

## Evaluative Processing of Food Images: The Role for Viewing in Preference Formation

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### 論 文 審 査 の 結 果 の 要 旨

This research uses behavioral analysis and eye-tracking with humans to examine the role of viewing in evaluative decision-making, when people can express a subjective choice. Previous research suggested that longer viewing leads to higher evaluation. This proposal was based on a well-known phenomenon, called “gaze cascade,” which shows that, in a forced choice between two simultaneously presented items, subjects tend to gradually look longer at the item they will eventually choose. In this sense, the gaze was thought to be a precursor of choice, with the underlying assumption that longer viewing leads to higher evaluation. The present study challenged this assumption by using a different decision paradigm, with item-by-item evaluation instead of forced choice. Critically, this change in paradigm also reflects a change from relative evaluation (comparing one item against another) to absolute evaluation (making a decision about a single item). In addition, the present research manipulated several other factors that were hypothesized to influence the type of evaluative processing. Particularly, the viewing conditions were either free (determined by the individual) or controlled (set automatically by computer), and the choice conditions were either exclusive (selecting a limited set for a positive evaluation) or non-exclusive (rating without any limitations).

The results of the first set of experiments clearly discredited the common assumption about the relationship between viewing and evaluative processing. The nature of the task changed the relationship. The presumed connection between longer viewing and higher evaluation was observed only when subjects performed the exclusive evaluation under free viewing. For non-exclusive evaluation (rating from 1 to 5) under free viewing, the results showed an inverted U-shape, with short viewing leading to extreme evaluation (either positive or negative). In controlled-viewing conditions, when subjects had no way of determining the amount of time they looked at items, the results showed no significant relationship between viewing time and evaluation.

While the results of the first set of experiments were clearly against the prevailing theory, the findings left open two alternative explanations for the diverging results in the exclusive versus non-exclusive evaluation. One possibility was that the results were due to the competitive

nature of the decision, with an opportunity cost only in the exclusive conditions, but not in the non-exclusive conditions. The presence of an opportunity cost could lead to the activation of a confirmation mechanism during decision-making, leading to relatively longer viewing before choosing only when the opportunity cost is high (i.e., when subjects want to confirm whether they really want to choose a particular item, given the potential cost).

Alternatively, the diverging relationships observed in the first set of experiments could be due to the response set. In the exclusive task, there were only two options, “take it” or “leave it,” preventing any opportunity to observe an inverted U-shape in the data. Here, the idea is that such categorical choice leaves no space for doubt; it was possible that items which elicited a doubtful evaluative process were categorized as “take it” in this case, leading to an association between longer viewing and higher evaluation.

To disambiguate these two possibilities, a second set of experiments was performed with exclusive and non-exclusive evaluation tasks that both used a response set of three options (“take it,” “wish list” or “leave it” versus rating from 1 to 3). The results turned out to provide corroborating evidence for both hypotheses, suggesting that the modulations by opportunity cost and by “space for doubt” occur in parallel. Particularly, with response sets of three options, inverted U-shapes were observed in both exclusive and non-exclusive evaluations. Moreover, in exclusive tasks, the “take it” condition was again associated with longer viewing than the “leave it” condition, whereas there was no difference between the viewing durations for the “1” versus “3” ratings. Finally, as in the first set of experiments, the relationships between viewing and evaluation were observed only under free-viewing conditions.

Taken together, the two sets of experiments provided solid evidence against the sweeping notion that longer viewing leads to higher evaluation. Instead, the framing of the choice task has a significant impact on the style of evaluative processing. The amount of time that individuals spend viewing items for evaluation depends on the opportunity cost and the response set. These findings warrant a revision of current theories on evaluative decision-making.

Therefore, we conclude that this thesis deserves to be acknowledged as a doctor’s thesis (Systems Life Sciences).