



University of  
Zurich<sup>UZH</sup>

# Item Thresholds

Master Rasch Seminar 5 – 14.10.2020

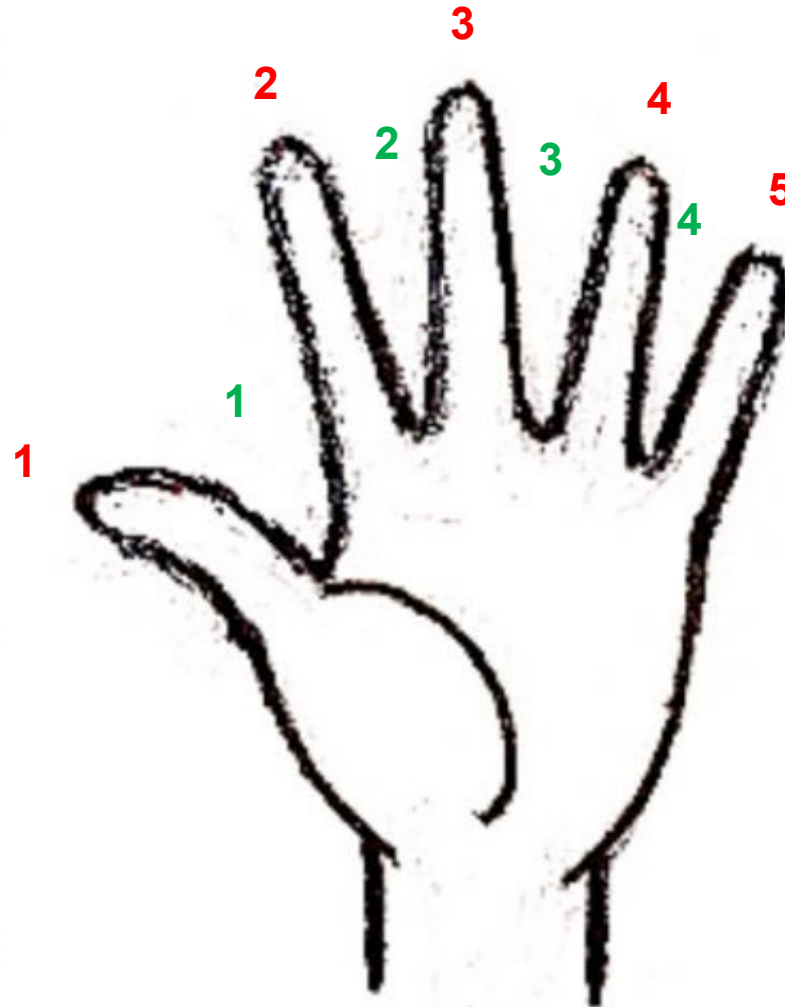
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# Difficulty Thresholds

Difficulty thresholds are the equal probability points which separate two adjacent response levels in a questionnaire item.

# Difficulty Thresholds

Example: A questionnaire with **5 response options** would have **4 thresholds**.



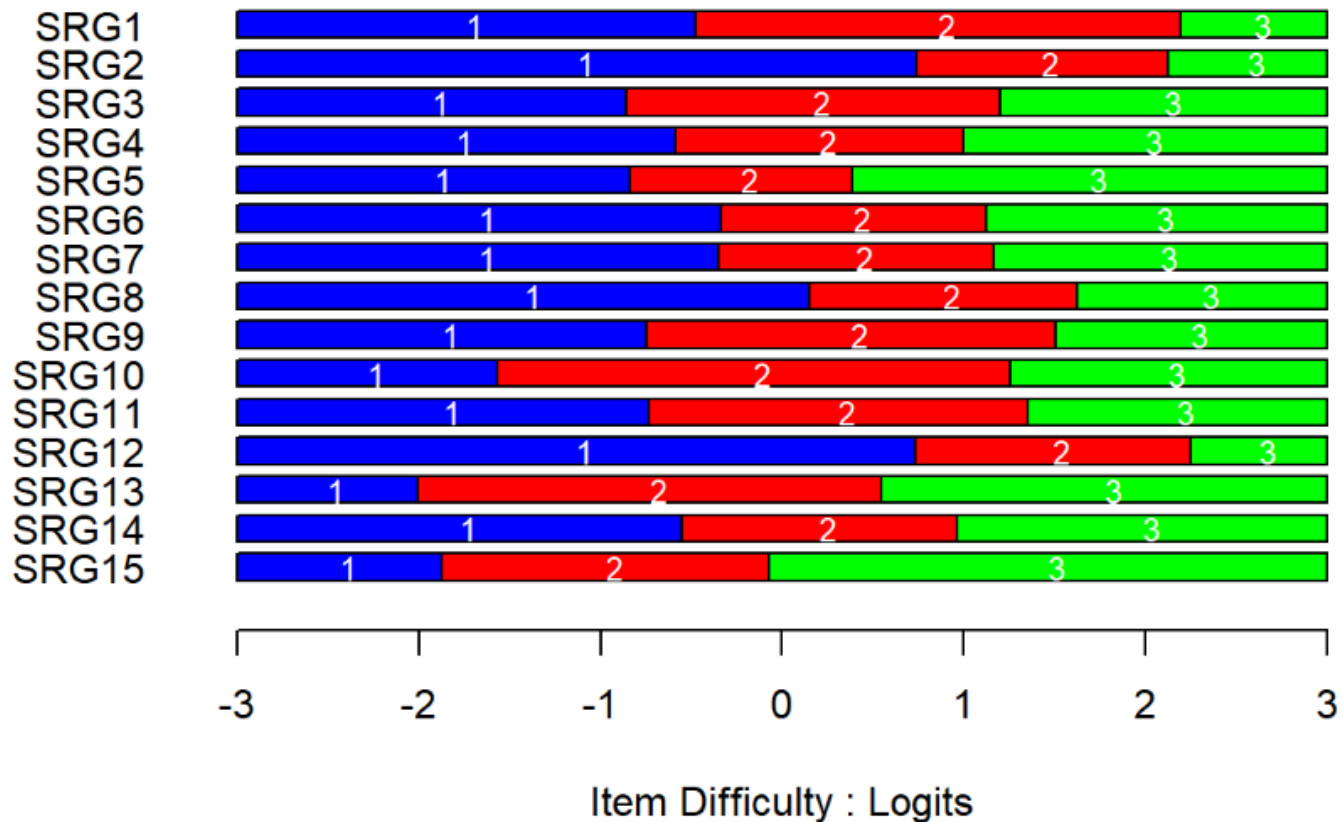
# Difficulty Thresholds

The PCM, partial credit model allows non-equidistant thresholds.

Reversing and disordering of thresholds can happen for example with many response options, with vaguely defined response options, participants with unexpected response behaviors...

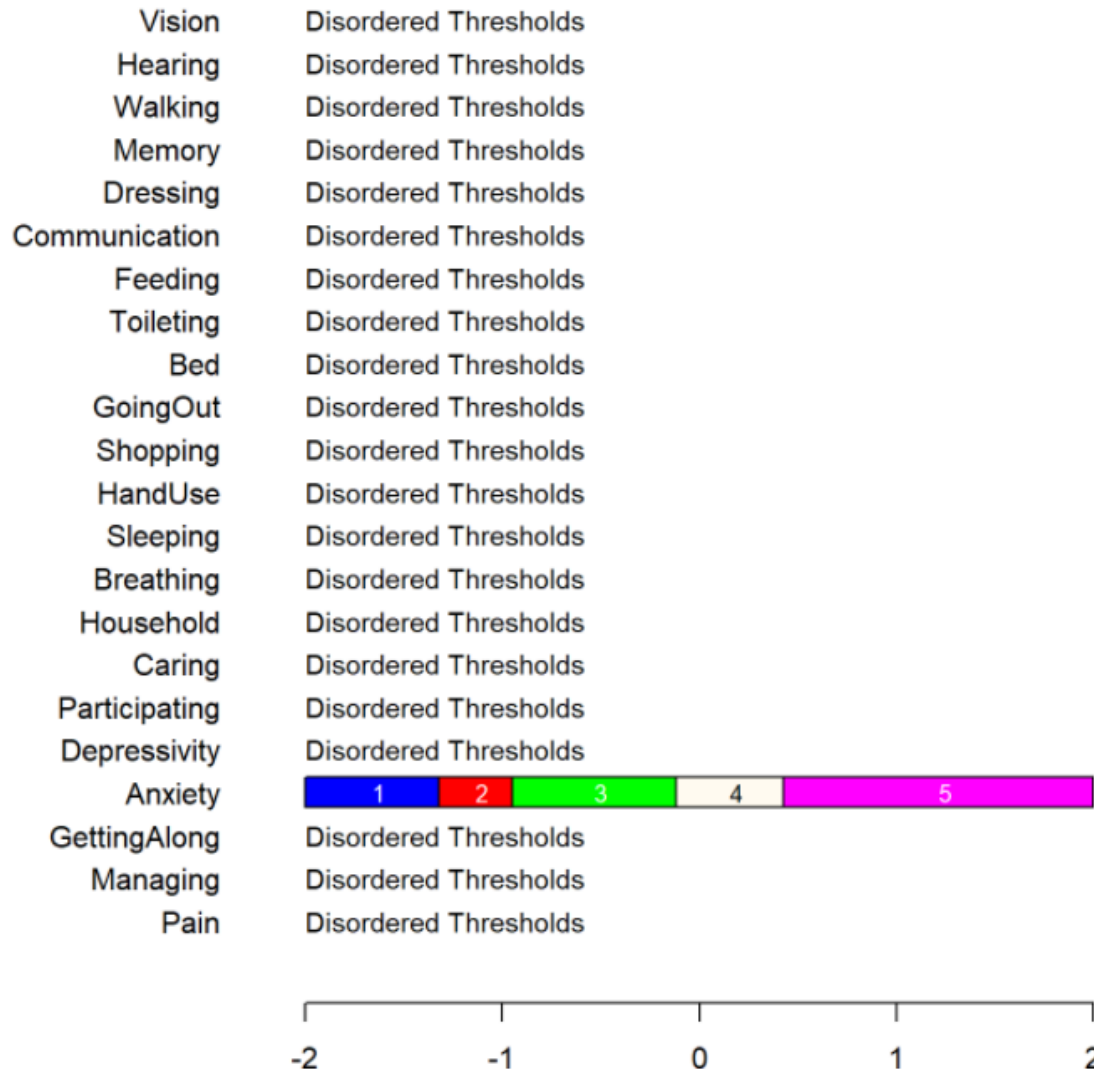
# Example for Ordered Thresholds

Item Threshold Map



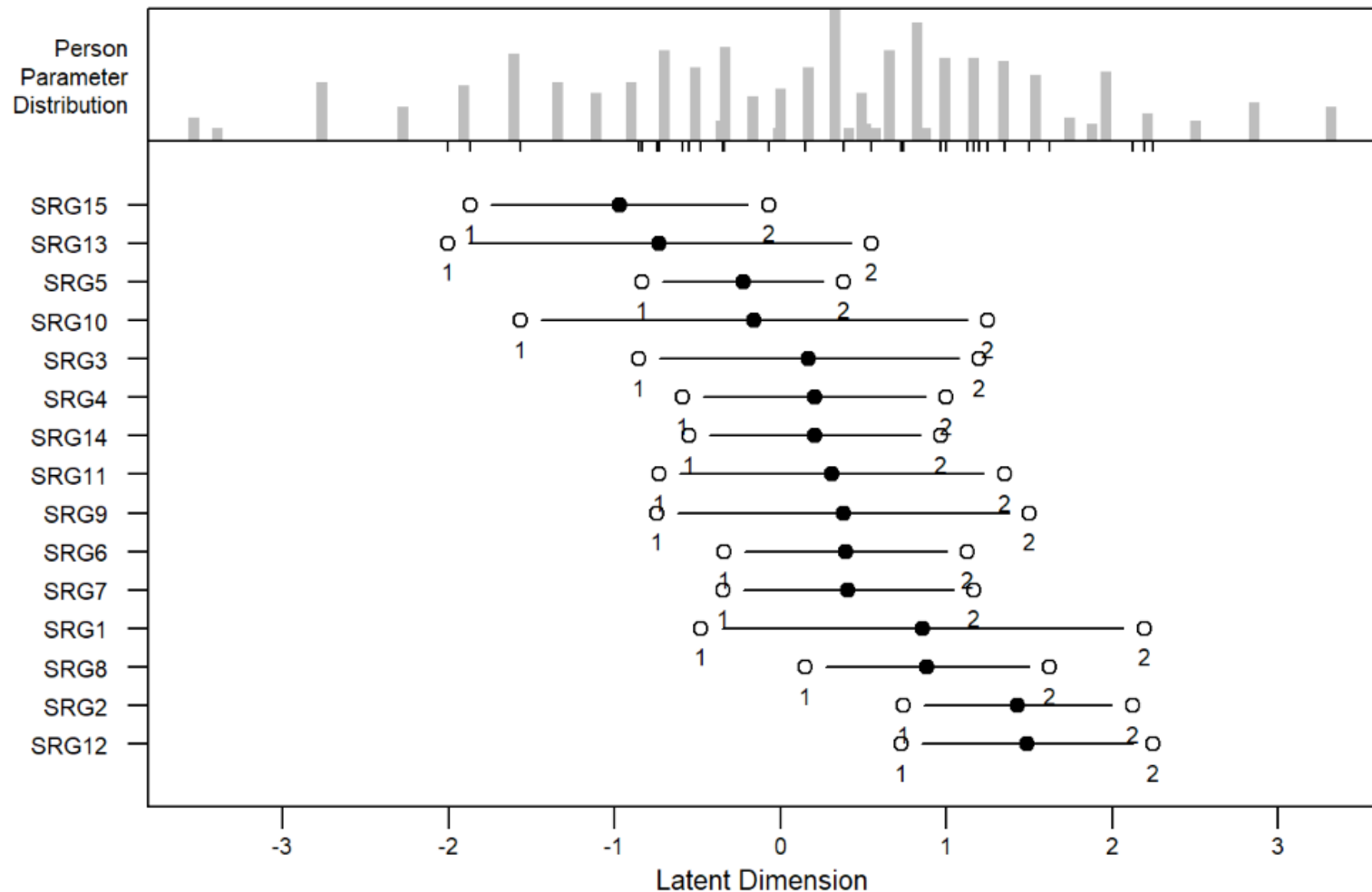
# Example for Disordered Thresholds

Item Threshold Map



# Example for Ordered Thresholds: Person Item Map

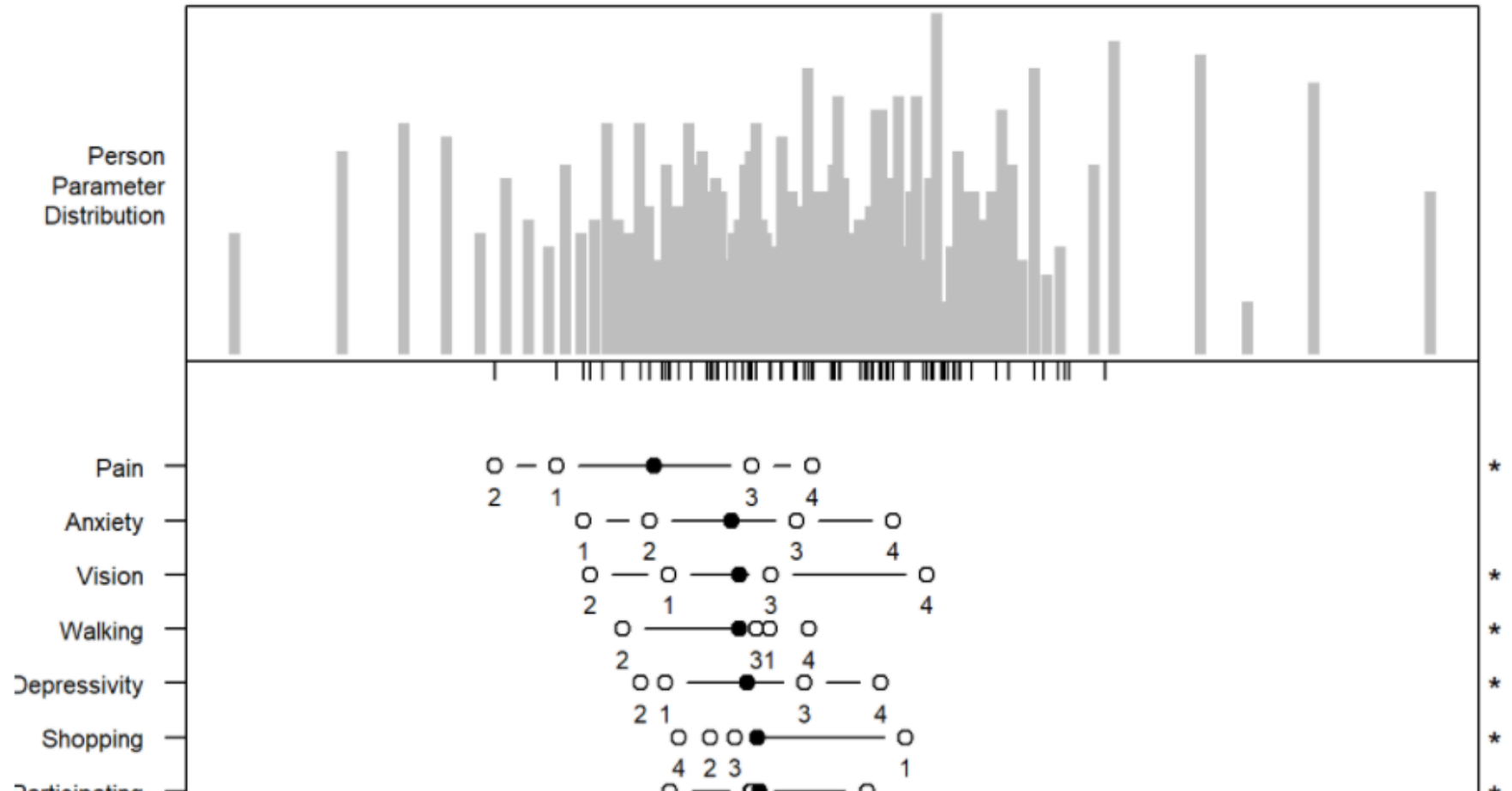
## SRG - short form



# Example for Disordered Thresholds

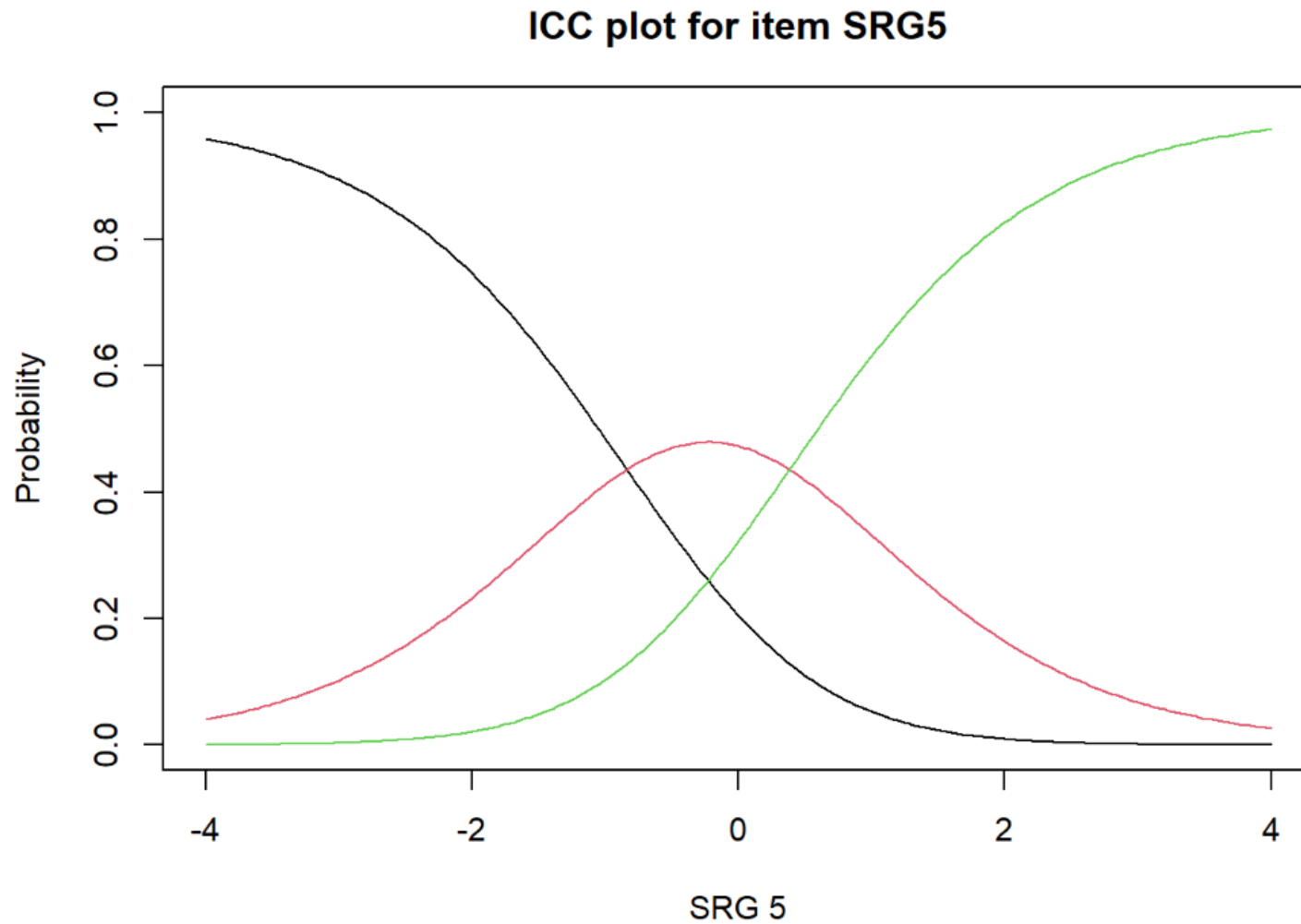
## Person Item Map

**MDS - capacity**



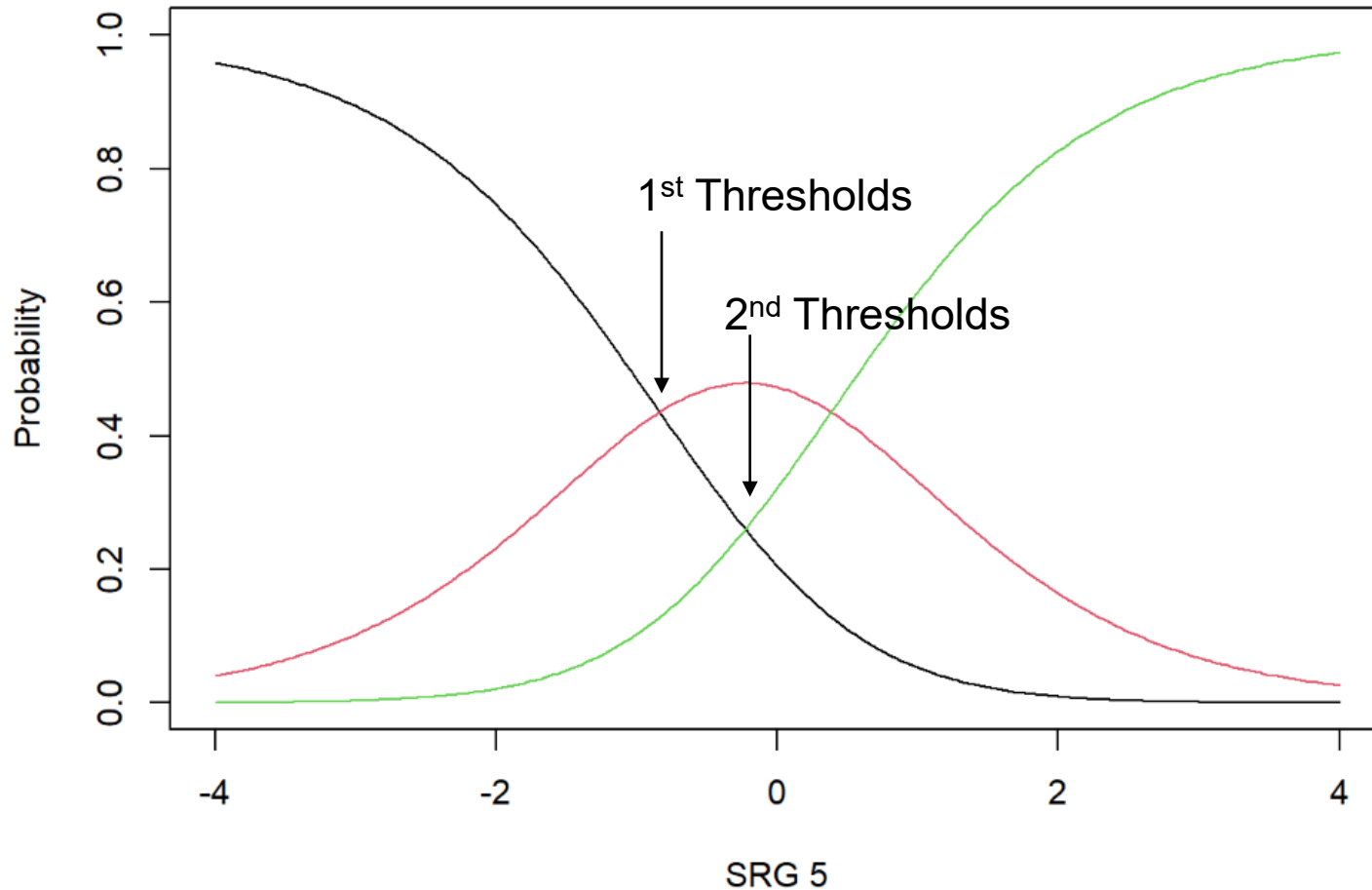


# Example for Ordered Thresholds



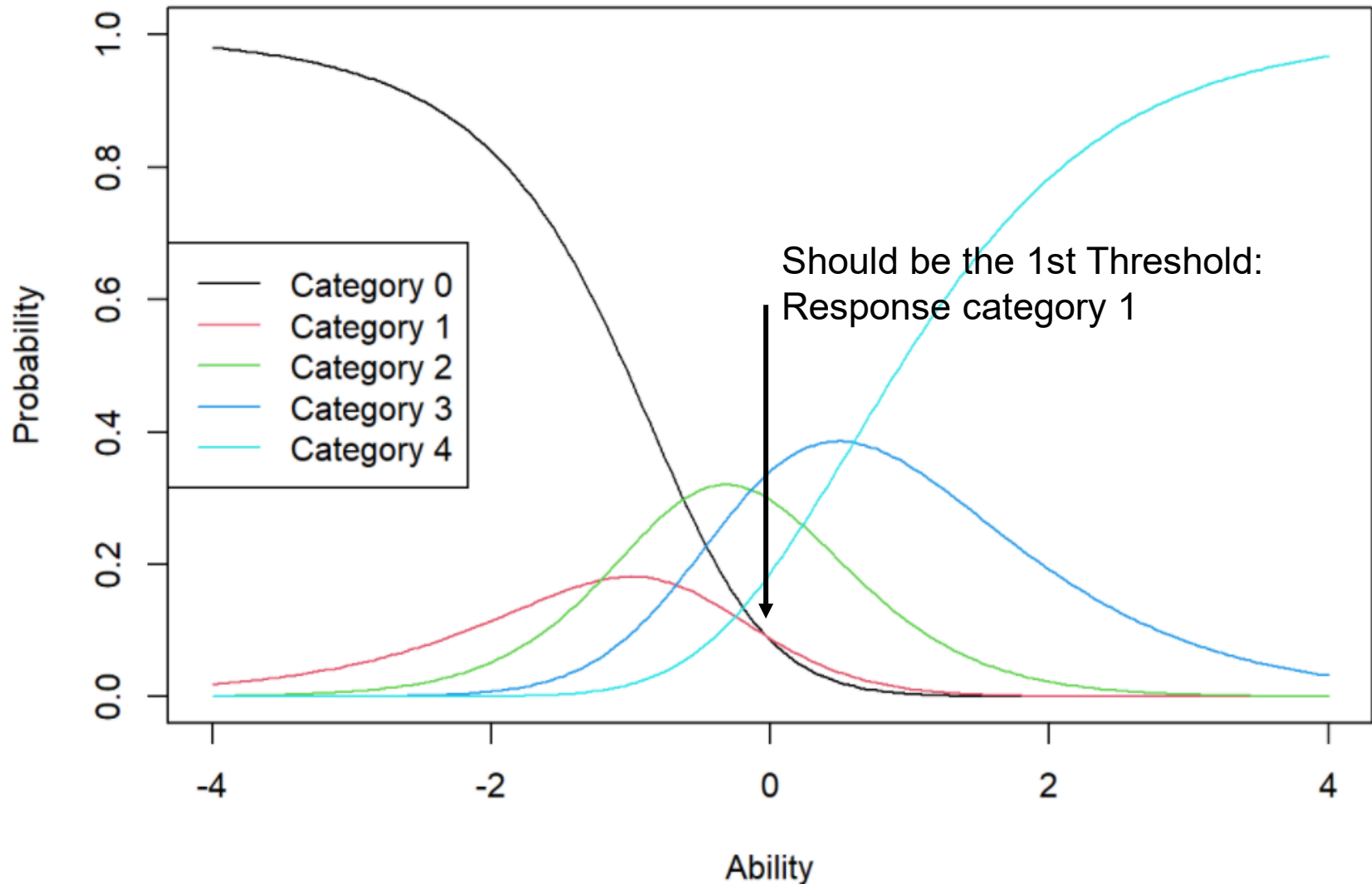
# Example for Ordered Thresholds

ICC plot for item SRG5



# Example for Disordered Thresholds

ICC plot for item Sleeping



# Solving Disordered Thresholds

Disordered response thresholds indicate that the model cannot distinguish between response categories as expected.

When the analysis output shows that thresholds are disordered the item should be recoded.

Example :

Item original coding: 01234

Output has the first and second threshold that are reversed.

Item could be recoded: 00123 or also 01123. The best coding strategy is found through «insightful» trial and error.

## Let's go to R-Studio

Open the R-Script MS5\_Rscript.r that is in the OLAT or the MS-Teams Course Materials.

# Exercise

The threshold diagnostics and item collapsing are now illustrated with an exercise on a scale with more issues.

Using the MDS capacity scale (description in the Sampling.html file) investigate step by step the item thresholds with the method(s) of your choice.

What do you notice?

Do the items work as expected?