**Additional explanation on response dependency**

The application of the Rasch model requires that responses to the items are statistically independent. This means that specific responses to the items on the first time of testing do not affect the responses on a later test administration.1 The RUMM2030 program can identify response dependency (i.e., when responses to items are dependent), and provide a correction factor to produce accurate reporting of change in measurement.2

To evaluate whether response dependency is present, we analyzed two sets of data from the same sample of participants: one set at time point 1, one set at time point 2. The items were then organized in two ways: a ‘stacked’ way and a ‘racked’ way. The ‘stacked’ way produces two observations per participant; the ‘racked’ way simulates a 56-item assessment (28 pre-treatment, 28 post-treatment scores). In short, with the ‘stacked’ way, change is revealed through person parameters; with the ‘racked’ way, change is revealed through item parameters. If there is no response dependency, the two analyses give equivalent and correct measures of change. If there is response dependency (e.g., scores at discharge are dependent on scores at admission), there is a difference between both analyses in terms of change in logits. The exact amount of under- or overestimation of change is given by the RUMM2030 program. Other methods of calculating response dependency have been reported in the literature.3,4

**References**

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