

Harmonisation of mental health measures in the British birth cohorts

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CENTRE FOR
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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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Pooling data from different studies

- Increased statistical power
- More refined subgroup analysis
- Increased exposure heterogeneity
- To undertake comparison
 - Cross validation/ replication
 - Group differences
 - Change

Harmonisation – ensuring equivalence

- Compatible protocols and measures
- Challenges
 - Replication using different designs and measures
 - Often impractical
 - Study specific designs/collection methods for technical or scientific reasons
 - Developments and new harmonisation requirements

Retrospective harmonisation – an introduction

- Harmonisation using aggregated data
- Meta-analysis
 - Can be conducted for less cost, in both money and time
 - Can be carried out faster
 - Can include group-level statistics for which individual participant data are not available

(Cooper & Patall, 2009)

Retrospective harmonisation – an introduction

- Harmonisation using individual-level data
- Recoding or modifying variables so that they are comparable across research studies
- Advantages
 - More complex analyses
 - Subgroup analyses that were not conducted by the initial data collectors
 - Can test for both between-study and within-study moderators (Cooper & Patall, 2009)

The UK's Longitudinal Studies

TIMELINE

Hertfordshire Cohort Study

1930

MRC National Survey of Health and Development

1940

1958 National Child Development Study

1950

1970 British Cohort Study

1970

Next Steps

Avon Longitudinal Study of Parents and Children

1990

Southampton Women's Survey

Millennium Cohort Study

2000

Understanding Society: The UK Household longitudinal Study

2010



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NHS



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Harmonisation of mental health measures – the issue of content

Age	Age 3	Age 4	Age 5	Age 6	Age 7	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16										
NSHD (1946)*										Precur sor to Rutter		Precur sor to Rutter											
NCDS (1958)						Rutter BSAG			Rutter BSAG				Rutter	Rutter									
BCS70 (1970)			Rutter					Rutter	Conners	CDS										Rutter	Conners	GHQ	Malaise
Next Steps																							
ALSPAC (1991-92)	EAS	Rutter		EAS	SDQ	SDQ		SDQ	SMFQ	SDQ	MFQ		SDQ	SDQ	MFQ						SDQ	MFQ	
MCS (2000-01)	SDQ			SDQ		SDQ							SDQ	SDQ									

Harmonisation of mental health measures – the issue of content

7A 3

III BEHAVIOUR

15. Which statement in each group *best* describes this child?

(a) Very popular with other children.....1
 Of average popularity.....2
 Tends to be ignored by other children.....3

(b) Liable to get unduly rough during playtime.....1
 Takes a normal part in rough games.....2
 Rather frightened of rough games.....3

(c) Avoids attention, hates being in the limelight.....1
 Does not unduly avoid or seek attention.....2
 Shows off; seeks attention.....3

(d) A dare-devil.....1
 As cautious as the average child.....2
 Extremely fearful.....3

+

Strengths and Difficulties Questionnaire

+

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

Child's Name Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Harmonisation – the issue of scale

+

Strengths and Difficulties Questionnaire

+

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

Child's Name

Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

41

The next questions are about your feelings generally.

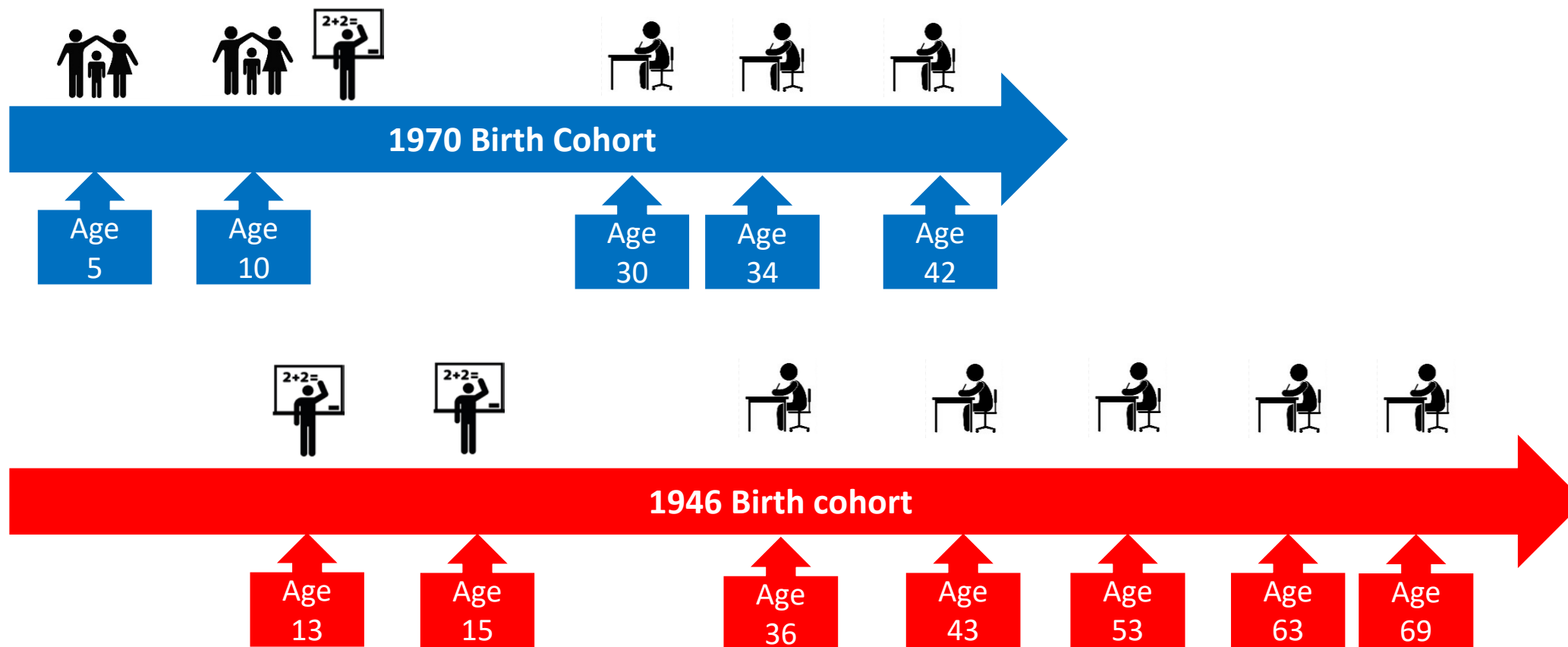
CROSS (X) ONE BOX ON EACH ROW

	Yes	No
Do you often get worried about things?	<input type="checkbox"/>	<input type="checkbox"/>

(a) Please make a vertical mark through the line alongside each of the following statements to indicate the extent to which the statement applies to your child's behaviour.

	Does not apply	Certainly applies
6. Often worried, worries about many things		

Harmonisation – the issue of reporter



Harmonisation of mental health measures – the issue of content

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BCS70 (1970)			Rutter					Rutter	Conners	CDS										Rutter	Conners	GHQ	Malaise	
Next Steps																								
ALSPAC (1991-92)	EAS	Rutter		EAS	SDQ	SDQ		SDQ	SMFQ	SDQ	MFQ		SDQ	SDQ	MFQ								SDQ	MFQ
MCS (2000-01)	SDQ			SDQ		SDQ							SDQ	SDQ										

Harmonisation process – item matching

Malaise Inventory (9-item version)			
	Rater 1	Rater 2	Agreement
1. Do you feel tired most of the time?	Fatigue	Fatigue	✓
2. Do you often feel miserable or depressed?	Low mood	Low mood	✓
3. Do you often get worried about things?	Worry	Worry	✓

Matched items

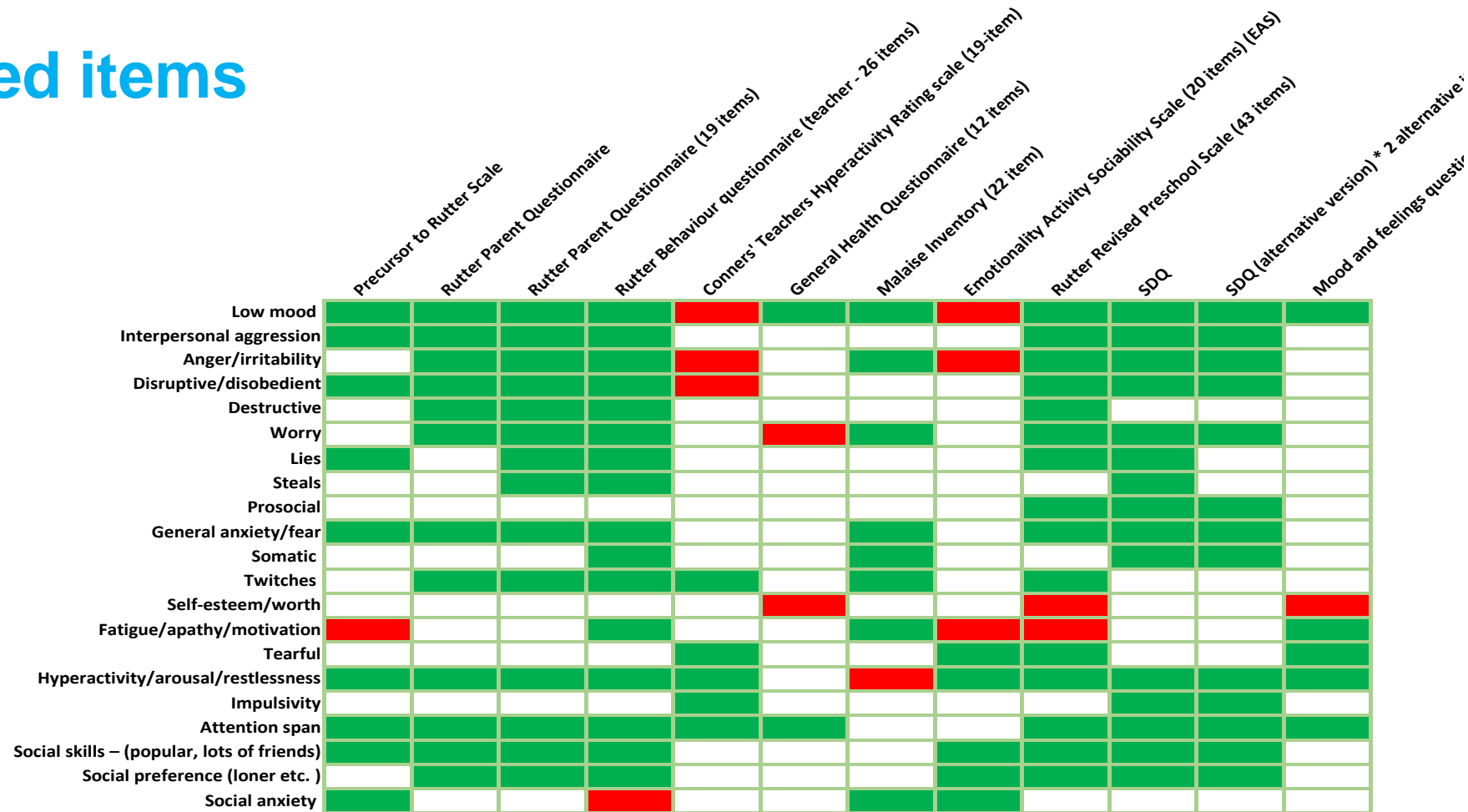


Figure 1. Heat map representing inter-rater agreement on item content in mental health measures available in childhood. Green blocks reflect agreement; red blocks equal disagreement. Empty blocks indicate neither researcher identified a corresponding item. SDQ = Strengths and Difficulties Questionnaire.

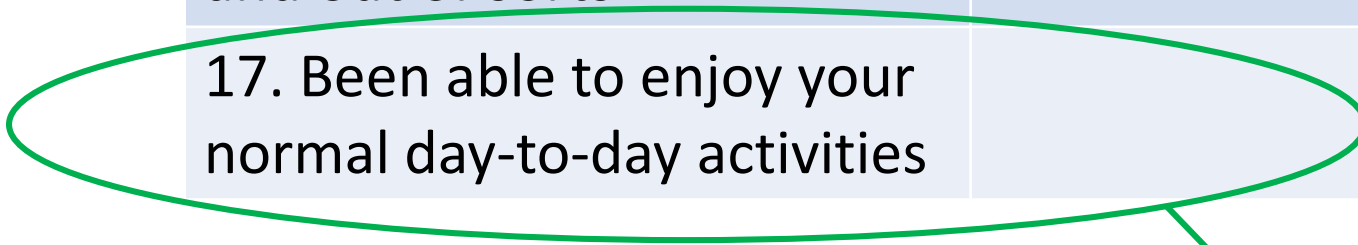
Matched items



Figure 2. Heat map representing inter-rater agreement on item content in mental health measures available in adulthood. Green blocks reflect complete agreement. Red blocks equal disagreement. Empty blocks indicate neither researcher identified a corresponding item. PSFS = Psychiatric Symptom Frequency Scale; GHQ = General Health Questionnaire; CES-D = The Centre for Epidemiological Studies-Depression; SF-36 = 36-Item Short Form Survey.

Harmonisation process – item matching

General Health Questionnaire (28-item)			
	Rater 1	Rater 2	Agreement
16. Felt constantly under strain	Tension/stress	Tension/stress	✓
3. Been feeling run down and out of sorts	Low mood		✗
17. Been able to enjoy your normal day-to-day activities		Low mood	✗



Matched items

	Precursor to Rutter Scale	Rutter Parent Questionnaire (19 items)	Malaise Inventory (22 item)	Rutter Revised Preschool Scale (43 items)	SDQ
Low mood	Unusually happy and contented child / Generally cheerful and in good humor / usually gloomy and sad	9. Often appears miserable, unhappy, tearful or distressed.	3. Do you often feel depressed?	14. Appears miserable, unhappy, tearful or distressed	13. Is often unhappy, down hearted or tearful
Interpersonal aggression	Average—not particularly quarrelsome/ A quarrelsome and aggressive child	4. Frequently fights other children.		7. Fights with other children	12. Often fights with other children or bullies them
Anger/irritability		8. Irritable. Is quick to fly off the handle.	9. Do you often get into a violent rage?	12. Is irritable, quick to fly off the handle	5. Often has temper tantrums or hot tempers
Disruptive/disobedient	Seldom or never disobedient / sometimes disobedient / frequently disobedient	14. Is often disobedient		17. Is disobedient	7. Is generally obedient, usually does what adults request
Destructive		3. Often destroys own or others' belongings		5. Destroys own or others' belongings	
Worry		6. Often worried, worries about many things	5. Do you often get worried about things?	10. Is worried, worries about many things	8. Has many worries, often seems worried
Lies	Seldom or never evades the truth to keep out of trouble / Sometimes evades the truth to keep out of trouble / Frequently evades the truth to keep out of trouble	18. Often tells lies.		23. Tells lies	18. Often lies or cheats
Steals		10. Sometimes takes things belonging to others* (not in NCDS)			22. Steals from home, school or elsewhere
Prosocial				1. Tries to be fair in games	1. Is considerate of other people's feelings
General anxiety/fear	Would you describe this child as an anxious child (ie, apprehensive, worrying, and fearful)? Not at all anxious / somewhat anxious / very anxious	16. Tends to be fearful or afraid of new things or new situations.	12. Do you suddenly become scared for no good reason?	20. Tends to be afraid of new things or new situations	16. Is nervous or clingy in new situations, easily loses confidence

Matched items

	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)	
		SF36	
Age 53	General Health Questionnaire		
Age 60-64	General Health Questionnaire		
Age 69	General Health Questionnaire		

Matched items

	General Health Questionnaire (28-item) (GHQ-28)	Psychiatric Symptom Frequency Scale (18 items)	Present State Examination (selected items)	Malaise Inventory (9 item)
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 you 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?

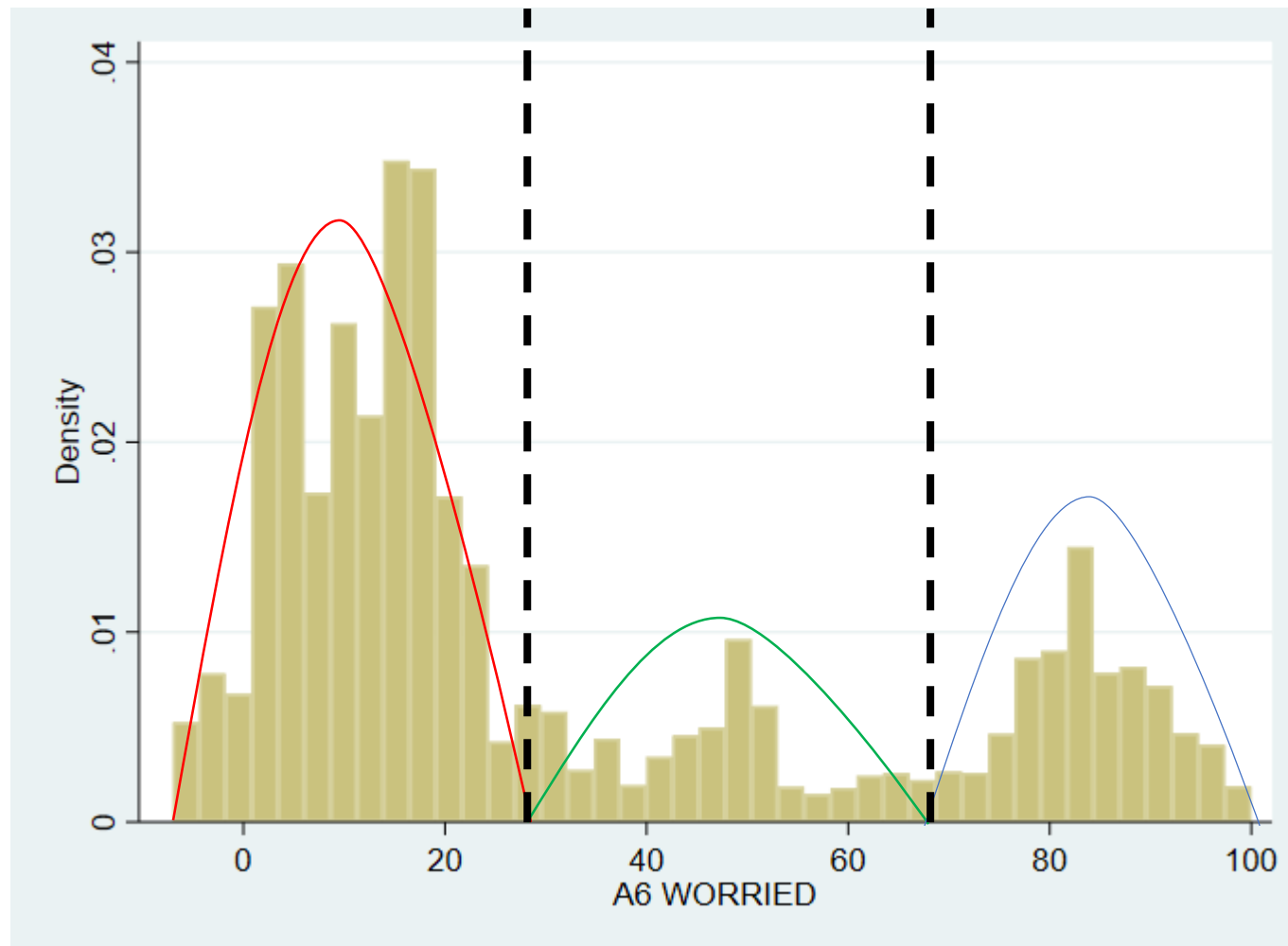
Matched items

Rutter Parent Questionnaire	Rutter Parent Questionnaire (19 items)	Rutter Revised Preschool Scale (43 items)	SDQ
5. Is miserable or tearful	9. Often appears miserable, unhappy, tearful or distressed.	14. Appears miserable, unhappy, tearful or distressed	13. Is often unhappy, down hearted or tearful
7. Worries about many things	6. Often worried, worries about many things	10. Is worried, worries about many things	8. Has many worries, often seems worried
10. Is upset by new situation, by things happening for the first time	16. Tends to be fearful or afraid of new things or new situations.	20. Tends to be afraid of new things or new situations	16. Is nervous or clingy in new situations, easily loses confidence
3. Is bullied by other children	5. Not much liked by other children.	8. Is not much liked by other children	11. Has at least one good friends
2. Prefers to do things on his/her own rather than with others	7. Tends to do things on his/her own – rather solitary.	11. Tends to do things on his own, rather solitary	6. Is rather solitary, tends to play alone
12. Fights with other children	4. Frequently fights other children.	7. Fights with other children	12. Often fights with other children or bullies them
14. Is disobedient at home	14. Is often disobedient	17. Is disobedient	7. Is generally obedient, usually does what adults request
8. Is irritable, quick to fly off the handle	8. Irritable. Is quick to fly off the handle.	12. Is irritable, quick to fly off the handle	5. Often has temper tantrums or hot tempers
6. Is squirmy or fidgety	1. Very restless. Often running about or jumping up and down. Hardly ever still.	2. Is restless, runs about or jumps up & down. Doesn't keep still	2. Is restless, overactive, cannot stay still for long
1. Has difficulty in settling to anything for more than a few moments	15. Cannot settle to anything for more than a few moments.	19. Has poor concentration, or short attention span	15. Is easily distracted, concentration wanders

Harmonisation – issues of scale

Measure	Scale
Psychiatric Symptom Frequency Scale	0 (i.e. never) 5 (i.e. always)
General Health Questionnaire	1 (Better than usual) 4 (Much worse than usual)
Present State Examination	0 (Not present) 2 (Symptom clinically intense)
Malaise Inventory	Yes/No

Harmonisation – issues of scale



Harmonisation – issues of scale

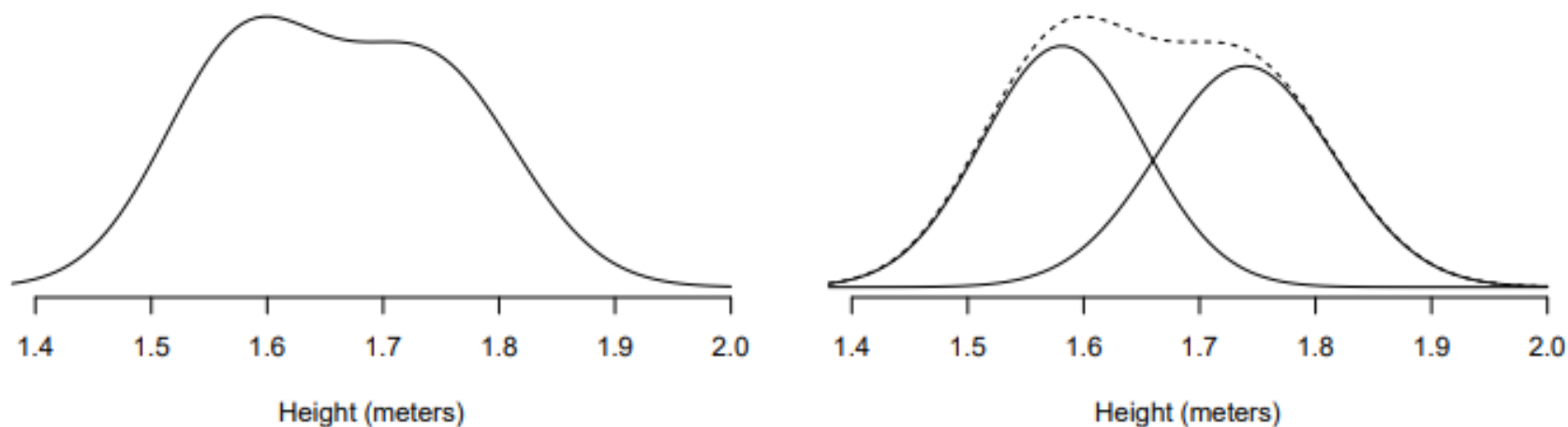
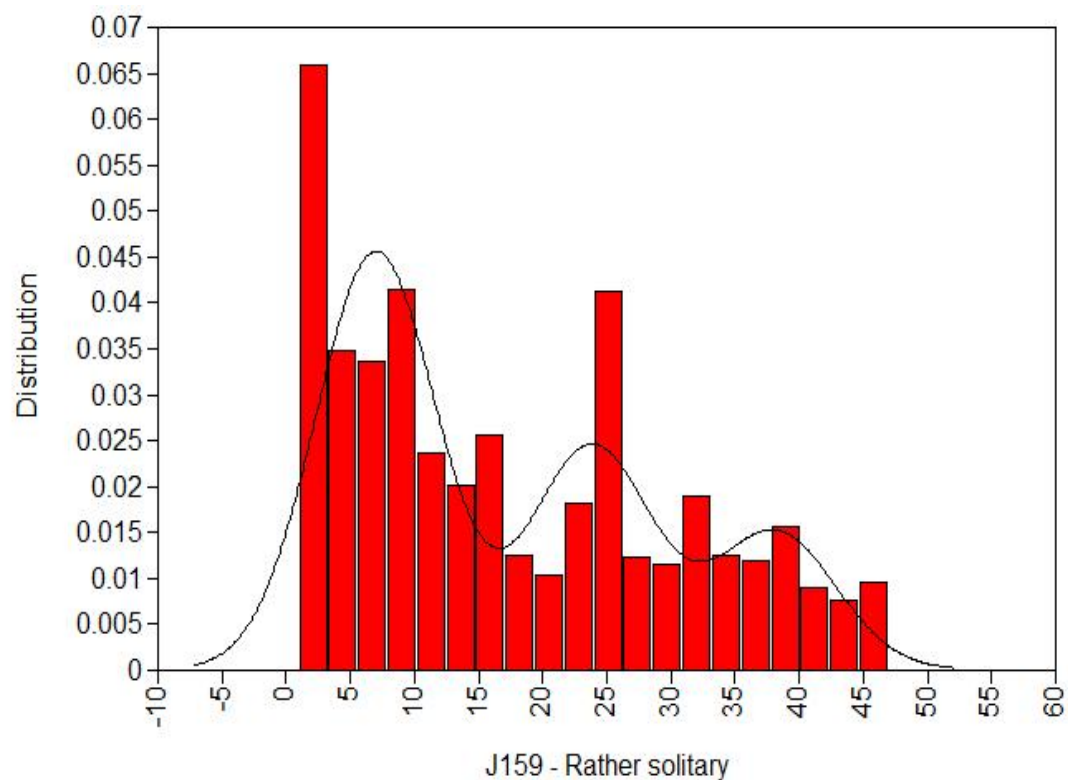
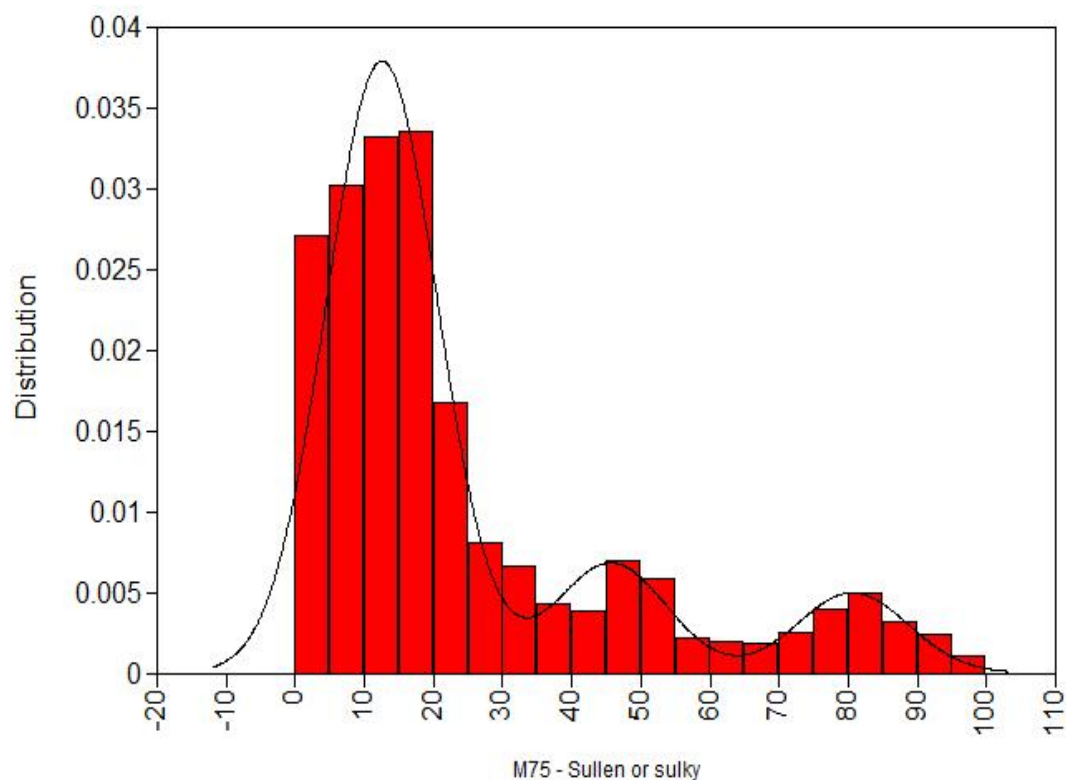


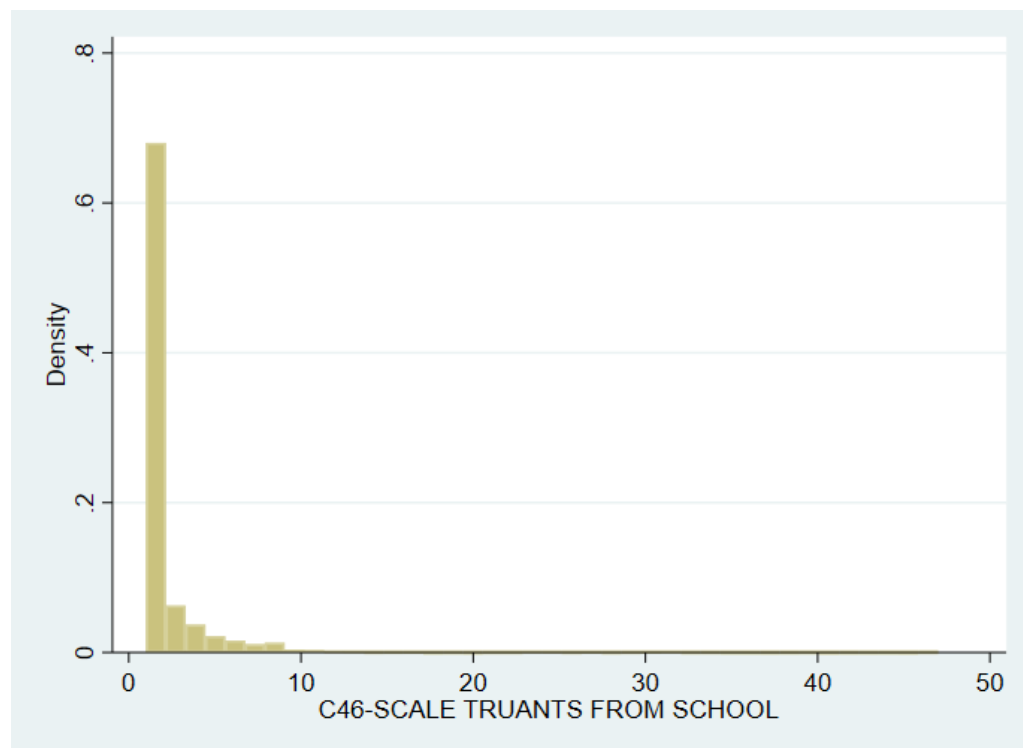
Fig. 1 Peoples' height. Left: observed distribution. Right: men and women separate, with the total shown as a dotted line.

(Oberski, 2016)

Harmonisation – issues of scale

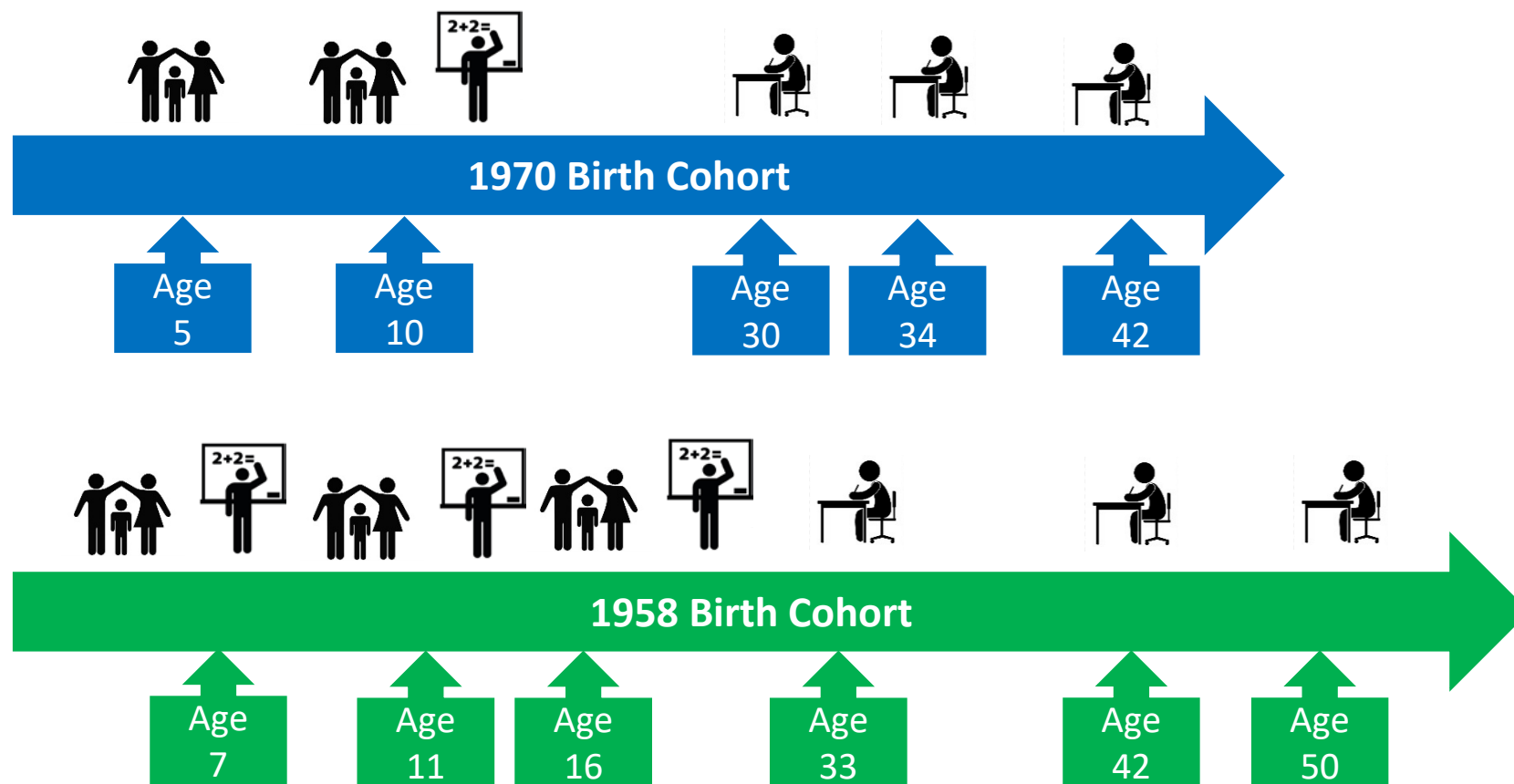


Harmonisation – issues of scale



	Truancy (raw)	Truancy (mixture)	Truancy (divided)
Truancy (raw)		1	
Truancy (mixture)	0.8954		1
Truancy (divided)	0.5876	0.3944	

Harmonisation – the issue of reporter



UK Data Service



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Conclusion



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