# FACTOR AND DISCRIMINANT ANALYSIS FOR REVEALING OF INFORMATIVE CHARACTERISTICS OF RATS BEHAVIOR WITH DIFFERENT BEHAVIORAL MODELS

N.P. Alexeyeva, I.V. Belozertseva, E.V. Verbitskaya[†]

*State Pavlov Medical University, St.-Petersburg, Russia*

[†] E-mail: *verboel@spmu.rssi.ru*

The aim of the study was to explore approach for the analysis of ethological data using factor and discriminant analysis for revealing differences in the behavioral strategies of laboratory rats. We analyzed the behavior of the depressive (DG, N=7) vs. control (CG, N=9) male Wistar rats. The sequence and duration of 38 behavioral elements were recorded during first 500 s of resident-intruder interaction. The elements were combined into behavioral categories: aggression, defense, sociability, ambulation, static and motor. We investigated the cumulative duration dynamic of behavioral categories and have found out the greatest distinction between the specified groups in the beginning of the supervision period. Variables in the factor analysis were the number (N) and average duration (AD) of behavioral categories in the first 100 s. The first factor meant the vital energy (53.4% variation), the second - communicative activity intensity decrease (16.5%). Variation of the second factor in the DG is more than in the CG. 95%CI ellipses were not blocked. The quantities of motor and defense categories were sufficient for realization of discriminant analysis. Percent correct is 100%, $p<0.0001$. Discriminant functions were based on the N of motor and defense categories and on the N and AD of the behavioral element "sitting-sniffing". The bidimension diagram of specified discriminant functions along with diagram of factors can be used for a visual estimation of classification of new cases and model quality.