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Can an experience with no car use change future mode choice behaviour?

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THIS ONE RUNS ON FAT AND SAVES YOU MONEY

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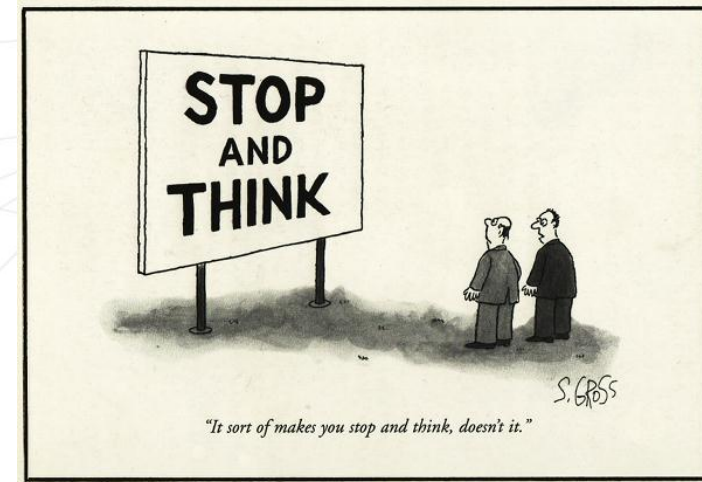
1. Background theory:
Mode choice

The Theory of Interpersonal Behaviour (Galdames et al., 2011) suggests that mode choices depend on:
– attitudes towards available modes
– habits
– social influences
– facilitating conditions(e.g. travel time and cost)

"It sort of makes you stop and think, doesn't it."

1. Background:
Car use as a habit

Car use is often **the first choice**, mainly because of:

− socialization to car use: car use in the (own) family, peer influence, social status

− city architecture and infrastructure built for cars, lack of other attractive transport possibilities (e.g. costs, comfort)

→ The **problem of starting point:** to break the habit, we need a positive experience. But as car use is the first choice, we miss this experience.

2. Hypothesis

Real experience with not using a car for one month will influence behaviour after the end of the experiment in such a way that people will more often use other modes of transport than the car.

3. Research design and methods

- based on the work of Burwitz, Koch and Krämer-Badoni (Leben ohne Auto, 1992)

- design: within-group experiment
  - pretest, posttest, 3 months follow-up

- measures:
  - WHO – Quality of life questionnaire (WHOQOL-100)
  - A questionnaire regarding the frequency and attractiveness of car use and other transportation modes (walking, cycling, public transportation)
  - Interviews
  - Travel logs (Google Maps/Excel)
  - Travel diaries

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- participants: 10 families

  - recruited via ads (incentive for participation)
  - living in the city of Olomouc or up to 50 km away
  - use a car at least 4 times a week

  − 6 families with 4 members
  − two families with 3 members and
  − two families with two members
  − all living in different parts of city municipality

Table 1. Family characteristics, example

F.	Location	Total Nr. of family members	Adults	Children	Children Age	Nr. of cars	Nr. of bicycles	Gross monthly income (family, CZK)	Average monthly car costs (CZK)	Distance to public transport (in meters)	Distance to train station (in metres)	Distance to supermarket (in metres)
1	north periphery	2	2	0	/	1	2	50000	3000	500	4000	500
2	northwest periphery	4	2	2	< 10 y.o., nurseling	1	3	/	3000	600	3500	3000

5. Results

Car use – days per week

	Car use days per week – mean	N	Std. Deviation	Std. Error of Mean
Before period	**4,5**	16	1,413	0,353
During experiment period	**2,2**	16	1,471	0,368
3 months after experiment period	**2,9**	16	1,586	0,397

- N = 16: 16 car users within 10 families under the study (with complete data)
- Mean: number of days of car use per week (maximum 7 days)
- During experiment period: a zero value expected IF participants would follow strictly given instructions.

5. Results

Car use – days per week: mean differences

Car use days per week: **Differences** Periods:	**Mean**	Std. Deviation	Std. Error of Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Before – during experiment	2,250	2,113	0,528	1,124	3,376	4,258	15	0,001
During experiment - 3 months after	-0,688	1,352	0,338	-1,408	0,033	-2,033	15	0,06
Before - 3 months after	**1,563**	**2,065**	**0,516**	**0,462**	**2,663**	**3,027**	**15**	**0,008**

Weekly car use dropped significantly 3 months after experiment, in comparison to the initial value (before experiment) (mean = -1,5 trips a week; t = 3,027; p = 0,008).

Note: no significant change in total trips per week (all modes) before and 3 months after experiment (mean before 13,1; mean 3 months after 13,6; t = -0,641; p = 0,531).

5. Results
Car use – days per week

Differences observed among the families:

- The biggest drop in car use was observed among the three single parents (with children) in the experiment.

- A positive trend was also seen in the family with 2 children (10y.o., < 10y.o.), that used to use the car 5-7 times a week. This family was thinking of and planning to reduce/ give up car use before the experiment period began.

- In the other families, results were rather mixed: either, only one of the partners dropped his/her car use as compared to the pre-experimental period, or they both returned to their previous car use, due to: *the weather (cold season), comfort and time (including costs for trains when travelling with the whole family).*

5. Results
Car use – days per week

Differences observed among the families:

Overall, families with:

a)   more children or

b)   relating on just one (of the two!) parents to manage the trips,

c)   who struggle to organize frequent and/or longer trips with children and experienced unpleasant/negative events (mostly in trains)

might be less likely to "stick" to a life without a car.

In contrast to this, for **single** individuals and/or **families who think of getting rid of the car themselves**, such an experience could be a starting point for their new behaviour.

5. Results
Car use – attitudes

As for **attitudes** regarding car use (likeability, comfort rating, time consumption, finances), the overall rating remained **roughly the same during all 3 measurement periods:**

Car use was rated as mostly "likeable", quite comfortable, although financially quite demanding.

We did not observe change in the attitudes.

5. Results - Mode shift to PT

- Since the beginning of the experiment, the participants' use of public transport increased from 1,75 trips per week on average to 2,88 trips on average at the 3-months-post-test measurement (significant change, t = 2,377; p = 0,031).

- It does not seem that the ratings of public transportation on the other scales (likeability, comfort, time consumption, finances) changed significantly (p > 0,05 for all comparisons, although the initial ranking was not that high/low to achieve floor or ceiling effect), so the actual use might just **be the change of habit, not the attitudes themselves.**

5. Results - Mode shift to bike & walking

- As for bike use & walking, we generally did not observe changes in the number of trips per week.

- This is probably due to the already quite high no. of trips at the beginning of the experiment (5-7 times a week, ceiling effect).

- Families which reported rather low number of trips in the before period (2 trips max.) stayed with the same number after the experiment, usually "because of the cold weather" (December to March).

- Ratings of biking and walking on the scales of likeability, comfort, time consumption or finances stayed unchanged (no change in attitudes)

5. Results – interviews

− All families would recommend such an experience to their friends

− The most frequent reason for "going back to what we were used to" was the cold weather (December-March), followed – not that explicitly – by comfort and time consumption.

− These, together with "planning" in general, were also mentioned as the most difficult parts of life without a car.

− The most prominent negative experiences usually had something to do with travelling by train (delays, too many people, high costs etc.) or bus (need to catch it, too many people, travel duration).

− On the other hand, people liked the experience of living without a car in general ("just to try it"), appreciated it for their children ("they see that it's possible") and the less stressing about finding a parking spot.

5. Results - Diary analysis

The main factors influencing mode choice are:

- Children (number, age, activities)

- Infrastructure (bike paths, PT connectivity, parking)

- Cost (train for a family is more expensive that a car trip)

- Weather

- Goods transport (e.g. shopping)

- Reliability of transport mode (delays...)

- Flexibility and planning (more trips per day)

- Alcohol consumption

- Time to talk and be „available" for the children

5. Results – comparison with Burwitz, Koch & Krämer-Badoni

- We found basically similar results both in the mode shift (from car to other modes) and reasons or preconditions for mode shift

- In both experiments, only a few reports of "completely giving up an activity" because of the lack of a car were mentioned; rather, the families re-organized their routines and chose other modes of transport (for shopping, school rides, etc.), admitting *"needing more time and planning"*.
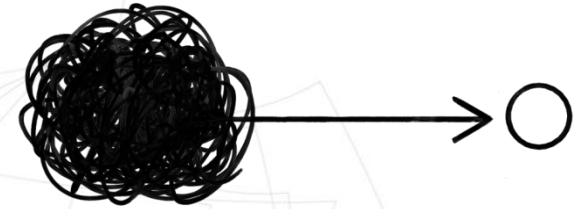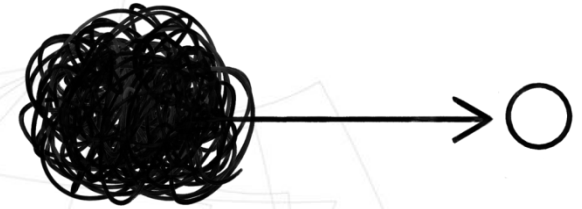
6. Summary and Discussion

We observed:

1. significant car use reduction within 3 months after the experiment.

2. mode shift to public transport, not so much to bike use or walking.

The data suggest that the actual behavior of the participants does not have that much in common with their **attitudes** but more with their actual **habit and the will to change it.**
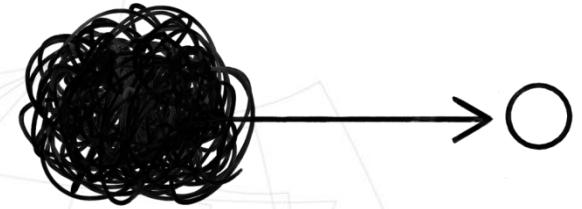
6. Summary and Discussion

As for the Theory of Interpersonal Behaviour and mode choice (attitudes, habits, social influences, facilitating conditions), our results suggest that:

- the most prominent factors influencing mode choice are **habits and facilitating conditions**

- in contrast, the influence of attitudes & social factors was not confirmed.

On the other hand, we can assume (based on social psychology theory), that change of attitudes will follow the change in habits and behaviour.

6. Summary and Discussion

As for the initial question: *Can an experience with no car use change future mode choice behaviour?*

The answer is **yes,** further more:

- Real experience with other transport modes is needed
- A preliminary set up for the change is an important presumption
- Facilitating (situational) conditions are also important presumptions for a mode shift

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Thank you for listening.