Simulation Process for Statistical Significance of Order Effect of Selected Thumbnail Types (Section 5.1.1)

We ran a statistical test and found that the order of the thumbnails presented to users is not relevant to user selection (X^2 (3, N =161) = 3.3975, p = .3343). We also assumed that users selected thumbnails in a specific position (e.g., first thumbnail) and ran a statistical test with the assumption**. The test result with the probability of 0.005 with 2000 simulations indicates that users did not select thumbnails in a specific position.** We uploaded the codes and results for the testing at OSF (https://osf.io/khgw2/).
To evaluate the association between the order of thumbnails shown to participants and their choice, we ran a statistical simulation. The simulation was conducted to test "whether participants choose thumbnails according to the order the thumbnails were presented". We found from the result that participants chose thumbnails with the order of presentation being extremely low (probability: 0.0005 with 2000 simulations).

We use the simulation method as described below:
(1) We prepared the same sequences of thumbnails that were exposed to 161 participants in the experiment. Here, one sequence refers to an ordered set of 4 thumbnails, where each thumbnail is a unique combination of the 4 different thumbnail types and 4 different topics (e.g., a sequence: [GNRD-Kavanaugh, HRO-Apple vs. Microsoft, Resized-Trump, Highlight -LeBron]). In total, we used 148 unique sequences, where 136 were exposed to one participant, 11 to 2 participants, and 1 to 3 participants.

(2) We calculated the probability of a thumbnail being chosen when the thumbnail is shown to people the first, second, third, and fourth item (0.30, 0.22, 0.26, and 0.22, respectively).

(3) According to the four probabilities, we designated four intervals between 0 and 1 (1st: <=0.30, 2nd: <=0.52, 3rd: <=0.78, 4th <=1).

(4) We randomly drew a number X between 0 and 1, and checked which interval X falls in. For example, if random X is 0.88, it corresponds to the 4th interval. So, in this simulation, we assume that the 4th thumbnail was chosen.

(5) We executed **(4)** for the 161 sequences, which provided the result of one simulation of thumbnail selections for four thumbnail types (Resized, GNRD, Highlight, and HRO) and one Chi-squared value.

(6) We performed **(5)** for 2000 times, and we calculated the probability that simulated Chi-squared values are greater than 14.975 (X^2 (3, N =161) = 14.975, p = .0018), which resulted in 0.0005.

Therefore, it is statistically unlikely that the order of thumbnails shown to participants affected their thumbnail selection.