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BACKGROUND

Improvement in HIV survival rates has led to an increasing need for patient-reported outcome measures, including up-to-date symptom measures associated with HIV and current treatments. Using a template for condition-specific -SRQs developed for people with other long-term conditions (e.g. ThySRQ for hypothyroidism) ^{1,2} this abstract reports on the psychometric development and initial analyses from a new HIV-specific symptom measure: the HIVSRQ.

METHOD

Two hundred and fifty-five participants (UK N=128, US N=127) were recruited via the internet by Opinion Health. Participants chose to complete and return the questionnaire individually (via post) or with a researcher (via phone). Prior to analysis the HIVSRQ included 64 items, drafted in consultation with HIV specialists and tested in 25 qualitative interviews with people living with HIV (14 UK-English speaking and 11 US-English speaking). Each item asked if a particular symptom had been experienced in recent weeks and if 'yes', was rated for how much this symptom had bothered the respondent on a scale of 1 (not at all) to 4 (a lot).

RESULTS

Participant Details: Mean ages of UK participants was 46 years (SD=9.19) and 51 years (SD=11.69) in the US. Mean time since diagnosis for the UK participants was 12 years (SD=8.30) and 18 years (SD=9.29) in the US. The male/female ratio was 99/29 in the UK and 104/20 in the US.

Analytic Approach: In order to examine the structure and underlying constructs within the data an exploratory factor analysis (EFA) was run. EFA is a complex multi-step process that examines the pattern of relationships between observed variables. The aim of EFA is to reduce the number of variables to a smaller number of factors. Reliability was assessed using Cronbach's alpha (α) and Intra-class Correlation Coefficient (ICC).

Results: Using principal axis factoring and an oblique rotation, EFA revealed a clean six-factor structure comprising 25 items, all items loaded >0.4 and explained 50% of the variance in the data. The six factors were neuromuscular ($\alpha=0.84$, ICC=0.76), sexual problems ($\alpha=0.82$, ICC=0.82), emotional/mood ($\alpha=0.85$, ICC=0.75), minor illnesses ($\alpha=0.66$, ICC=0.46), skin problems ($\alpha=0.73$, ICC=0.86) and gastrointestinal symptoms ($\alpha=0.73$, ICC=0.74).

Recognising the pragmatic benefits of a single symptom scale, a forced one-factor EFA was also run. Stepwise removal of low-loading items resulted in a 38-item composite subscale (see Table 1). All items loaded >0.4 and explained 28% of data variance ($\alpha=0.94$, ICC=0.82).

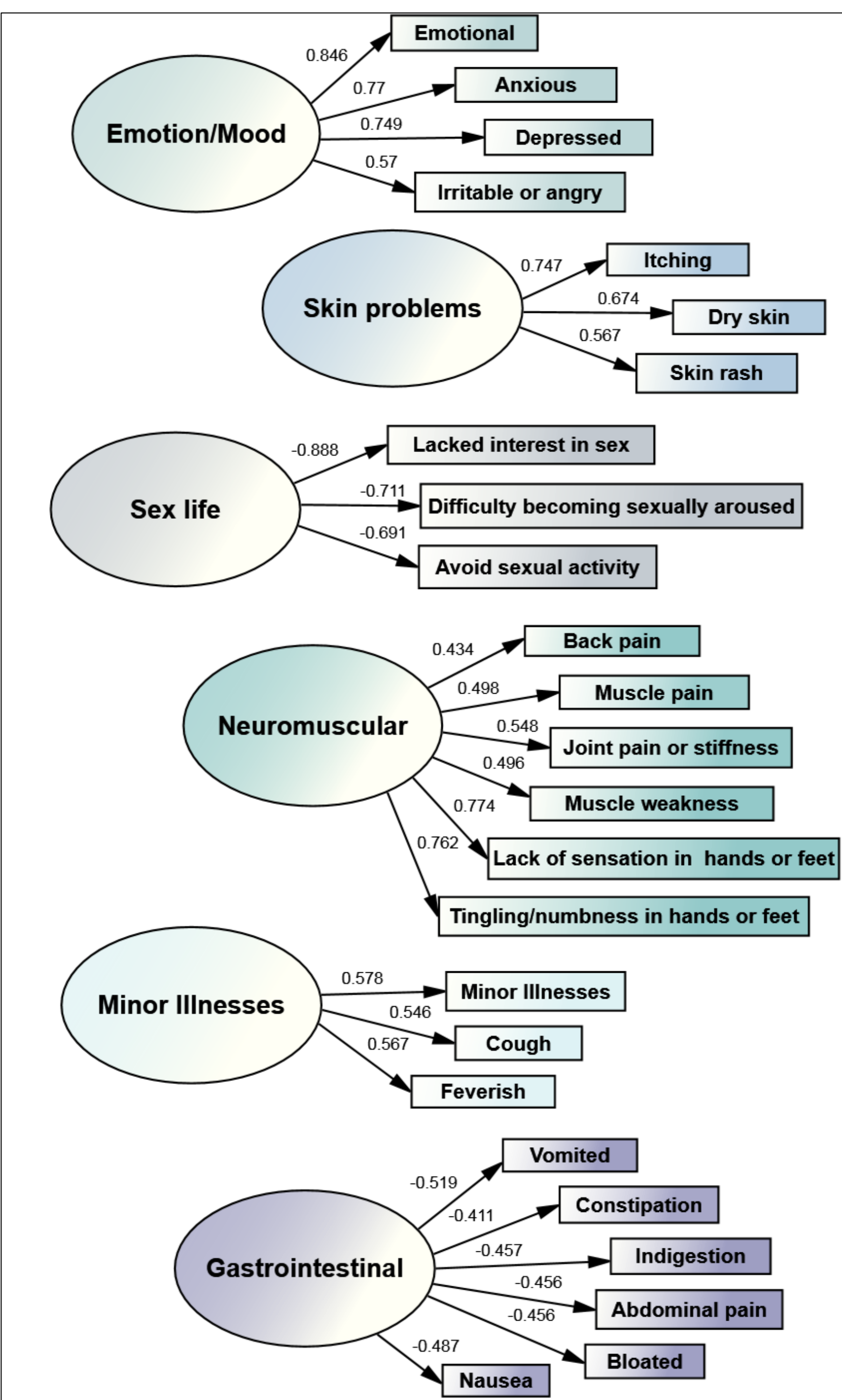


Figure 1: HIVSRQ Exploratory Factor Analysis - Forced-Six Factor Solution

Table 1: Forced One Factor Exploratory Factor Analysis: Factor Loadings and Reliability: Ordered by strength of factor loading

N	Item Number	Symptom	Factor Loadings	Alpha if Item Deleted	N	Item Number	Symptom	Factor Loadings	Alpha if Item Deleted
1	28	Muscle Weakness	0.694	0.932	20	2	Palpitations	0.506	0.934
2	6	Tired	0.683	0.932	21	58	Excessively Sleepy	0.492	0.934
3	11	Generally Unwell	0.672	0.932	22	34	Decreased Touch	0.487	0.934
4	29	Muscle Pain	0.669	0.932	23	1	Chest Pain Bother	0.482	0.934
5	41	Thinking/Remembering	0.649	0.932	24	52	Night Sweats	0.477	0.934
6	35	Depression	0.627	0.932	25	62	Poor Appetite	0.477	0.934
7	37	Emotional	0.617	0.932	26	56	Abnormal Dreams	0.474	0.934
8	42	Unsteady/Uncoordinated	0.606	0.933	27	59	Strange Taste	0.467	0.934
9	8	Nausea	0.579	0.933	28	12	Abdominal Pain	0.466	0.934
10	32	Joint Pain	0.574	0.933	29	46	Avoid Sex	0.457	0.934
11	3	Breathing Problems	0.572	0.933	30	50	Dry Skin	0.455	0.934
12	36	Anxiety	0.567	0.933	31	45	Lost Interest in Sex	0.450	0.934
13	43	Dizzy	0.561	0.933	32	5	Thirsty	0.437	0.934
14	33	Tingling/Numbness	0.552	0.933	33	31	Back Pain	0.433	0.934
15	24	Headaches	0.538	0.933	34	47	Sexually Aroused	0.431	0.934
16	16	Bloated	0.536	0.933	35	7	Feverish	0.429	0.934
17	19	Dry Mouth	0.536	0.933	36	60	Discoloured Urine	0.418	0.934
18	57	Sleep Problems	0.526	0.933	37	51	Itching	0.408	0.934
19	38	Irritable/Angry	0.518	0.933	38	63	Lipodystrophy	0.401	0.935

ENQUIRIES & ACKNOWLEDGEMENTS

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 Information on this and other questionnaires: Visit www.healthpsychologyresearch.com
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RESULTS

Preliminary analyses: Test of difference analyses were conducted exploring differences by country and sex on the HIVSRQ composite score and each of the six subscales. Independent samples t-tests ($p<0.05$) comparing both ratings from UK and US participants found that UK participants reported significantly more bother on the composite symptom score and on sex life, emotion/mood, and minor illness subscales than participants living in the US (see Table 2).

Table 2: HIVSRQ subscales: Test of difference by country

Subscale	Number of Items	Max Possible Score	UK Data			US Data			t	df	p	d
			N	Mean	Std. Deviation	N	Mean	Std. Deviation				
Composite Score	38	152	122	56.20	30.32	120	41.58	28.98	3.832	240	<0.001	0.490
Neuromuscular	6	24	128	9.61	7.02	125	8.88	7.23	1.555	251	0.121	0.102
Sex Life	3	12	125	5.31	4.20	126	3.60	3.99	3.303	249	0.001	0.417
Emotion/Mood	4	16	128	8.21	5.01	126	5.44	4.82	4.463	252	<0.001	0.563
Minor Illnesses	3	12	127	3.44	3.36	127	2.19	2.84	3.207	245	0.002	0.401
Skin Problems	3	12	128	3.03	3.37	127	2.57	3.10	1.164	253	0.246	0.142
Gastrointestinal	6	24	127	5.97	5.53	126	5.22	5.49	1.077	251	0.282	0.136

Independent samples t-tests ($p<0.05$) comparing bother ratings for women and men found that women reported more bother than men on the neuromuscular and emotion/mood subscales (see Table 3).

Table 3: HIVSRQ subscales: Test of difference by sex

Subscale	Number of Items	Max Possible Score	Men			Women			t	df	p	d
			N	Mean	Std. Deviation	N	Mean	Std. Deviation				
Composite Score	38	152	195	47.42	30.47	44	56.41	30.60	-1.767	237	0.078	0.294
Neuromuscular	6	24	202	8.50	7.03	48	10.85	7.52	-2.062	248	0.040	0.322
Sex Life	3	12	201	4.59	4.15	47	3.96	4.26	0.932	246	0.352	0.149
Emotion/Mood	4	16	202	6.51	4.99	49	8.39	5.53	-2.312	249	0.022	0.356
Minor Illnesses	3	12	203	2.88	3.22	48	2.48	2.98	0.79	249	0.431	0.128
Skin Problems	3	12	203	2.62	3.01	49	3.45	3.82	-1.416	250	0.162	0.241
Gastrointestinal	6	24	202	5.27	5.23	48	7.04	6.50	-1.755	248	0.084	0.300

A two-way between-groups analysis of variance ($p<0.05$) was conducted to explore the impact of country and sex on amount of bother participants experience from emotional/mood-type symptoms. As expected, from the previous analyses, there was a significant main effect for country (UK experienced more bother than US) and a significant main effect for sex (women experienced more bother than men). The interaction effect between country and sex was also statistically significant (see Table 4). Examination of the means and inspection of the line graph (see Figure 2) revealed that while women in the UK and US experience greater bother from emotional/mood-type symptoms than men, the effect is much greater in the US.

Table 4: Results of a 2 x 2 between-groups ANOVA using the HIVSRQ emotion/mood subscale. Exploring differences by country (UK/US) & sex (men/women)

Country	Men		Women		Total		F	df	Sig	Partial Eta Squared
	N	Mean	SD	N	Mean	SD				
UK	99	8.14	4.94	29	8.45	5.64	4.453	1, 247	0.036	0.018
USA	103	4.94	4.54	20	8.30	5.51	5.337	1, 247	0.022	0.021
Total	202	6.51	4.99	49	8.39	5.53	3.699	1, 247	0.056	0.015

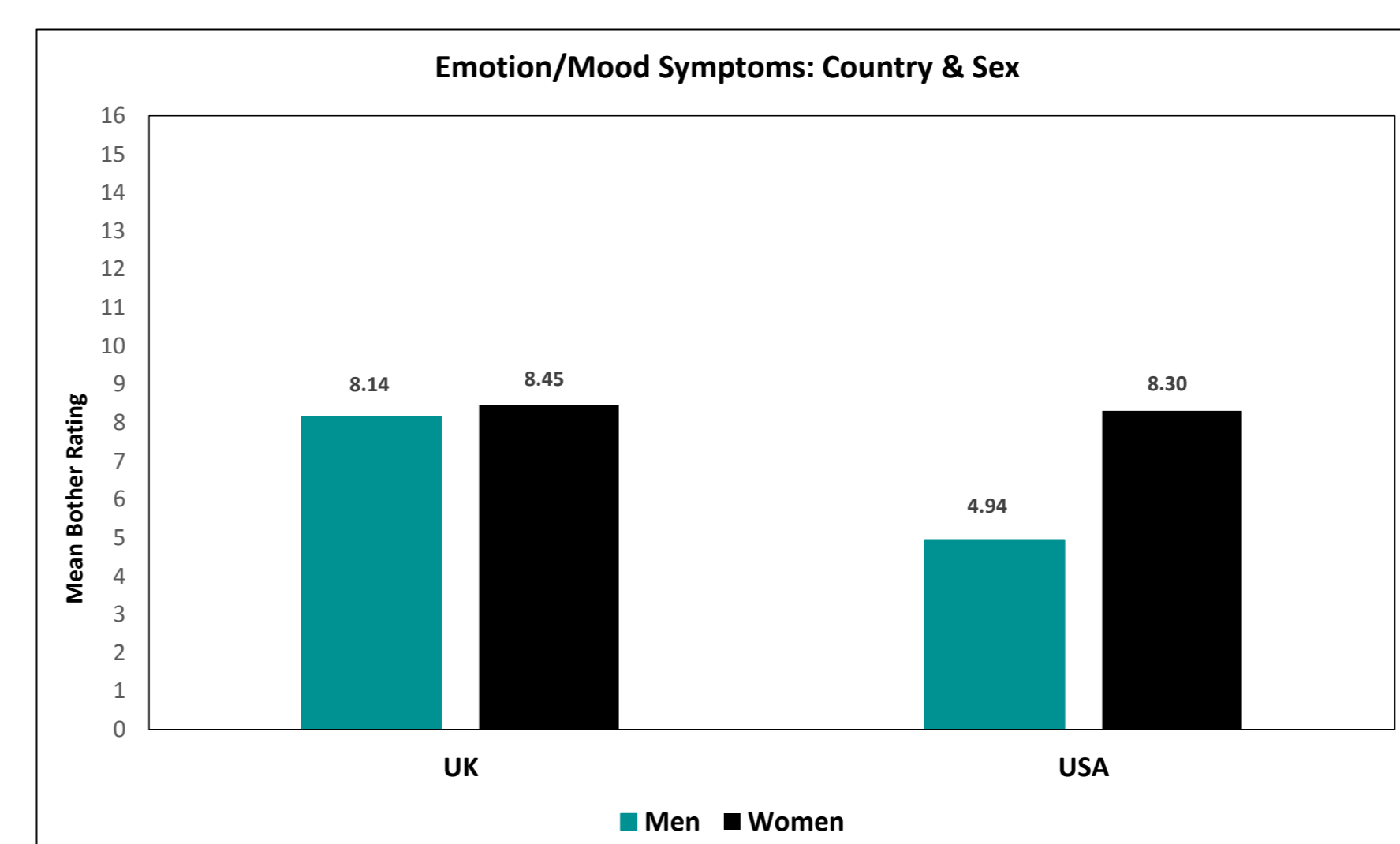


Figure 2: HIVSRQ emotion/mood symptom subscale: Exploration of the interaction effect of country & sex

CONCLUSIONS

The HIVSRQ is a 64-item questionnaire, including 6 subscales and a composite symptom scale. It is both comprehensive and quick to complete. It has sound psychometric properties, is suitable for use in clinical trials, other research and in routine clinical practice to evaluate key symptoms and help clinicians understand patients' experiences. Preliminary analyses suggest that amongst individuals living with HIV, country and sex differences exist for some symptoms, and particularly emotion/mood-type symptoms such as depression and anxiety.

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