

Acceptability of transport pricing strategies: Review & Outlook

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Objectives of Transport Pricing

- Internalizing external costs
- Manage demand (with regard to location, time, car or driver characteristics etc.) = Travel Demand Management (TDM)
- Lower environmental consequences (e.g. reduction GHG, noise, etc)
- Financing infrastructure and maintenance costs
- Generating additional revenues for e.g. alternatives

but ...

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But: Low acceptability

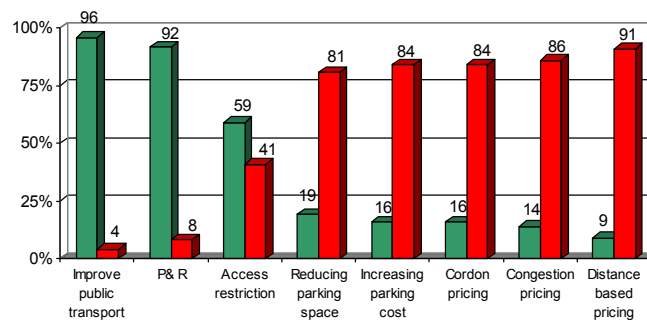
*“There have been many attempts to introduce urban road pricing around the world over the last 40 years – and **most have failed**. [...] In most cases extensive professional studies had demonstrated the technical feasibility and economic benefits of introducing the scheme, but the stumbling block was **public and political acceptability**. Too often this aspect was given inadequate attention, in the mistaken belief that a scheme which showed strong social and economic benefits would sell itself.”*

Peter Jones (1998, p. 263)

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Acceptability of different TDM-Measures



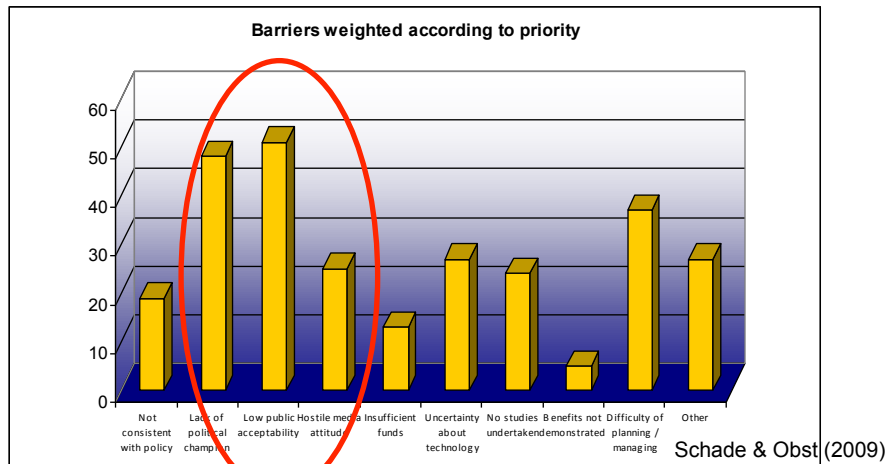
Schade (2003)

■ acceptable ■ not acceptable

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Barriers to RUC by European Cities



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Possible consequences of lacking acceptability

- **No implementation** even after successful demonstrations (e.g. Rotterdam, Stuttgart, Oxford, (Stockholm), San Francisco, Minnesota, New York)
- **Abolishment after introduction because of public resistance** (Hongkong, Lyon)
- **Low effectiveness and high transaction costs because of a high „violation rate“** (e.g. Rome system in the early stages)

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Conceptual Issues

- *"Acceptance of what, through whom and under which conditions and circumstances"*.
- *"Acceptability"* describes the prospective judgement of measures to be introduced in the future. Thus the target group will not have experienced any of these measures, making "acceptability" an attitude construct.
- *"Acceptance"* defines respondents' attitudes including their behavioural reactions after the introduction of a measure. (Schade, 2003)

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Studies I: Central Research Question

What are the individual determinants of acceptability?

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Mainstream approaches to acceptability

- a. *Economic approach*, which focuses almost exclusively on restrictions like income as an objective indicator of utility (Mayeres & Proost, 2003),
- b. „*Social science*“ approach which focuses in particular on (perceived) fairness (Montada, 1998).

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Psychological approach

- **Multi-factorial**, e.g.
 - problem awareness,
 - social value orientations,
 - knowledge,
 - perceived effectiveness,
 - social norms, and
 - fairness perceptions.

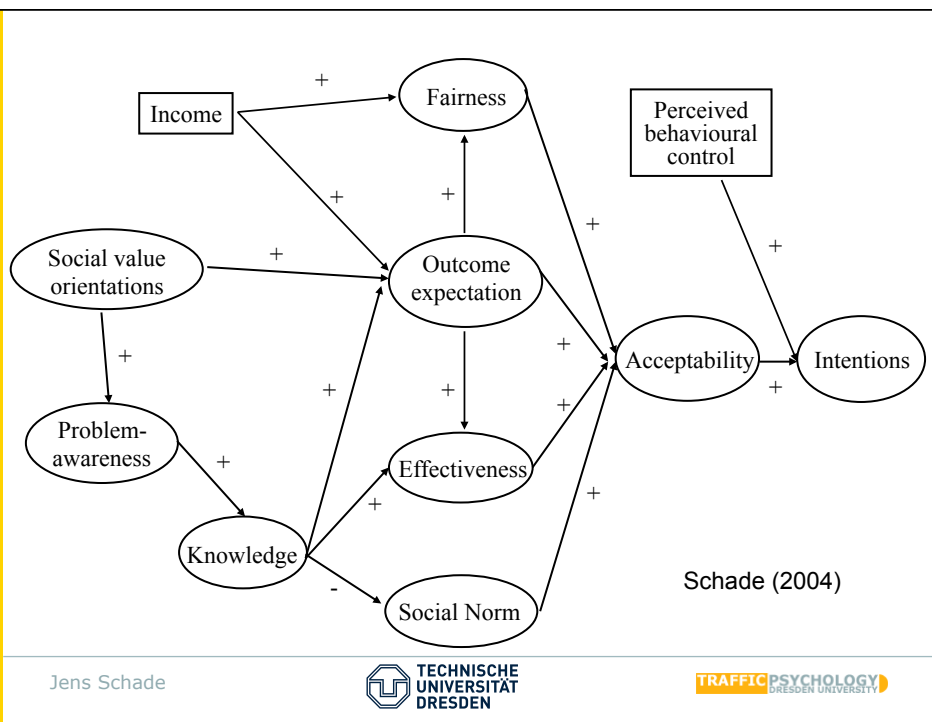
(e.g. Schlag & Teubel, 1997; Schade, 1999; Schade & Schlag, 2000, 2003; Jakobsson et al., 2000)

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Proposed Model

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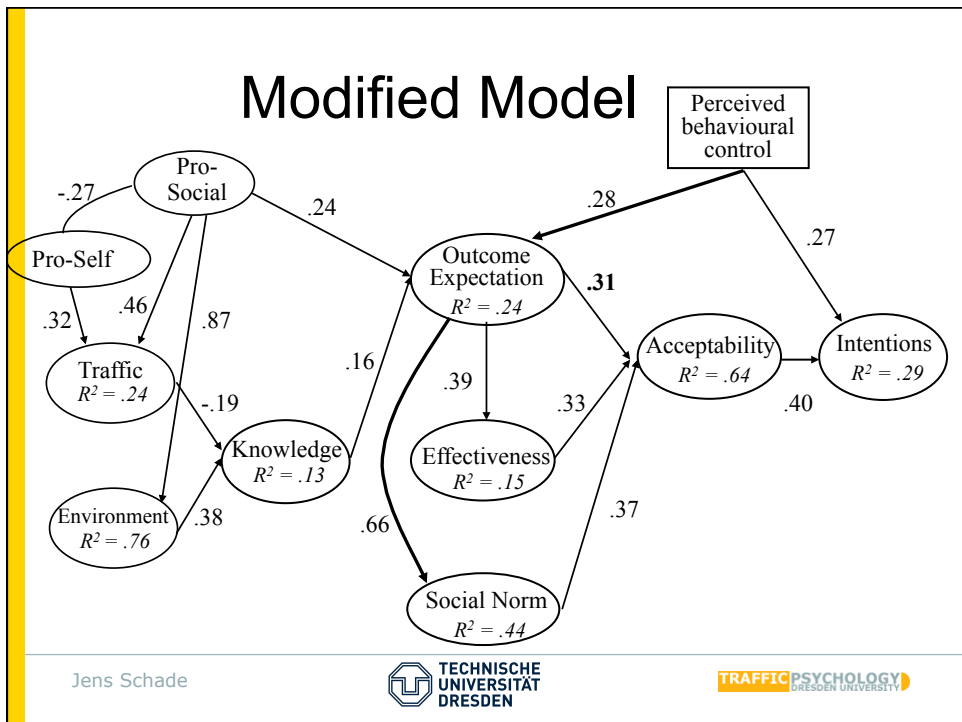
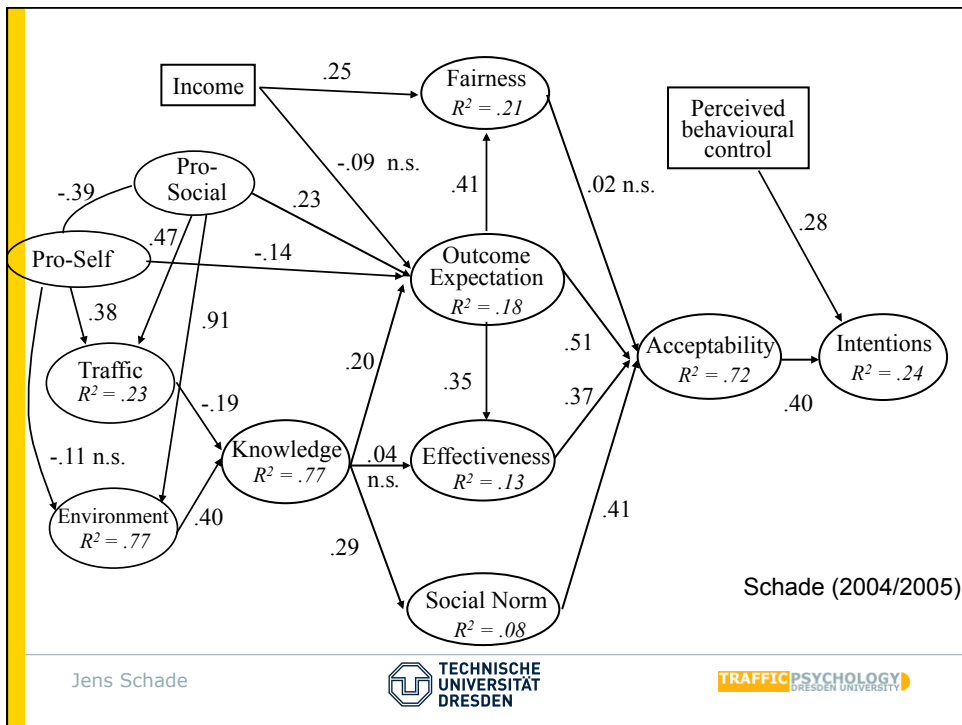
Research Questions

Which role plays ..

- **income** as objective factor („*utility*“)
- (distributional) justice / **fairness**
- **outcome expectation** („self interest“)
- „**moral concerns**“ (e.g. social value orientations)

... on the acceptability of road pricing?

Results



Standardized Total Effects (direct + indirect) Effekts

	SVO	Knowledge	Outcome Expectations	Subjective Norm	Perc. Effectiveness
Accept.	0,19	0,11	0,68	0,37	0,33

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Summary

- Outcome expectation (self-interest) has the strongest influence on acceptability but mainly via *indirect* effects
- I.e. all evaluative components are at least partly determined by self-interest
- Fairness does not play a role at all
- Income has no effect at all
- However, acceptability is also determined by pro-social value orientations as a non-egoistic factor

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Study II*

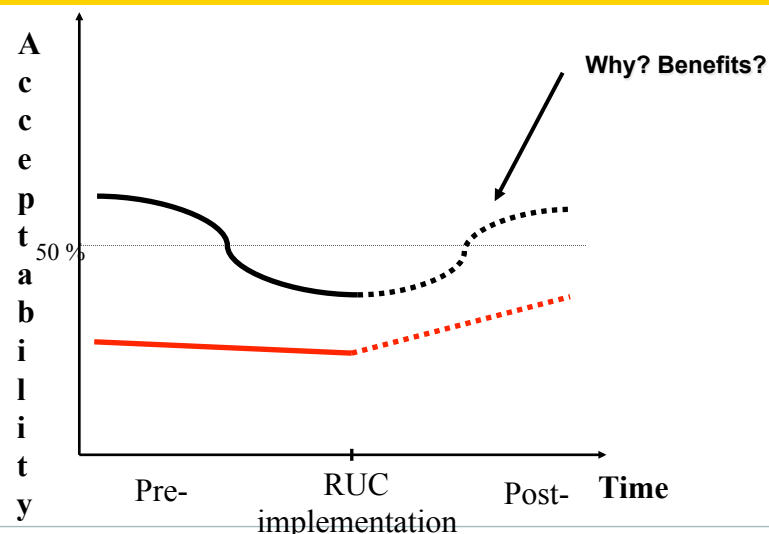
- Acceptability is not static but may be highly dynamical throughout the *pre-*, *decision* and *post* implementation phase.

* work done together with Markus Baum

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Possible developments of attitudes towards road pricing



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- typical ad hoc explanation for the observed shifts from negative attitudes before to rather positive attitudes after implementation of road pricing is that this is caused by the **benefits** (improvements) which have occurred after tolling has been introduced (Odeck & Brathen, 2002)

Alternative explanation for observed attitude changes

- According to *cognitive dissonance theory* (Festinger, 1957), there is a tendency for individuals to seek consistency among their cognitions (i.e., beliefs, opinions).
- Dissonance theory postulates that when there is an inconsistency between attitudes or behaviours (dissonance), people are motivated to reduce or to eliminate the dissonance because these inconsistencies cause discomfort.

Alternative explanation for observed attitude changes (ctd.)

- According to dissonance theory the introduction of road pricing evokes feelings of cognitive dissonance. However, this is only the case, if the introduction is (perceived as) *inescapable*.
- On the one hand people favour the status quo without road pricing. On the other hand people perceive that in the future this commitment can not be maintained any longer because the introduction of road pricing is inevitable. This causes strong cognitive dissonance.
- A devaluation of road pricing in terms of negative attitudes would not be an effective strategy to reduce dissonance in the long run. In contrast, the only effective option to reduce dissonance would be to develop more positive attitudes towards road pricing.

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Method

J. Schade, M. Baum / Transportation Research Part A 41 (2007) 41–48

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Table 1
Assignment of respondents to the four experimental conditions (N)

Group	Sex		Σ
	Female	Male	
High probability	9	25	34
Medium probability	10	22	32
Low probability	9	25	34
Control condition	13	27	40
Σ	41	99	140

N = 140 persons (41 female) aged between 19 and 69 years (mean age: 38.6 years)

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Impact of perceived probability of RUC implementation on acceptability

J. Schade, M. Baum / Transportation Research Part A 41 (2007) 41–48

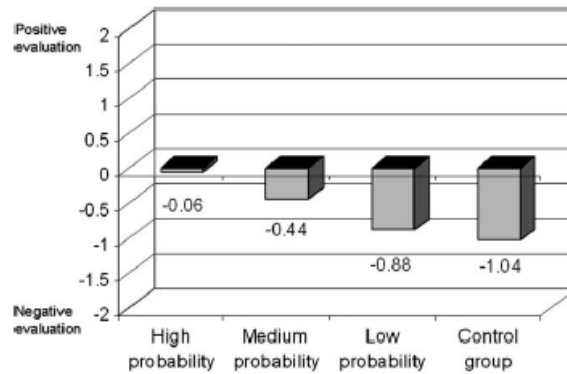


Fig. 2. Differences in the evaluation of the toll depending on the experimental condition (mean values).

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Additional evaluations of road pricing

- Persons who got convinced that the introduction of road pricing is almost inescapable report
 - weaker social norms against the toll
 - less negative emotions like anger
 - a lower importance of toll free use of infrastructure
 - a weaker infringement of freedom
 - weaker motivations (intentions) to defend or restore personal freedom e.g. by taking action against the toll or by evading the toll

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Conclusions Study II

In sum, results showed that persons with a strong conviction about a definite introduction of road pricing exhibit much more positive attitudes towards road pricing than persons who are less certain about a close introduction

- It seems, that people attempt to adapt to the new situation as soon as no real alternative is available. Apparently this applies even to areas where people do not make own decisions.

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Studies III*

- In the transport sector **differentiated pricing** is increasingly used to influence behaviour in order to manage users' demand for infrastructure capacity. (i.e. differentiation with regard to location, time, car or driver characteristics etc.)
- However, there is a likely conflict between the theoretical desirability of highly differentiated pricing structures and the *ability* and the *motivation* of users to respond effectively to them.

*Bonsall, Schade, Roessger & Lythgoe (2009)

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Main Research Questions

- We first investigated whether and how the time *taken* by participants to estimate the charges, and the *accuracy* of their estimates, was influenced by the *complexity* of the road pricing schemes, how they were presented and the characteristics of the participants.
- Secondly, we looked in particular to the question of whether the participant's performance is affected by their acceptability of road charging policy.
- Thus, the first part focuses on the cognitive ability to deal with complex pricing schemes whereas the second part emphasizes in particular the role of acceptance on the willingness or motivation to respond.

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Preliminary findings on the effect of acceptability

- Participants who held more positive attitudes towards road charging invested considerably less time evaluating the schemes. It seems they applied a heuristic which could be characterized with the following statement: *"If I like something, I do not need to examine it so critically"*.
- Participants who hold rather negative attitudes towards road pricing invest considerably more time in estimating the charges. They take longer, they make fewer errors, their errors are smaller and they express greater confidence in their estimates. It seems that they apply a strategy which could be characterized with the following statement *"If I do not like (but can not avoid) something, I need to examine it carefully"*.

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Conclusions & Outlook

- Work presented demonstrates how a rather new and unspecified construct can be usefully applied with psychological methods and theories
- Several parts of the research output (e.g. about revenue hypothecation) have found their way into official documents & policy making (e.g. on EC level)
- Research about differentiation/complexity is also well received from other disciplines (e.g. economics) for their demand prediction models
- There is still a lot of research to do: E.g. effect of cognitive variables (e.g. experience, knowledge, heuristics, information processing) and motivational factors (acceptability) on user reactions towards differentiated pricing structures and framing

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Thank you very much for your attention

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