

Getting more people on the stairs: The impact of point-of-decision prompts

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October 2015

Objective

Do point-of-decision prompts **lastingly**
change behaviour (habits) ?

Setting

Stairs v.s. escalator



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Objective

Stairs v.s. escalator

- Does the intervention change **individual** stair use behavior **during** and **after** intervention?
- Do the effects vary with message content ?

Previous studies

- Effective to change behavior (0,5%–10,3%) (Soler, R. 2010).

However,

- changes in the number or proportion of people using stairs.

Major limits

NO CAUSALITY

Our Contribution to the literature

- Daily filming, with hidden video cameras:
 - follow **individual** variations in stair use decisions,
 - observe the **context** in which the decision was taken.

Causal impact of point-of-decision

Results

- The point-of-decisions do change habits,
- Specific impact of message content.

Stations

Criteria

- Adjacent stairwell to an escalator,
- less than 30 steps,
- in business district,
- lead to an exit on the street.

Stations



Stations

- Control treatment: no message,
- Easy treatment: "Moving is easy: let's take the stairs!",
- Health treatment: "Moving is healthy: let's take the stairs!".

Timing of the experiment

Nine weeks of observations:

- First three weeks: No message
- Next three weeks: Signs encouraging stair use are posted,
- Last three weeks: Signs are removed.

Individual follow-up

- Filming every working day at the top of the escalator-stairwell,
- with hidden video cameras,
- in the morning (from 8:15 am to 9:45 am).

Facial recognition

- Watching video !!!
- Developed a software to facilitate and get reliable data processing:
 - commuter follow-up,
 - provides tools to check the reliability of facial recognition.

Figure: Face book interface

Software

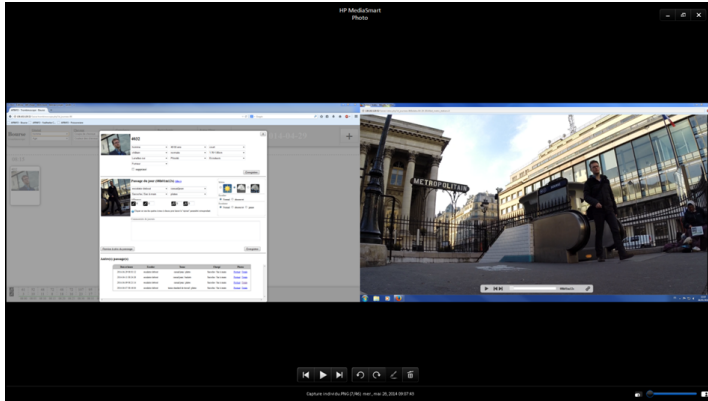


Figure: Video and individual sheet

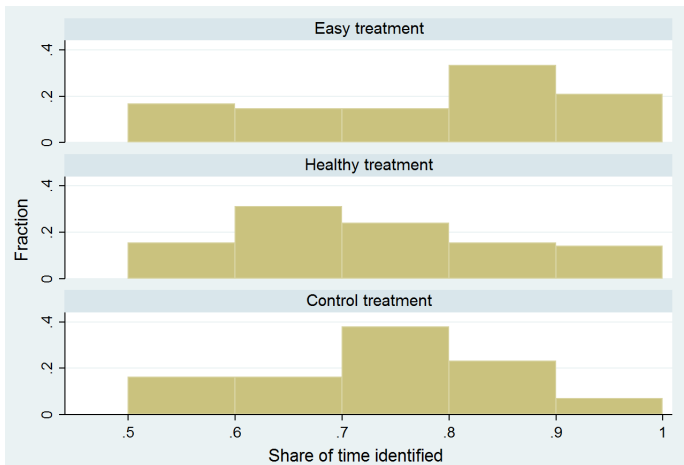
Software

The screenshot shows the 'Passage(s)' application interface with several annotations:

- Identifiant**: A blue box pointing to the year '2023' in the top left.
- Variables caractérisant l'individu**: A blue box pointing to a form with fields for personal characteristics:
 - Genre (Gender)
 - Age
 - Coupe de cheveux (Haircut)
 - Couleur du cheveu (Hair color)
 - Poids (Weight)
 - Taille (Height)
 - Lunettes (Glasses)
 - Handicap (Disability)
 - Prothèse (Prosthesis)
- Choix**: A blue box pointing to the 'Choix' (Choice) section, which includes:
 - Escalier/Escalator (Staircase/Escalator)
 - Tenue vestimentaire (Clothing)
 - Chaussures (Shoes)
- Passage du jour**: A label pointing to the 'Passage du jour' (Today's passage) section, which includes a silhouette icon and a 'Choix' button.
- Variables à renseigner pour la journée**: A blue box pointing to the 'Passage du jour' section.
- Affluence escalier et escalator**: A blue box pointing to the 'Affluence escalier et escalator' (Staircase and escalator traffic) section, which includes a 'Remette à jour le passage' (Update passage) button.
- Autres passages (s)**: A label pointing to the 'Autres passages (s)' (Other passage(s)) section, which includes a table of other passages.
- Autres passages renseignés avec les photos des autres passages (portrait et de plein pieds)**: A blue box pointing to the 'Autres passages (s)' section.

Figure: Individual information interface

Distributions of commuter identifications



RCT?

- Stations and individuals are randomly chosen,
- but, the station choice made by an individual is not random

Overlapping assumptions

Propensity score of being treated

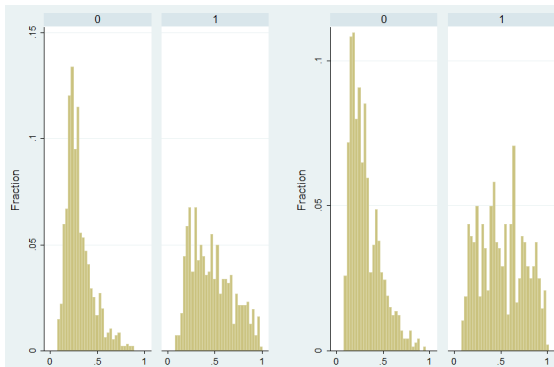


Figure: PSC distribution (Easy and Health treatments)

Overlapping assumptions

Descriptive statistics

	Control (N=87)		Health (N=71)			"Easy to do" (N=48)		
	Mean	S.d.	Mean	S.d.	Diff/s.d.	Mean	S.d.	Diff/sd
Individual characteristics								
Male	0.41	0.49	0.29	0.46	-0.17	0.39	0.49	-0.03
Age 18-39	0.49	0.50	0.65	0.48	0.22	0.52	0.50	0.04
Overweight/obese	0.23	0.42	0.11	0.32	-0.22	0.21	0.41	-0.04
Addicted to smoking	0.08	0.27	0.08	0.28	0.01	0.25	0.44	0.33
Pre-intervention stair climbing	0.00	0.02	0.01	0.02	0.07	0.00	0.02	0.00

Overlapping assumptions

Descriptive statistics

	Control (N=87)		Health (N=71)		Diff/s.d.	"Easy to do" (N=48)		Diff/sd
	Mean	S.d.	Mean	S.d.		Mean	S.d.	
Panel variables: intervention period								
Nber in stairs	1.84	1.53	1.85	1.58	0.00	2.61	2.01	0.32
Nber in escalator	2.63	2.02	1.99	1.76	-0.24	2.99	2.01	0.10
If wearing suit	0.09	0.28	0.03	0.17	-0.17	0.13	0.34	0.03
If high heel shoes	0.11	0.31	0.09	0.29	-0.04	0.14	0.35	0.05
Panel variables: post-intervention period								
Nber in stairs	1.77	1.43	1.84	2.39	0.03	1.91	1.75	0.08
Nber in escalator	1.44	1.38	1.75	1.58	0.15	2.36	1.71	0.41
If wearing suit	0.15	0.35	0.09	0.28	-0.14	0.12	0.32	-0.07
If high heel shoes	0.12	0.33	0.10	0.30	-0.04	0.09	0.29	-0.05

Ignorability of treatment

Table: Assessing unconfoundedness on pre-intervention trimmed data: estimates of the ATE for pseudo-outcome

	Mean	Std error
Health vs. control		
Regression (probit)	0.0076	0.0038
Propensity score (logit)	0.0074	0.0055
Matching estimator	0.0036	0.0029
"Easy to do" vs. control		
Regression (probit)	0.0002	0.0056
Propensity score (logit)	0.0016	0.0046
Matching estimator	0.0022	0.0036

Estimating equation

$$\begin{aligned}
 y_{it} = & (\gamma_1 P_{1t} + \gamma_2 P_{2t}) H_i + (\tau_1 P_{1t} + \tau_2 P_{2t}) E_i + \\
 & \phi_1^E Estair_{it} + \phi_2^E Estor_{it} + \phi_1^H Hstair_{it} + \phi_2^H Hstor_{it} + \\
 & \phi_1^C Cstair_{it} + \phi_2^C Cstor_{it} + \\
 & \gamma H_i + \tau E_i + \alpha_1 P_{1t} + \alpha_2 P_{2t} + \alpha_0 + \theta X_i + \varepsilon_{it}
 \end{aligned}$$

Estimated average treatment effects (std err)

	"Easy to do"	Health
Intervention period		
Linear regression	0.0981 (0.0310)	0.0287 (0.0109)
Fixed effect regressions	0.0843 (0.0244)	0.0310 (0.0114)
Pooled Probit regressions	0.1077 (0.0153)	0.0326 (0.0091)
Pooled MLE regressions	0.1032 (0.0146)	0.0344 (0.0095)

Estimated average treatment effects (std err)

	"Easy to do"	Health
Post-intervention period		
Linear regression	0.0769 (0.0297)	0.00528 (0.0074)
Fixed effect regressions	0.0705 (0.0251)	0.0044 (0.0077)
Pooled probit regressions	0.0644 (0.0153)	-0.0027 (0.0102)
Pooled MLE regressions	0.0591 (0.0167)	-0.0019 (0.0105)

ATE *weekly* evolution (std err)

Fixed effect estimations						
	P11	P12	P13	P21	P22	P23
Easy	.1110 (.0306)	.07222 (.0282)	.0631 (.02603)	.1117 (.0397)	.06978 (.0290)	.0549 (.0273)
Health	.0409 (.0214)	.0271 (.0135))	.0204 (.0115)	.0058 (.0102)	.0111 (.0132)	-.0029 (.0110)

Point-of-decision prompt effects

- Leads individuals to use the stairs more during the intervention,
- the easy content message is the most effective during and after the intervention,
- the easy content message leads to persistent individuals' changes.