The silver sensory experience: senior consumers’ sensory food needs and wants

Consumer Science & Health

S. Kremer
Elderly are a very broad target group!

Seniors (55+)

- Healthy, independently living seniors
- (Frail) elderly receiving care at home
- Frail/malnourished elderly in hospitals
- Frail elderly in a nursing home

Living at home:
- 96% of 65+
- 86% of 85+
**SenTo** (Senioren van de Toekomst (Dutch); Seniors of the Future; Italian: I feel)

- A Dutch research initiative that aims at gaining insight in drivers and barriers of seniors food enjoyment
- 850 active members (June 2015)
- SenTo is available for fundamental and applied research
SenTo – Characteristics

- Active network of healthy seniors living independently
- Aged between 55 and 90
- Computer-literate!

Standard measurements (yearly up-date):

- Minimal data set (demographics, lifestyle, health...)
- Mini Nutritional Assessment (MNA®)
- Taste sensitivity test (taste strips)
- Olfactory sensitivity test (Sniffin’ sticks)
- Cognition test
- BMI, calf and upper arm circumference
SenTo – Meet & greet
Sensory Impairment: Vision loss

Elderly

- need more light and contrast
- see less depth
- accommodation is less efficient
- Require effective colour contrasts
Sensory Impairment: Hearing loss

Elderly
- hard of hearing
- out of balance
- "cocktail party syndrome"

Figure 2: Prevalence of Hearing Loss

![Figure 2](image)
Sensory Impairment: Olfactory loss

Elderly

- Perceive flavours less intense
- Identify & discriminate less odours correctly
- Have higher odour thresholds

ETOC: 1,330 subjects, 5 EU countries (D, DK, F, FI, NL, S)
Sensory Impairment: Taste loss?

- Elderly (suprathreshold) taste perception is less impaired than their olfaction
- Sweetness perception is preserved best

Koskinen et al. 2003
Multi-sensory perception of foods decreases with age

Not all senses and not all senior consumers are affected in the same way, causing increased variation in multisensory functioning with increasing age.
Effects of age-related changes in sensory perception on liking of foods

- Young adults and seniors hardly differ in initial liking of foods
- Effects of reduced sensory perception on initial liking are ambiguous
- Reduced sensory perception does not lead to a general preference for products with increased overall taste
- Multi-sensory enrichment of foods, i.e. a combination of visual or textural modifications with increased taste (variation), may proof to be a succesful strategy to increase initial liking of foods in seniors
No indication was found that flavour-enhanced foods increase food liking for elderly with low sensory acuity.

Food liking is not generally reduced in the elderly.
Multi-sensory enrichment?

- Visual & flavour enrichment ↑
- Textural & flavour enrichment ↑
- Flavour enrichment only

The young liked the two variants of the mashed potatoes and gravy equally, whereas the elderly did not

*Kremer et al. 2014*
Practical relevance of age-related changes in sensory perception in R&D setting

- Poster presented at the EuroSense 2014: 7-10 September 2014; Scientific publication in preparation
- Fonterra NZMP WPC515
- Hyposmic and normosmic older persons differed in their acceptance of protein enrichment in yoghurt drinks and their acceptance was dependent on the type of flavour used. Consequently, in order to ensure acceptance of protein enrichment in foods, hyposmic and normosomic older persons may require the use of different types of flavourings.
Effects of age-related changes in sensory perception on intake of foods

- Better sensory function may be associated with higher BMI or body weight in specific senior populations
- Sole flavour enhancement seems unsuccessful to improve food intake in seniors
- Seniors may experience less boredom after repeated exposure to the same food (i.e. decreased sensory-specific satiety), this may lead to a less varied diets
- Intake of seniors may be largely habit-driven
The role of other mediating factors should not be underestimated.

**Intrinsic signals**
- Appetite
- Hunger and thirst
- Satiety

**Extrinsic modulators**
- Food familiarity
- Food memory
- External cues
- Food-evoked emotions

**Context**
- e.g. availability, economics, social environment, time of day

Affected by age-related decline in sensory perception of foods?

Available evidence mainly on young adults

Importance may increase with age

Sensory food perception

Food liking

Food intake
In conclusion....

- Ageing clearly takes a toll on human (food) perception, its impact on seniors food liking and food intake is still **poorly understood**.

- Given that, worldwide, populations are rapidly growing relatively older, **this lack of understanding needs to be addressed urgently**

- Product developers should keep seniors sensory losses in relation to food perception in mind when (re)formulating their foods and beverages, while at the same time realizing that not all senses and not all consumers are affected in the same way and consequently, **one size of the silver food experience will most likely not fit all!**

*For more information: stefanie.kremer@wur.nl*
Addendum

The silver sensory experience – A review of senior consumers’ food perception, liking and intake

Esmée L. Doets, Stefanie Kremer

Wageningen University and Research Centre, Food & Biobased Research, Consumer Science and Health, P.O. Box 17, 6700 AA Wageningen, The Netherlands

ARTICLE INFO

Article history
Received 11 December 2014
Received in revised form 20 August 2015
Accepted 21 August 2015
Available online xxxx

Keywords:
Elderly
Chemical senses
Multisensory perception
Food liking
Food intake
Olfactory impairment
Aging

ABSTRACT

It is commonly assumed that sensory impairments occurring with age negatively affect older people’s intake of foods in terms of both quality and quantity. This review discusses evidence published on the effects of age on sensory perception and the consequences for independently living seniors’ perception, liking and intake of food products. Because of anatomical changes in all the senses involved in human food perception, on average seniors perceive a lower flavour intensity than younger adults, are less sensitive to changes in the flavour profile of foods, and show a decreased ability to discriminate between different intensity levels of flavour and/or taste attributes. However, despite these differences in their sensory perception of foods, young adults and seniors seem to differ less in their initial hedonic appraisal of food products. Nonetheless, more research is needed to determine whether multisensory enchainment of foods across different modalities may lead to increased food liking in seniors both with and without olfactory impairment. Although limited, the current evidence suggests that sensory performance may be positively associated with BMI or body weight in specific senior populations. In addition, seniors fail to show a decreased appreciation of an eaten food, thereby increasing the risk of a monotonous diet. Taken together, these findings highlight the need for appropriate interventions and/or foods to improve and maintain adequate quantity and quality of food intake among independently living seniors, and especially those with low sensory performance. Such interventions should be holistic rather than focused on one modality and may also incorporate hedonic modulators such as past experiences, affective factors and external cues, e.g. brand names, labels or food packaging. In interventions and product development, segmentation of the senior consumer market is strongly advised to identify more homogeneous subgroups in order to deal with the large heterogeneity between independently living seniors. It is concluded that one size of the silver food experience will most likely not fit all senior consumers!

© 2015 Elsevier Ltd. All rights reserved.
Questions?