

Harmonisation of mental health measures in British birth cohorts

George B. Ploubidis



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STUDIES



MRC Unit for Lifelong Health and Ageing at UCL : LHA
&
MRC National Survey of Health and Development : NSHD



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Acknowledgements

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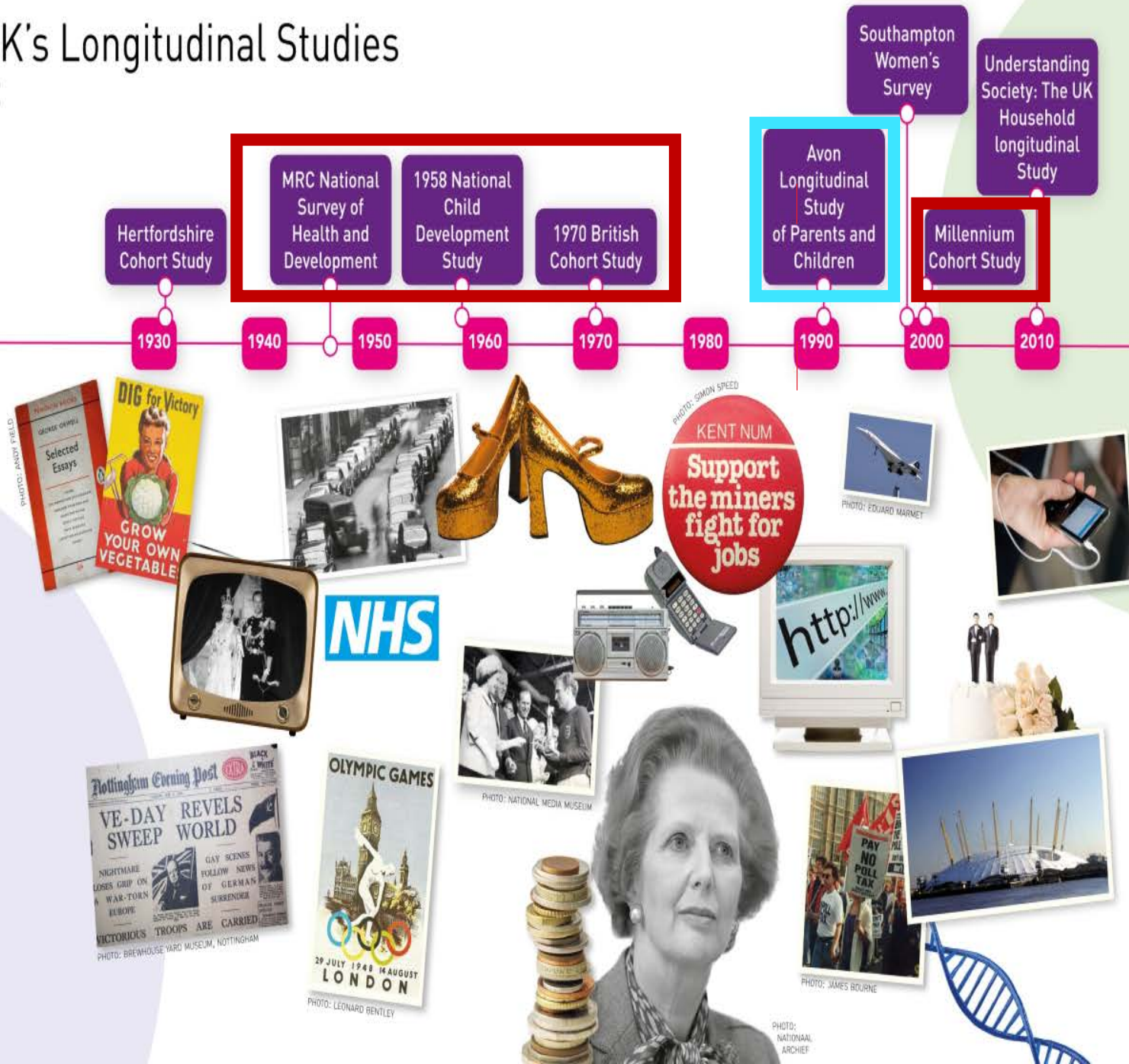
Outline

- Harmonisation process
- Measurement properties
- Outputs

The UK's Longitudinal Studies

TIMELINE

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Harmonisation

- Barriers to comparability
 - Content
 - Scale
 - Reporter

Harmonisation

- Content
 - Old School, 3 psychologists
 - Which items tap into the same symptom?
 - Interrater reliability

Harmonisation

	General Health Questionnaire (28-item) (GHQ-28)	Malaise Inventory (9 item)
Tense		
Rater 1	16. Felt constantly under strain	7. Are you constantly keyed up and jittery?
Rater 2	16. Felt constantly under strain	7. Are you constantly keyed up and jittery?
Agreement		
Irritability		
Rater 1	18. Been getting edgy and bad-tempered (possibly...)	6. Are you easily upset or irritated? (somewhat weak item)
Rater 2	18. Been getting edgy and bad-tempered	6. Are you easily upset or irritated?
Agreement		
Low Mood		
Rater 1	17. Been able to enjoy your normal day-to-day activities	2. Do you often feel miserable or depressed?
Rater 2	3. Been feeling run down and out of sorts	2. Do you often feel miserable or depressed?
Agreement		

Harmonisation

	GHQ (28-item)	GHQ (12-item)	PSFS (18 items)	Present State Examination	Malaise Inventory (9 item)	Malaise Inventory (24 items)	SF-36	CES-D	Kessler scale (4 items)
Low Mood	Red	Green	Green	Green	Green	Green	Green	Green	Green
Fatigue	Green	Green	Green	Green	Green	Green	Green	Green	Green
Tense/stressed	Green	Green	Green	Red	Green	Green	Red	Green	Green
Sleep problems	Green	Green	Green	Green	Green	Green	Green	Green	Green
Worry	Red	Red	Red	Green	Green	Green	Green	Green	Green
General anxiety	Green	Green	Green	Green	Green	Green	Red	Green	Green
Irritability	Green	Green	Green	Green	Green	Green	Green	Green	Green
Panic	Green	Green	Green	Green	Green	Green	Green	Green	Green
Hopelessness	Green	Red	Green	Green	Green	Green	Green	Green	Green
Loss of interest	Green	Green	Green	Green	Green	Green	Red	Green	Green
Concentration problems	Green	Green	Green	Green	Green	Green	Green	Green	Green
Impairment/functionality	Red	Green	Green	Red	Green	Green	Red	Green	Green
Appetite disturbance	Green	Green	Green	Green	Green	Green	Green	Green	Green
Health Anxiety/perceived poor health	Green	Green	Green	Green	Green	Green	Green	Green	Green
Restlessness	Green	Green	Green	Green	Green	Green	Green	Green	Green
Social phobia	Green	Green	Red	Green	Green	Green	Green	Green	Green
Cognitive impairment - Indecision	Green	Green	Green	Green	Green	Green	Green	Green	Green
Somatic complaints	Green	Green	Green	Green	Green	Green	Green	Green	Green
Wothlessness/self-esteem	Green	Green	Green	Green	Green	Green	Green	Green	Green
Motivation	Green	Green	Green	Green	Green	Green	Green	Green	Green
Suicidal ideation	Green	Green	Green	Green	Green	Green	Green	Green	Green



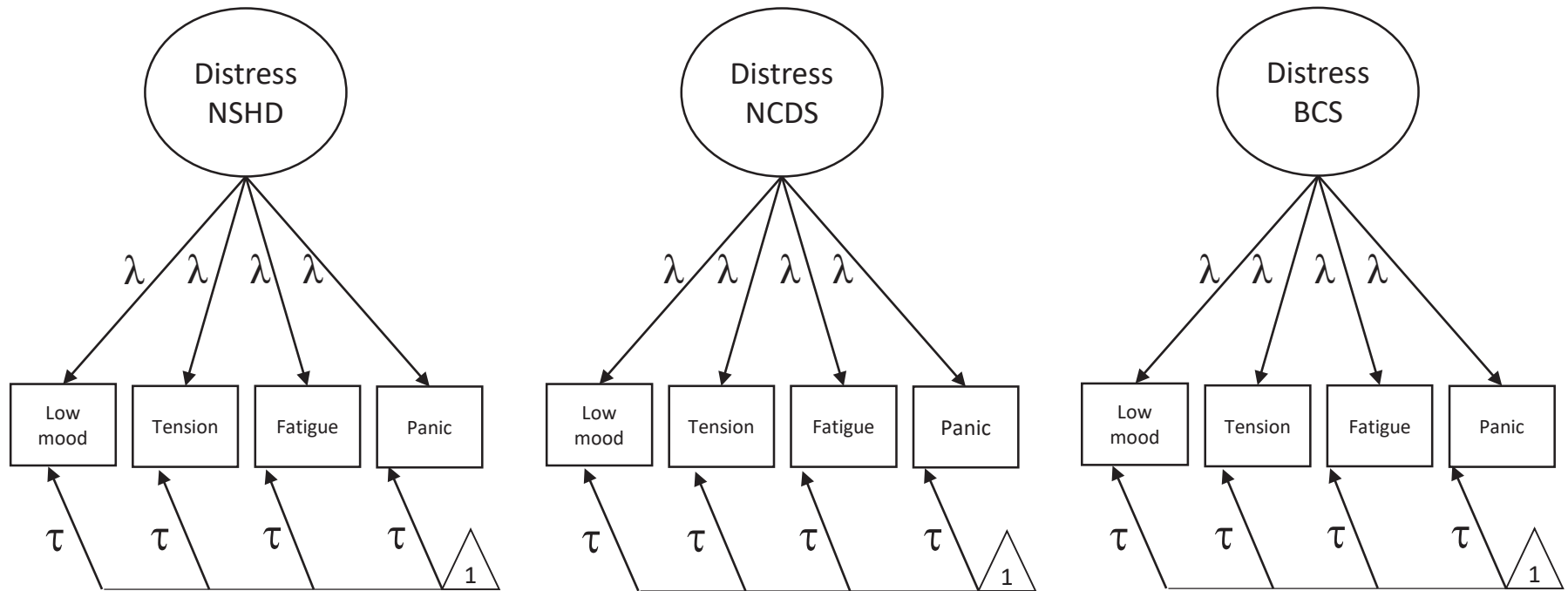
Measurement properties: Aims

- Explore and document measurement properties of scales in original format
- Examine comparability of scales administered in different sweeps/cohorts
- Explore and document measurement properties of harmonised scales
- Examine comparability of harmonised scales

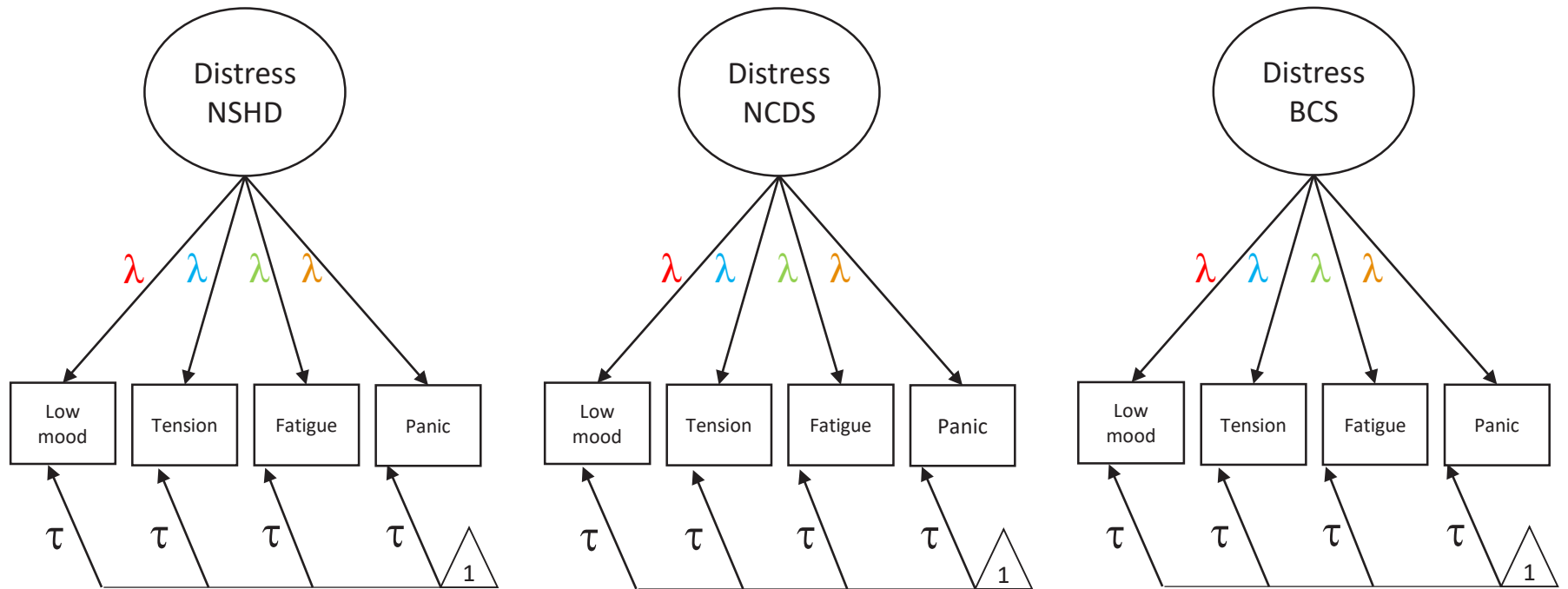
Measurement properties

- Identical items/scales within and between cohorts
 - ✓ Do cohort members interpret mental health questions in the same way as they age?
 - ✓ Are there generational differences in the interpretation of items?
 - ✓ Are there within (age) and/or between (generational change) differences in reliability/precision?
- Harmonised items within and between cohorts
 - ✓ As above
 - ✓ How do the harmonised items compare to the overall scales? Are they capturing a similar construct?

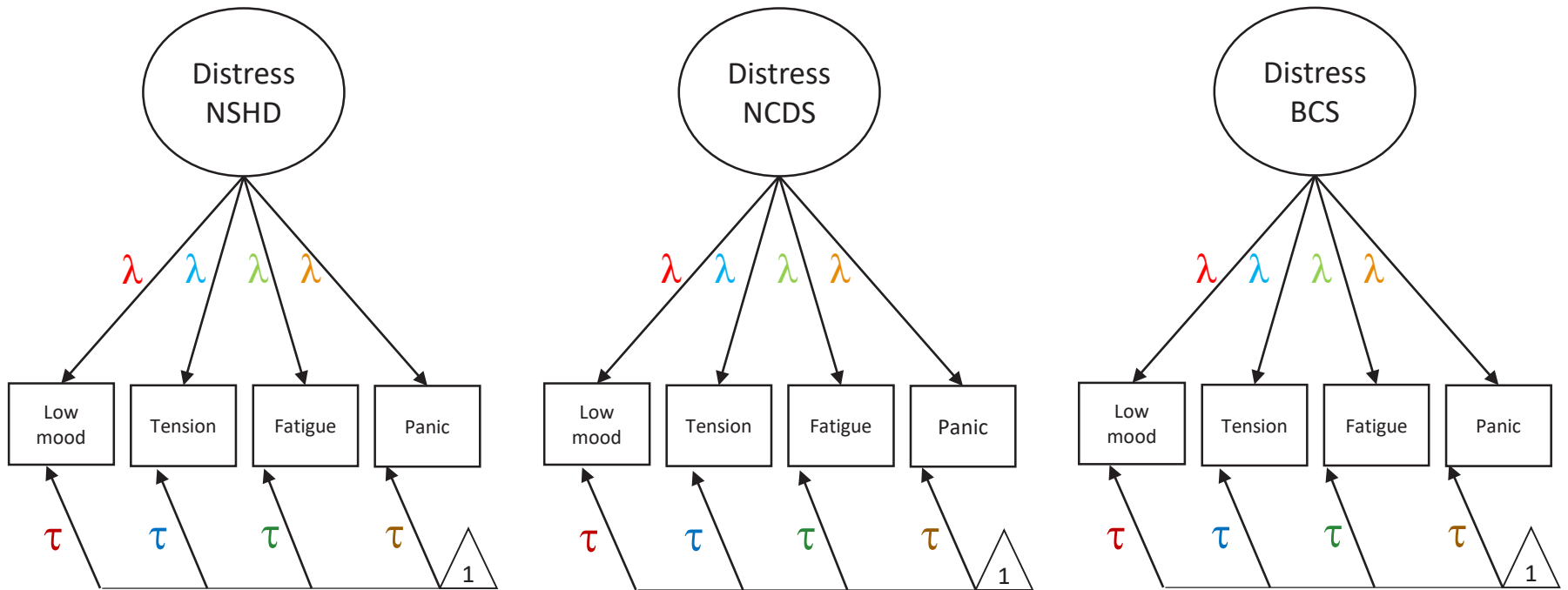
Measurement properties



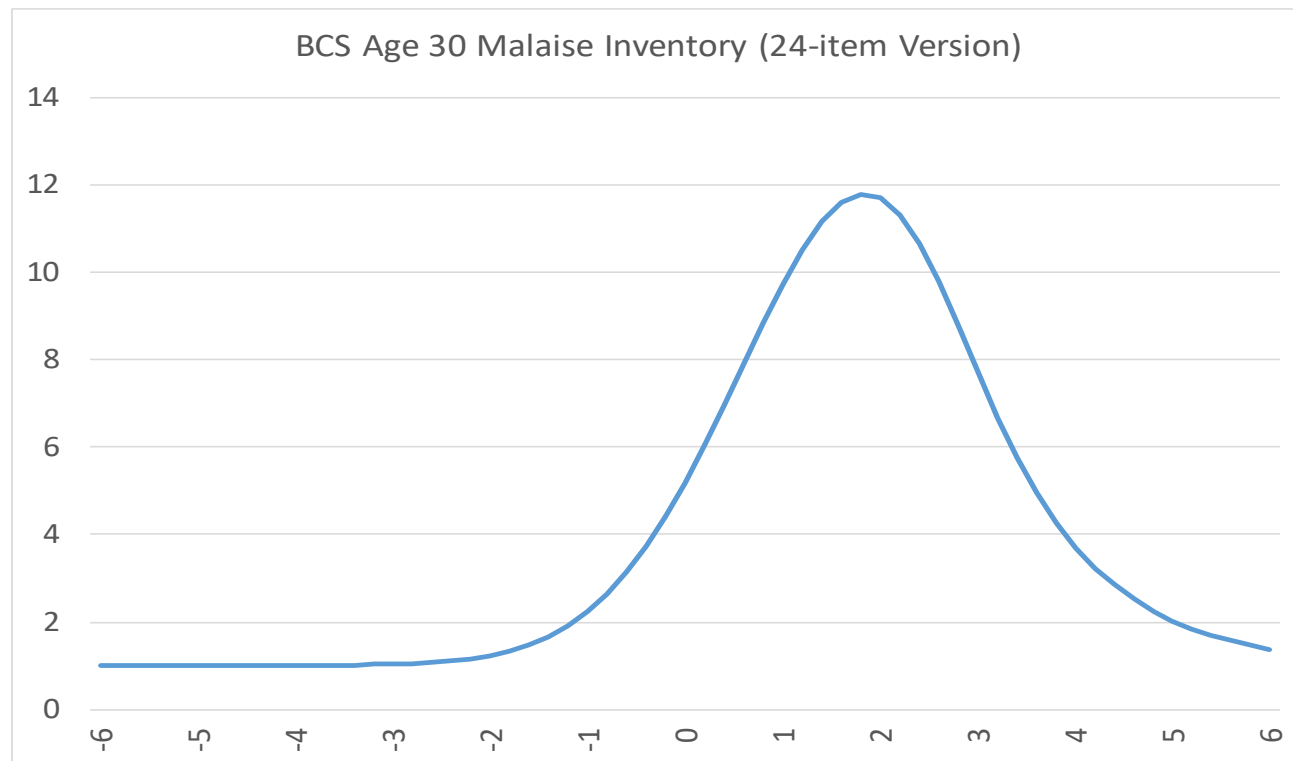
Measurement



Measurement



Reliability/precision: Scale Information Function



Fisher information



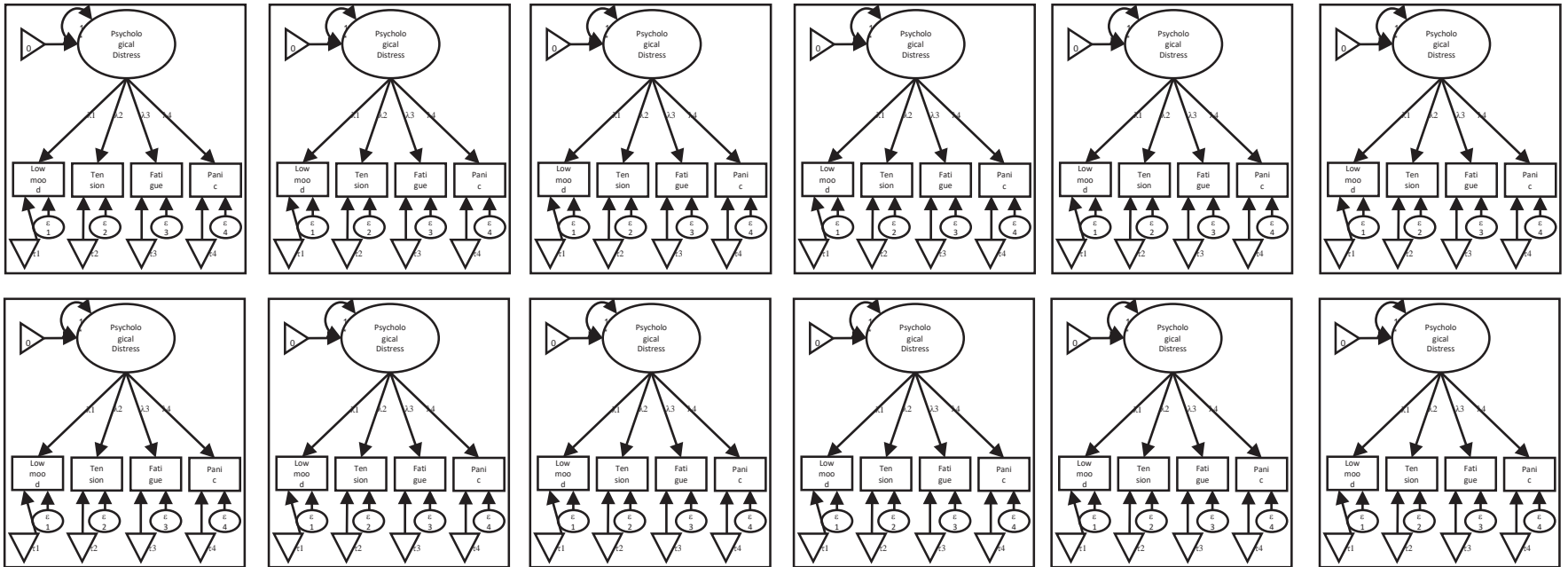
Level of the latent trait
(SD)



Results – Comparisons across waves and cohorts

	NCDS	BCS
Age 23	Malaise Inventory (24 items)	
Age 26		Malaise Inventory (24 items)
Age 30		Malaise Inventory (24 items)
Age 33	Malaise Inventory (24 items)	
Age 34		Malaise (9 items)
Age 42	Malaise Inventory (24 items)	Malaise (9 items)
Age 46		Malaise (9 items)
Age 50	Malaise Inventory (9 item)	

Results – Comparisons across waves and cohorts

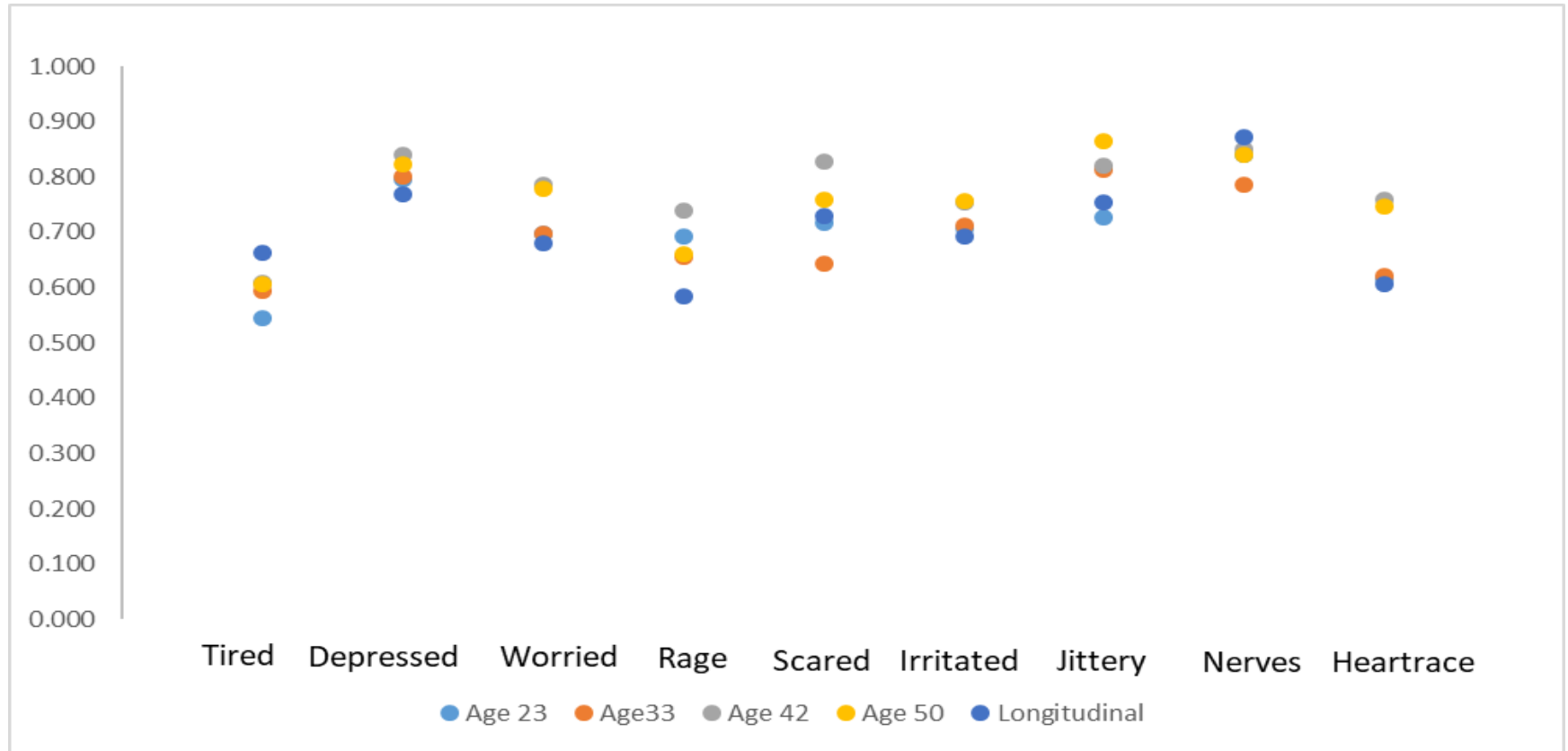


Results – Comparisons across waves and cohorts

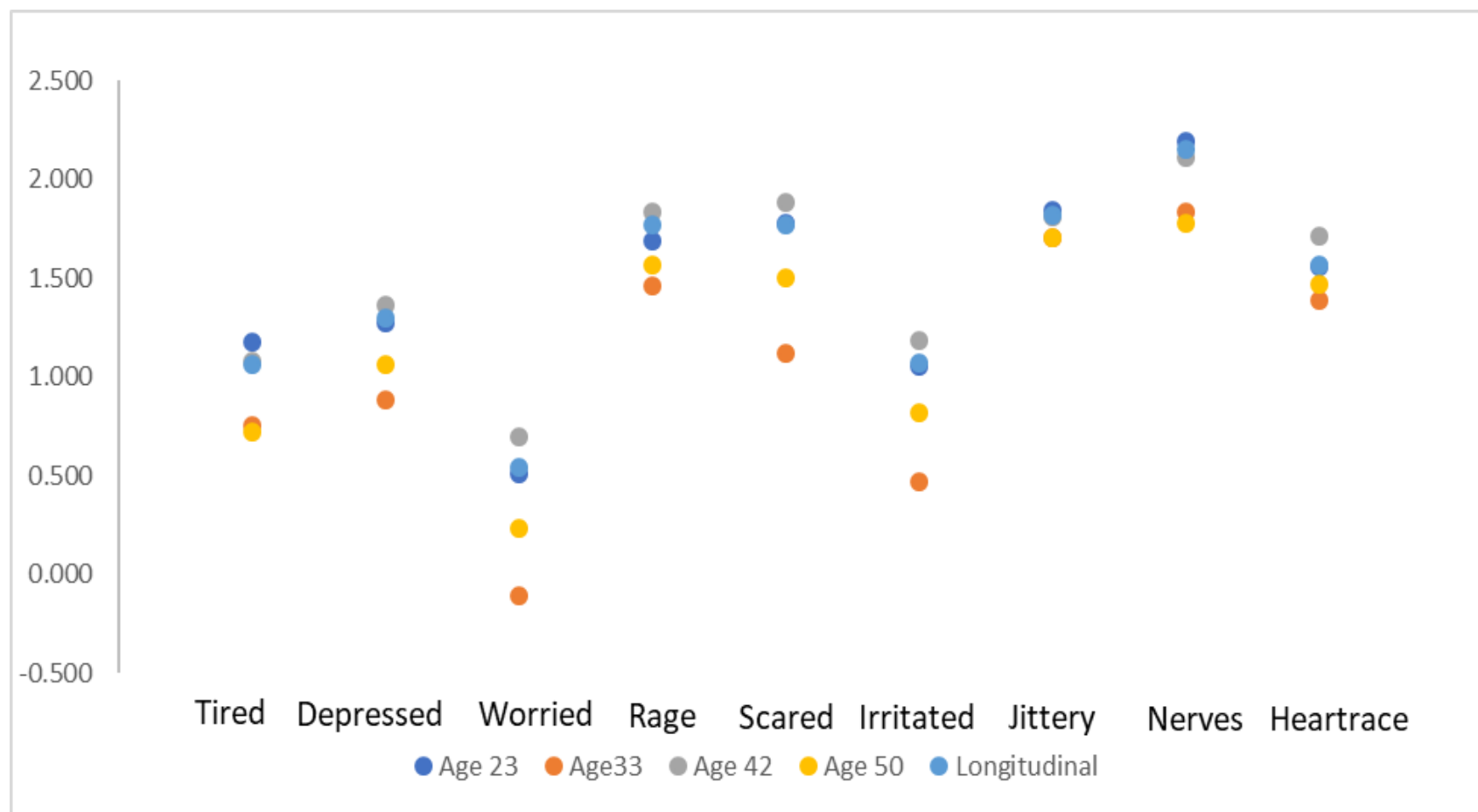
Goodness of fit criteria									
			Chi-square (d.f.)	RMSEA	CFI	TLI	Δ RMSEA	Δ CFI	Δ TLI
	NCDS 23, 33, 42, 50	Configural	1500.483 (216)	0.033 (0.031 to 0.034)	0.988	0.984			
		Scalar	2482.448 (265)	0.039 (0.037 to 0.040)	0.979	0.977	0.006	0.009	0.007
	BCS70 26, 30, 34, 42	Configural	1686.303 (216)	0.038 (0.036 to 0.039)	0.985	0.980			
		Scalar	2127.081 (265)	0.038 (0.037 to 0.040)	0.981	0.979	0.003	0.004	0.001
	NCDS & BCS70	Configural	2354.305 (324)	0.035 (0.033 to 0.036)	0.986	0.981			
		Scalar	3775.376 (401)	0.040 (0.039 to 0.041)	0.976	0.974	0.005	0.010	0.007

(Ploubidis, McElroy & Moreira, manuscript accepted)

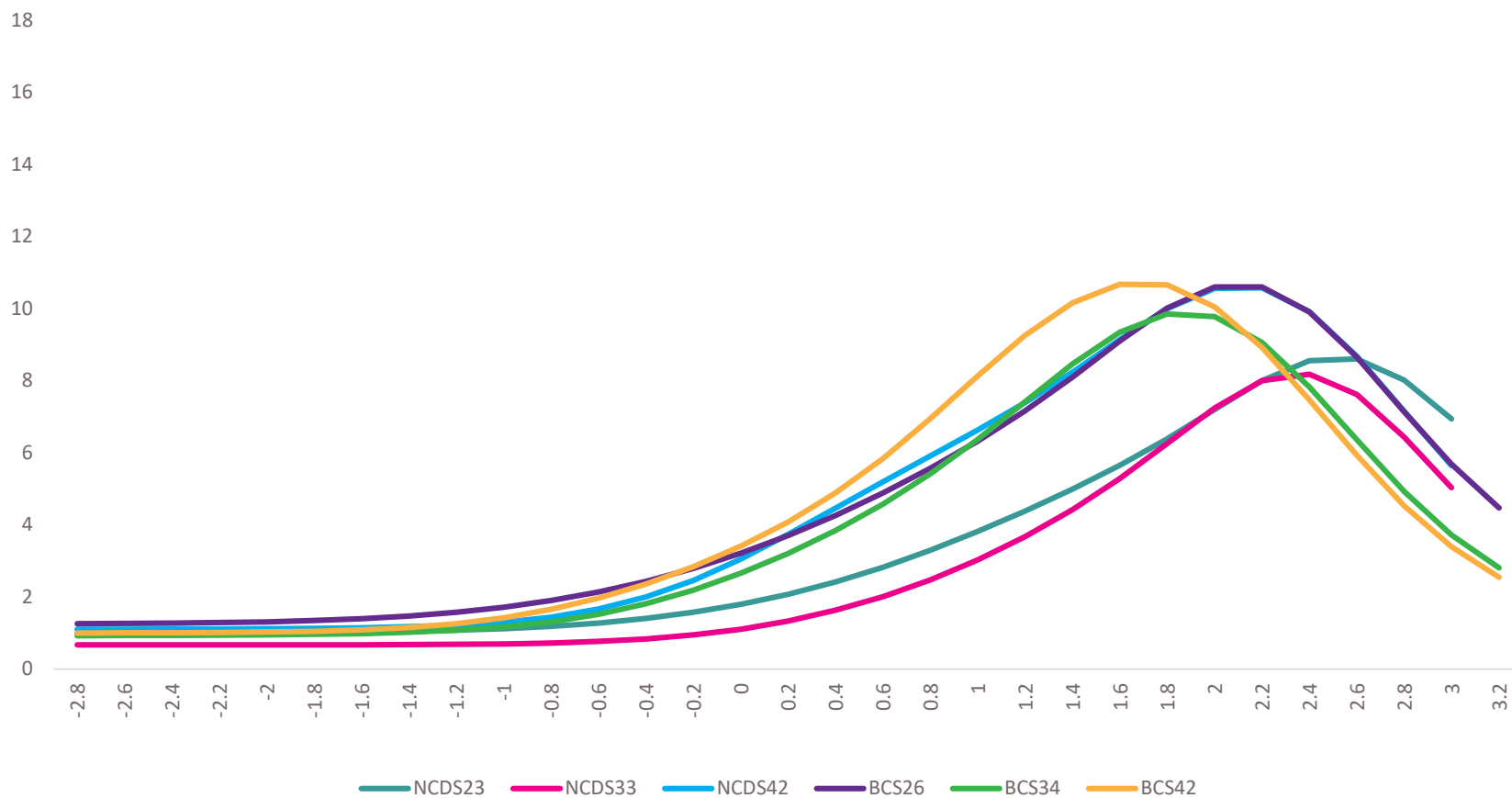
Results – Comparison across waves



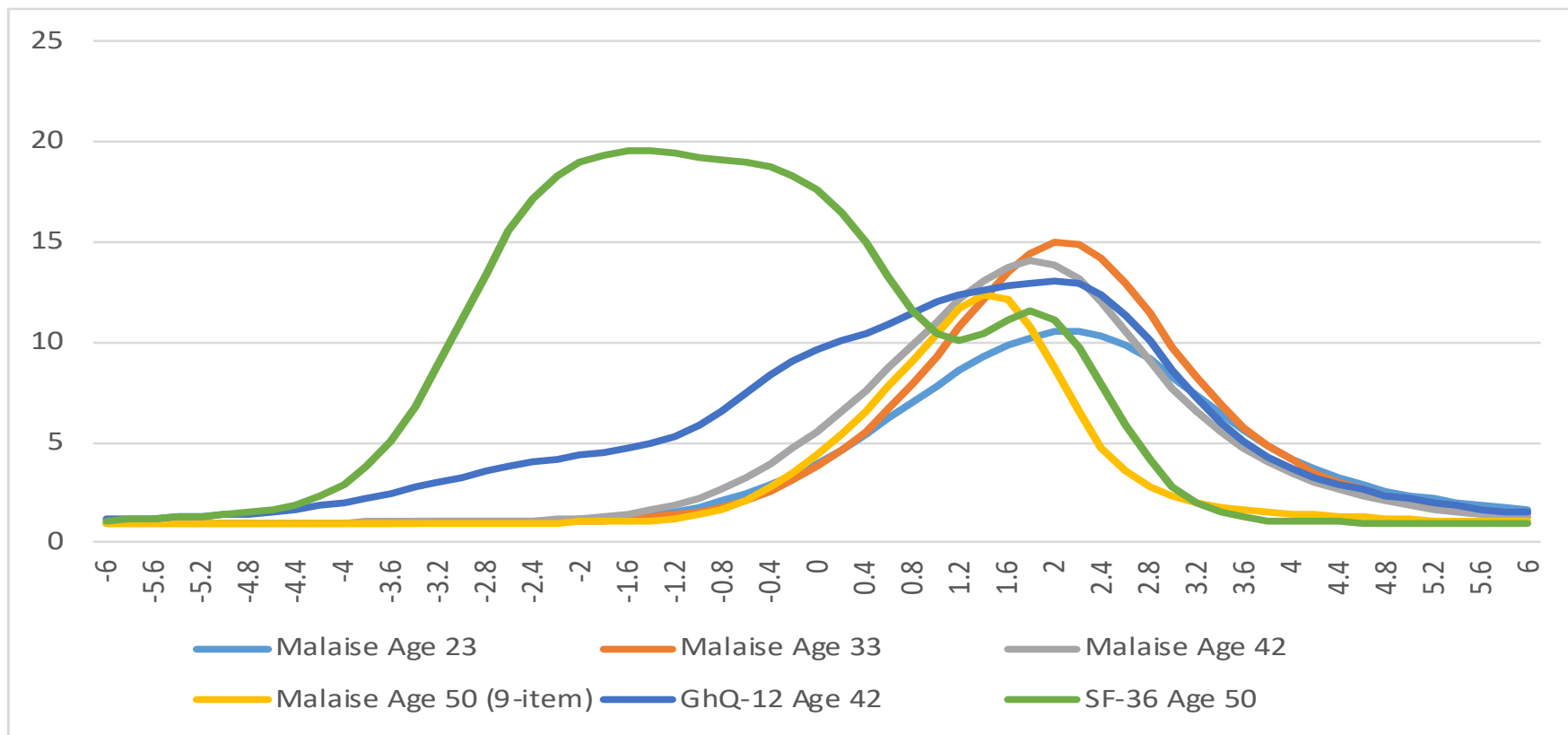
Results – Comparison across waves



Results – Comparisons across waves and cohorts



Scale Information Functions for Mental Health Measures in NCDS



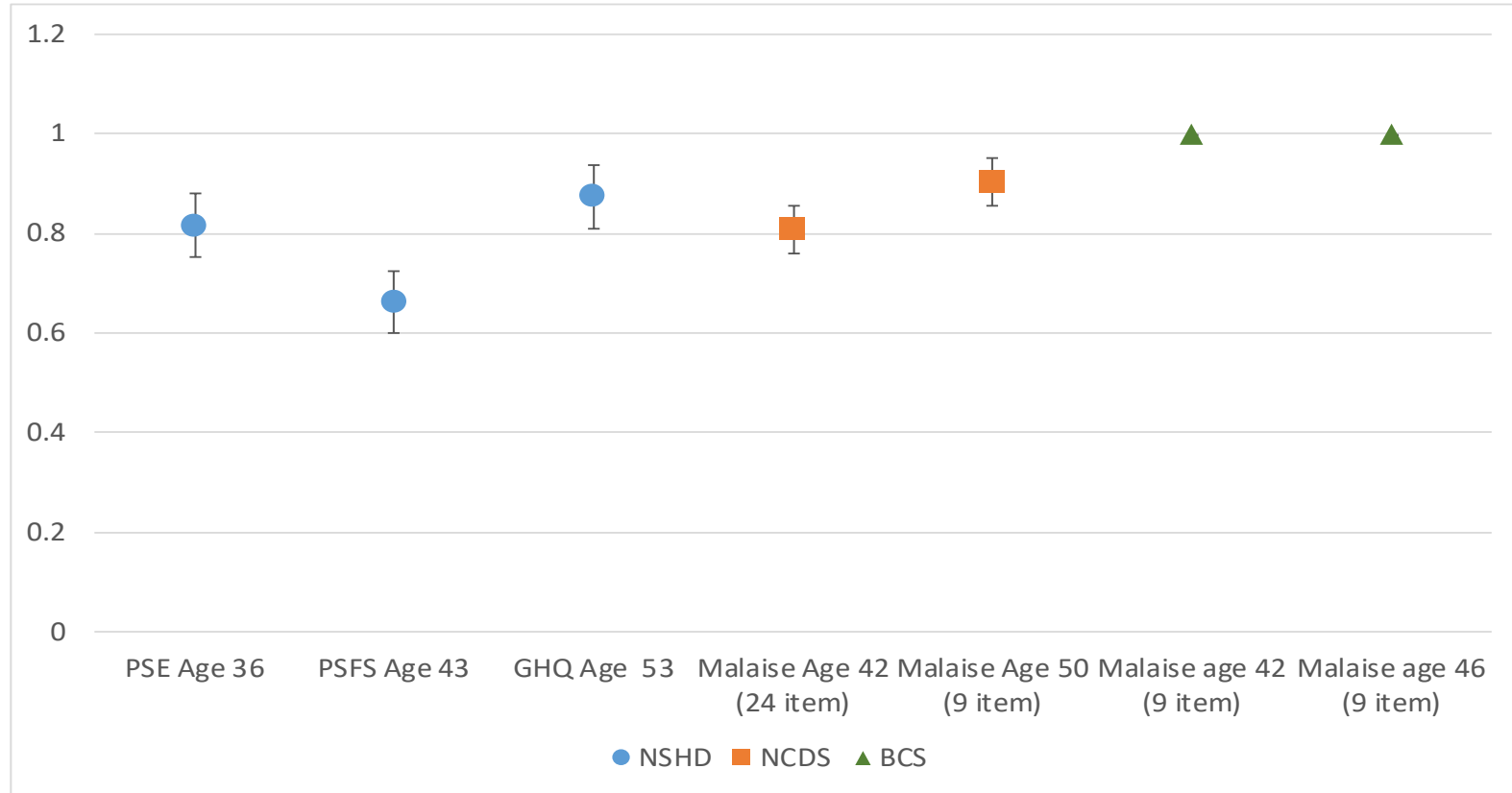
Harmonisation

	NSHD	NCDS	BCS70
Age 36	Present State Examination (selected items)		
Age 42		Malaise Inventory (24 items)	Malaise (9 items)
		General Health Questionnaire (12-item) (GHQ-12)	
Age 43	Psychiatric Symptom Frequency Scale (18 items)		
Age 46			Malaise (9 items)
			SF-36 (10 items)
			CES-D scale (Center for Epidemiologic Studies Depression) (10 items)
Age 50		Malaise Inventory (9 item)	
Age 53	General Health Questionnaire	SF36	
Age 60-64	General Health Questionnaire		
Age 69	General Health Questionnaire		

Harmonisation

	General Health Questionnaire (28-item) (GHQ-28)	Psychiatric Symptom Frequency Scale (18 items)	Present State Examination (selected items)	Malaise Inventory (9 items)
Low Mood	17. Been able to enjoy your normal day-to-day activities	2. have you been in low spirits or felt miserable	20. Do you keep reasonably cheerful or have you been very depressed or low spirited recently? Have you cried at all? (Rate depressed mood)	2. Do you often feel miserable or depressed?
Fatigue	2. Been feeling in need of a good tonic	14. have there been days when you tired out very easily?	3. Have you been exhausted and worn out during the day or evening even when you haven't been working very hard? (rate tiredness/exhaustion) (slightly doubtful about this one)	1. Do you feel tired most of the time?
Tension	16. Felt constantly under strain	1. have you felt on edge of keyed up or mentally tense	7. Do you often feel on edge, or keyed up, or mentally tense or strained? (rate nervous tension)	7. Are you constantly keyed up and jittery?
Panic	19. Been getting scared or panicky for no good reason	8. have you been in situations when you felt shaky or sweaty or your heart pounded or you could not get your breath?	11. Have you had times when you felt shaky or your heart pounded or you felt sweaty and you simply had to do something about it? (rate panic attacks)	9. Does your heart often race like mad?

Results – Harmonised items across waves and cohorts

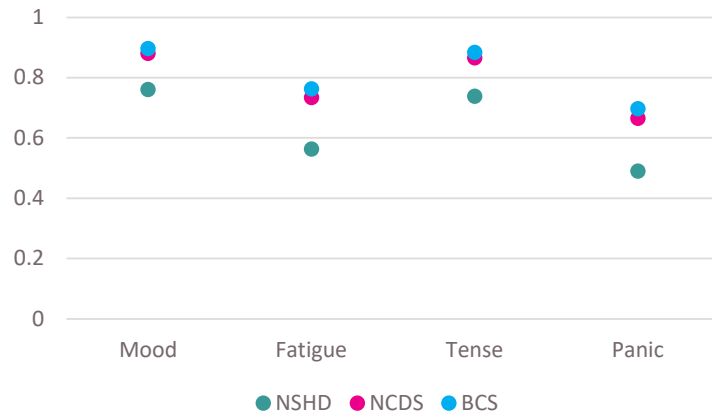


Results – Harmonised items across waves and cohorts

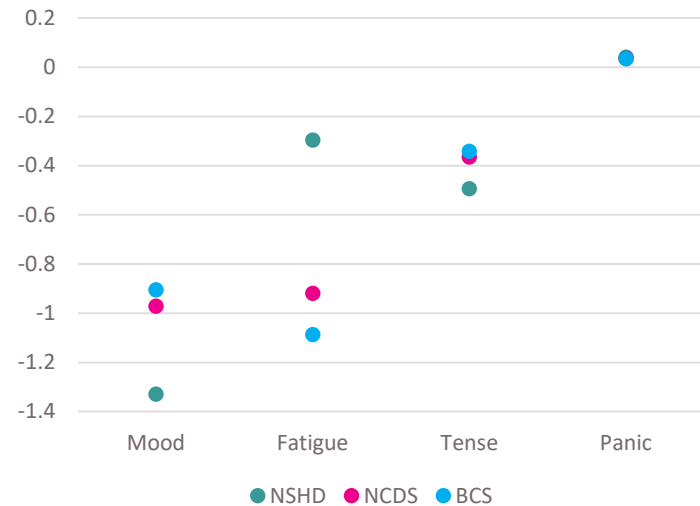
Goodness of fit criteria									
			Chi-square (d.f.)	RMSEA	CFI	TLI	Δ RMSEA	Δ CFI	Δ TLI
	Model	Configural	256.591 (18)	0.042	0.994	0.983			
		Metric	383.003 (42)	0.033	0.992	0.990	0.009	0.002	0.007
		Scalar	4576.551 (66)	0.095	0.896	0.915	0.053	0.098	0.068
		Partial Scalar	1835.781 (58)	0.064	0.959	0.962	0.022	0.035	0.021
		Partial Scalar 2	775.514 (50)	0.044	0.983	0.982	0.002	0.011	0.001

Measurement properties

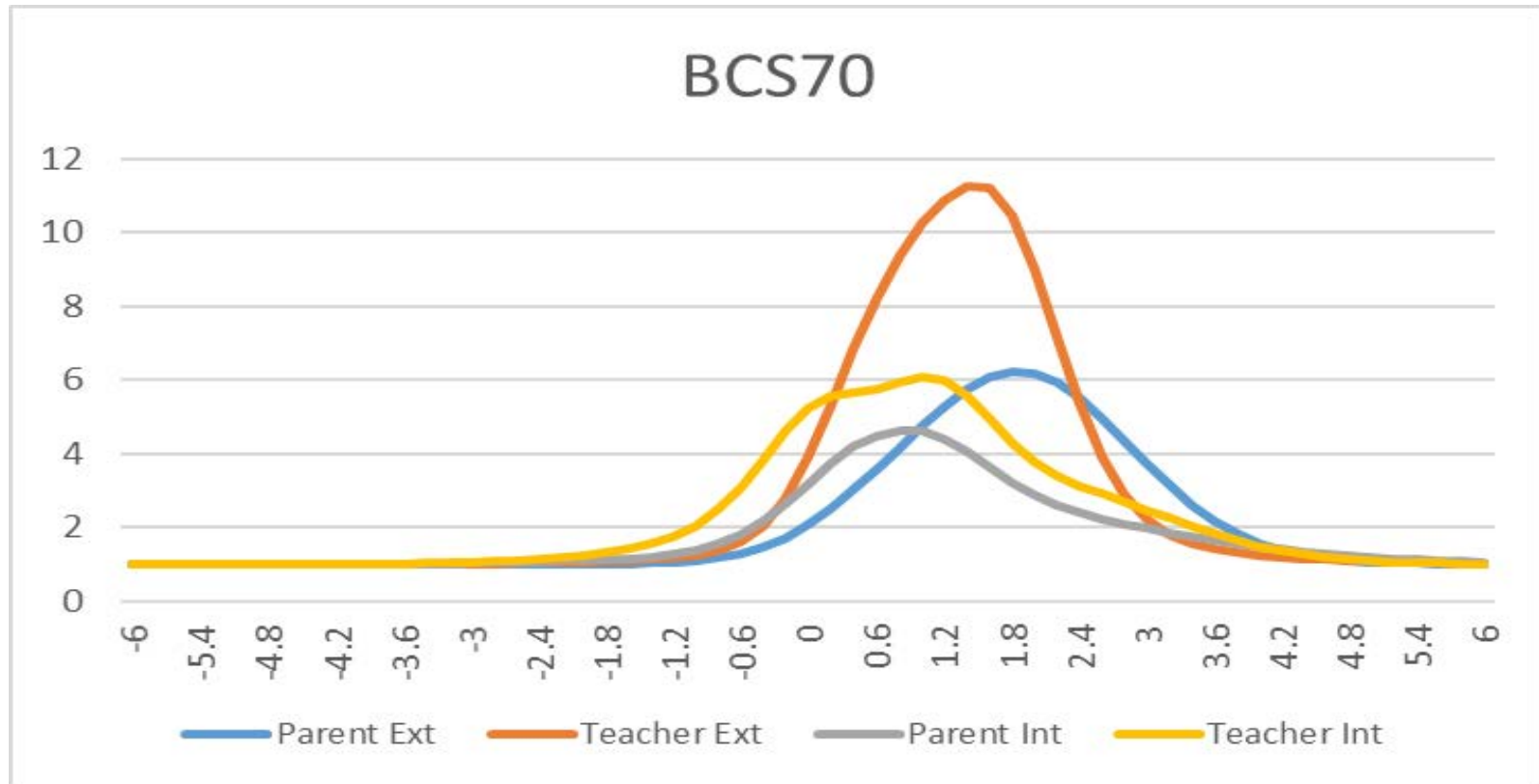
Factor Loadings (λ)



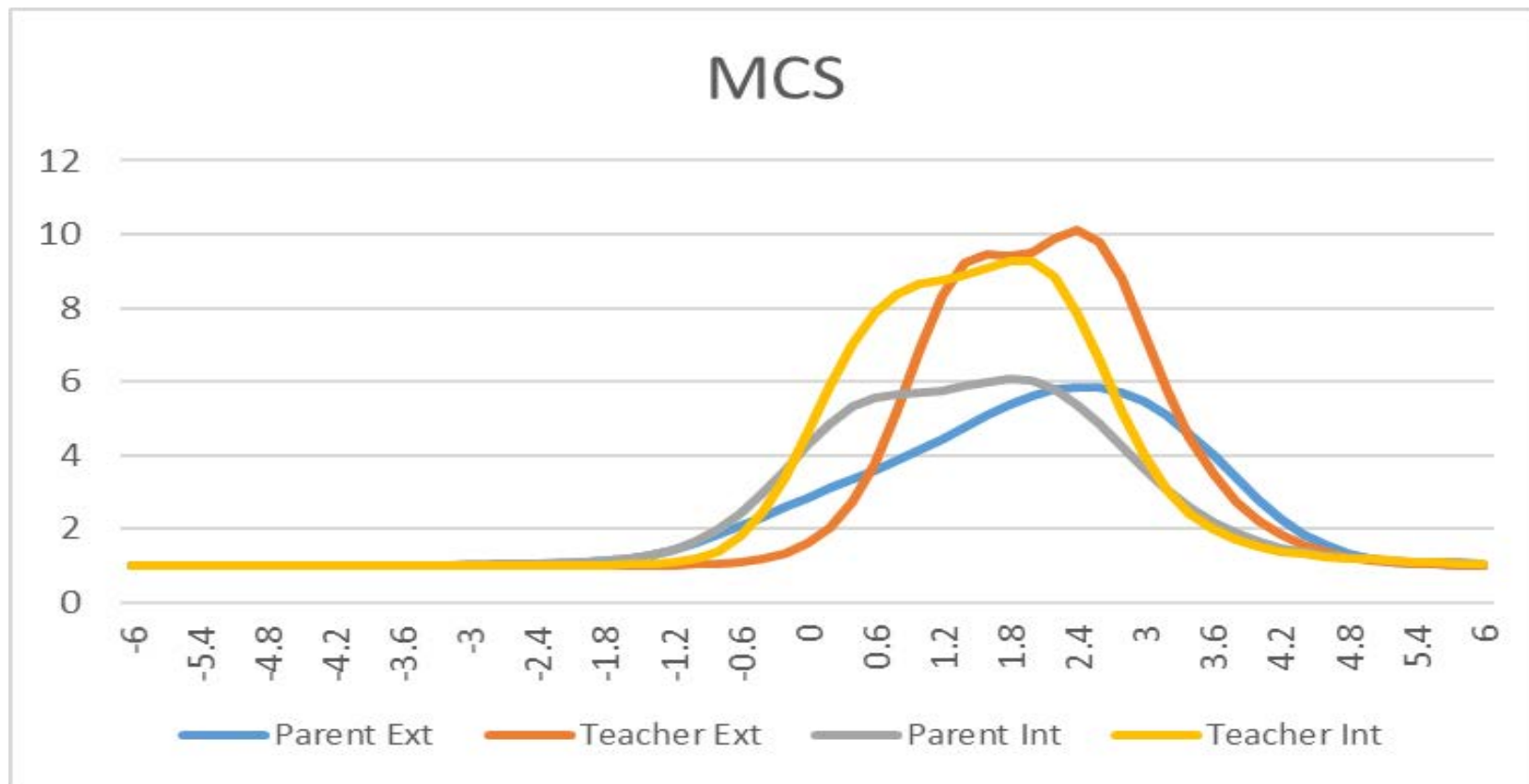
Thresholds (τ)



Teachers vs Mothers



Teachers vs Mothers



Summary

- Potential sources of bias such as age effects, survey design, period effects, or cohort specific effects **do not influence** the way participants interpret and respond to mental health items
- Harmonised items are broadly representative of the scales they were derived from (capture the same construct)
- Teachers provide more reliable/precise reports on child mental health.

Outputs

UK Data Service



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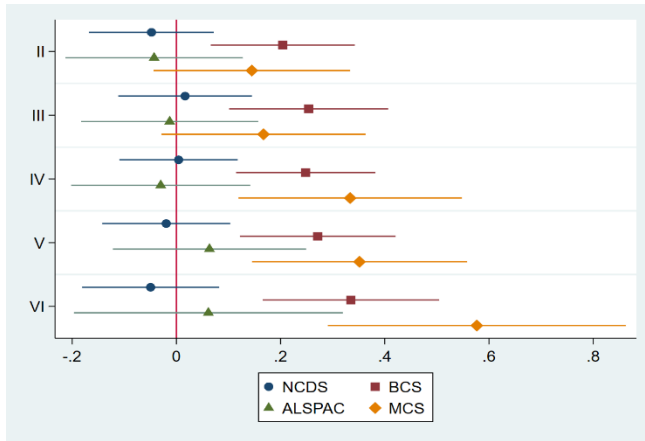
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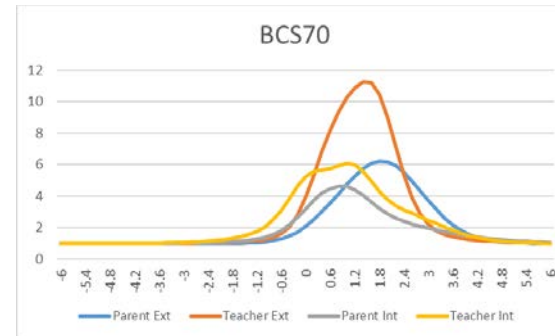


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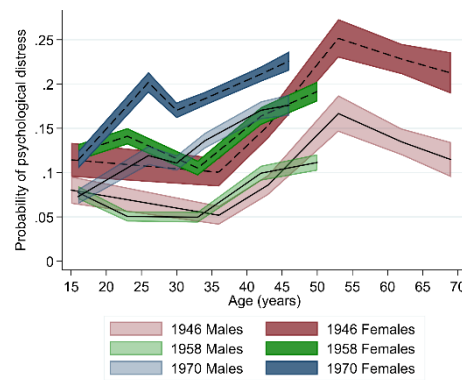
Outputs



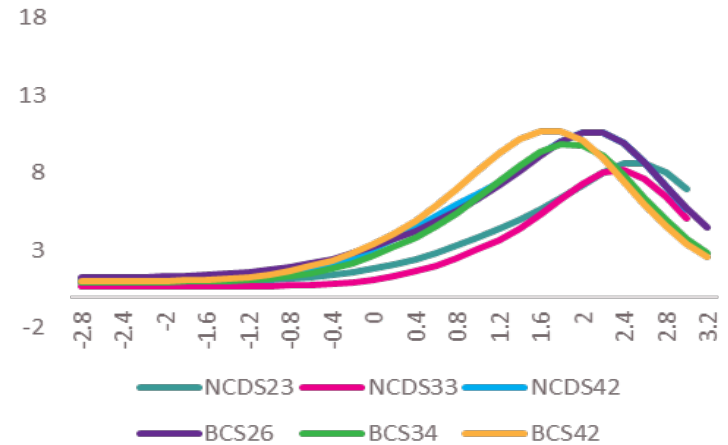
(McElroy et al., in prep)



(Villadsen et al., in prep)



(Gondek et al., under review)



(Ploubidis et al., accepted, in press)

Outputs

2019 SLLS International Conference

Hosted by the University of Potsdam, Germany

'Life Courses in Comparable Perspective: Similarities and Differences of Predictors and Outcomes Between Countries, Times and Populations'

25 – 27 September 2019

With pre-conference workshop(s) on 24 September 2019

IFPE 2019 São Paulo

Mental health equity around the globe:
contributions from the psychiatric
epidemiology perspective – 8-10th April 2019



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