Effects of Variety and Peanut Type on Consumer Liking During a Daily Peanut Consumption Trial

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PURPOSE

Consumption of peanuts has been associated with improved diet quality[1]. Often, a lack of variety in the diet will cause sensory-specific satiety, and a consumer will seek different foods to consume. To maintain peanut consumption as part of a healthy diet, this study sought to determine the effect of variety in maintaining compliance and liking in a peanut consumption trial.

Previous work has shown that small changes, such as the addition of condiments, could attenuate the effect of sensory-specific satiety[2]. Intake of a regularly eaten food will increase as a result. Similarly, changing the flavor or seasoning of a target food can reduce the decrease in pleasure attained from repeated exposure to the food[3,4]. Maintaining the hedonic rating of peanuts is fundamental to maintain intake among consumers with many options available to them. To obtain the health benefits of peanut consumption, they must be eaten regularly. By altering the flavor and intake patterns of peanuts, it was hoped that compliance and hedonic liking would improve.

References:

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2. Brondel L, Romer M, Van Wymelbeke V, Pineau N, Jiang T, Hanus C, Rigaud D (2009). Variety enhances foor intake in humans: role of sensory-specific satiety. *Phys & Behav*; 97: 44-51.
3. Romer M, Lehrner J, Van Wymelbeke V, Jiang T, Deecke L, Brondel L (2006). Does modification of olfacto-gustatory stimulation diminish sensory-specific satiety in humans? *Phys & Behav*; 87: 469-477.
4. Raynor HA & Epstein LH (2001). Dietary variety, energy regulation, and obesity. *Psych Bulletin*; 127(3):325-341.

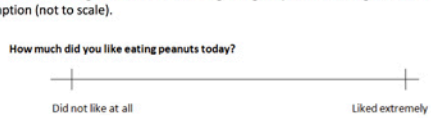
METHODS

Study design: This study used a 12-week randomized, parallel-group, two-arm design with interventions that entailed daily consumption of 42 grams of either 1) a single variety (spicy, salted, unsalted, or honey roasted) or 2) three different flavor varieties of peanuts (14 grams of each). No restrictions were placed on how or when the peanuts were consumed with the exception of the first 25 participants in the variety group. These participants were required to consume one bag of each flavor each day. The remaining members of the variety group were allowed to consume any three bags each day. The study was approved by the Purdue University Biomedical Institutional Review Board.

Participants: Weight stable (<3 kg change in past 3 months) volunteers who were 18-50 years old, were not daily peanut or tree nut consumers, had no GI disease history, were non-smokers, and were not diabetic or hypertensive were included. Participants meeting the above criteria tasted each of the varieties of peanuts and rated them on a general labeled magnitude scale (gLMS). To be eligible for study, participants had to rate at least three of the four types at moderate or greater liking.

Reporting: Participants were instructed to record when they ate their given peanuts, what type were consumed (if in the variety group), whether the peanuts were part of a meal or a snack, what other foods and beverages were consumed with the peanuts, and how much they liked eating the peanuts on a 10 cm visual analog scale (seen below).

Figure1. Visual analog scale for determining liking of peanuts during 12-weeks of daily consumption (not to scale).



Statistical analysis: Data were analyzed by GLM one-way ANOVA with Bonferroni corrections using IBM SPSS (version 19.0, IBM Inc).

ACKNOWLEDGMENTS

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RESULTS

Participants: One hundred twenty-five participants (56 males, 69 females) have completed the study. Mean age 26.4 ± 7.4 years and BMI=23.8 ± 4.5 kgm^{-2}. They were randomized into variety (n=44) or monotony (n=81) groups. The monotony groups included salted-roasted (n=23); spicy-roasted (n=18); unsalted-roasted (n=16); and honey-roasted (n=24).

Changes in liking:

Figure 2. Comparison of hedonic liking between the variety and monotony consumption groups.

•Both groups decreased in liking compared to baseline, but there is a significant interaction between the group and the time course (p=0.012). Monotony causes a steady decline in liking while variety mitigates the decline.

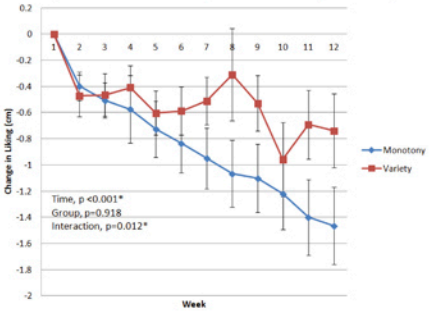
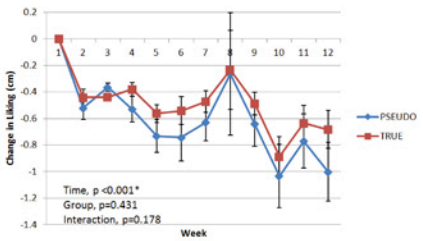


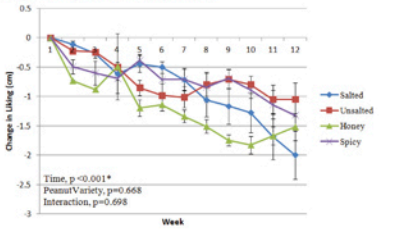
Figure 3. Comparison of hedonic liking between the true variety and pseudo-variety groups.



•Participants in both groups exhibited a decline in liking compared to baseline measures. The decrease in liking was significantly greater in the pseudo-variety group (mandating three different types each day) compared to the true variety group (consumption of any of three types each day), but there was no significant difference between groups at week 12.

Figure 4. Comparison of hedonic liking among monotony groups.

•All of the monotony groups decreased significantly in liking over time. There was no significant difference between the groups.



CONCLUSION

Incorporating variety into a 12-week peanut consumption study led to a smaller decrease in liking for the peanuts over the study. The different flavors of peanuts given in the monotony treatments did not differ from each other significantly and liking declined in all varieties over time. True variety was associated with better overall acceptance compared to pseudo-variety (structured), but both showed some decline in liking over time. Most importantly, the monotony group exhibited a greater decline in liking as the trial progressed while the variety groups appeared to stabilize with a smaller decline. These data support the inclusion of variety to improve compliance with advice to consume peanuts regularly.