

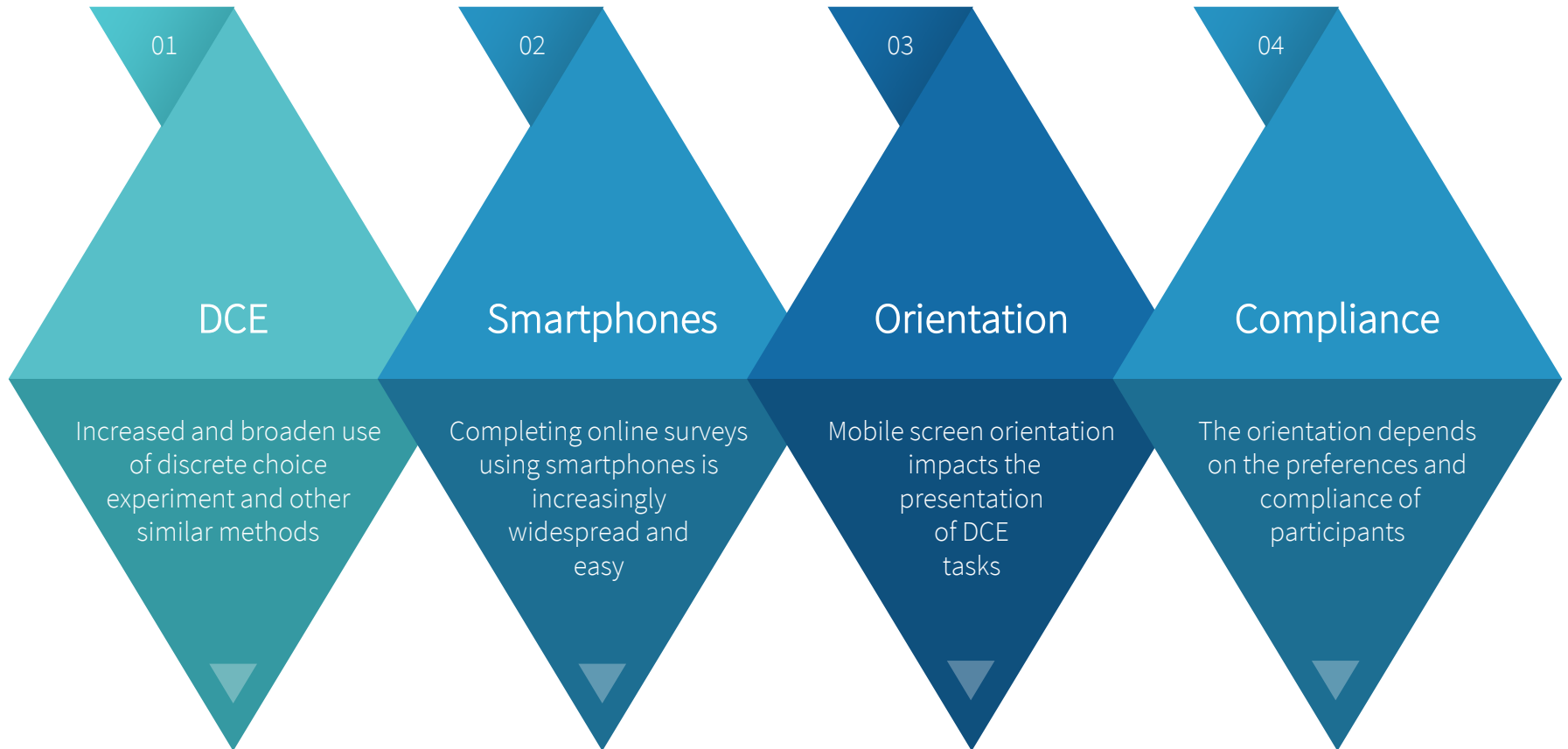


Using discrete choice experiments in applied research: does the presentation and device type influence respondents' responses, behaviour and experience?

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Context



Theoretical Background

- There is almost no literature on how to display discrete choice experiments and similar methods so that they are adapted to smartphones
- Research on design elements in general has mostly focused on the complexity of the tasks: number of dimensions, number of repetitions, as well as order effects
 - One exception is Dülmer & Giza (2019), who studied the difference between tables and text for vignettes in a factorial survey
- Regarding smartphones, Vass & Boeri (2021) studied the difference between the results from a DCE depending on the device type. The authors found no difference and recommend allowing users to use their preferred device, but recommend researchers optimize the instruments accordingly

* Shamon, H., Dülmer, H., & Giza, A. (2019). The Factorial Survey: The Impact of the Presentation Format of Vignettes on Answer Behavior and Processing Time. *Sociological Methods & Research*.

* Vass, C.M., Boeri, M. Mobilising the Next Generation of Stated-Preference Studies: the Association of Access Device with Choice Behaviour and Data Quality. *Patient* 14, 55–63 (2021).

Method

Method – Population, Subject and Type of Experiment

Method

- Online survey using Qualtrics

Population

- Qualtrics online panel of French-speaking Swiss residents
 - 1,017 respondents (50.1% women, age $M=42$ years old)
 - 494 smartphone respondents (target population in this presentation)

Subject

- Attitudes towards climate change

Discrete choice experiment

- Pro-environmental measures aimed at reducing carbon footprint
- 7 dimensions, 5 choices between two scenarios

Method - Variables

| Dependent variables | Independent variables |
|---|--|
| <ul style="list-style-type: none">• Choice of scenario | <ul style="list-style-type: none">• Experimental : orientation → Horizontal vs. Vertical vignette presentation |
| <ul style="list-style-type: none">• Self-reported ease with the vignette task | <ul style="list-style-type: none">• Self-reported skills using smartphones |
| <ul style="list-style-type: none">• Screen rotation behaviour | <ul style="list-style-type: none">• Sociodemographics |
| <ul style="list-style-type: none">• Time spent on each task | |

Qualtrics's Conjoint Analysis Package

Display

Card view (recommended for mobile)

| Option 1 | | Option 2 | | Option 3 | |
|-----------|--------------|-----------|----------------|-----------|----------------|
| Main Dish | Steak | Main Dish | Chicken | Main Dish | Chicken |
| Side | Fries | Side | Fries | Side | Salad |
| Drink | Water | Drink | Soda | Drink | Water |
| Price | \$15 | Price | \$15 | Price | \$20 |

Table view (traditional display for conjoint)

| | Option 1 | Option 2 | Option 3 |
|-----------|--------------|----------------|----------------|
| Main Dish | Steak | Chicken | Chicken |
| Side | Fries | Fries | Salad |
| Drink | Water | Soda | Water |
| Price | \$15 | \$15 | \$20 |

Modulpaket 1

Wahlfach 1 **Cross-Cultural Psychology**

Pflichtfach **Social Psychology**

1

Wahlfach 2 **Crime in Society**

Pflichtfach **Research Methods and Statistics**

2

Pflichtfach **Behavioural Neurosciences**

3

Modulpaket 2

Wahlfach 1 **Contemporary Research in Psychology**

Pflichtfach **Developmental Psychology**

1

Wahlfach 2 **Counselling and Forensic Psychology**

Pflichtfach **Introduction to Psychology**

2

Pflichtfach **Behavioural Neurosciences**

3

Vignette Designs

“Horizontal”

| Comportements | Scénario A | Scénario B |
|--|---------------------|-----------------------|
| limiter la consommation de viande à : | 2 jours par semaine | 0 jour par semaine |
| Consommer que des fruits et légumes produits : | en Suisse | Aucune restriction |
| limiter l'achat de nouveaux vêtements à : | Aucune restriction | 1 fois tous les 2 ans |
| Garder le même téléphone portable au minimum : | 5 ans | 3 ans |
| limiter le chauffage en hiver à : | 16°C | Aucune restriction |
| limiter les voyages en avion à : | 2 fois par an | 2 fois par an |
| limiter l'utilisation privée de la voiture à : | Aucune restriction | 1 fois par semaine |

“Vertical”

| Scénario A | |
|--|---------------------|
| limiter la consommation de viande à : | 0 jour par semaine |
| Consommer que des fruits et légumes produits : | en Europe |
| limiter l'achat de nouveaux vêtements à : | 1 fois par an |
| Garder le même téléphone portable au minimum : | Aucune restriction |
| limiter le chauffage en hiver à : | 20°C |
| limiter les voyages en avion à : | Aucune restriction |
| limiter l'utilisation privée de la voiture à : | 1 fois par semaine |
| Scénario B | |
| limiter la consommation de viande à : | 4 jours par semaine |
| Consommer que des fruits et légumes produits : | en Suisse |
| limiter l'achat de nouveaux vêtements à : | 2 fois par an |
| Garder le même téléphone portable au minimum : | Aucune restriction |
| limiter le chauffage en hiver à : | 16°C |
| limiter les voyages en avion à : | 1 fois par an |
| limiter l'utilisation privée de la voiture à : | 2 fois par mois |

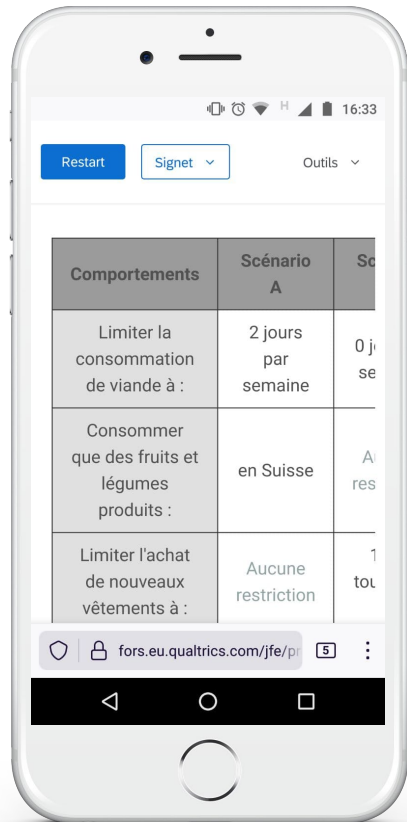
Vignette Display on Smartphone - Vertical



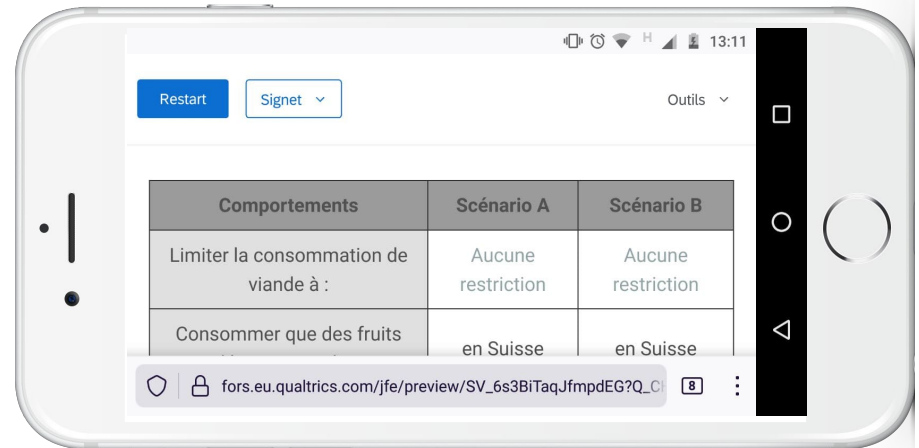
- Scénario A first
- Scénario B below

Vignette Display on Smartphone - Horizontal

Portrait orientation



Landscape orientation



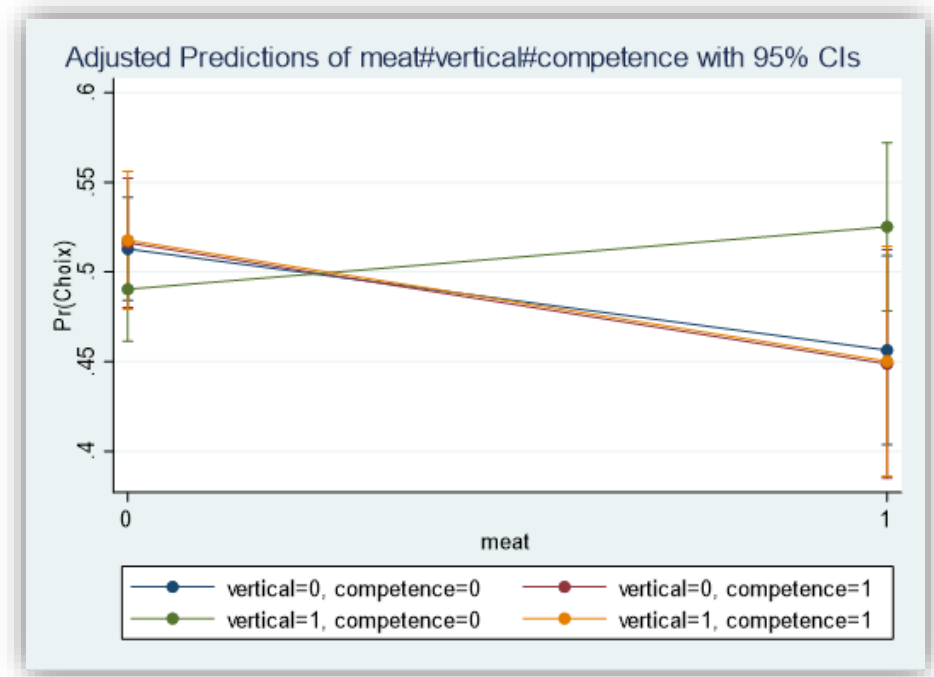
→ Rotating the mobile device screen allows for horizontal vignettes to be displayed fully (laterally)

Results

Does Orientation Impact Choice?

- Amongst smartphone non-experts, the choice is significantly more based on the first dimension when presented with vertical vignettes

→ *They have different choice profiles when presented with vertical vignettes*



- Auto-reported difficulty to perform the task isn't impacted by orientation
 - *Vertical display of vignettes seems to drive the participants to focus on the first dimension displayed*
 - *This tendency is not perceived/reported by the participants*
 - *What are the implications of horizontal presentation for smartphones users?*

Compliance of Smartphones Users with Screen Rotation Instructions

| Compliance | Frequency | Valid Percentage |
|------------------------------------|------------|------------------|
| Already landscape | 16 | 5.6 % |
| Comply early | 73 | 25.4 % |
| Comply at 1 st vignette | 116 | 40.4 % |
| Mostly complied | 10 | 3.5 % |
| Never complied | 72 | 25.1 % |
| Total | 287 | 100 % |

- Results suggest a variety of profiles when it comes to compliance with the rotation instruction
 - Only one out of four respondents complies exactly when asked to
 - The most common behaviour (40% of participants) is to rotate the screen only when faced with the 1st truncated vignette
 - Another one out of four respondents never rotates their screen, and 10 respondents complied irregularly
- Other results
 - High self-reported competence with smartphones decreases compliance
 - Women comply more than men
 - Older people comply more

Discussion

- Vignette orientation seems to impact the decision in discrete choice experiments when using a smartphone
- Classic horizontal presentation should be preferred
- Compliance with instructions varies across the population
- Does compliance impact the discrete choice experiment analysis results?
- What other types of instructions could yield better compliance levels (if necessary)?