

[O06.4]

The sound of chewing and its influence on apple preference drivers

M.L. Dematte^{*1}, N. Pojer¹, I. Endrizzi¹, M.L. Corollaro¹, E. Betta¹, E. Aprea¹, M.C. Charles¹, F. Biasioli¹, M. Zampini², F. Gasperi¹

¹*Fondazione Edmund Mach, Italy*, ²*University of Trento, Italy*

In a previous study (1), we manipulated the sound produced while biting into apple cylinders with the front teeth. Perceived crispness and hardness varied as a function of the properties of the sound. In the present study, we adopt a different procedure for further investigating the role played by sound on the evaluation of apples and to investigate possible multisensory interaction between physical and chemical stimuli.

Fifty-three naïve participants evaluated sensory properties of some apple cylinders (Reinette or Fuji) by chewing them with their lateral teeth and the sound produced while chewing was captured by a microphone. Then, it was manipulated in its high frequencies (2-20 kHz) in real time through a computer, before being fed back to the participant via a pair of headphones. The sound manipulation was made by either 24dB reduction, or 12dB increase, or else the real sound delivering. Evaluations were made by expressing an intensity score on a 100-pt rating scale for the following sensory attributes: crunchiness, hardness, juiciness, or sweetness. According to a balanced incomplete block design each participant evaluated no more than two attributes. The data collected were related to 20 participants for each attributes (with 6 replicates for attribute).

Sound reduction induced a decrease in perceived apple crunchiness compared to sound increase or the real sound replicating what previously highlighted for perceived crispness (1).

The results revealed instead that sound related information did not affect juiciness or sweetness perception. Interestingly, hardness evaluations performed with the lateral teeth were not influenced by sound manipulation as opposed to previous results (1) that showed a sound influence on hardness evaluated with the front teeth. This might be due to chewing duration that in the present study was longer and eventually prevented any auditory conditioning. We suggest also that this result could be related to the different stages in food properties processing at which these evaluations are performed, with hardness perception at first bite with front teeth being an earlier event than hardness perception during chewing.

Our findings support the role of sound in the evaluation of an important driver for apples preference, like crunchiness. Sound does not appear to influence other judgments more related to chewing.

1) Demattè, M.L., Pojer, N., Endrizzi, I., Corollaro, M.L., Betta, E., Biasioli, F., Zampini, M., & Gasperi, F. (2012). Influence of sound on texture perception of apples. In: 5th European Conference on Sensory and Consumer Research - A Sense of Inspiration: Program and abstracts book, Bern (Switzerland), 9th-12th September 2012: 37.

Keywords: Apples, Sound, Multisensory interactions