A Novel Method for the Quantitative Analysis of Behavior

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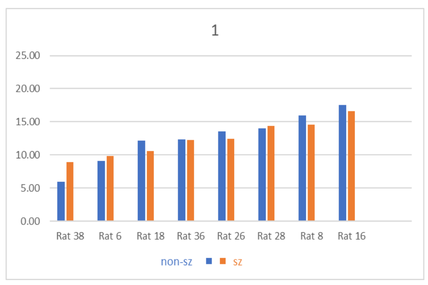
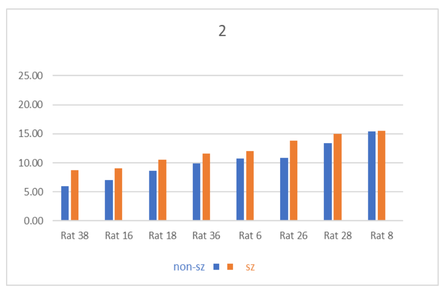
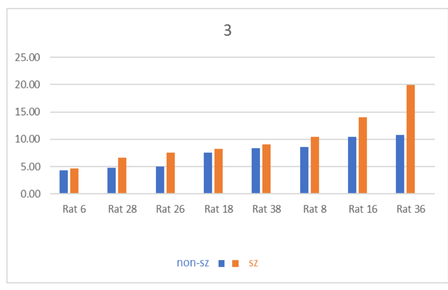
Abstract:

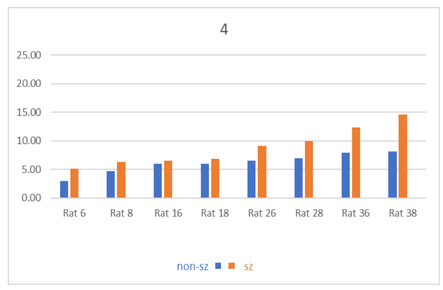
A novel data analysis method was developed and conducted on data collected in an earlier behavioral experiment. The data were re-analyzed in the present study by compiling the data into paired serial rank order (PSRO). Thus, in the first session, a pair of animals, a control animal and a experimental animal, were selected because both had the lowest number of errors in their group for that session. Then, the next pair of animals with the second best performance were compared, then the third best pair were compared, etc. Individual animals in the experimental group almost always performed worse when compared to a PSRO control animal, even though the rank order of individual animals often changed.

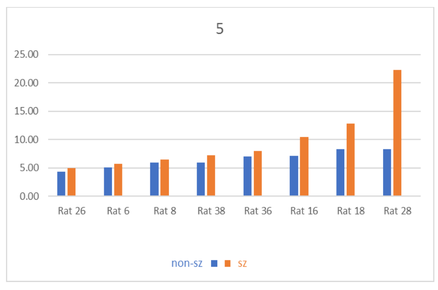
PSRO analysis was conducted for every one of 12 training sessions.

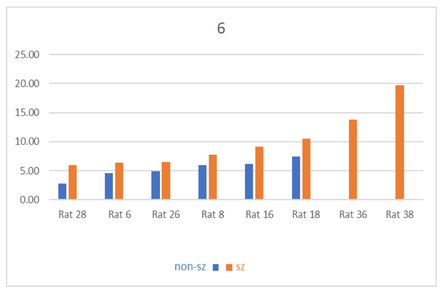


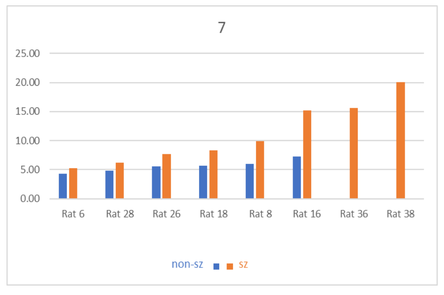


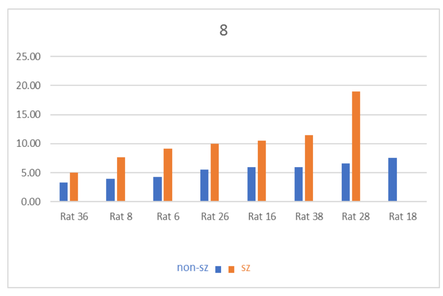


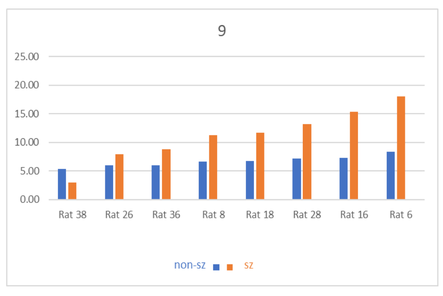


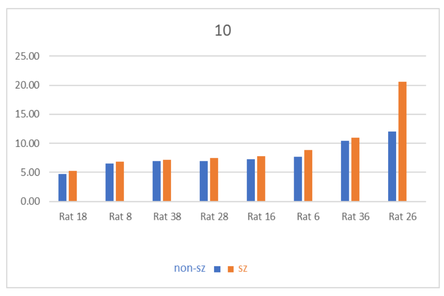


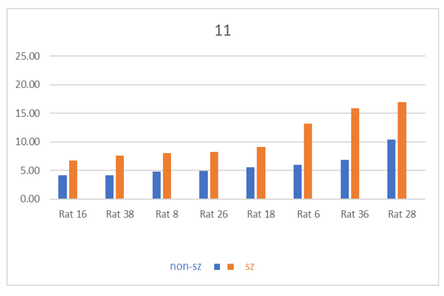


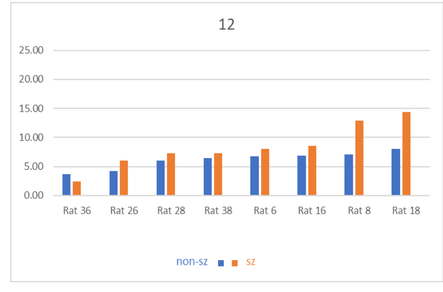






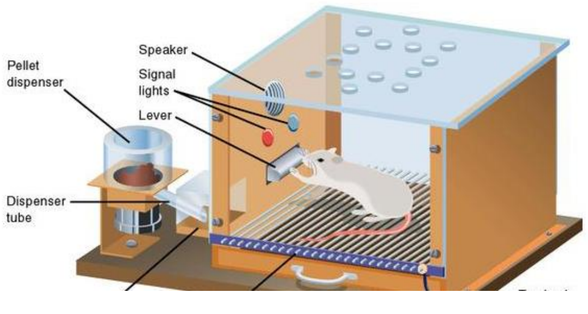






The resulting PSRO graphs show much clearer differences visually than group averaged data that are typically analyzed.

Auditory Quality Discrimination



We ran into a strange phenomenon observing the graphs; Interestingly, the rats who had induced seizures from a young age seem to always respond more frequently than those who did not have seizures at a young age. Even though the seizure rats are fully recovered, they still seem to perform below the non-seizure rats responding more frequently. The non-seizure rats seem to almost always be a step ahead of the seizure rats performing the equal tasks. We are still in the process of trying to understand why this strange phenomenon occurs between these rats.

Plus Maze