**S1 Table. Description of the main phases of the experiment.**

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| **Phase** | **Procedure**  | **Measurement** | **Outcome measures** |
| **Arrival** | Sorting into 19 cages of 4 non-littermates | None  | None |
| **Play-in-Pairs Test 1(PIP 1)** | Three play sessions per rat, each with a different cage mate | Individual playfulness levels and classification of rats into playfulness categories: H = high, I = intermediate, L = low | Pinning and Attack to Nape |
| **Resorting** | Resorting into 25 cages of 3 unfamiliar non-littermates; 5 treatment groups (HHH, HII, III, LII, LLL) based on playfulness classification in PIP 1 | None  | None |
| **Three Home Cage Observations (Weeks 8, 10, 12 of age)**  | Continuous observation of play behaviour in the home cage during the second quarter of each of the first four hours of the dark phase | Social play behaviour | Pinning and Attack to Nape |
| **Play-in-Pairs Test 2(PIP 2)** | Two play sessions per rat, each with a different cage mate | Consistency of playfulness between PIP 1 and PIP 2, and comparison with home cage play levels | Pinning and Attack to Nape |
| **Social Preference Test** | I rats of the heterogeneous treatment groups were given a social preference test | Preference for dissimilar (H or L) or similar (I) cage mate  | Time spent in proximity of either the dissimilar or the similar cage mate |