CONCORDANCE CORRELATION COEFFICIENT FOR OVERDISPERSED COUNT DATA

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The concordance correlation coefficient has been defined as a specific intraclass correlation coefficient when subjects are considered as a random effect and observers as a fixed effect. Using this result, the concordance correlation coefficient was extended for measuring agreement between counts by means of the intraclass correlation coefficient derived from the Poisson-Normal generalized linear mixed model, where the link function is the logarithm, the variability between subjects is Normal distributed and the within-subject variation follows a Poisson distribution. However, it would be possible to find overdispersion when analyzing this kind of data. In this case, the assumption that within-subject variability is Poisson distributed would not hold, and the expression of the concordance correlation coefficient should be accordingly modified. In this work we show two alternative expressions of the concordance correlation coefficient for count data to account for overdispersion. In the first solution the within-subject variance is expressed as a product of the scale parameter and the mean, whereas in the second the assumption about the within-subject distribution is changed from Poisson to Negative Binomial. The three concordance correlation coefficient expressions are estimated and compared in a data example set where the counts of $CD34^{+}$ cells are obtained using different techniques.