THE VIRTUAL SUPERMARKET:
An Innovative Research Tool to Study Consumer Behavior

Wilma Waterlander, Msc.
PhD Candidate
Vrije Universiteit Amsterdam
wilma.waterlander@falw.vu.nl

Introduction
About:

The Virtual Supermarket: an innovative research tool to study consumer behavior

WHY??

Introduction: Study background

Ogden et al. JAMA 2005
Introduction: Study background

• Cause of overweight:
  Positive energy balance:

HEALTHY CHOICE = EASY CHOICE?
Background

• WHY FOOD PRICING STRATEGIES?

1. Healthy food is relatively expensive

2. Price may be a barrier in choosing healthy food
   Waterlander et al., IJBNPA 2010

3. Price is an important factor in food choice
   Glanz et al., JAMA 1998, Waterlander et al., IJBNPA 2010

4. Price is important in steering consumer behavior
   Han et al., Journal of Retailing 2001

• Should we introduce food pricing strategies to stimulate healthy eating?
• **Question 1:** Which kind of pricing strategies?

- **Results of Delphi Study and Focus Groups:**
  - Subsidies are *more* effective and feasible opposed to taxes

• **Question 2:** Are those food pricing strategies effective?

  ![Graph](image)

  **NOT MUCH EVIDENCE!!!**
Price elasticity

Epstein et al. Psychological Science 2010

Price elasticity

Myton et al. Jornal Epidemiol Community Health 2007
Important to find the evidence!

What is needed?

• Large intervention studies
• In larger food environments (supermarkets)
• Measuring both price elasticity and cross-price elasticity effects

However

– Complex
– Expensive
Virtual Supermarket

**Design**
- SARA Computing & Networking Services
- Based on a real supermarket

**Stock**
- Selection of popular and frequently consumed products per category
- Aim around 10% of real stock
- Result: 512 different food products in Virtual Supermarket
- No different brands available

**Prices**
- Regular prices, excluding discounts
- Based on average of 2 Dutch market leader supermarkets

---

The Virtual Supermarket

- The Virtual Supermarket has several features, including:
  - Ability to manipulate the consumers' budget:
    - Budget: 61.00
  - Ability to manipulate product prices:
    - Chocoladereep 0.67, Haribo snoep 1.23
  - Ability to draw special attention to products by using signs
    - Magere melk 0.73, Kamermelk 0
The Virtual Supermarket

**PILOT STUDY:**

**Aim:**
- to test the Virtual Supermarket

**Methods:**
- N = 66 consumers
- Recruited through: community centres, public library
- Completed weekly purchases in the Virtual Supermarket
- Answered questions on:
  - Is the program user-friendly?
  - Similarity to real supermarket
  - Stock
  - Their purchases
The Virtual Supermarket

**Results:**
- *Is the Virtual Supermarket easy to understand?*

![Bar chart showing responses to the question about understanding the Virtual Supermarket.](image)

The Virtual Supermarket

**Results**
- *Do your purchases in the Virtual Supermarket correspond to your regular groceries?*

![Bar chart showing responses to the question about correspondence between Virtual Supermarket purchases and regular groceries.](image)
The Virtual Supermarket

To conclude:

The Virtual Supermarket is:

• A good quality tool to study consumer behavior
• Easy to use
• Comparable to a real supermarket
• However, the feasibility of interventions later on in real life settings should not be neglected

A 25% price discount on fruit and vegetables leads to higher purchases of those products: results of a randomized trial in the Virtual Supermarket

Waterlander WE, Steenhuis IHM, Schuit AJ, Seidell JC. Am J Publ Health (submitted)
A RCT using the Virtual Supermarket

**Methods:**
- Randomized Controlled Trial (RCT)
- 2 Research conditions:

1. **Control condition:**
   - Regular prices
   - € 2.69

2. **Experimental condition:**
   - 25% discount on Fruit and vegetables
   - € 2.02

**Participant recruitment:**
- Local and national newspapers
- Public library
- Community Centers

**In- and exclusion criteria:**
- > 18 years of age
- Dutch speaking
- Running an independent household

**N = 197 people signed in**
Methods

Measurements

Main
• Total expenditures
• Fruit and vegetable purchases
• Purchases in other categories

Secondary
• Habit strength (Verplanken)
• Price perception (Lichtenstein)
• Appreciation of the Virtual Supermarket
• Several background characteristics

Methods

• Analysis excluding:
  – People not responsible for groceries
  – People with low appreciation of the Virtual Supermarket

Total =

Control condition
n = 52

Experimental condition
n = 63
A RCT using the Virtual Supermarket

**Results**

- **Total expenditures**:
  - Control group: 60.98
  - Experimental group: 58.86

- **Fruit & Vegetable expenditures**:
  - Control group: 49.49
  - Experimental group: 49.15

- **Other food category expenditures**:
  - Saved money not spent in other food categories:
    - Control group: 40
    - Experimental group: 42

- **Fruit + Veg (gram)**:
  - Experimental group compared to control:
    - Vegetables: +504 gram (p.08)
    - Fruit: +481 gram (p.09)
    - Fruit + Veg: +984 gram (p.03*)

- Correction for: sex, education level, responsibility for groceries, price perception, habit strength, appreciation of the Virtual Supermarket, household size and virtual shopping budget.
A RCT using the Virtual Supermarket

**Conclusion**

- Crude model: large differences ≠ significant
- Corrected model: significant more fruit and vegetable purchases due to 25% discount
  - 25% Discount on fruits and vegetables increases total fruit and vegetable purchases with 25% (p.03).
- Discount does not lead to higher expenditures in other food categories
A RCT using the Virtual Supermarket

**Discussion**
- Results only significant for total fruit and vegetable purchases
- Silent pricing strategies
  - Extra effect of signing the discounts (e.g., ‘SALE!’)
- Virtual Supermarket ≠ Real supermarket
- **Important to carefully study interventions before introduction**
- **Virtual Supermarket = valuable tool**

QUESTIONS?

Wilma Waterlander
wilma.waterlander@falw.vu.nl