

UniODA vs. Eyeball Analysis: Comparing Repeated Ordinal Scores

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The Adverse Drug Reaction Probability Scale (APS) is an algorithm that is used to rate the probability that an adverse drug event is drug-induced. Prior research compared the reliability of APS ratings generated by 15 pairs of independent experts between baseline and training, versus between training and three-month follow-up.¹ Findings of eyeball comparison¹ of ranges of the intraclass correlation coefficient of reliability², versus findings obtained using UniODA^{3,4} to contrast the two testing periods, are compared.

The finding of eyeball analysis comparing the intraclass correlation coefficient of reliability for the 15 pairs of raters between the two time periods was summarized¹:

“The reproducibility was maintained on retesting...” (p. 243).

The nondirectional UniODA model comparing the intraclass correlation values between the two time periods was identified via the following UniODA^{3,4} and MegaODA⁵⁻⁷ software syntax:

```
OPEN iccr.dat;  
OUTPUT iccr.out;  
VARS time r;  
CLASS time;  
ATTRIBUTE r;  
LOO;  
MCARLO ITER 25000;  
GO;
```

The UniODA model was: if intraclass correlation coefficient of reliability ≤ 0.905 , then predict training-to-follow-up; otherwise predict baseline-to-training. The model was relatively strong ($ESS = 66.7$; $p < 0.0004$), and performance was stable in leave-one-out (LOO) validity analysis. The model correctly classified all baseline-to-training intraclass correlations, and 10 of 15 training-to-follow-up intraclass correlations.

Thus, a statistically- and ecologically-significant effect emerged: intra-rater reliability declined in the three months following the end of training.

References

¹Naranjo CA, Busto U, Sellers EM, Sandor P, Ruiz I, Roberts EA, Janecek E, Domecq C, Greenblatt DF (1981). A method for estimating the probability of adverse drug reactions. *Clinical Pharmacology and Therapeutics*, 30, 23-245. DOI: 10.1038/clpt.1981.154

²Strube MJ (2000). Reliability and generalizability theory. In: LG Grimm, PR Yarnold (Ed.'s), *Reading and understanding more multivariate statistics*. Washington, DC: APA Books (pp. 23-66).

³Yarnold PR, Soltysik RC (2005). *Optimal data analysis: A guidebook with software for Windows*. Washington, DC: APA Books.

⁴Yarnold PR, Soltysik RC (In Review). *Maximizing predictive accuracy*. Chicago, IL: ODA Books.

⁵Soltysik RC, Yarnold PR (2013). MegaODA large sample and BIG DATA time trials: Separating the chaff. *Optimal Data Analysis*, 2, 194-197. URL: <http://optimalprediction.com/files/pdf/V2A29.pdf>

⁶Soltysik RC, Yarnold PR (2013). MegaODA large sample and BIG DATA time trials: Harvesting the Wheat. *Optimal Data Analysis*, 2, 202-205. URL: <http://optimalprediction.com/files/pdf/V2A31.pdf>

⁷Yarnold PR, Soltysik RC (2013). MegaODA large sample and BIG DATA time trials: Maximum velocity analysis. *Optimal Data Analysis*, 2, 220-221. URL: <http://optimalprediction.com/files/pdf/V2A35.pdf>

Author Notes

The study analyzed de-individuated data and was exempt from Institutional Review Board review. No conflict of interest was reported.

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