

Perception Test: Comparing Calendar Styles

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LTAT.02.024: Artificial and Natural Intelligence

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07.01.2023

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Perception Test: Comparing Calendar Styles

This research delves into the intricacies of calendar perception by comparing reactions and recall in two distinct layouts—Google Calendar and Diary. Participants engage in a perception test where specific day-hour combinations are highlighted, and their task involves recalling this information through text input. The experiment utilises a strategic sampling approach, presenting a subset of day-hour combinations to maintain experimental integrity. Critical times, specifically 8, 12, 18, and 20, are explored, hypothesising that hours 12 and 18 are faster in diary-style layout and hours 8 and 20 faster in Google Calendar layout. The procedure consists of 49-item trials for each layout, alternating between them to ensure comprehensive insights. The experiment's design allows for an efficient yet thorough investigation, anticipating approximately 30 minutes per participant. Privacy is prioritised, with data stored securely and anonymity maintained. Results are expected to contribute significant findings regarding reaction times and accuracy differences between the two calendar layouts, offering insights into the cognitive aspects of time perception. This study not only adds depth to the understanding of calendar styles but also lays the groundwork for potential applications in designing user-friendly interfaces and effective time management tools.

Overview of the Perception Test: Comparing Calendar Styles

The following overview of the whole perception test was taken straight out of the test and this is what every participant saw before starting to complete the test:

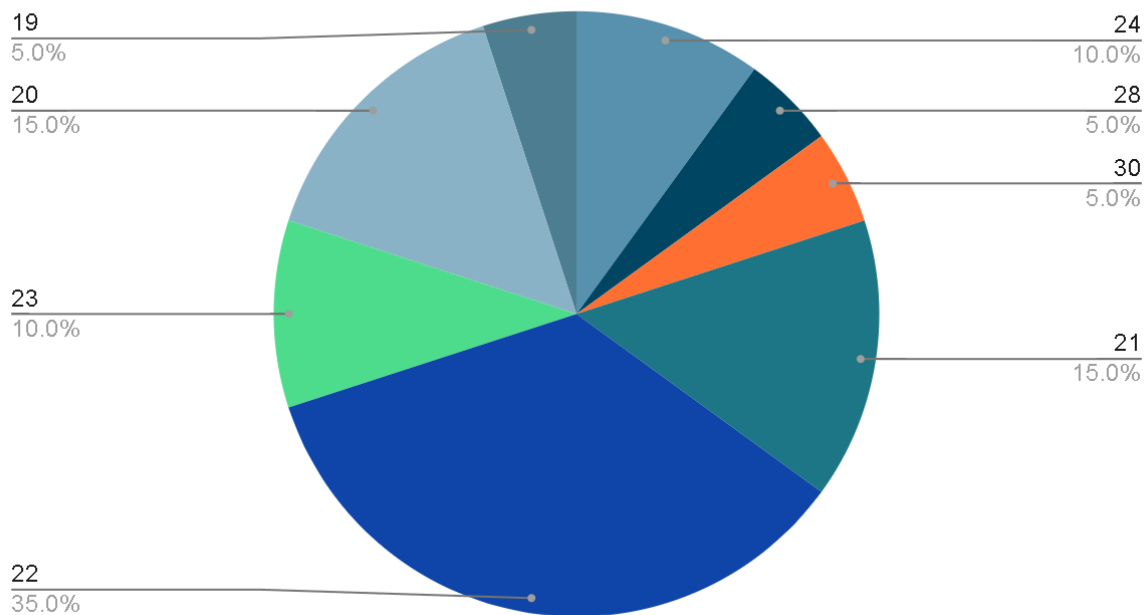
Welcome to our Perception Test on different calendar layouts! In this study, we aim to understand how people perceive and recall specific day-hour combinations in two distinct calendar styles. Task Details: You will be presented with cells highlighting specific day-hour combinations. Your task will involve recalling the highlighted information by typing the day and time. Why Participate? Your participation will contribute valuable insights to our research on calendar perception. Procedure: Each trial will consist of 49 items. The experiment will be conducted twice, alternating between Google Calendar and Diary layouts. Expect the entire session to take approximately 30 minutes, including brief breaks. Your Privacy Matters: Your responses will remain anonymous. Data is stored securely and can only be personalised by you. We do not collect or store IP addresses. Your Rights: You have the right to stop participating at any time without consequences. Consent: By completing the questionnaire, you provide consent to participate. Thank you for contributing to our research on calendar perception! If you have any questions, please contact us at juhanjoh@ut.ee, or luka.namoradze@ut.ee

Methods

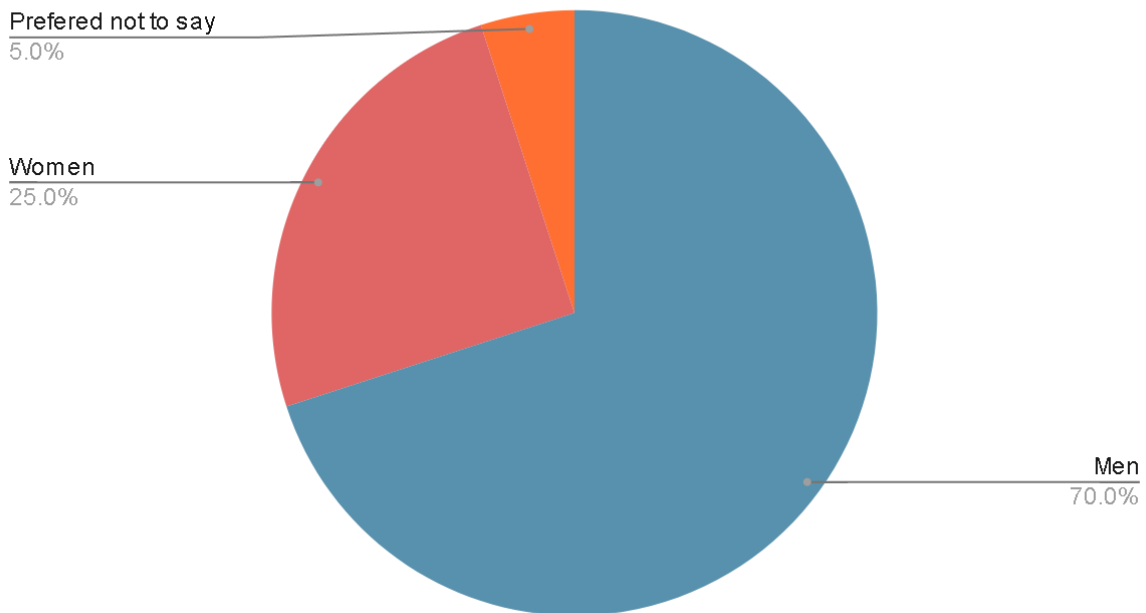
Participants:

A total of 20 participants were recruited for the perception test experiment. Participants were recruited by the experimenters. All participants provided informed consent before participating in the study. The charts of the participant's age and sex are provided down below as two charts.

Age of the participants



Participants sex



Procedure:

Participants engaged in a perception test designed to compare reactions and recall in two distinct calendar layouts—Google Calendar and Diary. Each participant completed a series of trials, with the task involving the recall of specific day-hour combinations highlighted in different colours. The variations in the task included recalling by typing the day of the week and the time.

Stimuli:

To prevent potential biases, a strategic sampling approach was employed. Instead of presenting all possible day-hour combinations, a subset was chosen, focusing on critical times, i.e., 8, 12, 18, and 20. Bold and non-bold formats were used to hypothesise differential performance in Diary and Google Calendar styles. Each trial consisted of 49 items, including crucial times and random hours to maintain experimental integrity.

Design:

The experiment followed a within-subjects design, with participants alternating between Google Calendar and Diary layouts across trials. This design choice aimed to capture comprehensive insights into potential differences in reaction times and accuracy between the two calendar styles. The following examples show the example of the empty Google and diary-type calendar:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
8	8	8	8	8	8	8
9	9	9	9	9	9	9
10	10	10	10	10	10	10
11	11	11	11	11	11	11
12	12	12	12	12	12	12
13	13	13	13	13	13	13
14	14	14	14	14	14	14
15	15	15	15	15	15	15
16	16	16	16	16	16	16
17	17	17	17	17	17	17
18	18	18	18	18	18	18
19	19	19	19	19	19	19
20	20	20	20	20	20	20

MONDAY	MORNING	AFTERNOON	EVENING	THURSDAY	MORNING	AFTERNOON	EVENING
		12	18			12	18
		13	19			13	19
	8	14	20		8	14	20
	9	15			9	15	
TUESDAY	10	16		FRIDAY	10	16	
	11	17			11	17	
WEDNESDAY	MORNING	AFTERNOON	EVENING	SATURDAY	MORNING	AFTERNOON	EVENING
		12	18			12	18
		13	19			13	19
	8	14	20		8	14	20
	9	15			9	15	
	10	16		SUNDAY	10	16	
	11	17			11	17	

Data Collection and Analysis:

Participants' responses were collected through the PsychoPy. Reaction times and accuracy scores were recorded for each trial. The data were analysed using Python (libraries: SciPy, pandas, matplotlib and seaborn) to examine differences in reaction times and accuracy between Diary and Google Calendar layouts. Additional analyses explored variations in reaction times based on days and times within each layout. The code used for the analysis: https://github.com/lukanamo/Perception_Experiment

Ethical Considerations:

Participants were assured of the anonymity of their responses, and their rights to withdraw from the study at any point without consequences were emphasised.

Limitations:

The sample size of the study was relatively small, with only 20 participants aged 19-30. This may limit the generalizability of the findings to other populations, as the results may not be representative of the broader population.

Additionally, the specific calendar layouts used in the study may not be applicable to other contexts or cultures, which could further limit the generalizability of the findings. It is important to consider these limitations when interpreting the results of the study and to avoid making broad conclusions that are not supported by the data. You could also consider discussing the implications of these limitations for future research in this area.

Results of the experiment

The paired t-test analysis aimed to evaluate the presence of significant differences in the average response durations for participants identifying specific times across two distinct calendar layouts. This assessment was performed for each predefined time point (8, 12, 18, and 20 hours). General Findings: The paired t-test analysis revealed no significant difference in reaction times between the two calendar layouts at any of the times tested.

Specific Results:

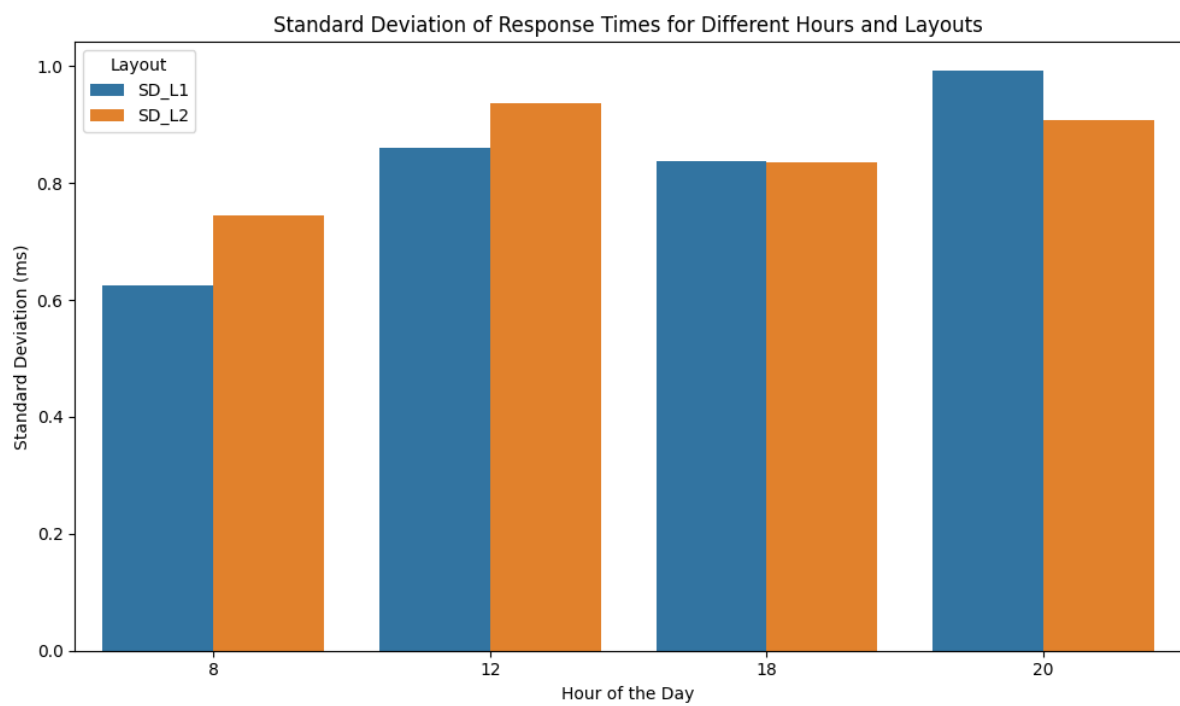
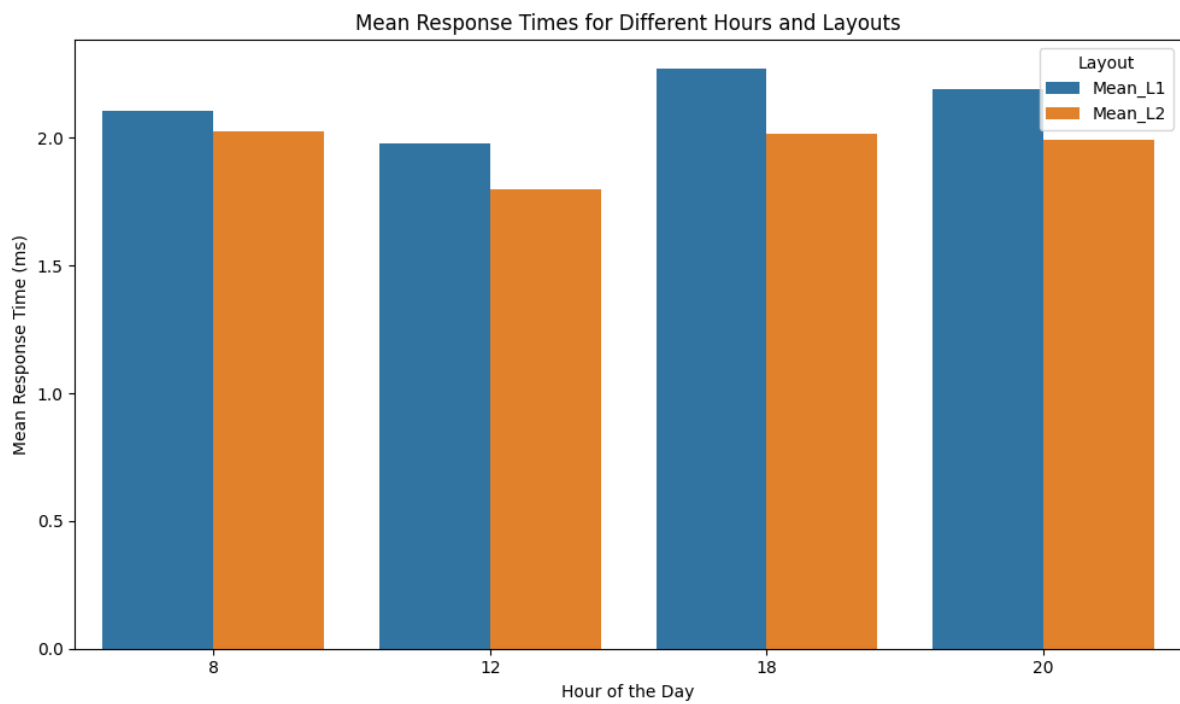
For the 8 o'clock hour, the response times did not exhibit a significant discrepancy between the two layouts ($t = 0.626$, $p = 0.539$). The average response duration for LAYOUT1 was 2.104 ms with a standard deviation of 0.626 ms, whereas for LAYOUT2, the mean was 2.024 ms with a standard deviation of 0.745 ms. The 12 o'clock responses also showed no significant difference ($t = 1.329$, $p = 0.200$), with LAYOUT1 having a mean response time of 1.980 ms (SD = 0.860 ms) and LAYOUT2 showing a mean of 1.798 ms (SD = 0.936 ms). Similarly, no statistically significant difference was found at 18 o'clock ($t = 1.845$, $p = 0.081$), where LAYOUT1 had a mean response time of 2.269 ms (SD = 0.838 ms), and LAYOUT2 had a mean of 2.016 ms (SD = 0.836 ms). The 20 o'clock responses also lacked a significant difference ($t = 1.409$, $p = 0.175$), with LAYOUT1 showing a mean response time of 2.189 ms (SD = 0.992 ms), and LAYOUT2 with a mean of 1.992 ms (SD = 0.908 ms).

Interpretation:

Contrary to our hypotheses, the diary layout did not result in significantly faster reaction times at 12 and 18 o'clock, nor was the Google Calendar layout faster at 8 and 20 o'clock.

The next graphs show two variants of the response times according to the hour in the calendars, the mean response time is defined as the average time it takes for a system to respond to a request. The standard deviation of response times is a measure of the variability

of the response times around the mean. Layout1 is the Google Calendar on the graph and Layout2 is the diary version.



Conclusion

Based on the results of the paired t-test analysis, there was no significant difference in reaction times between the two calendar layouts at any of the times tested. The study aimed to evaluate the presence of significant differences in the average response durations for participants identifying specific times across two distinct calendar layouts. This assessment was performed for each predefined time point (8, 12, 18, and 20 hours). The study had a small age range of 19-30 and only 20 participants.

In conclusion, the results suggest that the two calendar layouts do not have a significant impact on reaction times for identifying specific times. However, the small sample size and limited age range of the participants may limit the generalizability of the findings. Future research could expand the sample size and age range to further investigate the impact of calendar layout on reaction times.