrast	2.3	2.1	2.2
Items loaded > 0.4 to 1 st contrast	-	-	-
Targeting	-0.75	-3.96	-1.45
	None	Gender:	None
DIF by age, gender		AL 84 (-1.35, p < 0.05)	
		Ocular co-morbidity	
		AL 84 (1.45, p < 0.05)	

PSI, person separation index; MNSQ, mean square; PCA, principal component analysis; DIF, differential item functioning.