



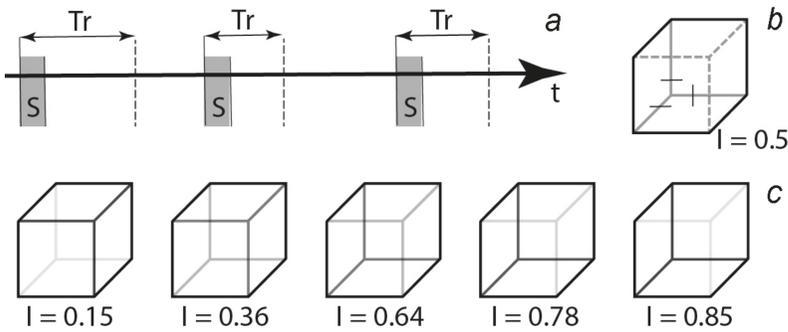
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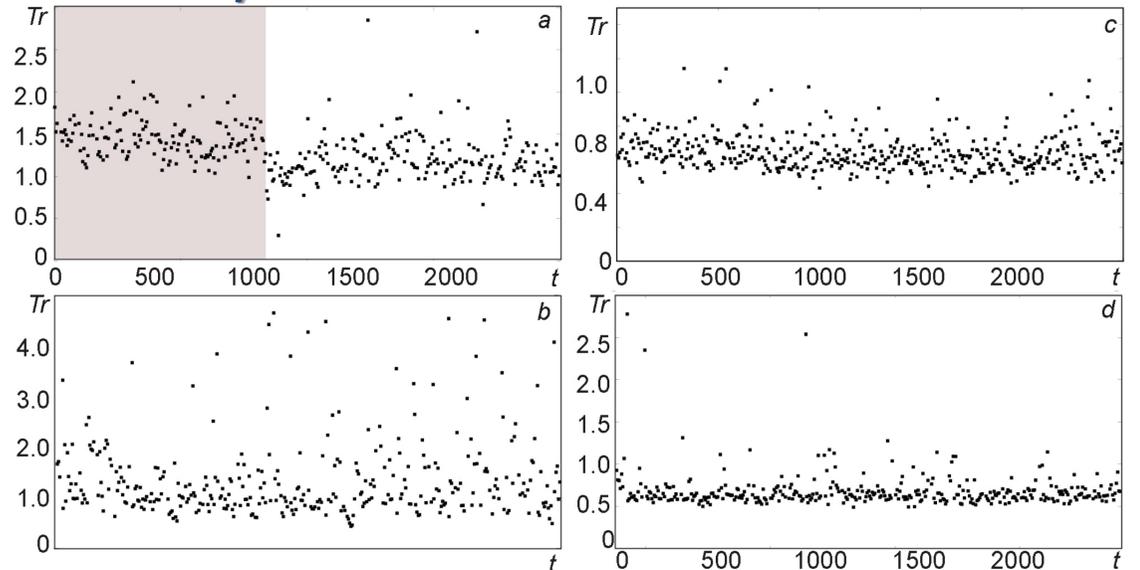
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Two scenarios of adaptation during monotonous cognitive activity



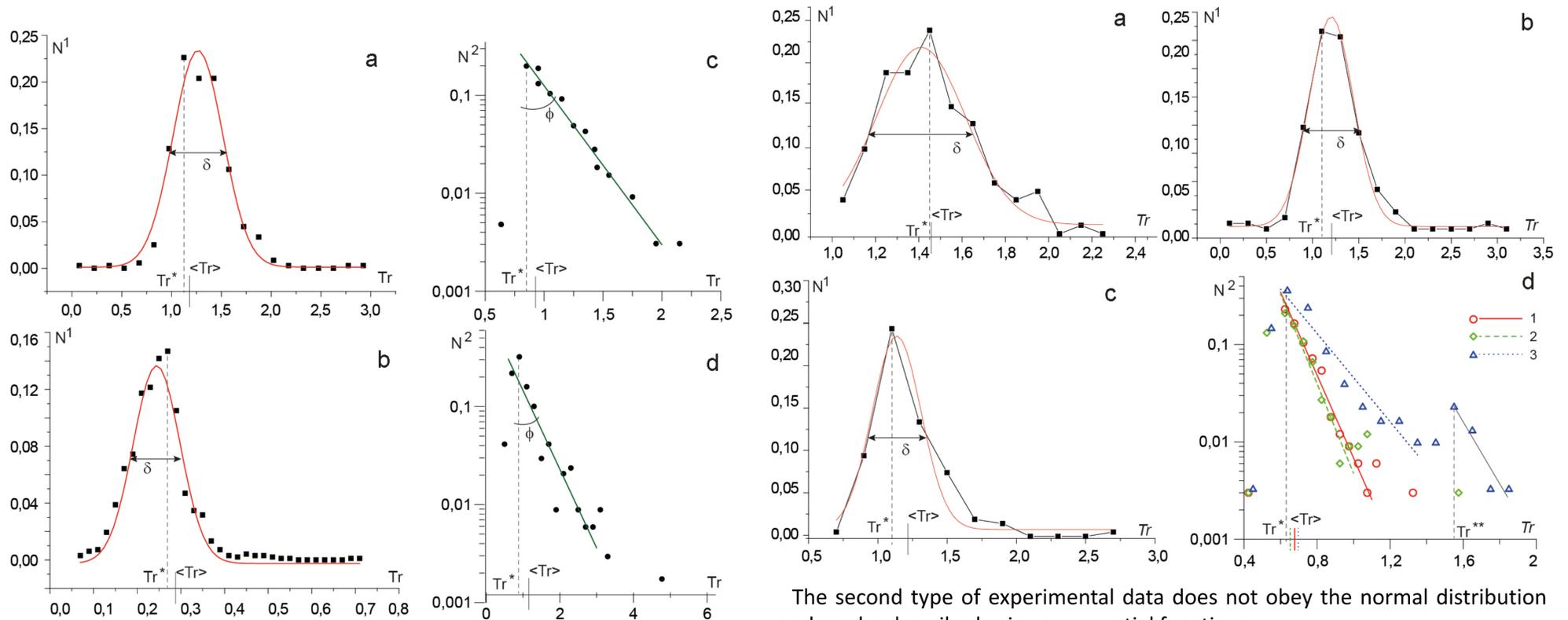
a) experimental work diagram: the periods of displaying stimulus images (S), the white spaces between them correspond to the pauses between them (P), the vertical dashed lines show the moment the subjects pressed the remote control, Tr is the reaction time
 b) determination of the ambiguity parameter I for the bistable image of the Necker cube
 c) illustration of Necker cubes with increasing ambiguity parameter I.



Dependences of the reaction time Tr on the time t of experimental work for subjects: a - № 2, b - № 26, c - № 28, d - № 6. The colored background shows the presence of a pronounced training stage for the subject.

For each subject, the average reaction time was calculated $\langle Tr \rangle$:
$$\langle Tr \rangle = \frac{\sum_{i=1}^{Ns} Tr_i}{Ns}$$

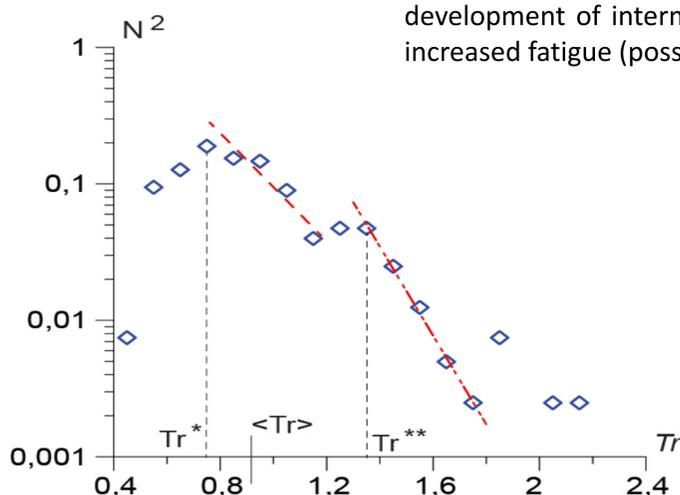
The responses duration in test subjects is divided into two types, described by the Gauss distribution and the exponential distribution, respectively.



For the first type, the probability distribution is relatively close to normal and can be approximated in a standard form as:

$$N^1(Tr) = C0 + \frac{C}{w\sqrt{\pi/2}} e^{-\frac{2(Tr-T0)(Tr-T0)}{w \cdot w}}$$

Some subjects from subgroup II have a second local maximum Tr ** on the distributions N2 (Tr). The appearance of this local maximum Tr ** occurs at the final stage of the experimental process. The existence of the Tr ** maximum may be due to the emergence of two different intermittent psychophysiological states of the subject with a significant accumulation of monotonous stimulus, which alternately replace each other during the experiment.



The second type of experimental data does not obey the normal distribution and can be described using exponential functions as:

$$N^2(Tr) = Ae^{B \cdot Tr}$$

Thus, for the second class of subjects, it is possible to describe the development of intermittent behavior - the appearance of stages of increased fatigue (possibly, drowsiness).

Interestingly, subgroup II showed 65% fewer errors than subgroup I. However, the reaction time in the first subgroup was 65.62% lower. Perhaps the psychophysiological basis of the observed division of the subjects into two subgroups is the strength of the subject's nervous system.