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When using nutritional labels, less is better

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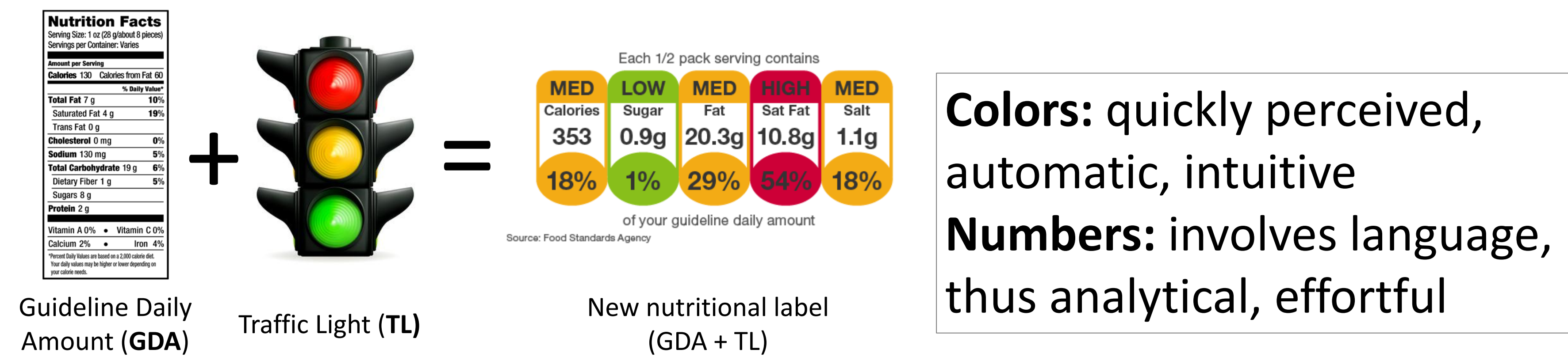
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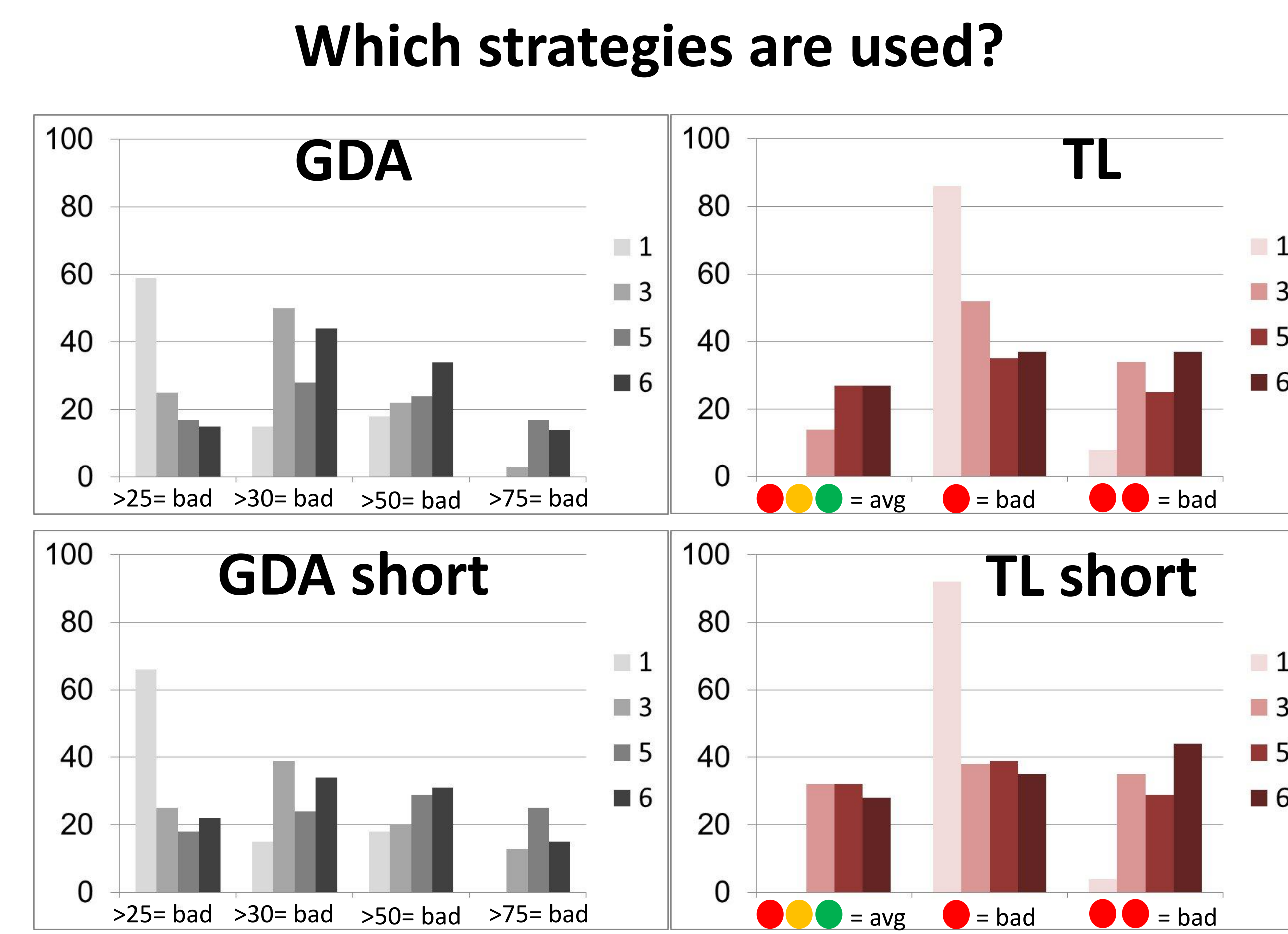
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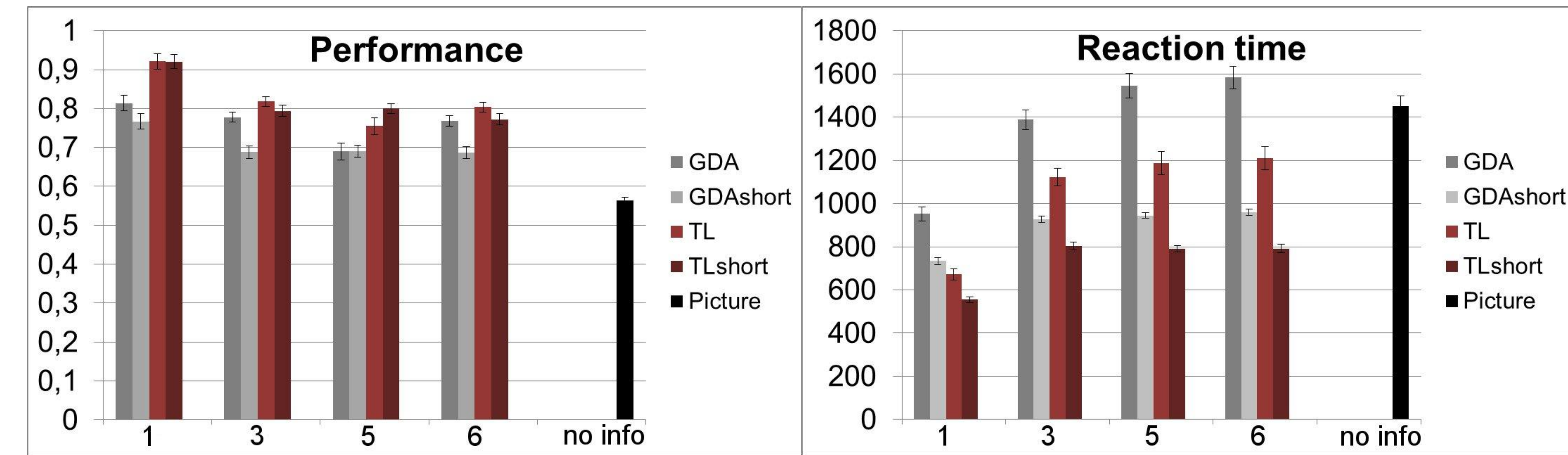
BACKGROUND



New colorful nutritional labels are now used in some countries to help people better evaluate how healthy are food products. But little is known about how we understand and manipulate colored information to evaluate food products. We are testing how people evaluate anonymous food products from nutritional information displayed as numbers (% of daily amount) or as colors (red, amber, green). We anticipate that people will categorize food as bad for their health as soon as the color red is present, and that performance and reaction time will reflect that colors are easier to use (possible use of heuristics) compared to numbers (very analytical).^{1, 2, 3}



RESULTS



Is the performance better with TL?

GDA vs TL ($t < -2.9$, $p < 0.01$)

Is the performance better with less info?

1 vs 3, 5 and 6 info ($t > 2.1$, $p < 0.05$)

Is the performance worse when pressured?

GDA vs short for 1, 3, 6 info ($t > 3.6$, $p < 0.01$)

TL vs short for 6 info ($t = 2.7$, $p < 0.01$)

Is the evaluation faster for TL than GDA?

GDA vs TL ($t > 7.7$, $p < 0.001$)

Is the evaluation fastest with less info?

1 vs 3, 5 and 6 info ($t < -3.8$, $p < 0.001$)

Is the evaluation faster when pressured?

GDA, TL vs short ($t > 5.1$, $p < 0.001$)

METHODS

TASK AND PROCEDURE

3 types of stimuli (n=60 per condition)

1/ food pictures without nutritional information

2/ nutritional information from 1 to 6 using GDA system

3/ nutritional information from 1 to 6 using TL system

(6 info: kilocalories, cholesterol, salt, total fat, saturated fatty acids, added sugar)

Eyetracking (n = 17) using Eyelink, 250Hz sampling rate

PARTICIPANTS

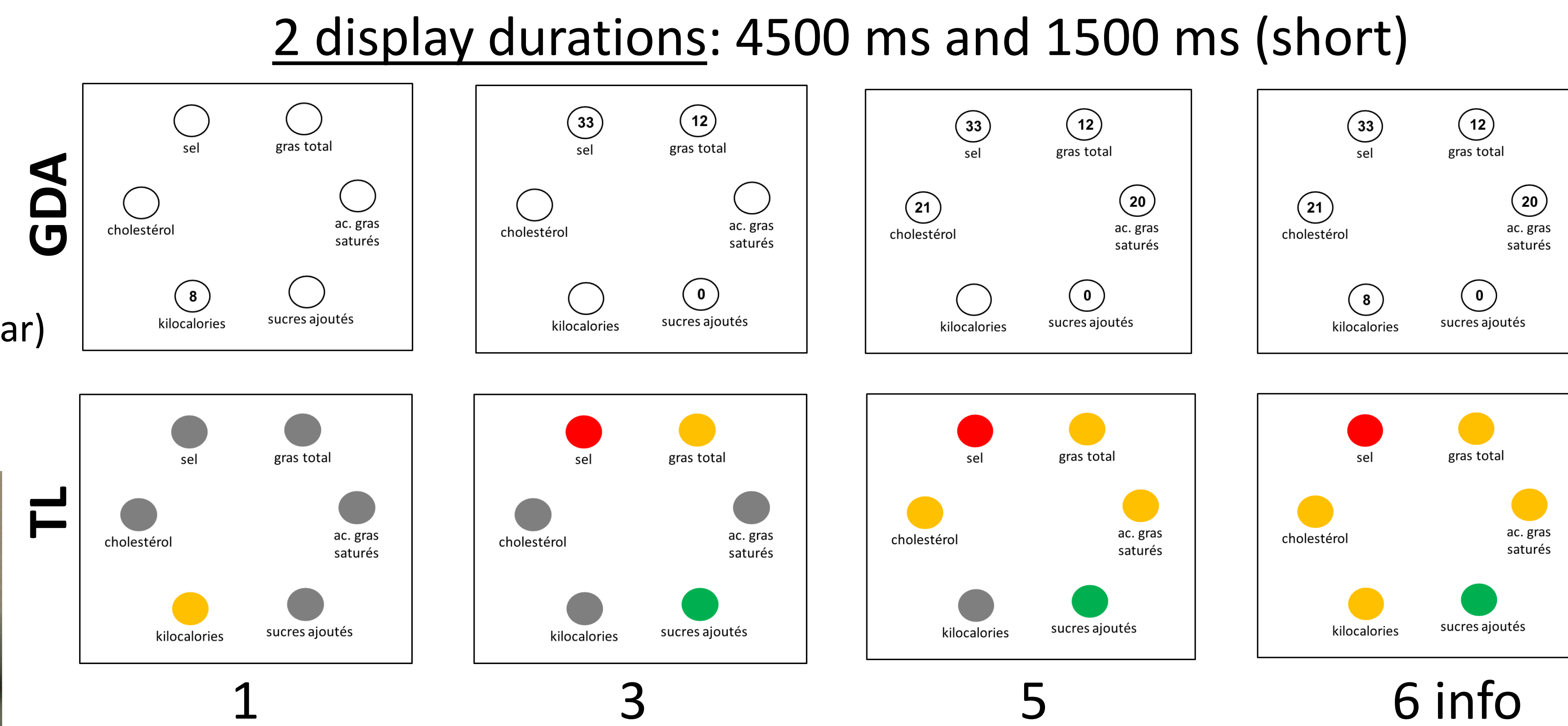
71 participants (F = 36)

Age = 22,4 (SD = 5,4)

BMI = 21,3 (SD = 2,9)

Min education level = Secondary school

Task duration = 1h30, Compensated 10 euros



Instructions: «Is that food bad, average, or good for your health?»

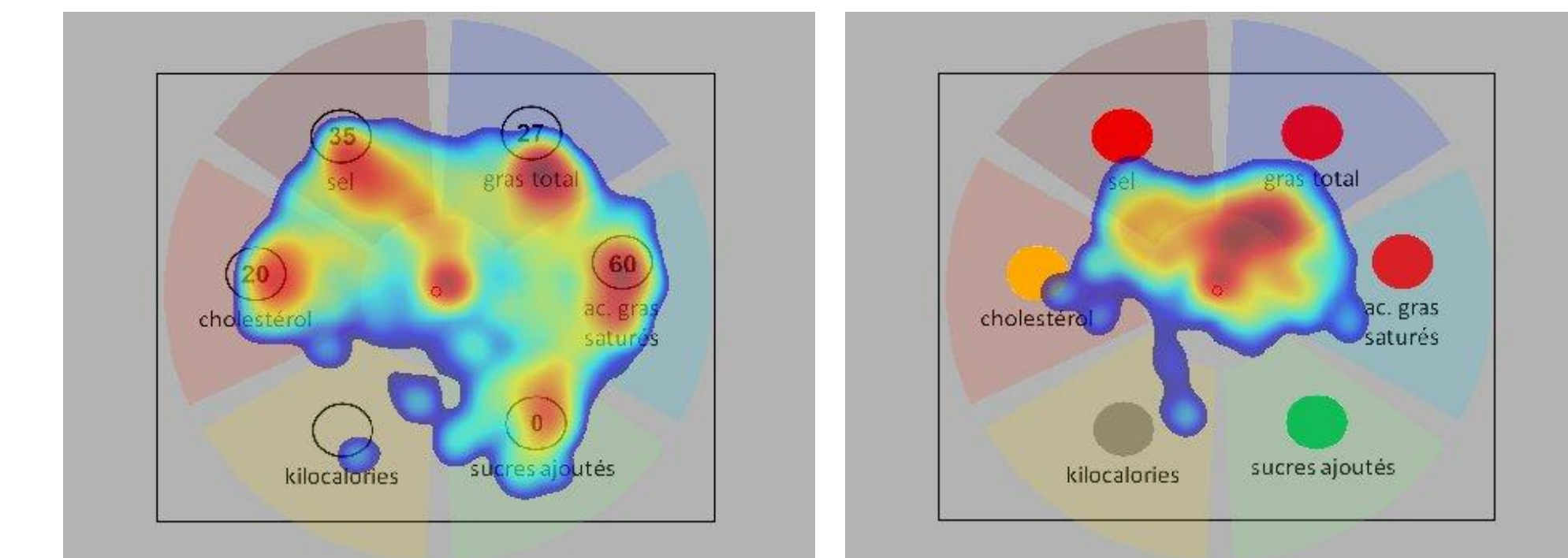
ANALYSES

Strategies: Answers compared against 3 models for TL and 4 models for GDA

Performance: the best performance from each model was kept for each participant

Repeated measure ANOVAs with label (GDA vs TL), display (1500ms vs 4500ms), and conditions (1, 3, 5 and 6 info) were run. Posthoc analyses with **paired t-tests**.

More time looking at GDA than TL
(n = 17; $t = -6.8$, $p < 0.001$)



One participant's mean number of saccades

DISCUSSION

Large inter-individual differences were observed in the way people evaluated how healthy food products are, likely due to different personal beliefs about what is a good or bad food product. The best performance was observed for TL with one piece of information in less than 600ms. Reaction times increased with the quantity of information and from TL to GDA, likely due to the fastest perception of colors compared to numbers, whereas performance seemed to plateau from 3 to 6 pieces of information.

As suggested previously,^{2,3} the TL system appears as a more efficient system than GDA alone to help people evaluate nutritional aspects of food products.

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