

# Strategies to influence habitual road user behaviour

Tineke Hof

TNO | Knowledge for business



## Outline

- Introduction
- Background
  - Reasoned / planned behaviour
  - Habitual behaviour
  - Behaviour change strategies
  - Effectiveness of behaviour change strategies
- Method
  - Design and scenarios of driving simulator experiment
  - Hypotheses
- Results
- Conclusion
- Discussion



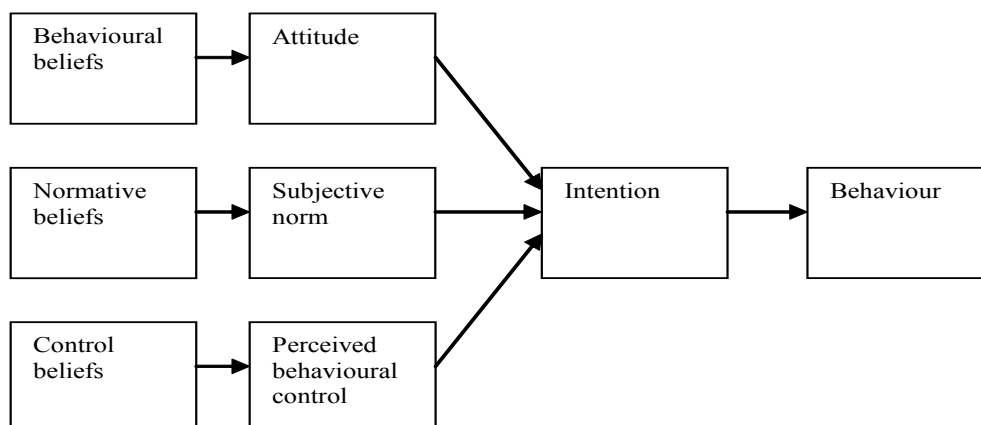
# Introduction

- Governments try to influence road user behaviour to prevent accidents, air pollution, and congestion
- Underlying motive for behaviour determines how successful behaviour change strategies may be



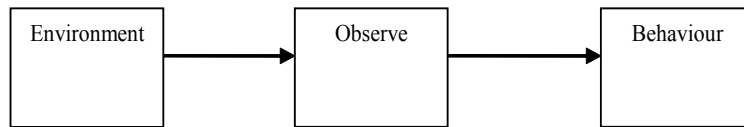
## Reasoned / planned behaviour

- Theory of planned behaviour (Ajzen, 1985)



# Habitual behaviour

- Behaviour is cued by the environment (Verplanken & Wood, 2006)

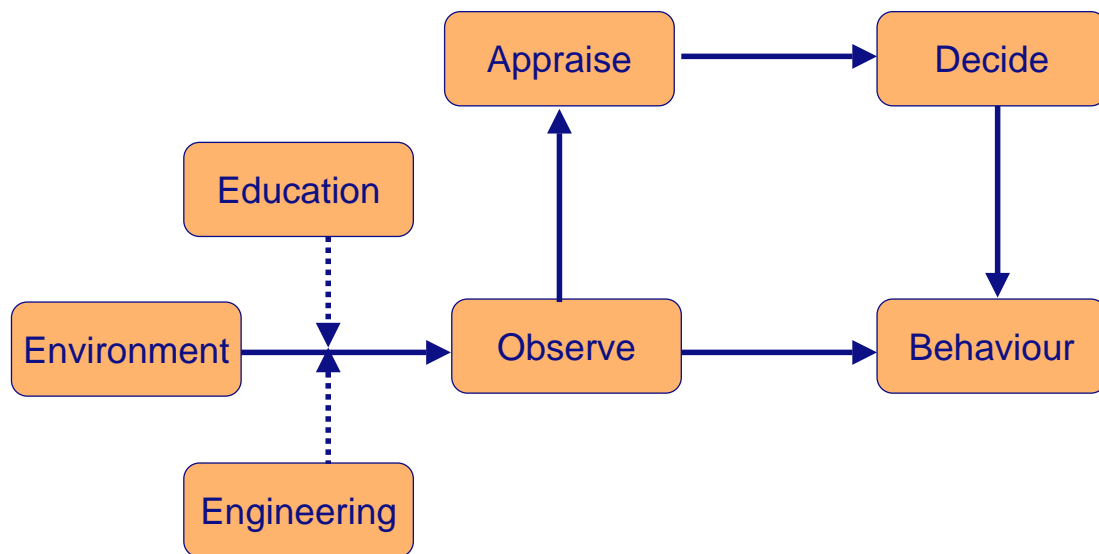


- Advantage of habitual behaviour
  - It is efficient, and leads to predictable and safe traffic
- Disadvantage of habitual behaviour
  - People fail to detect changes

# Behaviour change strategies

- Engineering
  - Infrastructure
  - Traffic signs
  - In-car systems
- Education
  - Road safety education
  - Road safety campaigns

# Effectiveness of behaviour change strategies



7

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## Method

- Rush-hour lane use



8

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# Design and scenarios

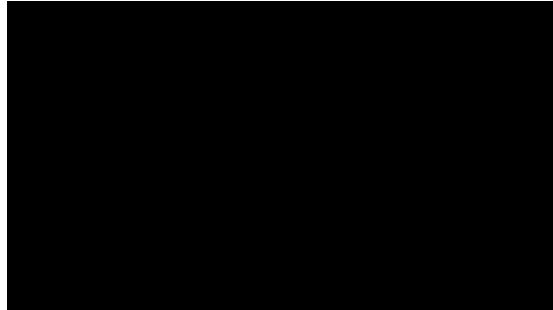
- Scenario 1: Baseline
- Scenario 2: Advertisement
- Scenario 3: Adapted road design
- Scenario 4: In-car message



## Scenario 1: Baseline



## Scenario 2: Advertisement



## Scenario 3: Adapted road design



# Scenario 4: In-car message



## Hypotheses

- 1: Merging into traffic is more habitual than using the rush-hour lane
- 2: Participants with a *high* 'merging into traffic-habit' will use the rush-hour lane more often in the three experimental scenarios than in the baseline scenario.



# Questionnaire

- Habit
  - Merging into traffic
  - Using rush-hour lanes
- Attitudes towards behaviour change strategies
  - Which strategy is most suitable to influence rush-hour lane use?



## Results

- Is merging into traffic more habitual than using rush-hour lanes?
  - 12 items on 7-point Likert-scale from -3 to +3
  - Mean 'merging into traffic' = .74
  - Mean 'using rush-hour lanes' = -.71
  - $t(22) = 4.28, p < .001$





## Results

- Do road users with a high merging into traffic-habit use the rush-hour lane more often in the experimental scenarios compared to the baseline?

Variable	N	Did not use rush-hour lane N (%)	Did use rush-hour lane N (%)	Likelihood ratio $\chi^2$ P-value (one-sided)
Scenario				
Baseline scenario	2	2 (100)	0 (0)	
Experimental scenario: advertisement, adapted road design or in-car message	9	3 (33)	6 (67)	.027



## Results

- Do road users with a high merging into traffic-habit use the rush-hour lane more often when behaviour change strategies are applied?

Variable	N	Did not use rush-hour lane N (%)	Did use rush-hour lane N (%)	Likelihood ratio $\chi^2$ P-value (one-sided)
Scenario				
Baseline	2	2 (100)	0 (0)	
Advertisement	4	1 (25)	3 (75)	.025
Scenario				
Baseline	2	2 (100)	0 (0)	
Adapted road design	3	2 (67)	1 (33)	.138
Scenario				
Baseline	2	2 (100)	0 (0)	
In-car message	2	0 (0)	2 (100)	.009



# Results

- Most suitable strategy to influence rush-hour lane use?
  - Adapted road design (43%)
  - In-car message (43%)
  - Advertisement (14%)



# Conclusion

- Limitations
  - Small amount of participants
  - Simulated environment
- Conclusion
  - Habitual behaviour (merging into traffic) can be changed into new behaviour (using rush-hour lane) by applying behaviour change strategies in such a way that connects to the underlying motive and enables road users to detect changes in traffic situation



# Discussion

- Thank you for your attention!
- Questions?

Tineke Hof, MSc  
+ 31 346 356 407  
tineke.hof@tno.nl

