

**The psychometric properties of the self-reported SDQ
– an analysis of Swedish data based on the Rasch model**

Curt Hagquist

Karlstad University, Karlstad, Sweden

[curt.hagquist@kau.se]

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SDQ – background

- The Strength and Difficulties Questionnaire (SDQ) is increasingly used as a survey instrument for tapping information about mental health problems among children and adolescents.
- According to most of the evaluations of the SDQ, the instrument shows sound psychometric properties. This conclusion is based on traditional analyses.
- Latent trait analyses with the Rasch model do not seem to have been used yet in any published study dealing with the SDQ-instrument.

The purpose of the study

- To analyse the construct validity of the SDQ-25 items-scale by means of the Rasch model.

The sample:

A total of 8837 students – in six data sets

- Set I: 905 students aged 17-18 in upper secondary school.
Attrition rate: 22%.
- Set II: 2981 students aged 14-15 in compulsory school.
Attrition rate: 16%.
- Set III: 848 students aged 14-15 in compulsory school.
Attrition rate: 12%.
- Set IVa: 2027 students aged 12-13 in compulsory school.
Attrition rate: 7%.
- Set IVb: 650 students aged 14-15 in compulsory school.
Attrition rate: 13%.
- Set IVc: 1426 students aged 15-16 in compulsory school.
Attrition rate: 15%.

Emotional symptoms scale

- I get a lot of headaches, stomach-aches or sickness
- I worry a lot
- I am often unhappy, down-hearted or tearful
- I am nervous in new situations. I easily lose confidence
- I have many fears, I am easily scared

Conduct problems scale

- I get very angry and often lose my temper
- I usually do as I am told
- I fight a lot. I can make other people do what I want
- I am often accused of lying or cheating
- I take things that are not mine (from home, school or elsewhere)

Hyperactivity scale

- I am restless, I cannot stay still for long
- I am constantly fidgeting or squirming
- I am easily distracted. I find it difficult to concentrate
- I think before I do things
- I finish the work I am doing. My attention is good

Peer problems scale

- I am usually on my own. I generally play alone or keep to myself
- I have one good friend or more
- Other people my age generally like me
- Other children or young people pick on me or bully me
- I get on better with adults than with people my own age.

Prosocial scale

- I try to be nice to other people. I care about their feelings
- I usually share with others (food, games, pens etc.)
- I am helpful if someone is hurt, upset or feeling ill
- I am kind to younger children
- I often volunteer to help others (parents, teachers, children)

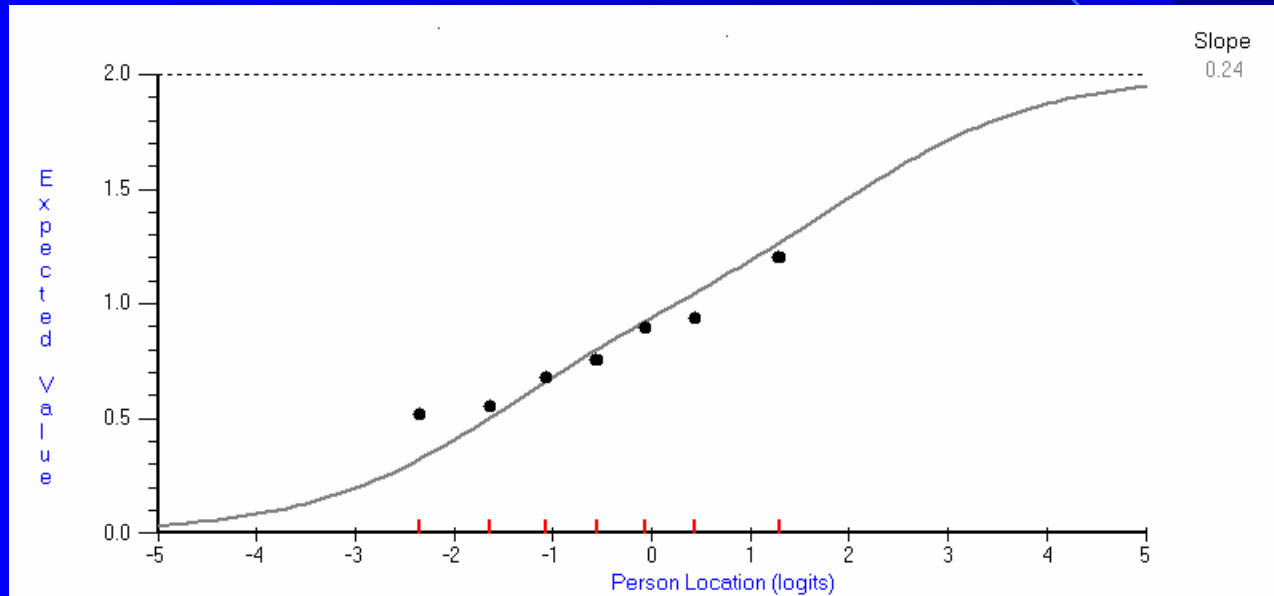
Response categories

- Not true
- Somewhat true
- Certainly true

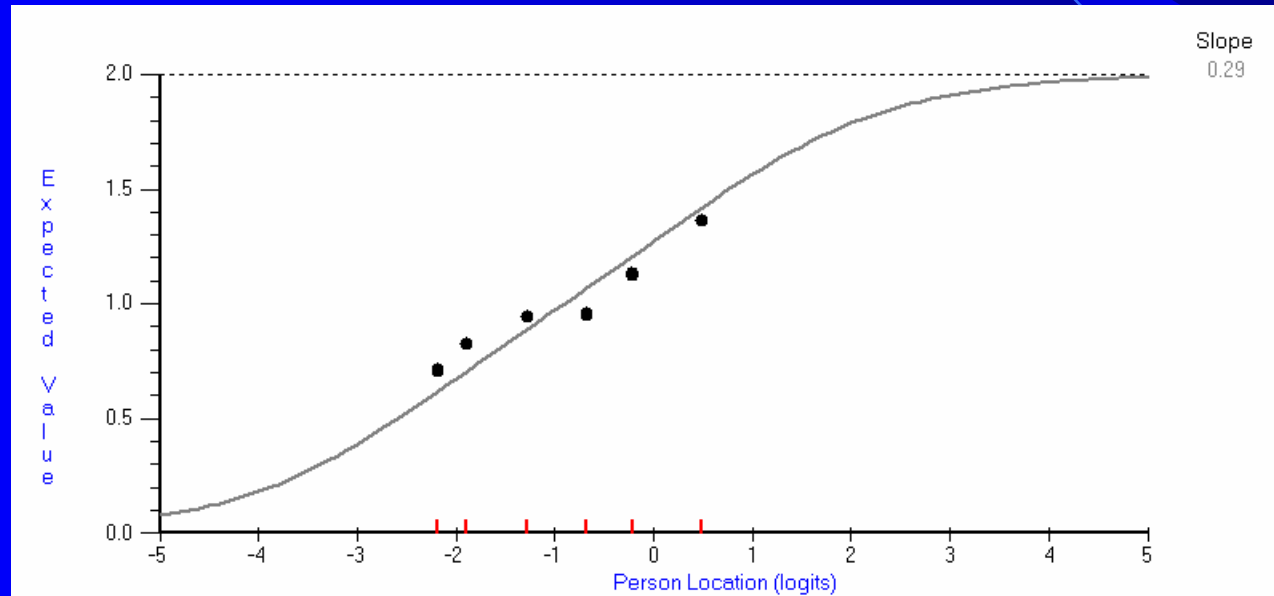
Problems detected

- Item fit
- Threshold ordering
- Person separation

Item Characteristic Curve for *I think before I do things* in data set IVa.



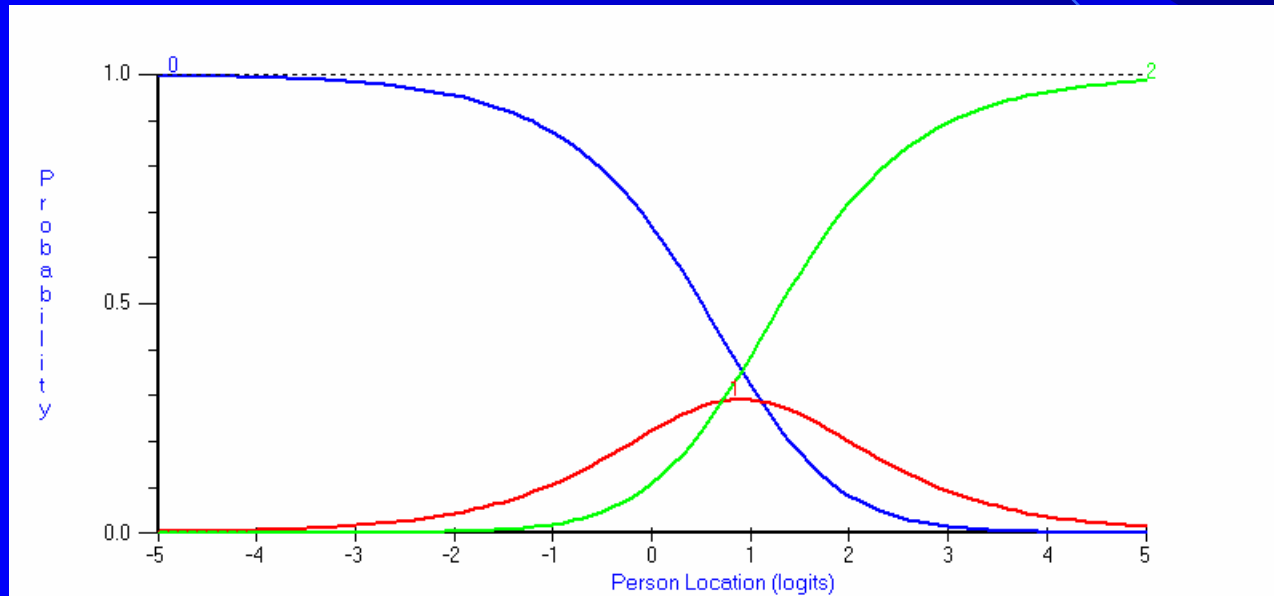
Item Characteristic Curve for *I usually do as I am told* in data set IVa.



Disordered thresholds

Subscales		Items with disordered thresholds					
		Data set I	Data set II	Data set III	Data set IV a	Data set IV b	Data set IV c
Emotional symptoms	Original 5 items	---	---	---	---	---	---
Conduct problems	Original 5 items	Lies and cheats	Steals	Steals	Steals	---	---
	4 items (Removal of I usually do as I am told)	Lies and cheats	--	Steals	Steals	---	---
Hyperactivity	Original 5 items	---	---	---	---	---	---
	4 items (Removal of I think before I do things)	---	---	---	---	---	---
Peer problems	Original 5 items	Good friend Bullied	Good friend	Good friend	Good friend	Bullied	Good friend Bullied
Prosocial	Original 5 items	---	---	---	---	---	---
	4 items (Removal of I usually share with others)	---	---	---	---	---	---

Category Probability Curve for *I have one good friend or more* in data set IVa.



Person Separation Index

Subscales		Person separation index					
		Data set I	Data set II	Data set III	Data set IV a	Data set IV b	Data set IV c
Emotional symptoms	Original 5 items	0.68016	0.66619	0.65577	0.64849	0.60468	0.67573
Conduct problems	Original 5 items	0.42738	0.53828	0.50385	0.45772	0.57580	0.46242
	4 items (Removal of I usually do as I am told)	0.51996	0.57834	0.46551	0.47177	0.52544	0.51776
Hyperactivity	Original 5 items	0.63584	0.65858	0.55290	0.58829	0.57972	0.61060
	4 items (Removal of I think before I do things)	0.67118	0.66595	0.60119	0.59849	0.56213	0.63641
Peer problems	Original 5 items	0.42661	0.49315	0.49150	0.43238	0.51788	0.46590
Prosocial	Original 5 items	0.61769	0.66467	0.64366	0.58222	0.58052	0.62325
	4 items (Removal of I usually share with others)	0.61054	0.65472	0.61262	0.56824	0.58145	0.59411

In conclusion

- All subscales problematic in one way or another.
- Improvements through removal of items.
- Double-barrelled items should be split into two new items.

Methodological remarks

- Tentative analyses carried out on a finer level indicate that there are additional problems with the SDQ-scales that have to be addressed, e.g. DIF with respect to sex.
- The analyses carried out clearly demonstrate the efficiency of the Rasch model in detecting violations of measurement requirements of invariance and proper ordering of the data.