Study of cognitive behavior by time of day

Background
- Based on personal preferences and schedules, Memorado users work out at different times throughout the day.
- Taking into account human circadian rhythms, cognitive performance has proven to reach its highest levels at a high core body temperature (CBT) [1]
- This analysis will also examine whether different types of tasks show different patterns throughout the day, as has been shown in previous studies [2].
- This analysis aims at finding out when users are most inclined to play and compare these results to the users’ performance.
- Relating the time of day to a user’s performance is a further step in personalizing the training program
- It will be examined if different types of tasks show different patterns of performance and preference throughout the day.
- This analysis can also offer valuable information for employers who gain knowledge on their employees’ most productive time of day.

Methods
- Participants chosen for this analysis are aged 18 and older.
- Only participants from Germany, Austria and Switzerland were chosen due to time zone differences in other countries.
- A variety of 20 exercises were chosen to account for all areas of brain training.

Results:

Most popular time of day

- Maximum difference between 8 a.m. and 8 p.m. is 2.3% (concentration)
- Two notable peaks around 9 a.m. and 4 p.m.

Performance time of day

Summary

When are the games played the most?
- Concentration and logic games peak in the early morning (between 8 and 10 a.m.). The have a second, slightly smaller peak in the afternoon (2 – 5 p.m.).
- The popularity of games training speed, memory and reaction increases through the day, peaking in the afternoon (3 – 7 p.m.)

When do users perform best?
- Users playing speed and reaction games achieve higher scores in the morning. Scores decrease during the day and rise again in the late evening.
- Memory games achieve the highest scores in the late evening.
- Users training concentration and logic achieve mostly stable scores throughout the day, have a low point in the evening, but scores peak in the late evening.

Discussion

There are a few aspects that can be examined in a further study. Do the popularity or game scores differ between the various age groups or between genders?

Further studies should also examine at which time of day a user shows the most improvement and whether these improvements also occur with untrained tasks.

References