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(BAP-IT)

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IRT Analyses: Sex*Country changes:

Winsteps → R (mirt package)

RSM → PCM

Added DTF assessment

SEA
NEUROSCIENCE LAB
Social, Emotional and Affective

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Broad Autism Phenotype (BAP)

Autism Spectrum Disorder

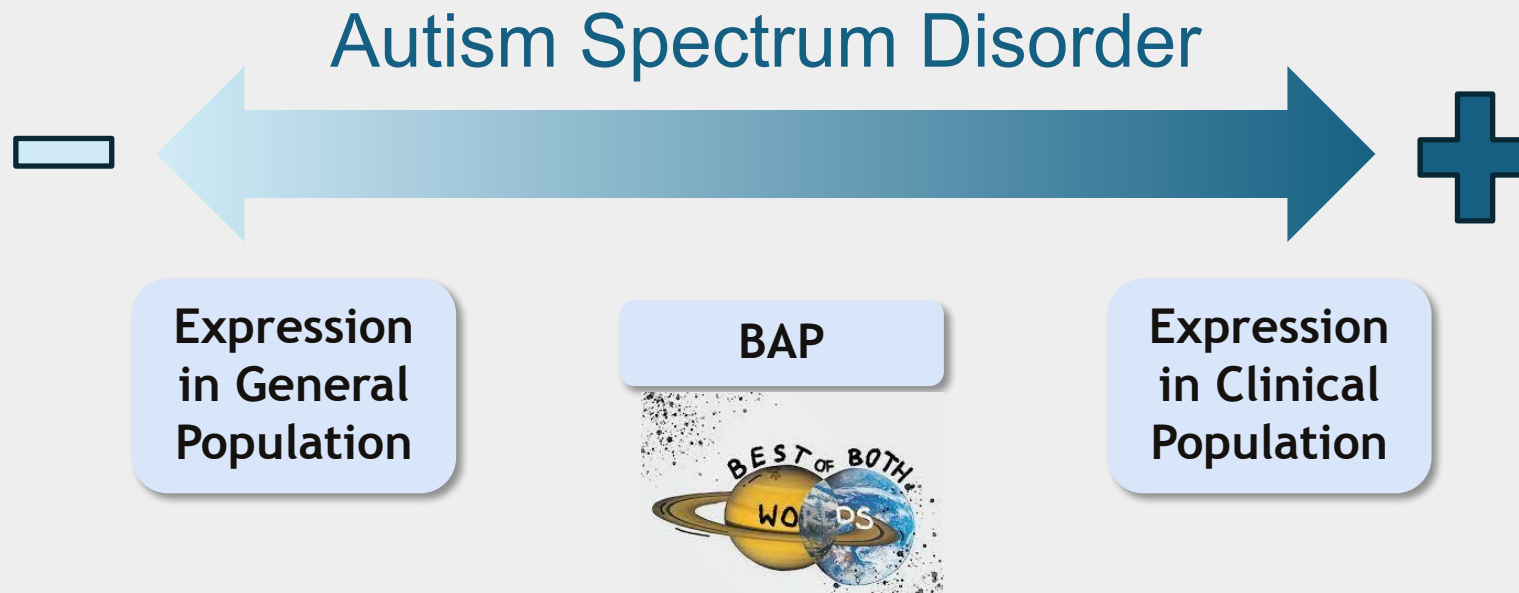| SOCIAL
Persistent deficits in social communication and social interaction across multiple contexts |
| --- |
| A. Deficits in social-emotional reciprocity |
| B. Deficits in non-verbal communicative behaviours used for social interaction |
| C. Deficits in developing, maintaining, and understanding relationships |

RIRE Restricted and/or repetitive patterns of behaviours, interests, or activities
A. Stereotyped or repetitive motor movements, use of objects, or speech
B. Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behaviour
C. Highly restricted, fixated interests
D. Hyper- or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment

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Broad Autism Phenotype (BAP)

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Broad Autism Phenotype (BAP)

Similar to ASD, lower severity

- Lower comorbidity

- Greater accessibility → increased statistical power

- Greater flexibility in task design

- Greater variability in the co-occurrence of symptom expression across different dimensions

Further Advantages

- **ASD Study**

  ❑ Structure, Measurement Models

  ❑ **Cultural Effect**

  ❑ Parent–Child Patterns

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Cultural and Sex influence

BAP/ADS Neurodevelopmental but...

Diagnosed based on culturally defined deviations from typical behaviour (Daley, 2002)

Culture
Reduced eye contact → Western vs East Asian Cultures

Culture*Sex
Speech Delays → USA (early detection) vs India (boys' late speech more socially accepted)

Culture*Sex
Social Difficulties → misinterpreted as mere shyness in Saudi girls

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Cultural and Sex influence

BAP/ADS Neurodevelopmental but...

Societal Structure

Variability in social interactions

More **structured** and more **predictable** social environments are generally better suited for **individuals with ASD**, as they **help** navigate social interactions more effectively

Individualistic

Collectivistic

Direct communications (clear goals and personal distance)

More indirect communications (implicit communications, more contact)

Cultural and Sex influence

BAP/ADS Neurodevelopmental but...

Social Norms

Education

Women (vs men)

Differential ASD expression

Adapt ASD behaviors in response to social pressures

Superior linguistic skills

Restricted interests that revolve around people or animals

Camouflaging strategies

Heightened awareness of social interaction

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Broad Autism Phenotype International Test (BAP-IT)

Simultaneous construction in SP and UK

Partial metric **invariance** SP-UK

Simple factor structure

Validity evidence with other variables

7-subdomain **representativity**

SOCIAL - Domain A, 9 items

Includes the three subdomains

RIRE- Domain B, 11 items

Includes the four subdomains

Objectives

Multiple Group IRT Analyses

DIF and DTF Country*Sex

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Method

Sample

SPAIN (n = 970):

- 557 SP women (57.4%; age M = 37.94 (0.51))

- 401 SP men (41.3%; age M = 37.43 (0.67))

- Convenience (n = 601; quota age and sex Spanish population) and snowball (n = 369)

UK (n = 533)

- 263 UK women (49.3%; age M = 45.44 (0.99))

- 270 UK men (50.7%; age M = 45.69 (0.96))

- Quota sampling (age and sex UK population) from an online panel

Procedure

Online application

Instrument

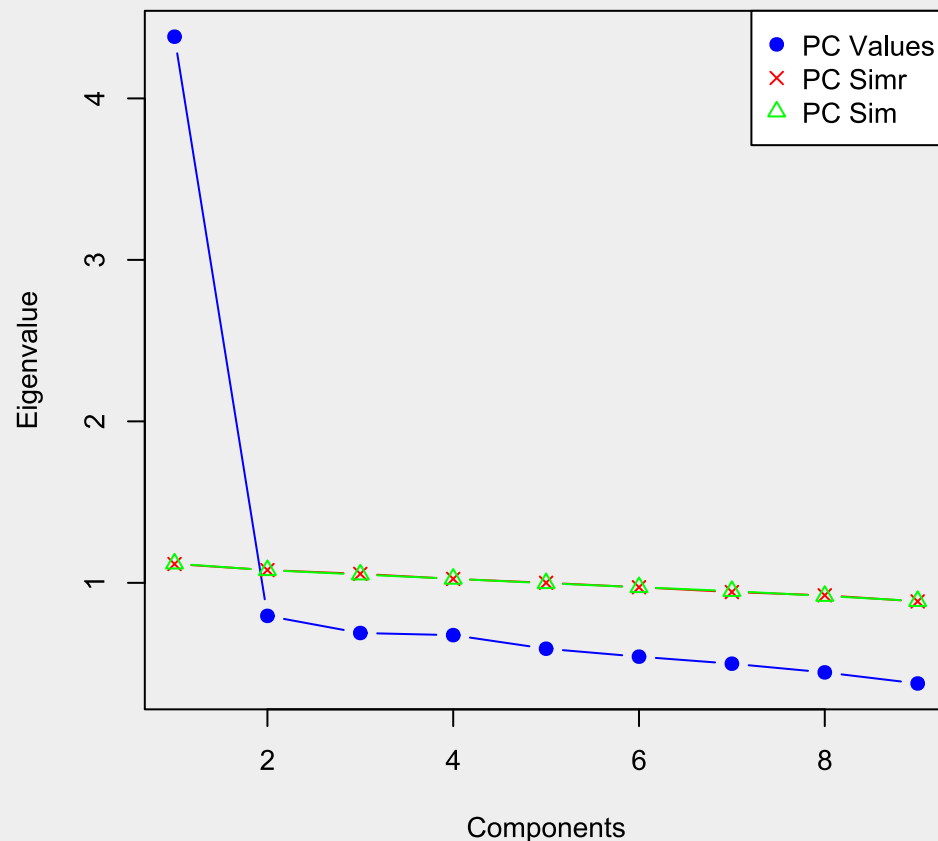**Broad Autism Phenotype-International Test (BAP-IT)**

- 6 response alternatives

- 2 dimensions

- SOCIAL (9 items); 54 points

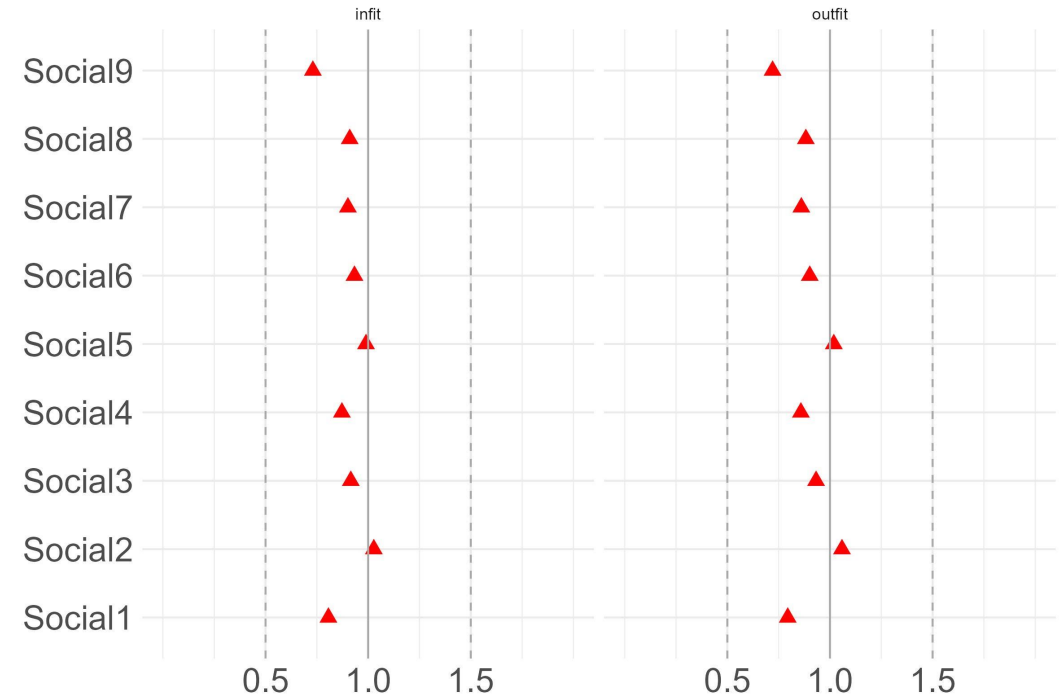- RIRE (11 items): 66 points

Data Analysis

- Dimensionality

- Partial Credit model

- Expectation maximization algorithm

- Fit

- DIF: likelihood ratio test with forward sequential anchor selection (AIC/SABIC),and Expected Score Standardized Difference (ESSD) as effect size

- DTF: signed and unsigned Differential Test Functioning

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Global Results: Social Dimensionality and Fit

Social Scree Plot

SOCIAL Item Infit and Outfit Statistics

Note: Items with values within 0.5 and 1.5 are considered to be productive for measurement.

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Multigroup Results: Social Item Fit

	Infit				Outfit			
	SP MAN	SP WOMAN	UK MAN	UK WOMAN	SP MAN	SP WOMAN	UK MAN	UK WOMAN
Social1	0.70	0.85	0.86	0.89	0.73	0.85	0.85	0.86
Social2	0.97	0.95	1.17	1.13	1.05	0.98	1.19	1.13
Social3	0.93	0.95	0.92	0.92	0.98	1.00	0.91	0.91
Social4	0.86	0.85	1.04	0.92	0.87	0.84	1.14	0.94
Social5	1.08	1.03	0.92	1.03	1.20	1.11	0.91	1.04
Social6	1.14	1.02	0.73	0.76	1.16	1.03	0.74	0.71
Social7	0.85	1.01	0.81	0.86	0.84	0.98	0.86	0.76
Social8	0.97	0.91	0.93	0.90	0.95	0.92	0.86	0.89
Social9	0.73	0.65	0.78	0.81	0.73	0.64	0.75	0.76

Multigroup Results: Social Parameters

-Severity
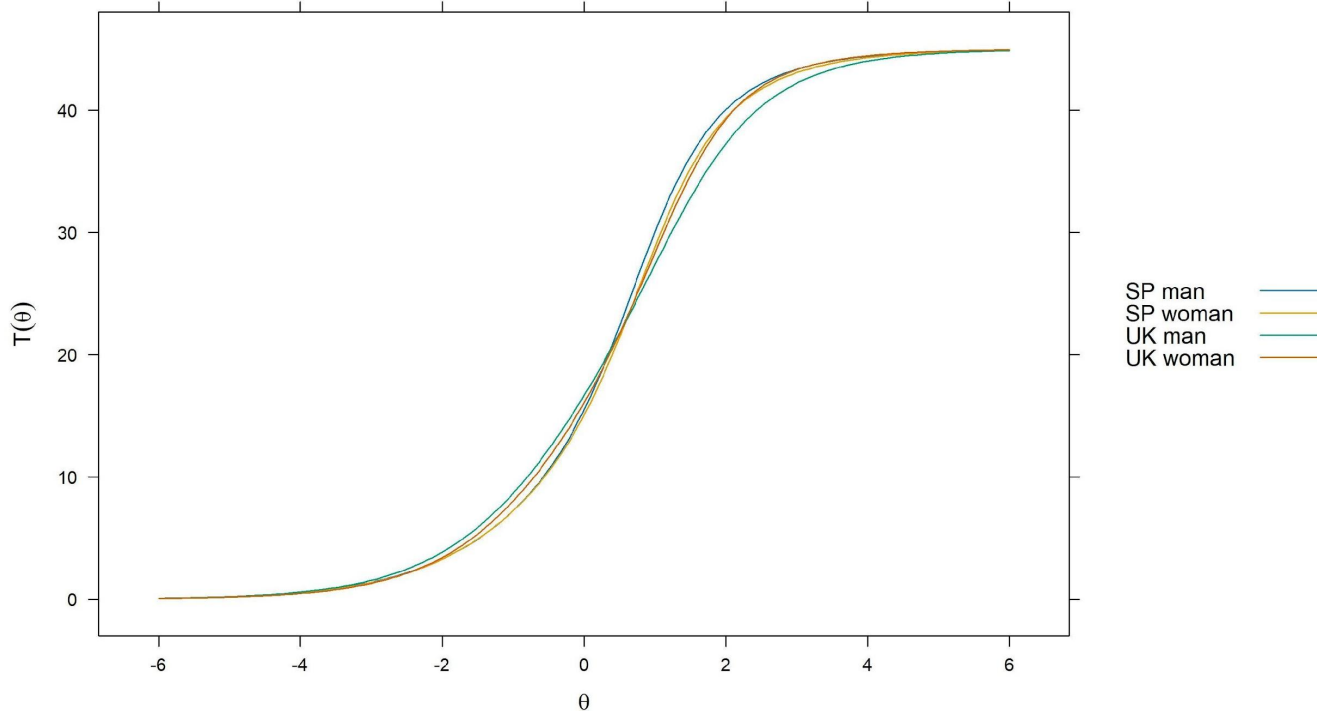

SOCIAL - Item-wise Group Thresholds and Averages
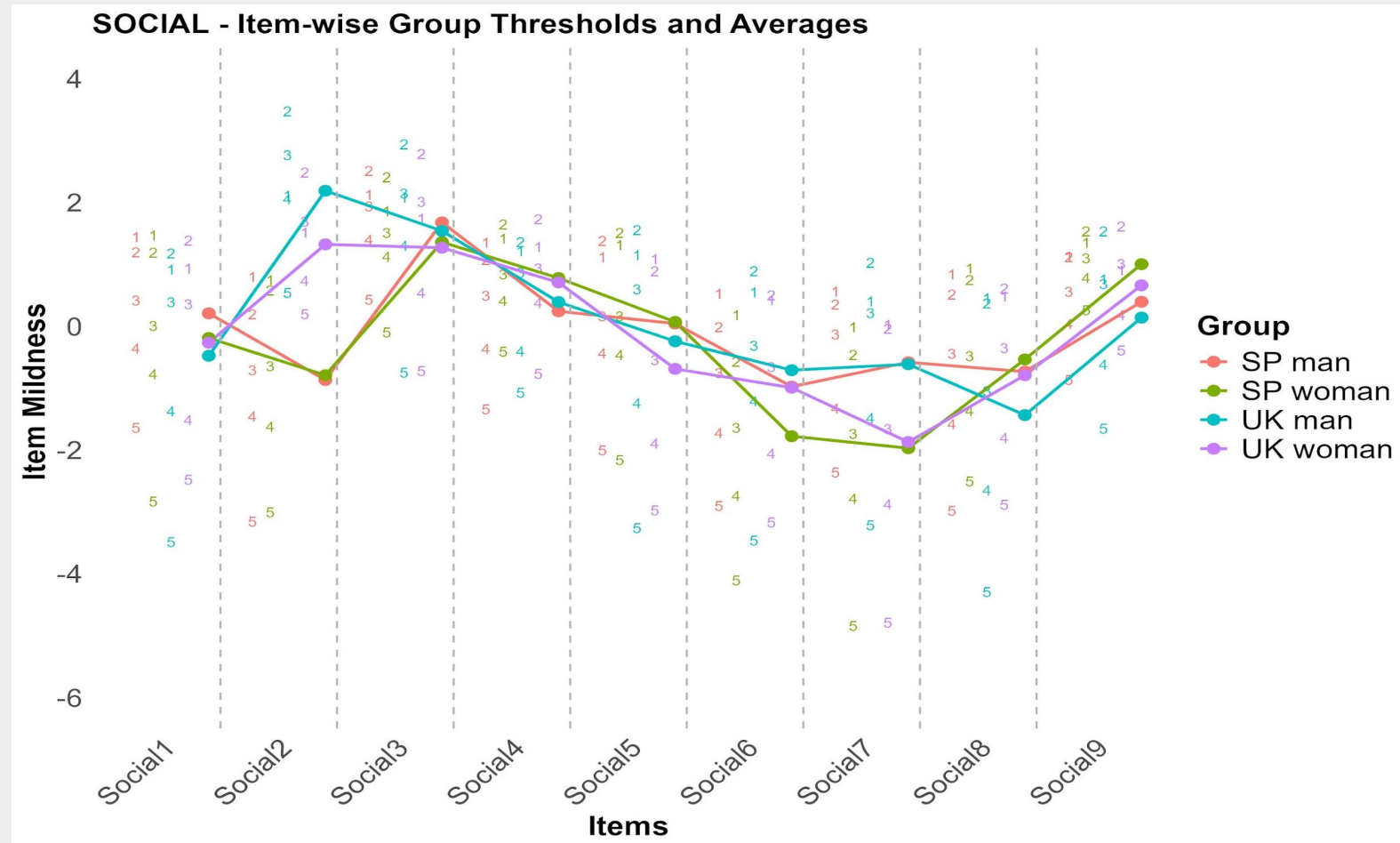
+Severity

Multigroup Results: Social DTF

SOCIAL Expected Total Score

Social Total Raw Score = 54

	sDTF	sDTF(%)	uDTF	uDTF(%)
SP M - SP W	0.24	0.53	0.24	0.53
SP M - UK M	0.32	0.70	0.85	1.89
SP M - UK W	0.10	0.22	0.34	0.76
SP W - UK M	0.08	0.17	0.70	1.56
SP W - UK W	-0.14	-0.31	0.26	0.57
UK M - UK W	-0.22	-0.49	0.55	1.23

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Multigroup Results: Social DIF

-Severity

SOCIAL - Item-wise Group Thresholds and Averages

Group
- SP man
- SP woman
- UK man
- UK woman

	Social1	Social2	Social3	Social4	Social5	Social6	Social7	Social8	Social9
AIC DIF	DIF	DIF	DIF	*	DIF	DIF	DIF	*	DIF
SABIC DIF		DIF					DIF		
Max ESSD	0.33	1.07	0.30	0.00	0.42	0.55	0.69	0.00	0.23

Items

+Severity

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*X^2 = 43.406, df=30, p = .054

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Multigroup Results: Social Information and SE

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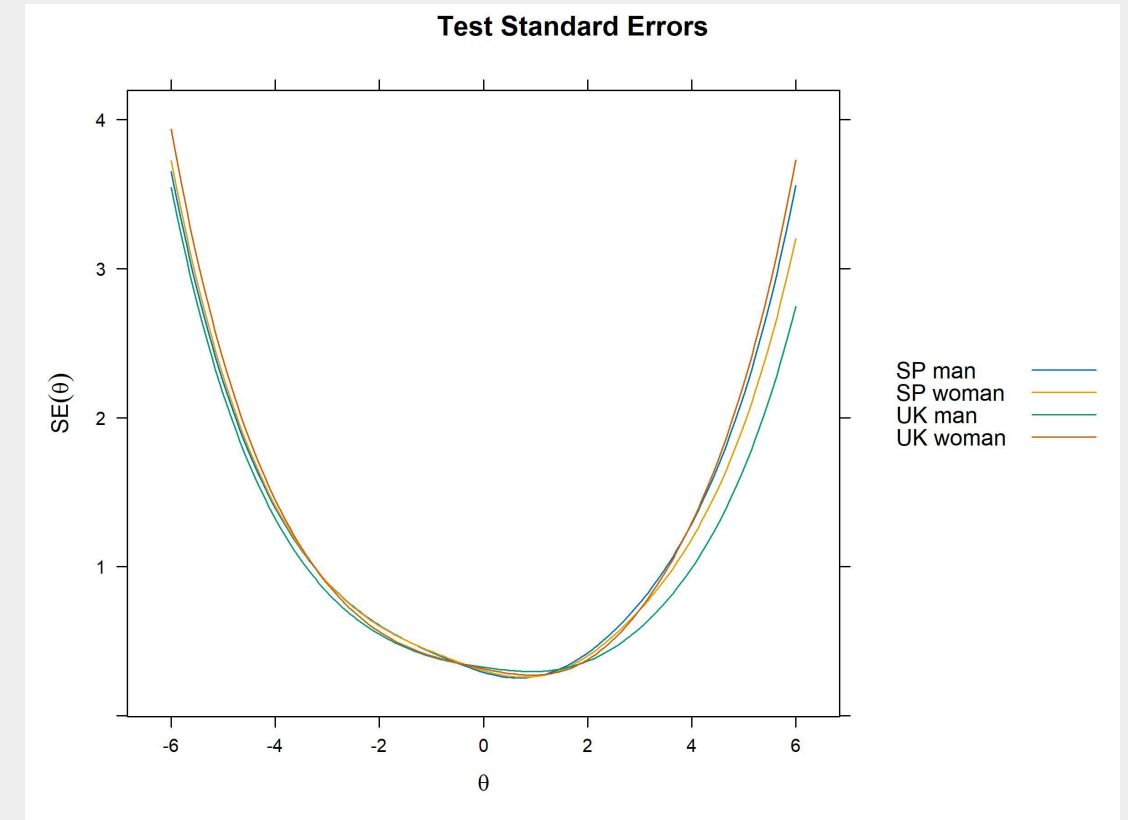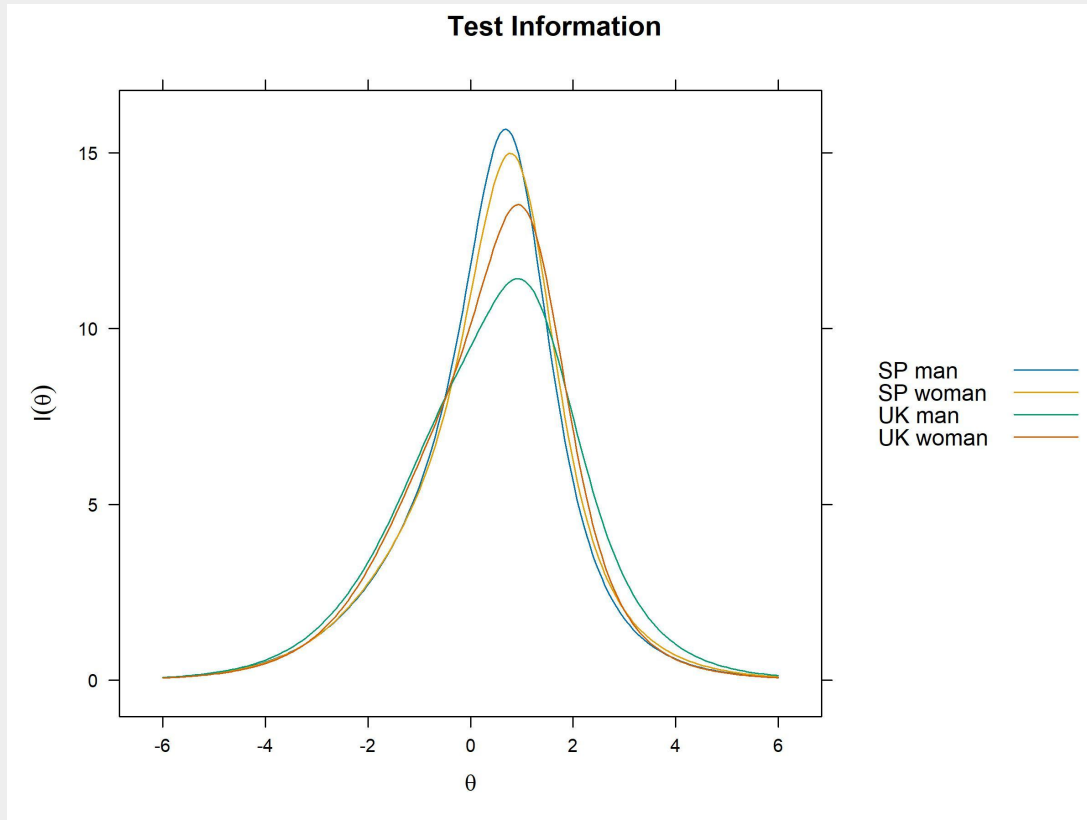
Global Results: Rire Dimensionality and Fit

RIRE Scree Plot

RIRE Item Infit and Outfit Statistics

Note: Items with values within 0.5 and 1.5 are considered to be productive for measurement.
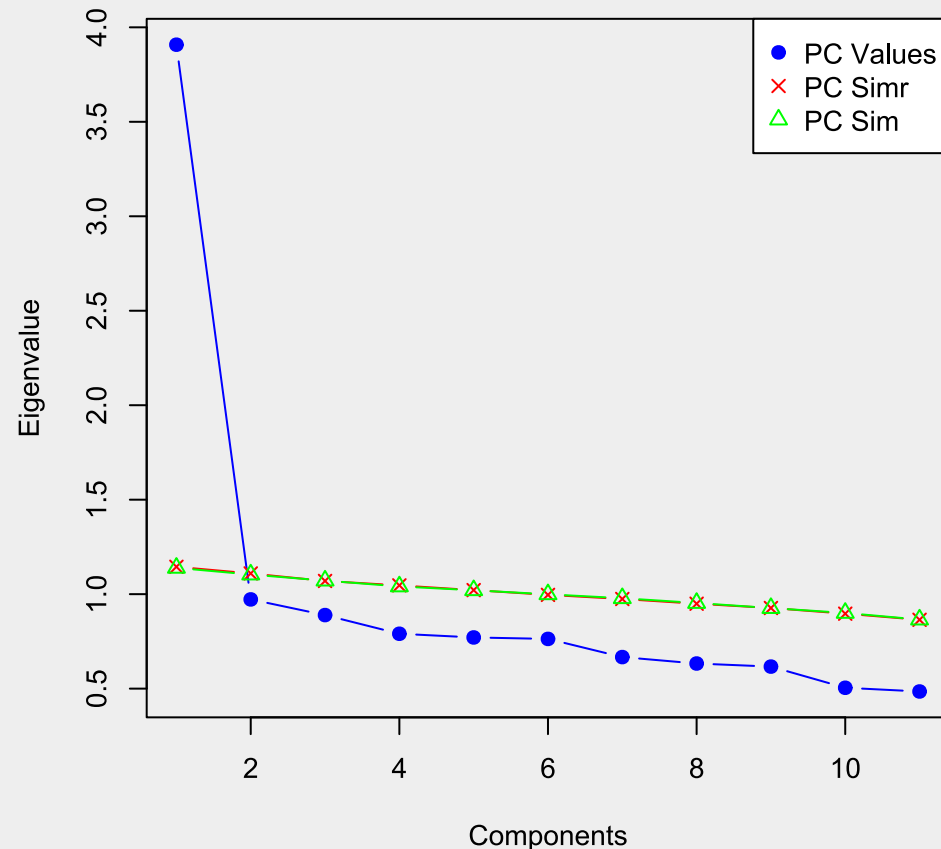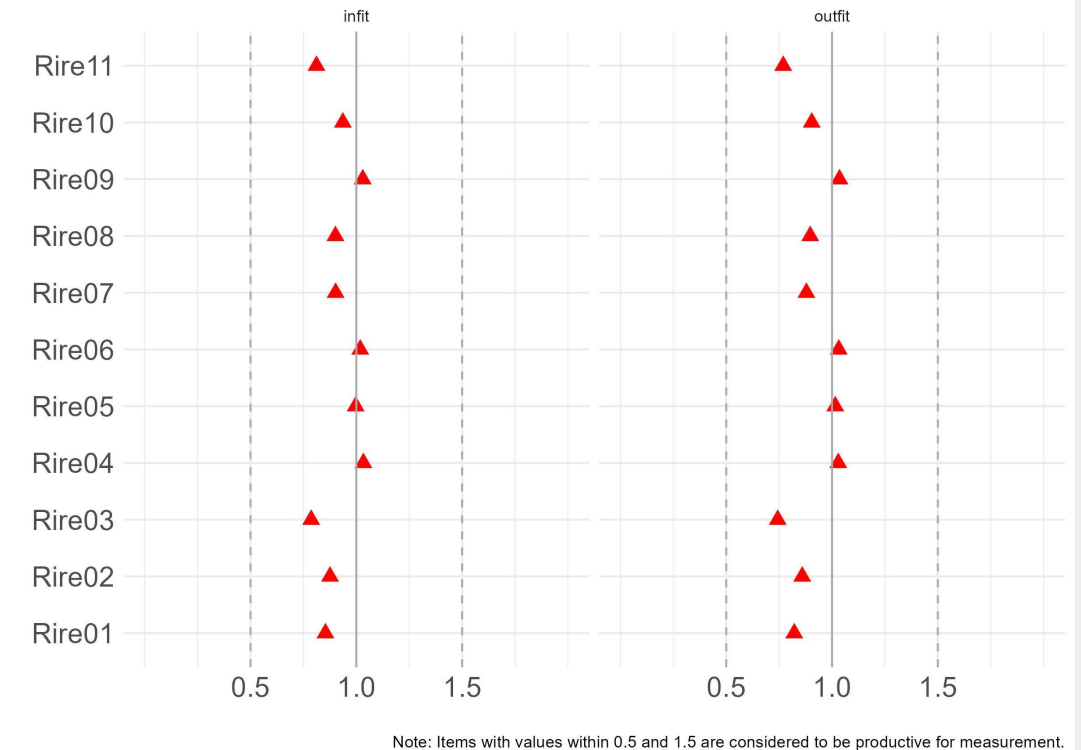
Multigroup Results: Rire Item Fit

	Infit				Outfit			
	SP MAN	**SP WOMAN**	**UK MAN**	**UK WOMAN**	**SP MAN**	**SP WOMAN**	**UK MAN**	**UK WOMAN**
Rire1	0.87	0.80	0.78	0.92	0.80	0.82	0.71	0.99
Rire2	0.92	0.94	0.74	0.79	0.99	0.94	0.73	0.82
Rire3	0.86	0.77	0.70	0.67	0.88	0.72	0.64	0.61
Rire4	1.09	1.07	1.21	1.05	1.13	1.10	1.26	1.03
Rire5	1.17	1.05	0.91	0.88	1.28	1.09	0.95	0.91
Rire6	1.04	0.97	1.27	1.13	1.07	1.01	1.37	1.17
Rire7	0.85	0.93	1.03	0.93	0.87	0.92	0.99	0.93
Rire8	0.86	0.85	0.86	1.18	0.89	0.85	0.87	1.13
Rire9	0.94	1.18	1.03	1.06	0.96	1.31	0.99	1.09
Rire10	0.92	0.96	1.00	0.80	0.92	0.98	0.99	0.82
Rire11	0.77	0.74	0.75	0.81	0.79	0.70	0.74	0.74

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Multigroup Results: Rire Parameters

-Severity

+Severity

RIRE - Item-wise Group Thresholds and Averages

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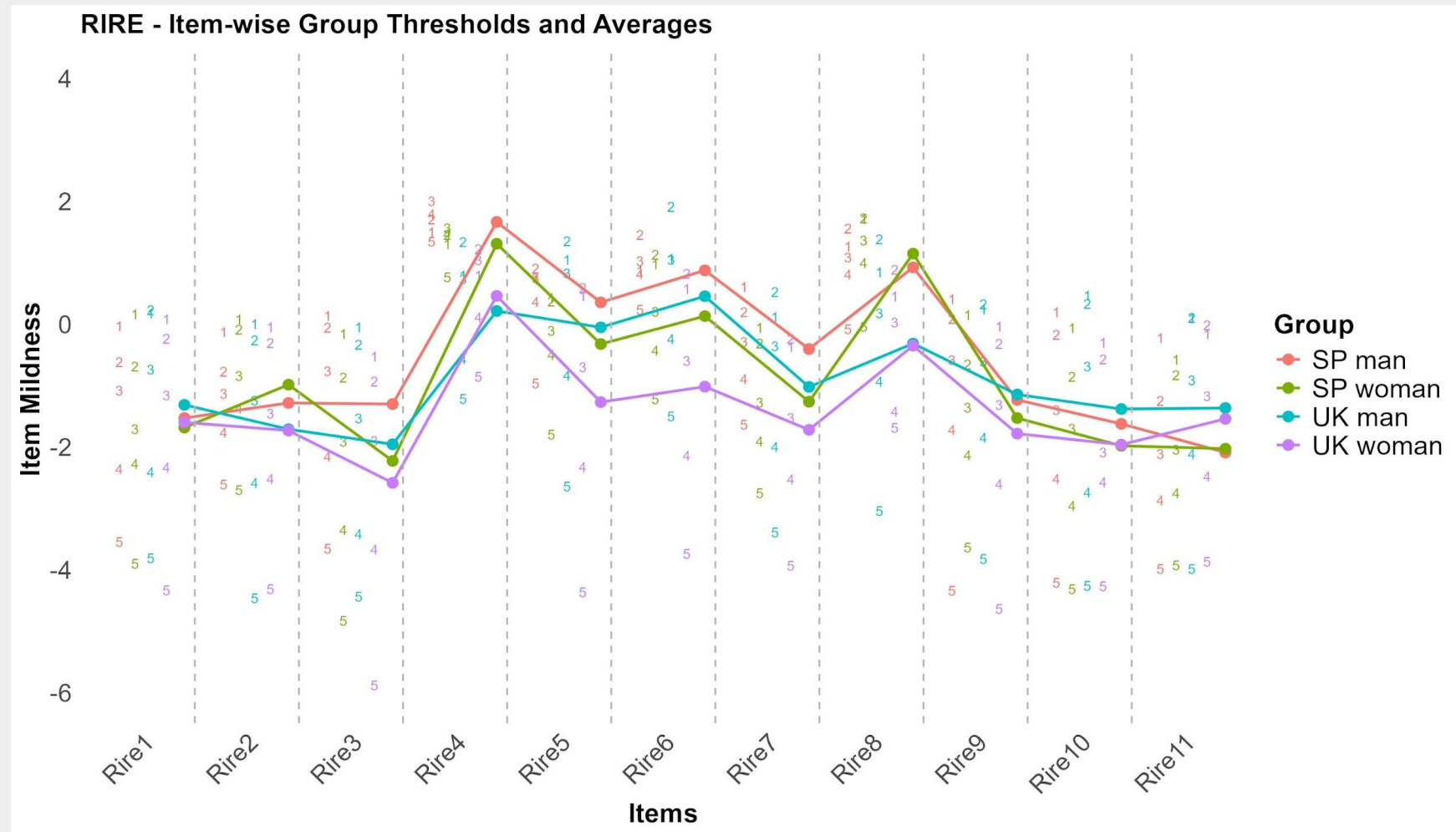
Multigroup Results: Rire DTF

RIRE Expected Total Score

Rire Total Raw Score = 54

	sDTF	sDTF(%)	uDTF	uDTF(%)
SP M - SP W	0.41	0.74	0.46	0.84
SP M - UK M	1.09	**1.98**	1.10	2.00
SP M - UK W	1.53	**2.78**	1.53	2.78
SP W - UK M	0.68	1.23	0.98	1.78
SP W - UK W	1.12	**2.04**	1.12	2.04
UK M - UK W	0.44	0.80	0.49	0.90

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Multigroup Results: Rire DIF

-Severity

RIRE - Item-wise Group Thresholds and Averages

Item Mildness

Group
- SP man
- SP woman
- UK man
- UK woman

	Rire1	Rire2	Rire3	Rire4	Rire5	Rire6	Rire7	Rire8	Rire9	Rire10	Rire11
AIC DIF	DIF	DIF	DIF	DIF	DIF	DIF	DIF	DIF	DIF	DIF	DIF
SABIC DIF				DIF	DIF	DIF	DIF	DIF			
Max ESSD	0.19	0.40	0.76	0.72	0.92	1.11	0.56	0.66	0.34	0.31	0.30

Items

+Severity

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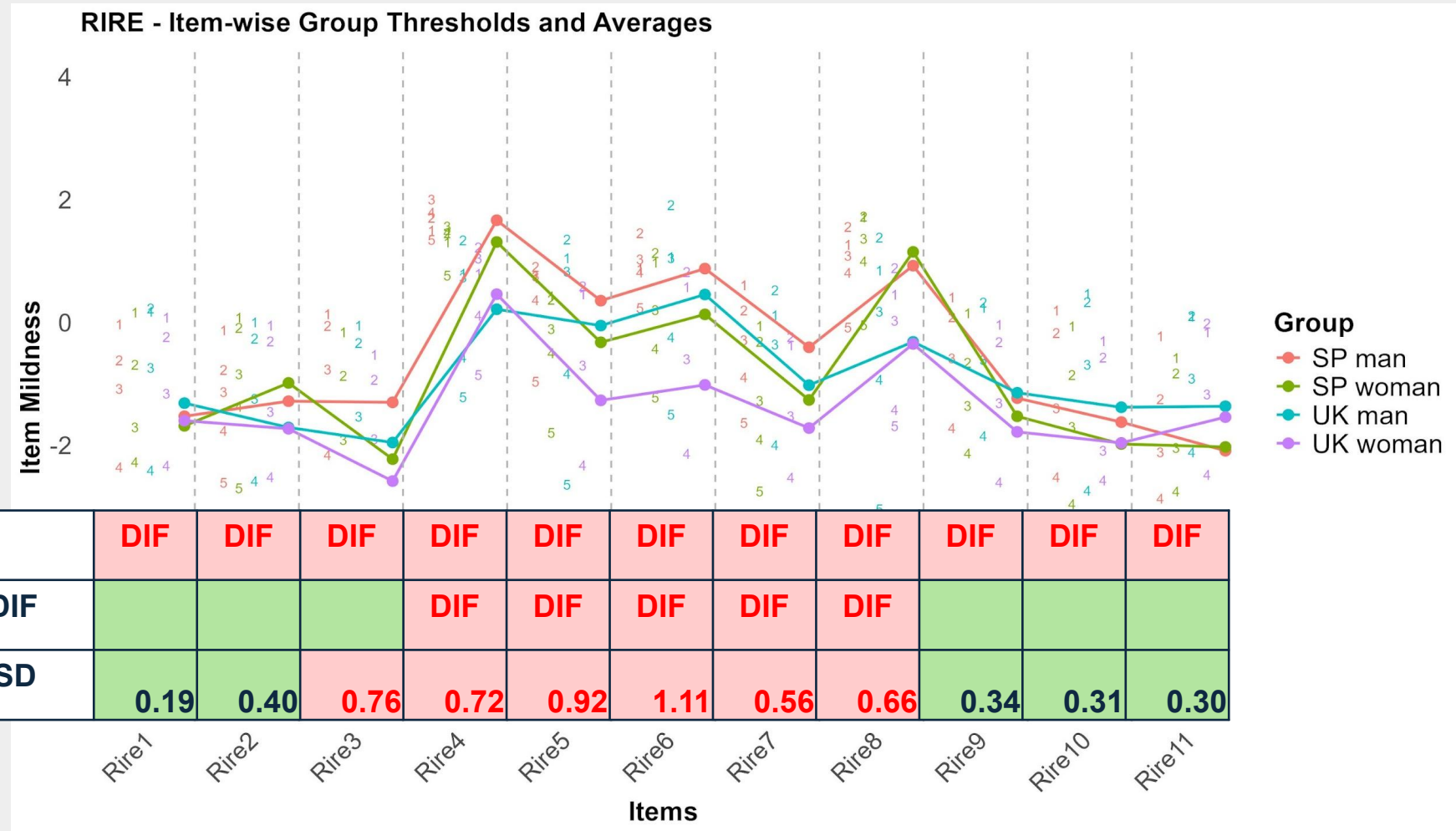
Multigroup Results: Final Rire (free means) DTF

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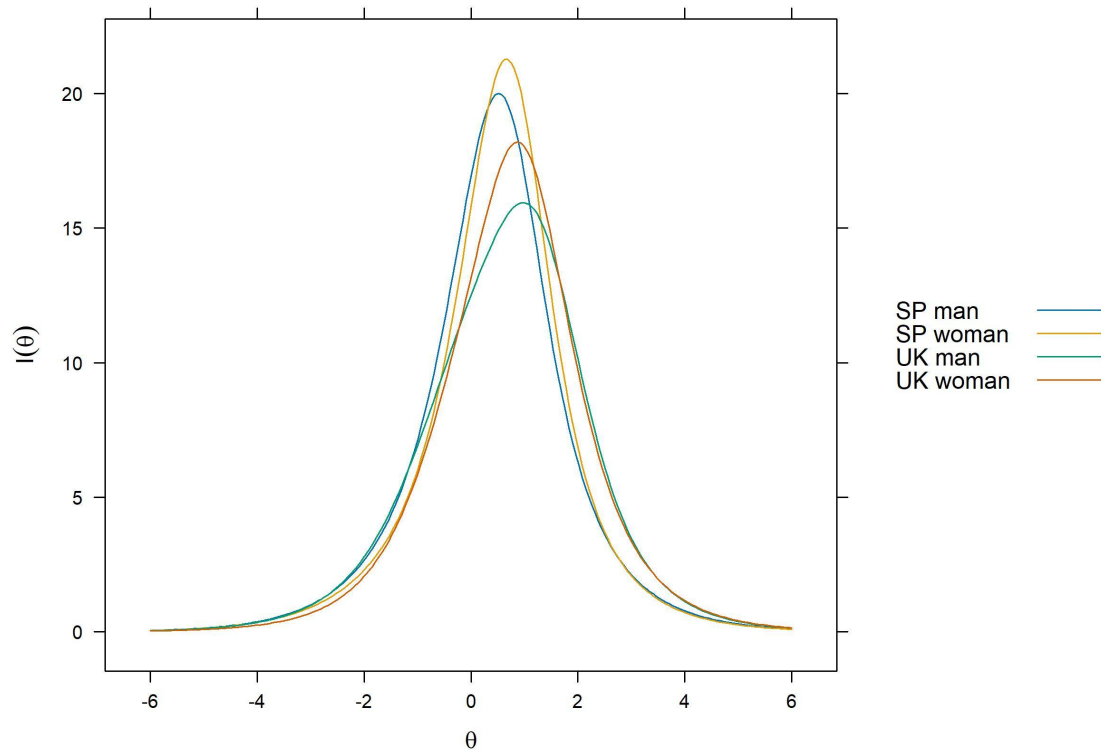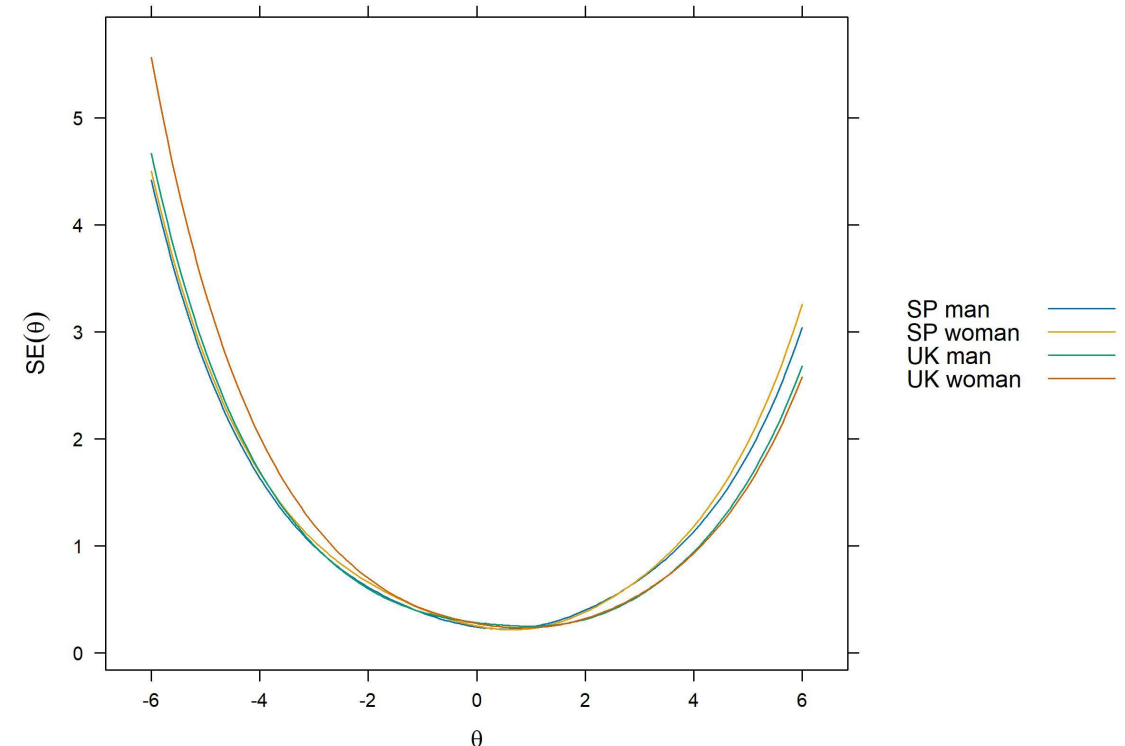
Discussion

Social

DTF negligible

DIF in items 2, 6, and 7

Social 2: During breaks in group activities (e.g., work, class, etc.), I prefer to do my own thing (e.g., get a head-start on work, read, etc.) to speaking to the other people in the group

Culture — Higher BAP severity required for endorsement in Spanish people

Social 6: When I am talking to someone, I am **not** sure where I should look

Culture*sex? — Higher BAP severity required for endorsement in SP Women, lower in UK Men

Camouflaging in Mediterranean cultures?

Social 7: Other people think I am emotionally distant and do **not** show my feelings

Sex — Higher BAP severity required for endorsement in Women

Discussion

Rire

DTF Spanish vs English (use theta instead raw scores)

DIF in items 3, 4, 5, 6, 7, and 8

Rire 3: When I hear a phrase that I like, I repeat it verbatim on other occasions even though it does **not** fit the context

Culture*sex??? — Lower BAP severity required for endorsement SP Men

Rire 4: Before leaving home, I have a specific way of preparing to avoid leaving with the feeling I have forgotten something

? — Higher BAP severity required for endorsement in British people

Rire 5: Regardless of the context, I use my own ways of greeting (e.g., sayings, set phrases) instead of conventional greetings

Culture*sex? — Higher BAP severity required for endorsement in UK Women, lower to SP Men

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Discussion

Rire

DTF Spanish vs English (use theta instead raw scores)

DIF in items 3, 4, 5, 6, 7, and 8

Rire 6: I love objects and mechanical games in which the movement of certain parts affects others (e.g., trains, cars, balance toys, pendulum balls, etc.)

Culture*sex??? Higher BAP severity required for endorsement in UK Women, lower to SP Men

Rire 7: I pay close attention to all the numbers I come across (e.g., number plates on cars, dates, identity card numbers, etc.)

Culture*sex??? Higher BAP severity required for endorsement in UK Women, lower to SP Men

Rire 8: I have a hard time getting rid of objects which other people usually attach **no** importance to

Culture??? Higher BAP severity required for endorsement in British people

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Thanks!

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