

INTRODUCTION

Environmental stimuli can have a big impact on our decisions. Music [1], colors [2], and smells [3] all have an impact on the store's ambience. Their precise impact on decisions, however, is unknown. The goal of this study is to find out how strawberry fragrance affects staring behavior and choice. The study's goals were to (1) see if the product in each of the four categories that they looked at the most often was chosen, (2) see if the presence of strawberry scent influenced consumer decision-making.

EYE-TRACKING PROCEDURE

During the study, eye movements were tracked using a Tobii Pro X2-60 (Tobii Pro AB, Danderyd, Sweden) static eye-tracker. The measurement was carried out with two groups: control (odorless) group of 31 participants and the odor group of 32 participants, where strawberry scent was sprayed into the air. Participants were students and employees at Buda Campus of the Hungarian University of Agricultural and Life Sciences, aged between 18-58 (42 % male). Participants were shown five different sets of images, out of which the first were the trial slides. The trial slides were not included in the data analysis. The remaining four choice sets were identical in structure, but the order of the product groups and the order of the products was randomized. The image sequences covered 4 product groups (Fig. 1) - muesli bar, chocolate bar, tea and yoghurt - and there were always 4 product alternatives to choose from. The visual stimuli consisted of product alternatives of the same brand with only one strawberry flavored product. The choice sets were presented with no time limit. Before each choice set, a fixation cross appeared on the screen for two seconds, so that the gaze of all participants started from the centre of the screen. After the fixation cross, participants received the visual stimuli and were asked to look at the alternatives and choose the most appealing one. After making the decision, they clicked once with the left mouse button and the cursor appeared on the screen (choice stating screen). Participants were asked to click on the chosen product. Data was recorded using Tobii Pro Lab software v.1.171 (Tobii Pro AB, Danderyd, Sweden) and time to first fixation (TTFF), first fixation duration (FFD), fixation duration (FD), dwell count (DC) and dwell duration (DD). Statistical data analysis was done using IBM SPSS Statistics Version 16.0. (SPSS Inc., Chicago, USA).

RESULTS

Each product was chosen at least eight times and two out of four product sets had statistically significant differences in choice frequency (Fig. 2). Strawberry and raspberry alternatives garnered 14% of choices in the chocolate category, whereas peanut received more than 40% of choices. In the case of teas, there was a substantial difference in preference between strawberry and cherry flavored options, with 36.7 % and 15.9 %, respectively. The findings of the Repeated Measures Analysis of Variance (RMANOVA) revealed that the tea product had a significant effect on staring behavior for the tea product group (Table 1). Product selection had no substantial impact on any of the four categories, and odor had no impact on any of the product categories. For all four product categories, there was a significant interaction between product and choice, indicating that the product picked was seen differently than those not chosen. Univariate tests reveal that the product had a significant effect on FC in the muesli bar category and DC in the chocolate category when looking at the significant effects in more detail. TTFF and FFD showed no significant effect between product and choice, indicating that proper randomization was used. For all four product categories, significant interactions were discovered for FD, FC, and DD, as well as for DC for chocolate, yoghurt, and muesli bars. In the yoghurt, muesli bar, and tea product categories, there was no significant interaction between product and odor for TTFF, while there was a significant interaction for FFD. Only the yoghurt product category produced significant findings for the DC indicator. Because the results of RMANOVA are comparable in all four product categories, we will only describe them using the yoghurt product group as an example. Figure 3 shows whether participants chose the product that drew the greatest visual attention. Participants identified the product that they spent the most time looking at for all four products, as shown in the graph. Figure 4 indicates that the strawberry fragrance has a considerable impact.



Figure 1. The four presented choice sets from top left to bottom right: chocolate, tea, muesli bar, yoghurt

Table 1. Repeated Measures ANOVA presenting the F-values of the three main effects and two of their interactions for the four product groups

| Effect | Chocolate | Yoghurt | Muesli bar | Tea |
|------------------|-----------|---------|------------|--------|
| Product | 3.068 | 1.057 | 3.999 | 5.181* |
| Choice | 0.854 | 0.974 | 0.923 | 1.919 |
| Odor | 6 | 1.762 | 1.908 | 0.533 |
| Product × Choice | 1.673* | 1.527* | 1.723* | 1.134* |
| Product × Odor | 0.702 | 2.667* | 0.78 | 1.329 |

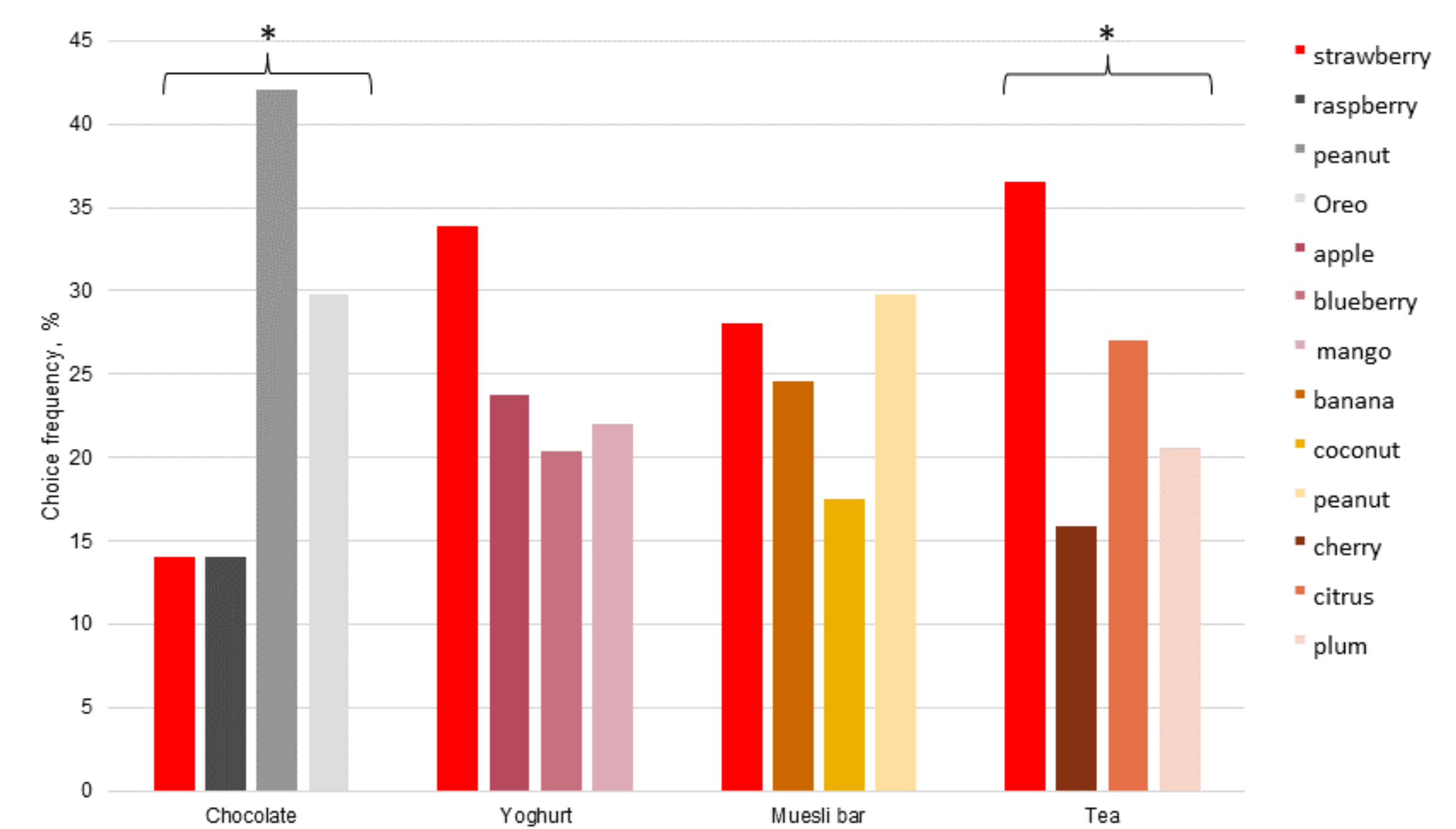


Figure 2. Frequency of choice for all four choice sets with each four alternatives

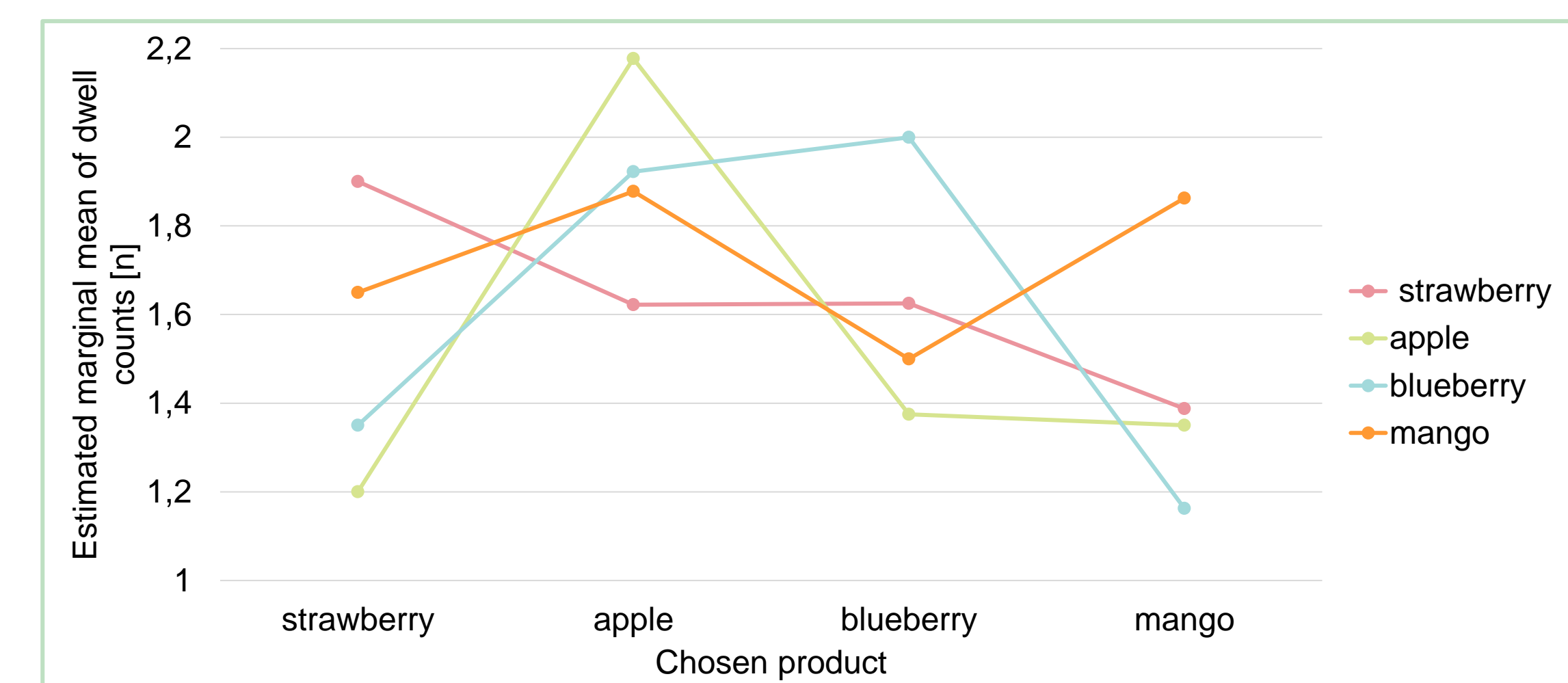


Figure 3. Dwell counts of the four yoghurt product alternatives



Figure 4. First fixation durations between the odor and odorless conditions for the yoghurt product group

CONCLUSIONS

The study's findings show that the fragrance of strawberries had no effect on choosing but did affect the location of first fixations. Our findings show that participants are more likely to select the product that receives the most visual attention. Future research should strive to include diverse age groups and fragrances to gain a more sophisticated understanding of the effect of scents on gaze behavior and choice. Further research should focus on the role of other types of aromas (natural, artificial, etc.), the method of evaporation (heat-based diffusion vs. cool-based diffusion), and the concentration of the aroma compounds in the air from an analytical standpoint, as all these factors influence human perception.

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ACKNOWLEDGEMENTS

DSz thanks the support of the Doctoral School of Economic and Regional Sciences, Hungarian University of Agriculture and Life Sciences. AG thanks the support of the János Bolyai Research Scholarship of the Hungarian Academy of Sciences. DR and AG thanks the support of the National Research, Development, and Innovation Office of Hungary (OTKA, contracts No FK 137577 and K 134260). Supported by the ÚNKP-21-5 New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund. We would like to thank AC Nielsen Ltd. - Nielsen Brandbank (Váci u. 8., H-1056 Budapest, Hungary) for kindly providing the product photos used in the research.