



The effect of consumption temperature on sensory characteristics and consumer acceptance of milk

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INTRODUCTION

- Milk consumption is on the decline, especially among adolescents¹
- Milk temperature can vary in school food service or over the course of consumption
- Temperature changes have been shown to impact consumer acceptance of milk²
- Descriptive analysis may be used to understand potential barriers in the consumption of healthful foods, such as fluid milk

OBJECTIVE

To understand the relationship between sensory attributes and consumer acceptability of milks at different temperatures

MATERIALS AND METHODS

SAMPLES: 6 milk samples (2 milk fat x 3 temperature)

Milk Fat	Dillon's Whole Milk, Dillon's Skim Milk
Temperature	40°F, 50°F, 60°F

CONSUMER

- 119 consumers
- 6 samples
- Overall liking, liking of sweetness, liking of aftertaste, amount of aftertaste, amount of off-flavor

DESCRIPTIVE

- 6 highly trained panelists
- 6 samples evaluated in triplicate
- 25 flavor and 3 texture attributes

RESULTS

- Whole milk samples were characterized by more *Fat (flavor), Fat Feel, Sweet, and Sweet Aromatics*
- Skim milk samples were characterized by more *Flat, Light-Oxidized, Cardboard, Lack of Freshness, and Refrigerator* flavors
- Significant differences in descriptive results primarily between fat levels, rather than temperatures
 - Skim sig. more *Bitter, Cardboard* at 60°F
 - Whole sig. more *Cooked* at 60°F
- Overall liking, liking of sweetness, and liking of milk aftertaste were significantly higher at 40°F than 60°F for both skim and whole milks
- Consumers preferred samples that were higher in fat and colder

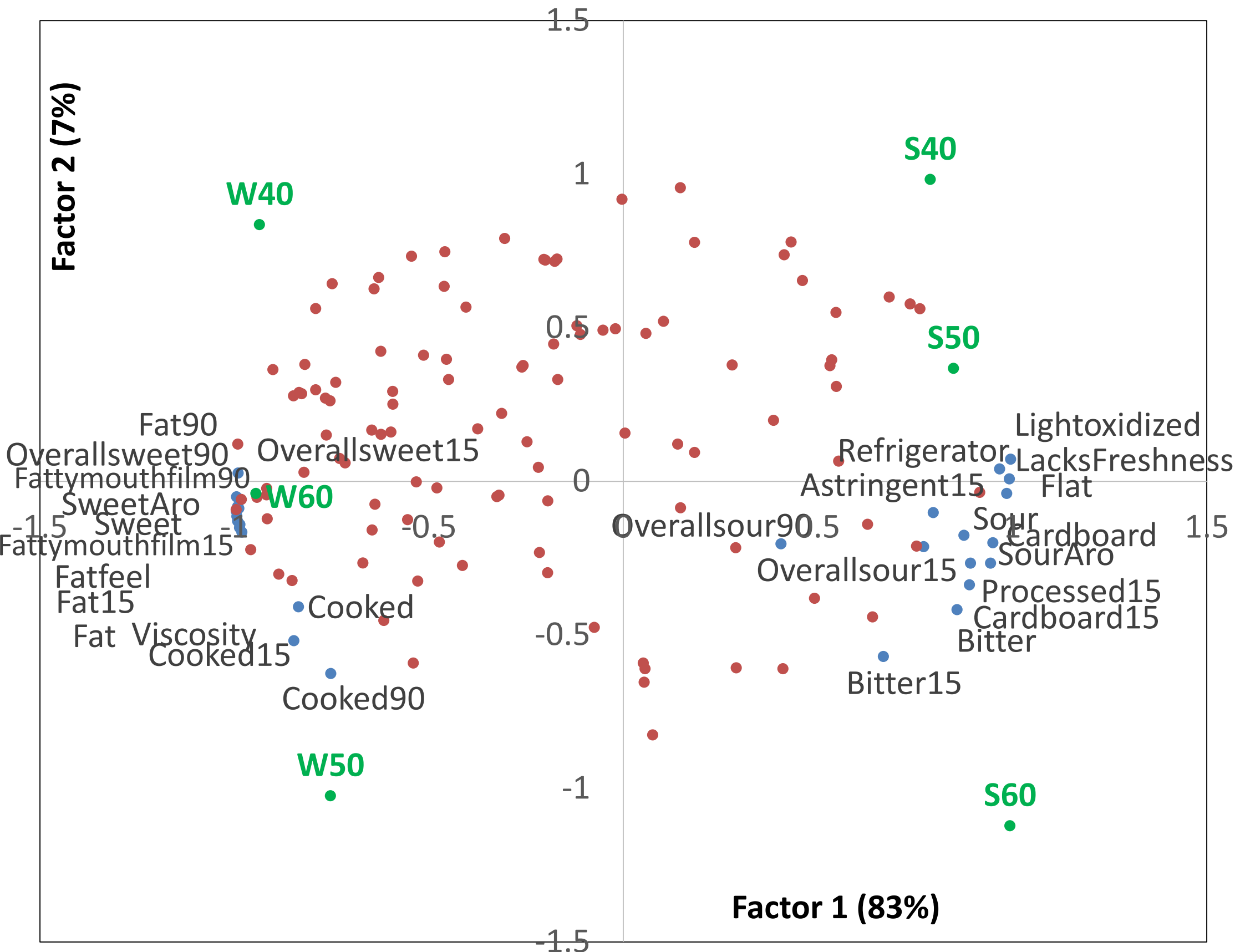


Figure 1. External preference mapping shows products primarily differentiated by fat level. Consumer liking was driven by fatty and sweet attributes.

DISCUSSION

- Despite few differences in the sensory profile within milk by temperature, consumer liking was sensitive to the temperature difference
- The results suggest that there is another factor at play among milks at different temperatures that is not captured by descriptive analysis of flavor and texture characteristics alone
- Further work is needed to investigate the nature of these differences and how they can be measured using a trained descriptive panel

REFERENCES

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