

Space Fortress: stats on HD and SHAM groups

Learning Rates on Total and Sub Scores for HD and SHAM groups

Akaike's information Criterion (AIC)

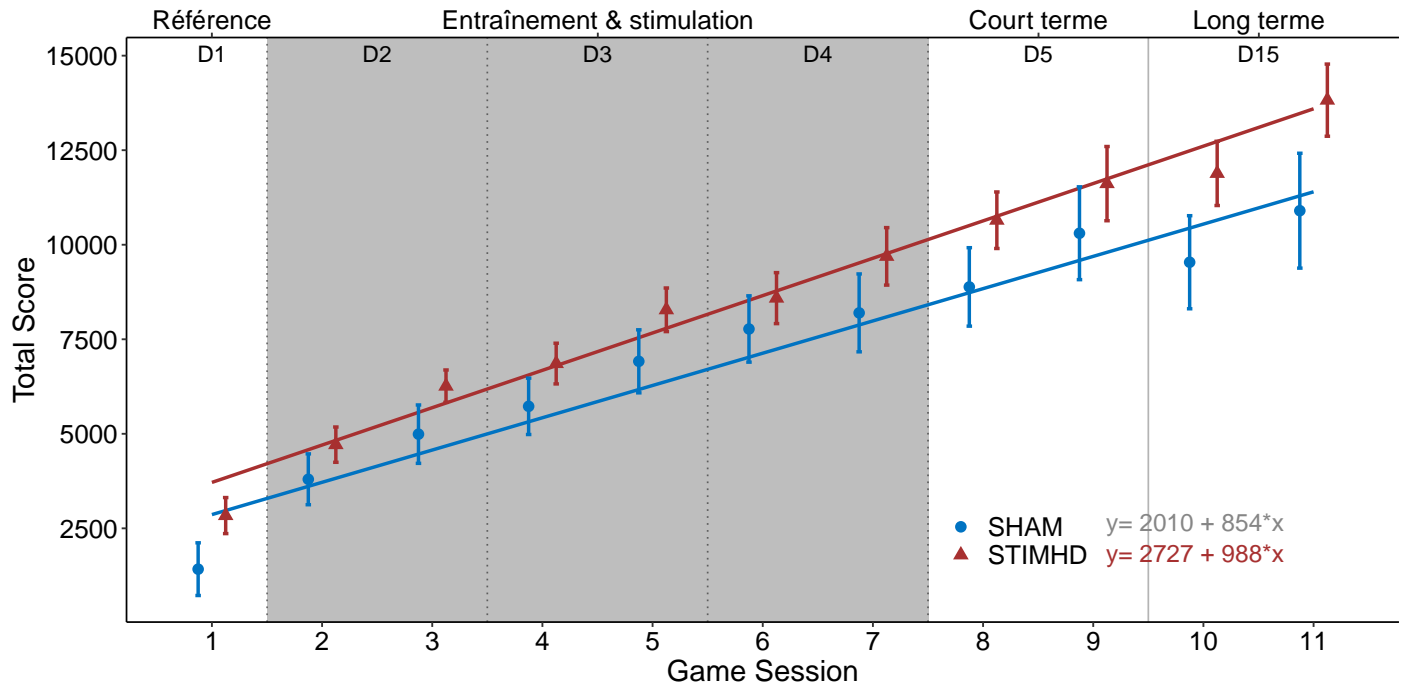
Table of Akaike's Information Criterion for each Sub-Score with a natural logarithme model $\text{lm}(\text{Score} \sim \ln(\text{Days}))$ or a linear model $\text{lm}(\text{Score} \sim \text{Days})$. Select the smallest.

| | Total | Fortress | Flight | Bonus | Mine |
|--------|----------|----------|----------|----------|----------|
| Ln | 8517.514 | 8321.206 | 7121.945 | 7127.336 | 7027.817 |
| Linear | 8515.631 | 8298.054 | 7134.132 | 7136.437 | 7060.661 |

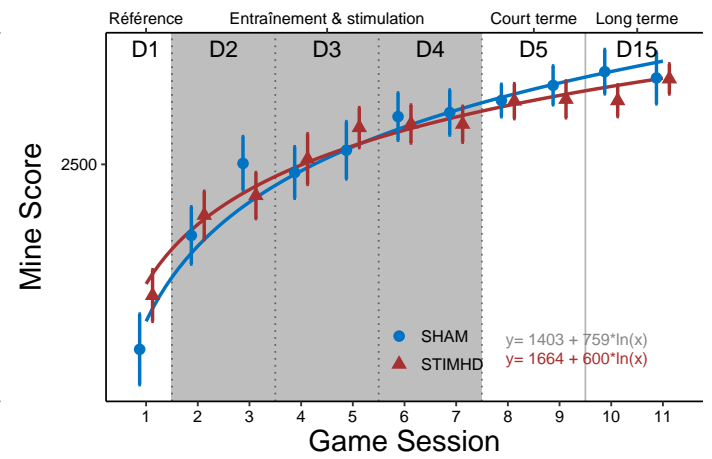
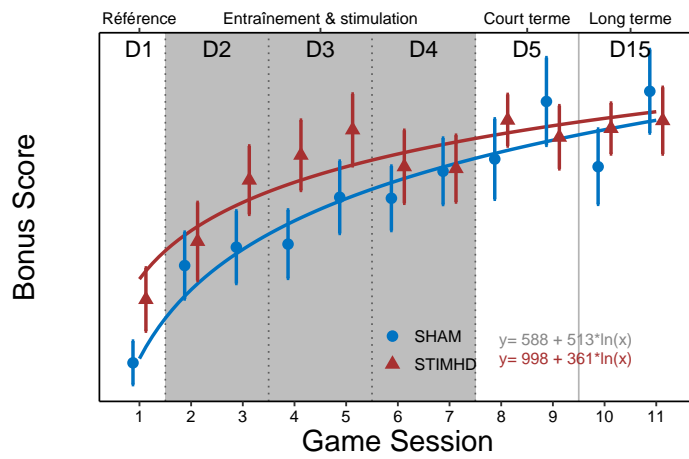
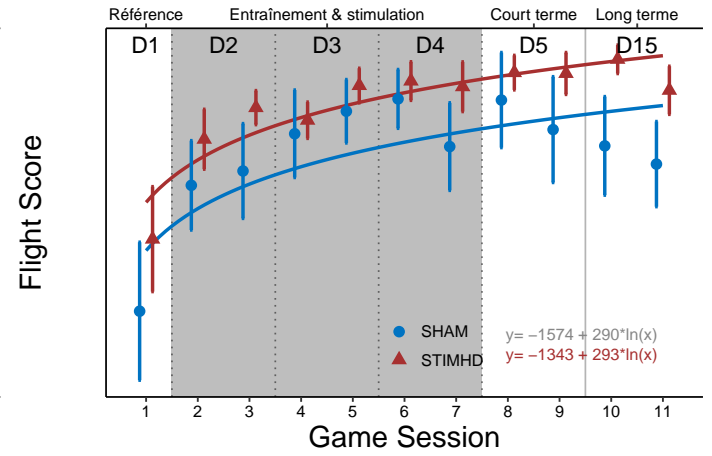
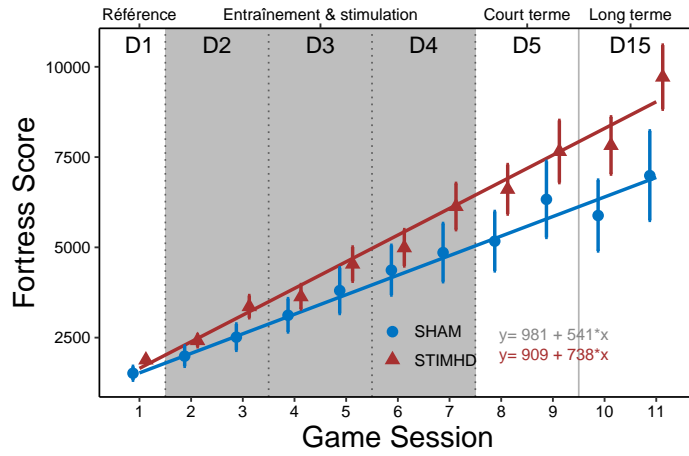
We choose a linear model for the Total Score as well as for the Fortres Score. For the remaining sub-scores, we can select the natural logarithme model.

Regressions Figures (linear or ln)

Total Score (linear)

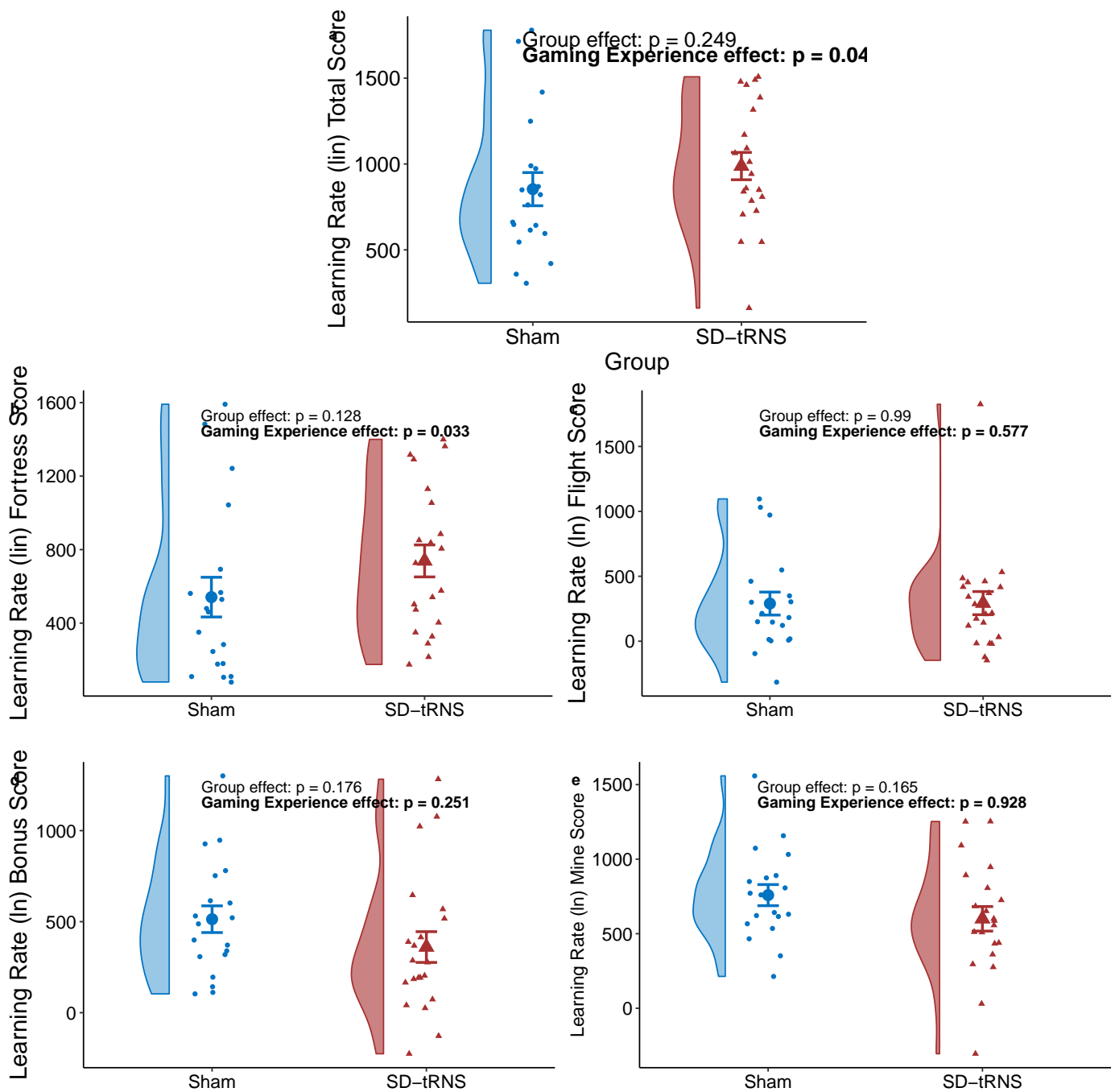


Sub-Scores : Fortress (linear), Flight (ln), Bonus (ln), Mine (ln)



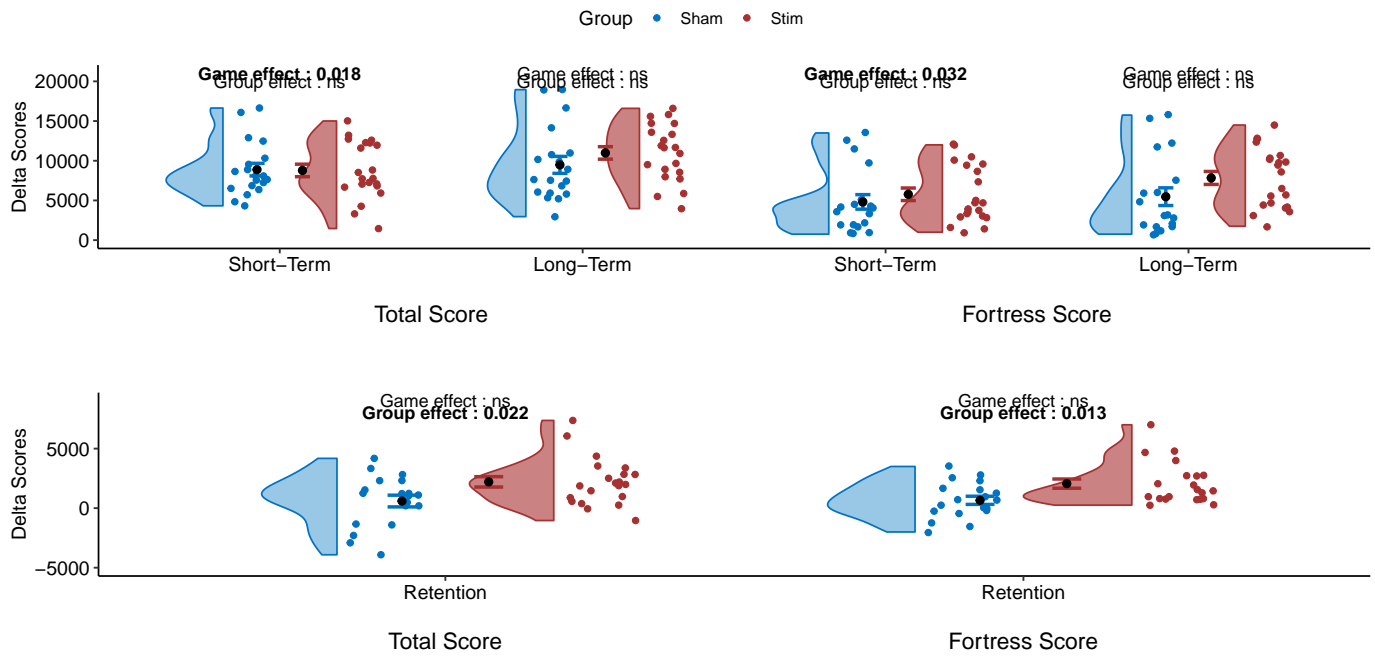
ANCOVA on Learning Rate by Group with Game Level as covariable

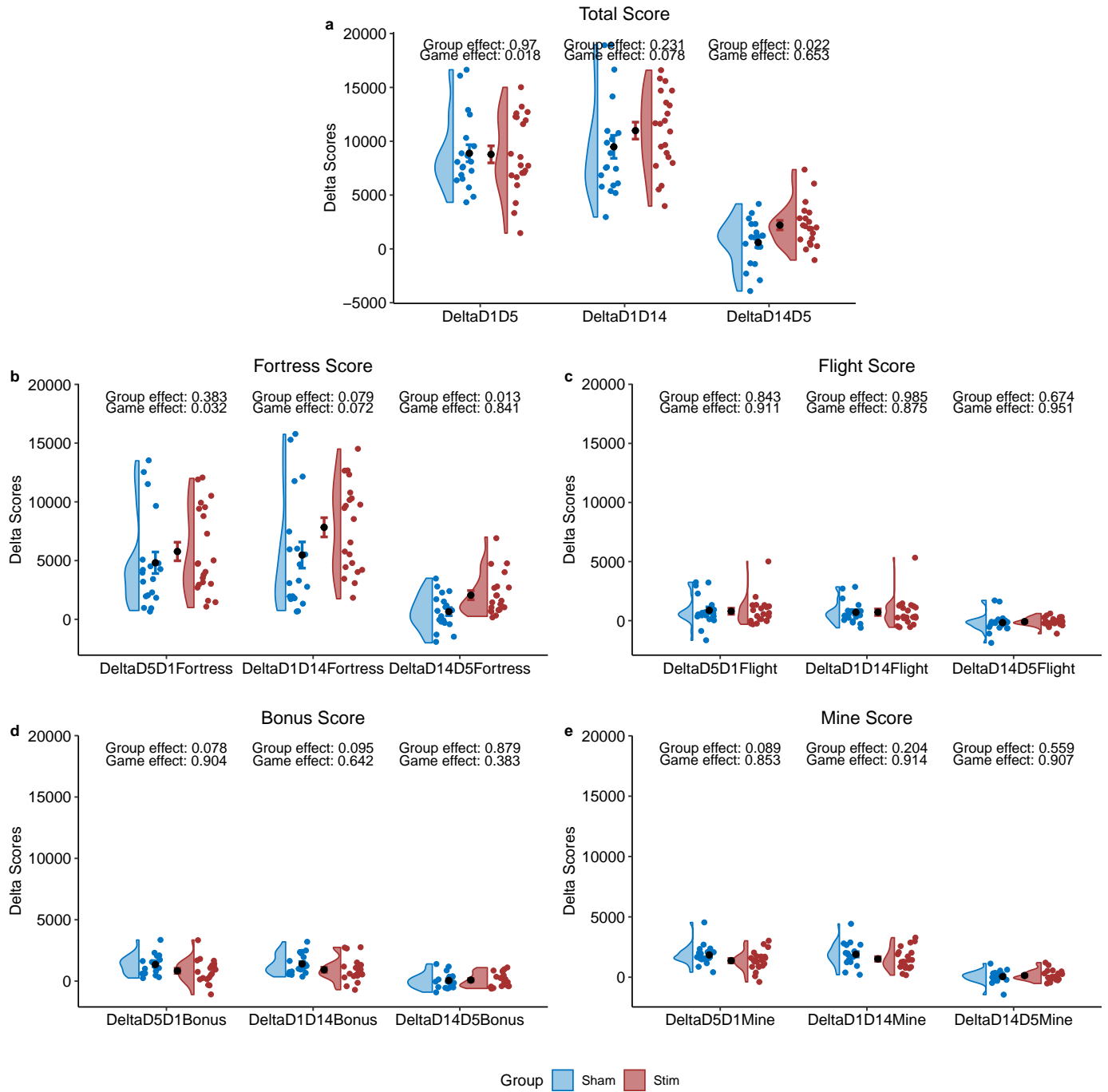
Total Score : Linear learning Rate



Sub-Scores

ANCOVA on Delta (Sub-Scores and Total Score)

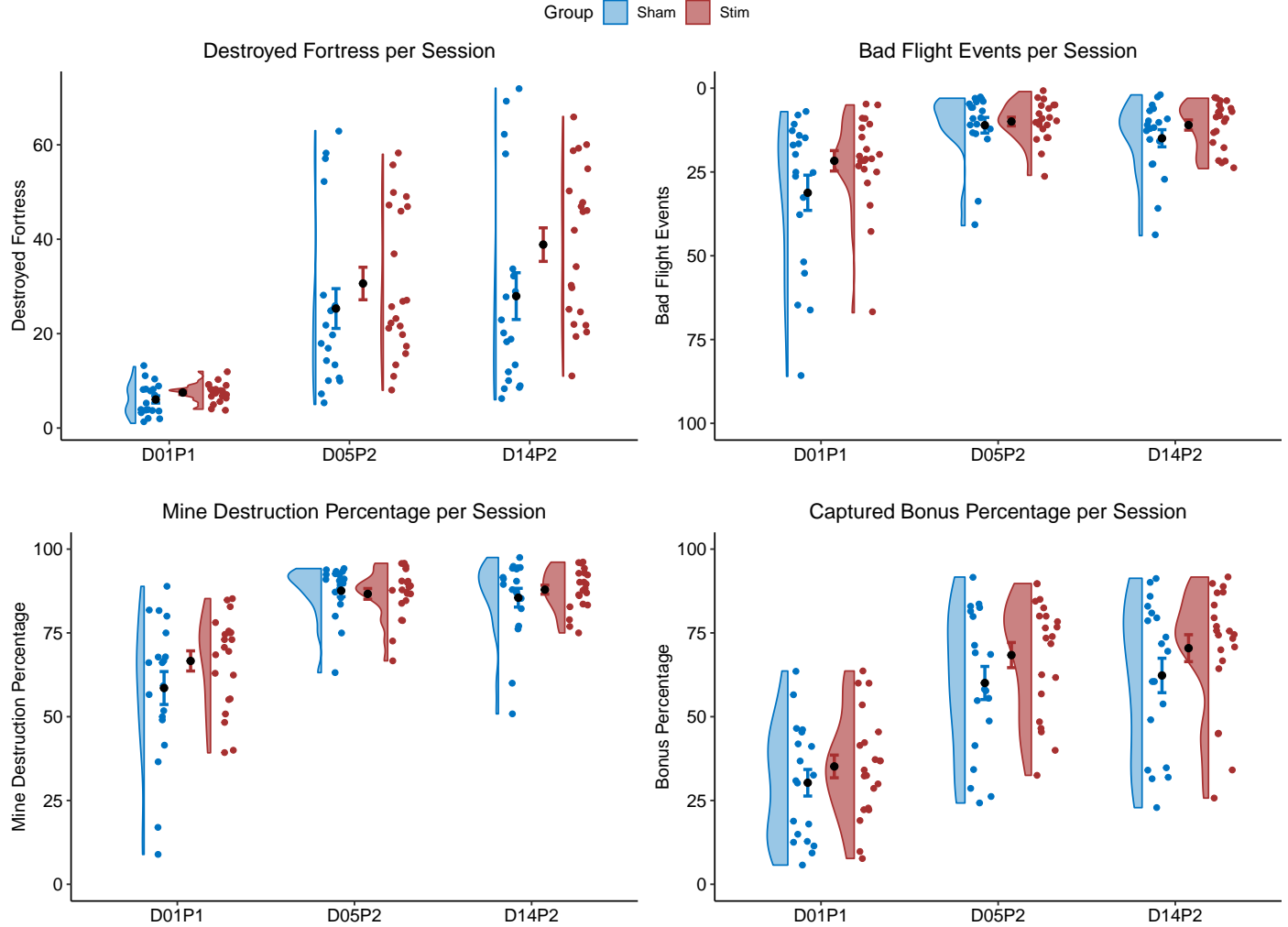




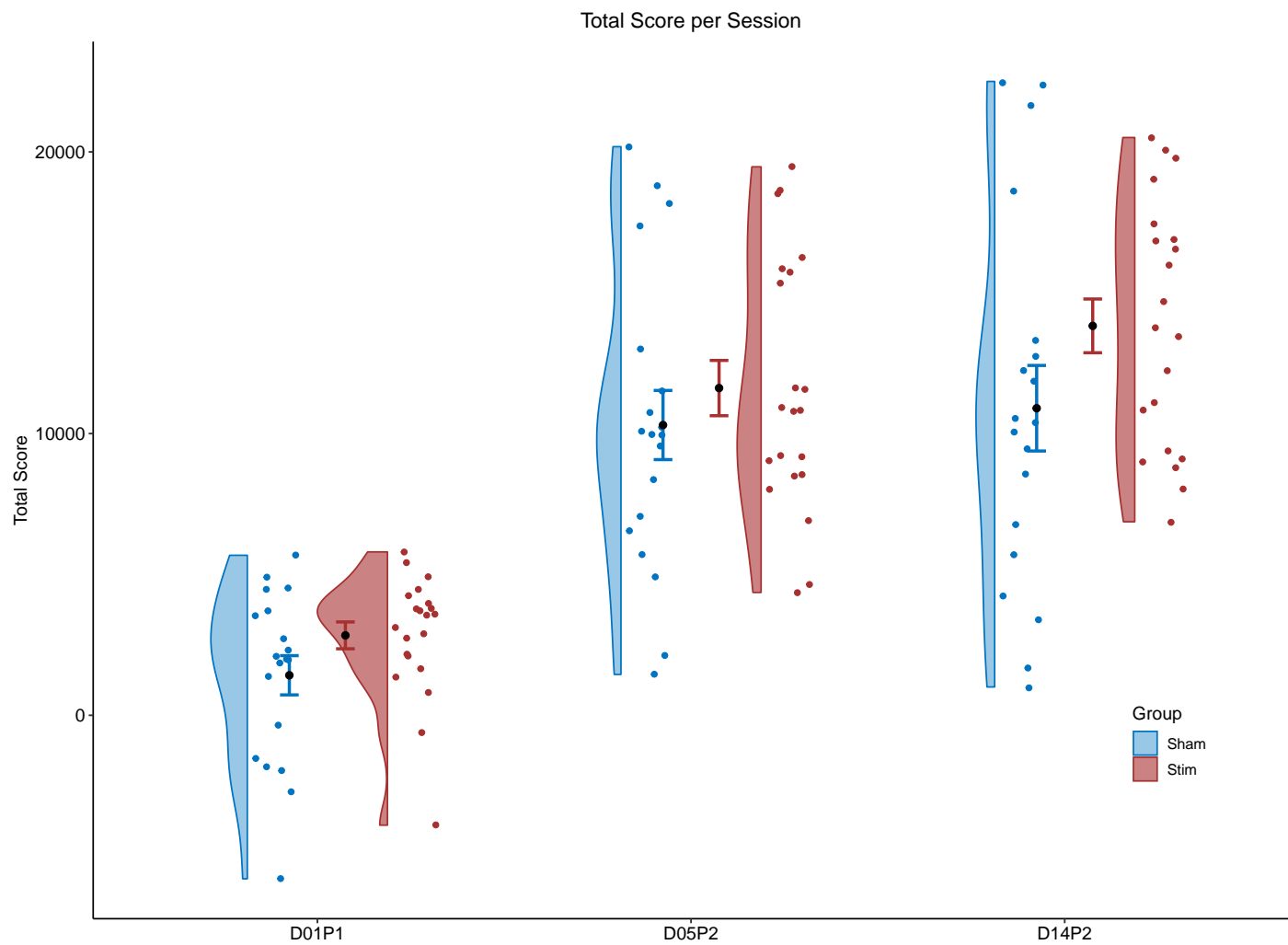
| Delta | Effect | TotalScore | Fortress | Flight | Bonus | Mine |
|-------|--------|--------------|--------------|--------|-------|-------|
| ST | Group | 0.970 | 0.383 | 0.843 | 0.078 | 0.089 |
| | Game | 0.018 | 0.032 | 0.911 | 0.904 | 0.853 |
| LT | Group | 0.231 | 0.079 | 0.985 | 0.095 | 0.204 |
| | Game | 0.078 | 0.072 | 0.875 | 0.642 | 0.914 |
| RT | Group | 0.022 | 0.013 | 0.674 | 0.879 | 0.559 |
| | Game | 0.653 | 0.841 | 0.951 | 0.383 | 0.907 |
| RTP1 | Group | 0.067 | 0.101 | | | |
| | Game | 0.069 | 0.279 | | | |

Other metrics suggestions for the Sub-Scores

In order to evaluate the effects of each sub-score in the form of metrics representing the participants' gaming strategies, we suggest: - For the Fortress Score : the total of destroyed fortress - For the Flight Score : the total of “bad” flight events (border collision, fortress collision, ship damage) - For the Bonus Score : the percentage of captured bonuses during the game - For the Mine Score : the percentage of destroyed mines during the game

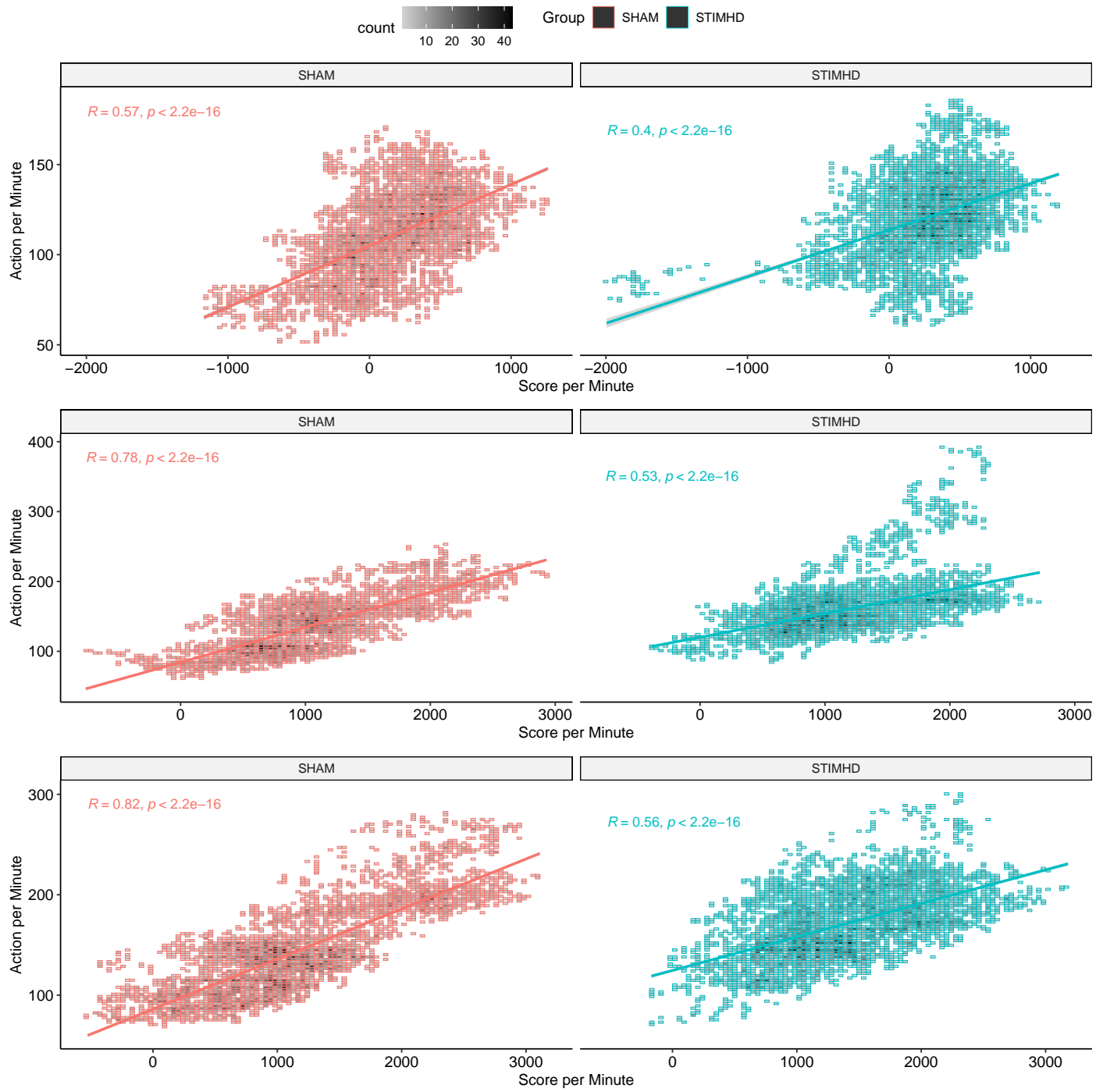


For information : the total score per group on D1, D5 and D14:



APM and SCM

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| X | Effect | D01P1 | D05P2 | D14P2 |
|-----|--------|-------|--------------|--------------|
| APM | Group | 0.099 | 0.043 | 0.018 |
| | Game | 0.197 | 0.248 | 0.278 |
| ScM | Group | 0.130 | 0.413 | 0.117 |
| | Game | 0.271 | 0.020 | 0.047 |