Revision of the Rush Video-Based Tic Rating Scale

Carolin Fremer[1], Rica Riechmann[1], Ewgeni Jakubovski[1], Jana Essing[1], Martina Haas[1], Christopher G. Goetz[2], Glenn T. Stebbins[2], Kirsten R. Müller-Vahl[1]

[1] Clinic of Psychiatry, Socialpsychiatry and Psychotherapy, Hannover Medical School, Germany, [2] Department of Neurological Sciences, Rush University, Chicago, Illinois, USA

I. Background:

For over 30 years now the Modified Scoring Method for the Rush Video Based Tic Rating Scale (MRVS)[1], is the only validated assessment instrument that does not rely on self-reported tic severity. The MRVS contains a protocol for assessing tics through a 10-min video recording consisting of a 5-min close-up (head and shoulders) and a 5-min full-frontal body recording. Tic assessment based on these video recordings includes the following criteria: number of motor and phonic tics, number of affected body areas, and tic severity. Finally, a sum score is computed. From our clinical perspective, we identified three modifiable <u>shortcomings of the MRVS</u>:

1. The protocol lacks detailed instructions for standardized recording procedures.

2. Second, a 10-min recording time complicates practical implementation in clinical routine work.

3. Compared to the Yale Global Tic Severity Scale (YGTSS), the current gold-standard for assessing tic severity, the MRVS assesses different tic phenomena and anchor values resulting in only medium to low correlations between both scales.

II. Methods:

Overall, 102 videos from 102 adult patients diagnosed with Tourette Syndrome (TS, n = 97) or persistent motor tic disorder (PMT, n = 5) were included. The following modifications were applied to the original protocol to improve its usability and increase correlation with the YGTSS:

1. Standardization of the recording protocol
   → Adjustment of the camera
   → Instructions for patients during the recording
   → Suggestions for room setting
2. Reduction of recording time
   → We reduced the recording time from 10 to 5 min using only the first video segment (full frontal body view) for further processing
   → We determined that 1-min segments - the actual parts used for the rating - were cut 60 s after the examiner left the room
3. Revision of the MRVS items and adaption to YGTSS
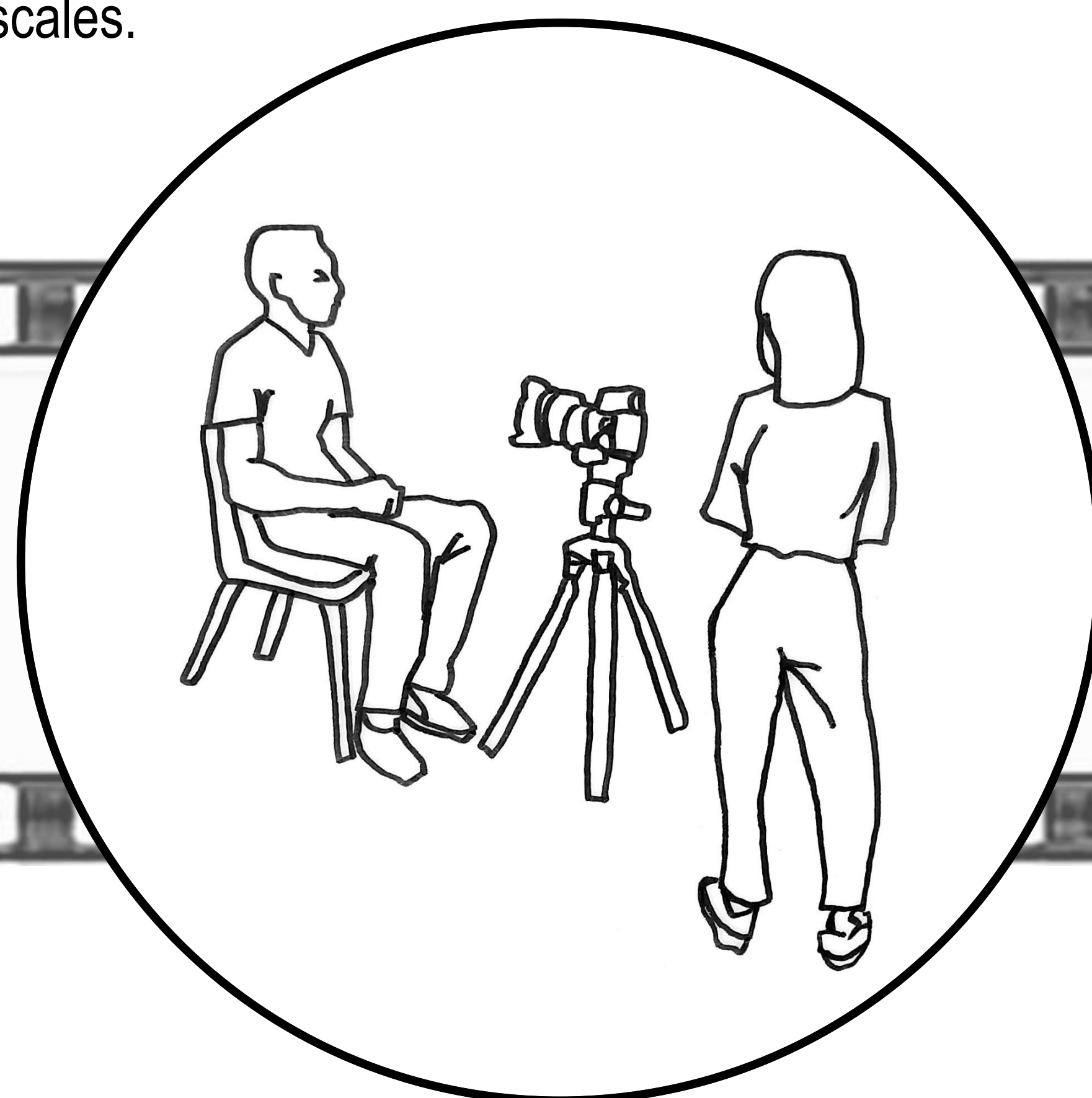
III. Results:

<u>Sample:</u>
Age M=36 years (SD=12.70, range: 18-73)
Sex   males=76%

→ The sample used in this study can be regarded as representative of a clinic sample in TS.

<u>Modifications of the MRVS:</u>

→ The reduction of recording time did not result in significant differences regarding the counts of motor and phonic tics in the 1-min video segment used for tic assessment.

→ Adaption of all items and anchor values as close as possible to the YGTSS, including:

• Readjustment of the "frequency" item's categories are now corresponding to the empirical distribution of tic frequencies as assessed in this study

• Replacement of the item "body areas" by the new item "number" of tics

• Split of the "severity of motor and phonic tics" item into two newly introduced items "intensity" and "complexity."

<u>Psychometric Properties:</u>

→ Acceptable interrater reliability for MRVS and MRVS-R
→ Good internal consistency
→ MRVS-R total score correlated notably higher with the YGTSS-TTS than the MRVS

IV. Conclusion:

We believe that our modifications of the MRVS further improved the instrument by making it more sensitive in assessing tic severity. Therefore, our revision moved the assessment instrument further toward precision and validity. A video-based assessment has several advantages that qualify the MRVS-R as an essential complementary tool alongside the YGTSS. In addition, through the objective observation of tics, the MRVS-R is an instrument to evaluate moment-to-moment tic fluctuations in intervention studies.

Thus, the MRVS-R can be considered a standardized and economical scale with several significant improvements compared to the MRVS and, in this form, might be an additional, valuable instrument for tic assessment[2].

References:
[1] Goetz CG, Pappert EJ, Louis ED, Raman R, Leurgans S. Advantages of a modified scoring method for the rush video-based tic rating scale. Mov Disord 1999;14:502–506.
[2] Riechmann R, Jakubovski E, Essing J, Haas M, Goetz CG, Stebbins GT, Müller-Vahl K. The rush video-based tic rating scale-revised: a practice-oriented revision. Mov Disord 2023; 10:802-810.