ENVIRONMENTAL **RESPONSIBILITY DENIAL** DUE TO OPTIMISM IN **GREEN** TECHNOLOGY

Martin Soland
Psychology Department, University of Zurich, Switzerland

Outline

- Research motivation
- Theory: Rebound effects from a psychological perspective
- Research goals
- The ‚Greentech Optimism' scale
- Study I: Greentech optimism and conservation in households
- Study II: Greentech optimism and environmental-friendly travelling
- Discussion of results and outlook

Research motivation

Findings from qualitative studies

Knowledge of climate change vs. Behavioural costs related to pro-environmental behaviour

→ Cognitive dissonance! (Stoll-Kleemann et al., 2001)

Psychological barriers to justify inaction
(Stoll-Kleemann et al., 2001; Lorenzoni, Nicholson-Cole & Whitmarsh, 2007)

Responsibility should lie mainly in hands of policy makers and technology

(Stoll-Kleemann et al., 2001; Lorenzoni et al., 2007)

Research motivation

Does something like a „greentech optimism“ exist?

Does greentech optimism serve as a justification for environmental inaction?

If yes, what are the underlying psychological mechanisms?

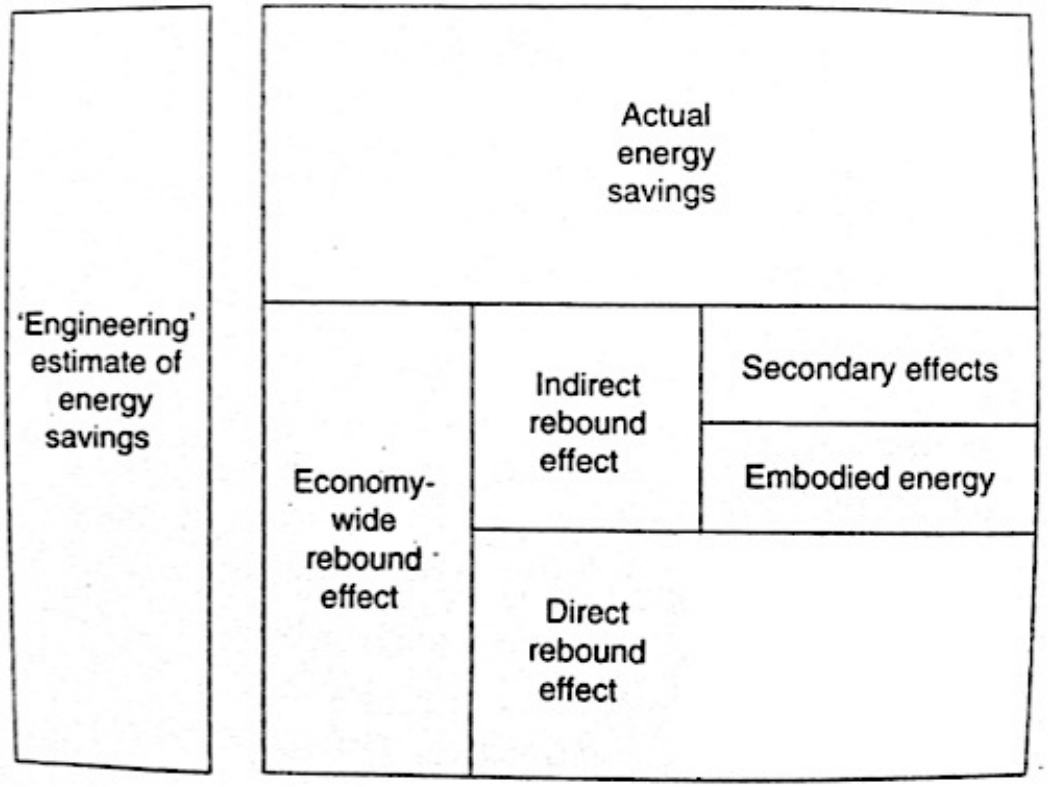
Theory: Rebound effects from a psychological perspective

Rebound effects: the economical perspective

Efficiency improvement decreases **costs per unit of use** (e.g., Euro per km of driving).

Consequence: Increase in **frequency of behaviour** (more km) or **intensity of behaviour** (km with higher speed).

Direct vs. **indirect**



From: Sorrell (2009, S. 202) (simplified)

The psychological perspective → Mental accounting

Human action is guided

- by **monetary costs** (e.g., budget available for daily mobility)
- but also by **moral costs** (e.g., morally acceptable amount of daily driving).

→ „Mental accounting of environmental load“ (de Haan, 2009)

„Mental rebound“**:** rebound that is not caused by saved monetary resources per unit of use. (de Haan, 2009)

Moral Balance Model (Nisan, 1991)

Goal: Moral equilibrium

More bad deeds than good deeds

More good deeds than bad deeds

Morally good behavior is necessary: Moral Compensation

Morally problematic behavior is acceptable: Moral Licensing

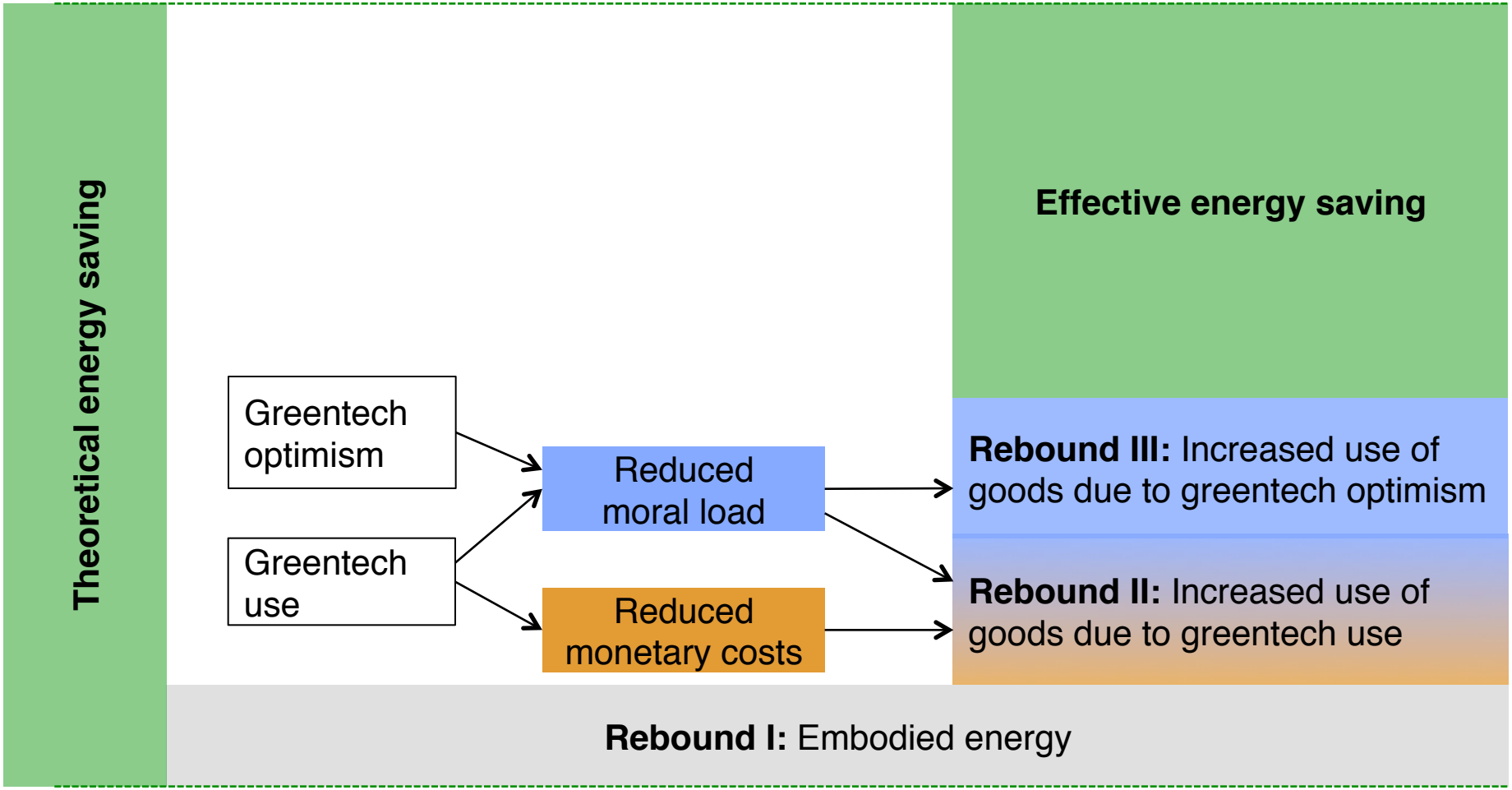
(Nisan 1991; Zhong, Liljenquist, et al., 2009; Zhong, Ku, Lount, & Murnighan, 2009; Agosti-Meile, 2011).

Moral licensing only due to one‘s own good deeds?

Vicarious Moral Licensing (Kouchaki, 2011)

Morally desirable behaviour shown by another person can lead to moral licensing.

If others use greentech, my moral load will be decreased. Hence, it is ok, if I don‘t act pro-environmentally.


Theoretical energy saving
Effective energy saving
Greentech optimism
Greentech use
Reduced moral load
Reduced monetary costs
Rebound III: Increased use of goods due to greentech optimism
Rebound II: Increased use of goods due to greentech use
Rebound I: Embodied energy

Two studies on greentech optimism: Research goals

Research goals

1. Develop a greentech optimism scale: A scale that measures optimism towards the problem-solving capacity of greentech.

2. Test the hypothesis that greentech optimism weakens individuals' willingness to act pro-environmentally.

3. Develop a psychological process model and test it statistically.

4. Derive policy implications.

The greentech-optimism scale

The greentech-optimism scale (GTO)

7 Items (Likert scale; α = 0.814)

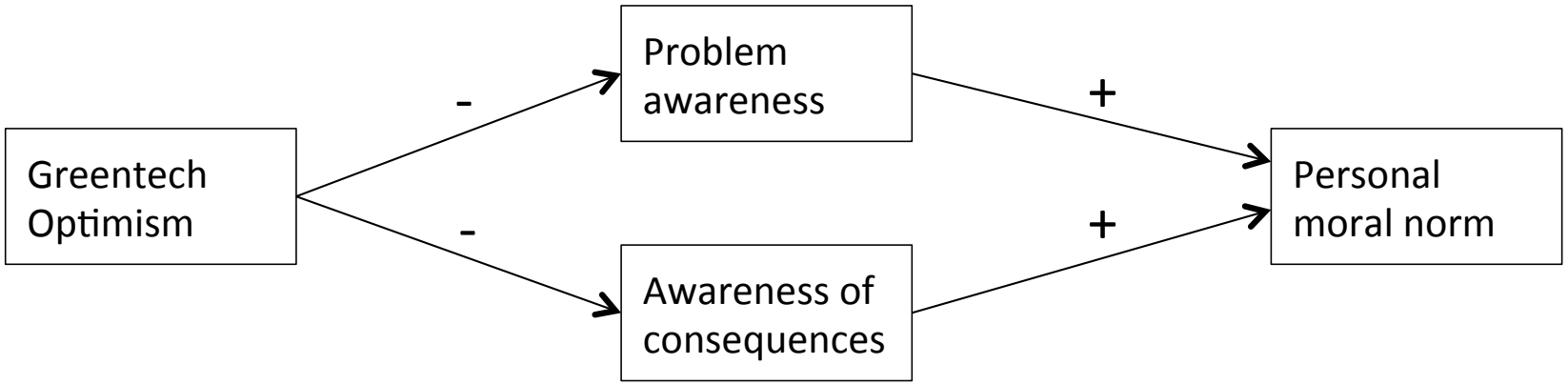
a) It makes me feel optimistic for our environment when I think of the developments being made in the field of green technologies.

g) Through the use of increasingly energy-efficient home appliances (refrigerators, washing machines, etc.) we will be able to master climate problems.

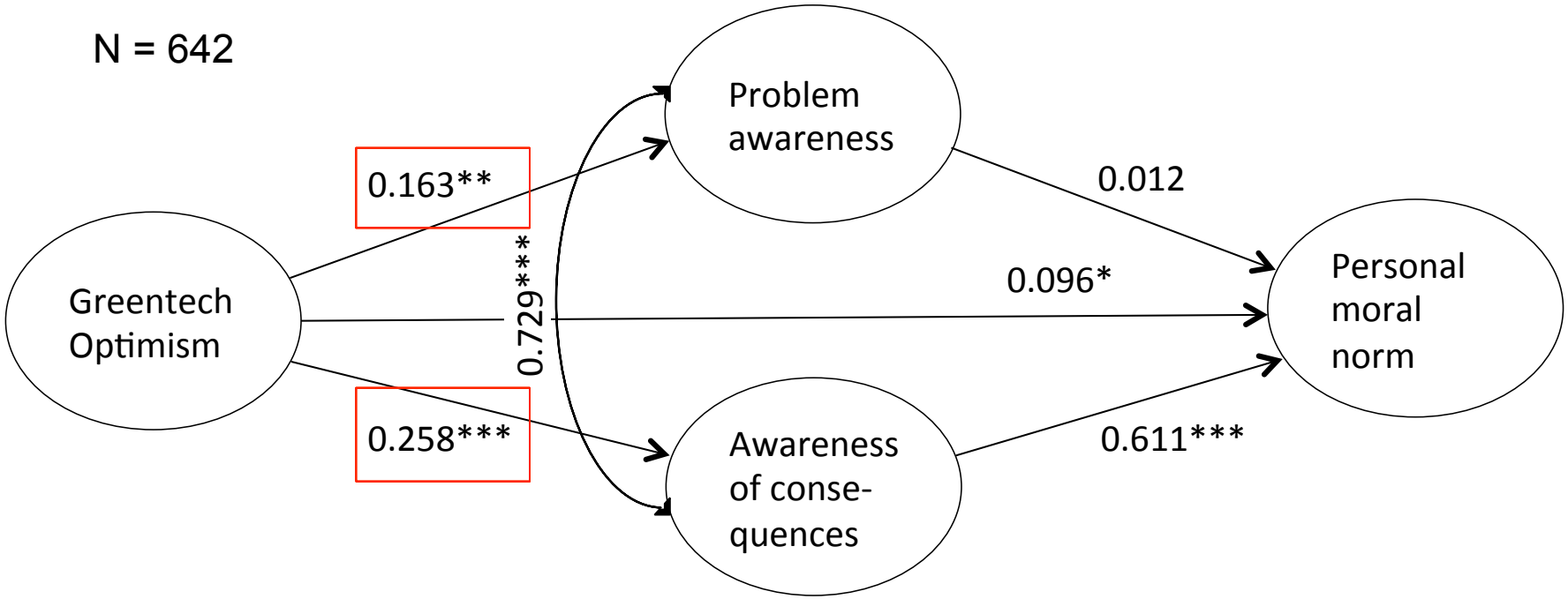
Study I: Greentech optimism and conservation in households

Theoretical process model

Based on the Norm activation model.
(Schwartz, 1977; Hunecke, 2000; Bamberg & Möser, 2007)



Results


N = 642
Greentech Optimism
Problem awareness
Awareness of conse-quences
Personal moral norm
0.163**
0.258***
0.729***
0.012
0.096*
0.611***

Why?

Universität Zürich[UZH]

Lehrstuhl für Sozialpsychologie

Findings from qualitative studies

Knowledge of climate change vs. Behavioural costs related to pro-environmental behaviour

→ Cognitive dissonance! (Stoll-Kleemann et al., 2001)

Psychological barriers to justify inaction
(Stoll-Kleemann et al., 2001; Lorenzoni, Nicholson-Cole & Whitmarsh, 2007)

Responsibility should lie mainly in hands of policy makers and technology

(Stoll-Kleemann et al., 2001; Lorenzoni et al., 2007)

Dissonance has to be integrated in the model

Without dissonance no justification for inaction needed

→ No negative greentech optimism effects to be expected

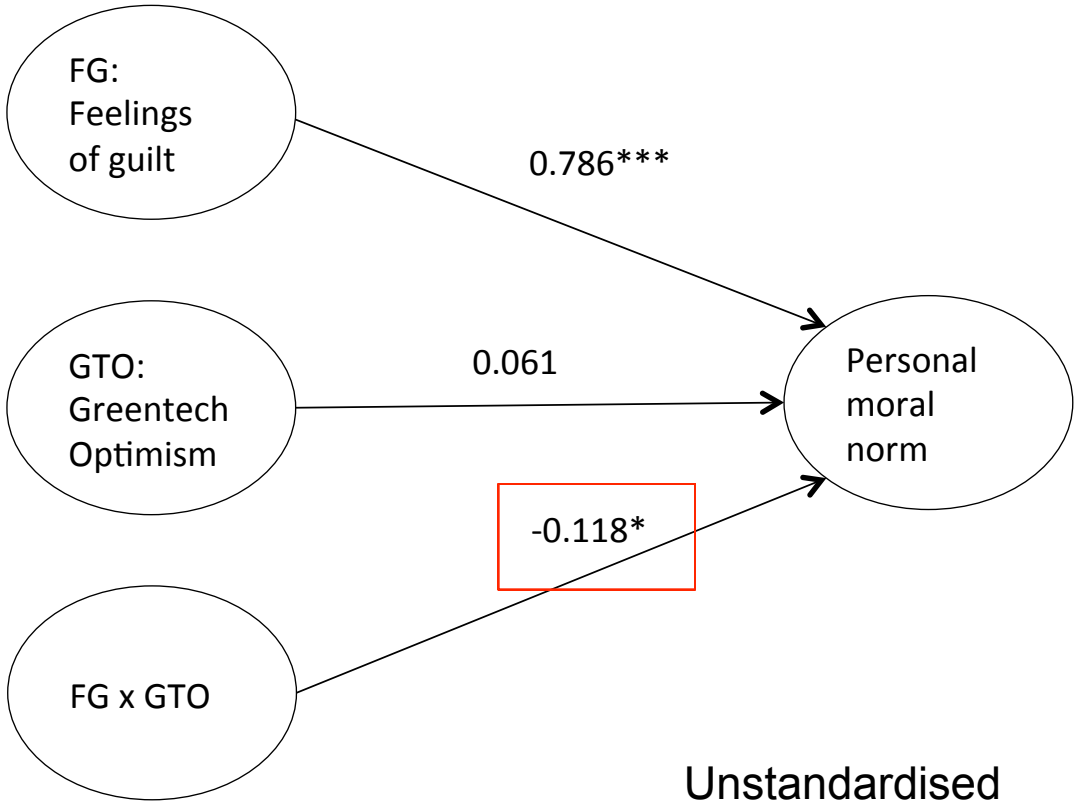
→ Dissonance has to be integrated in the model

→ **Moderation hypothesis:**

The stronger the feelings of cognitive dissonance are, the stronger the negative influence of greentech optimism on personal moral norm is.

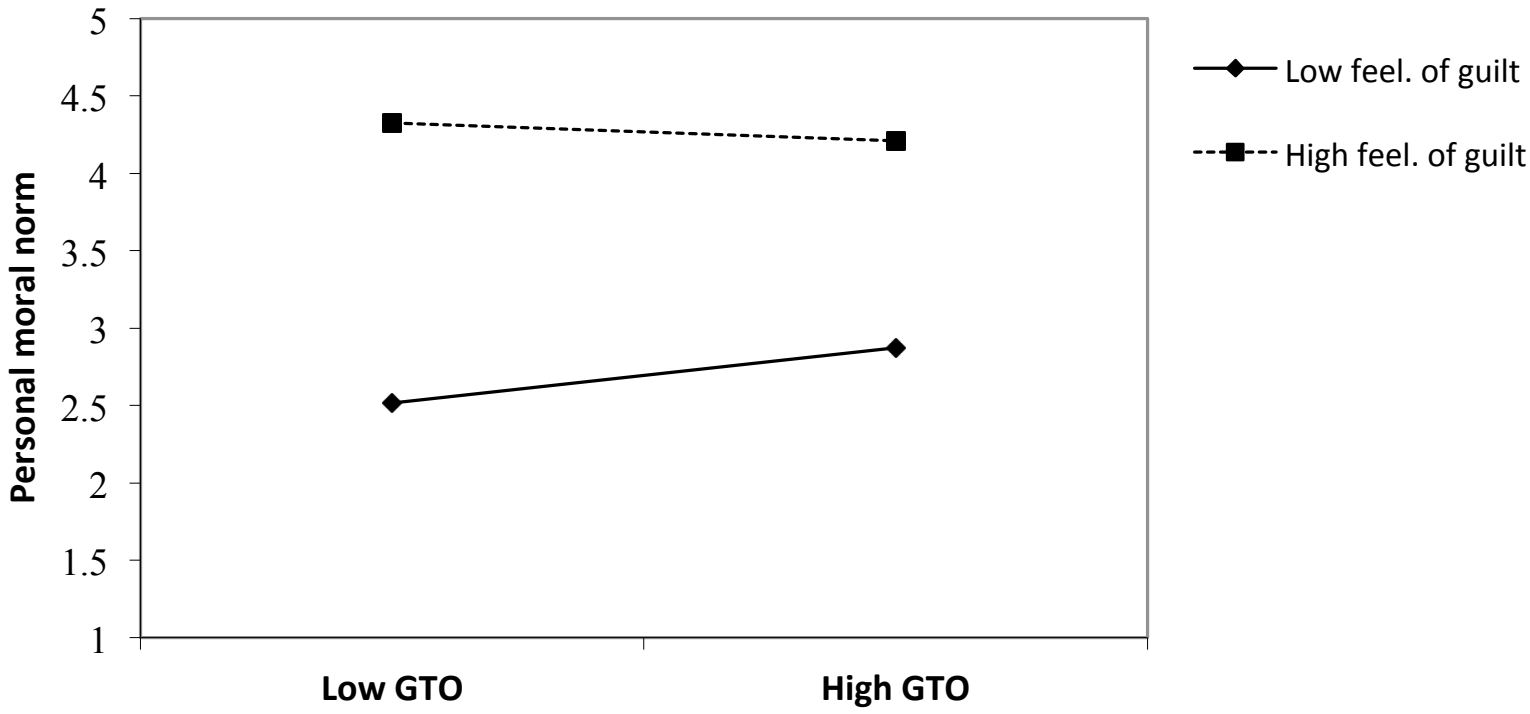
Test of the modified model

Feelings of guilt used as proxy for feelings of dissonance



Unstandardised Regression weights

Interaction plot



Conclusions from study I

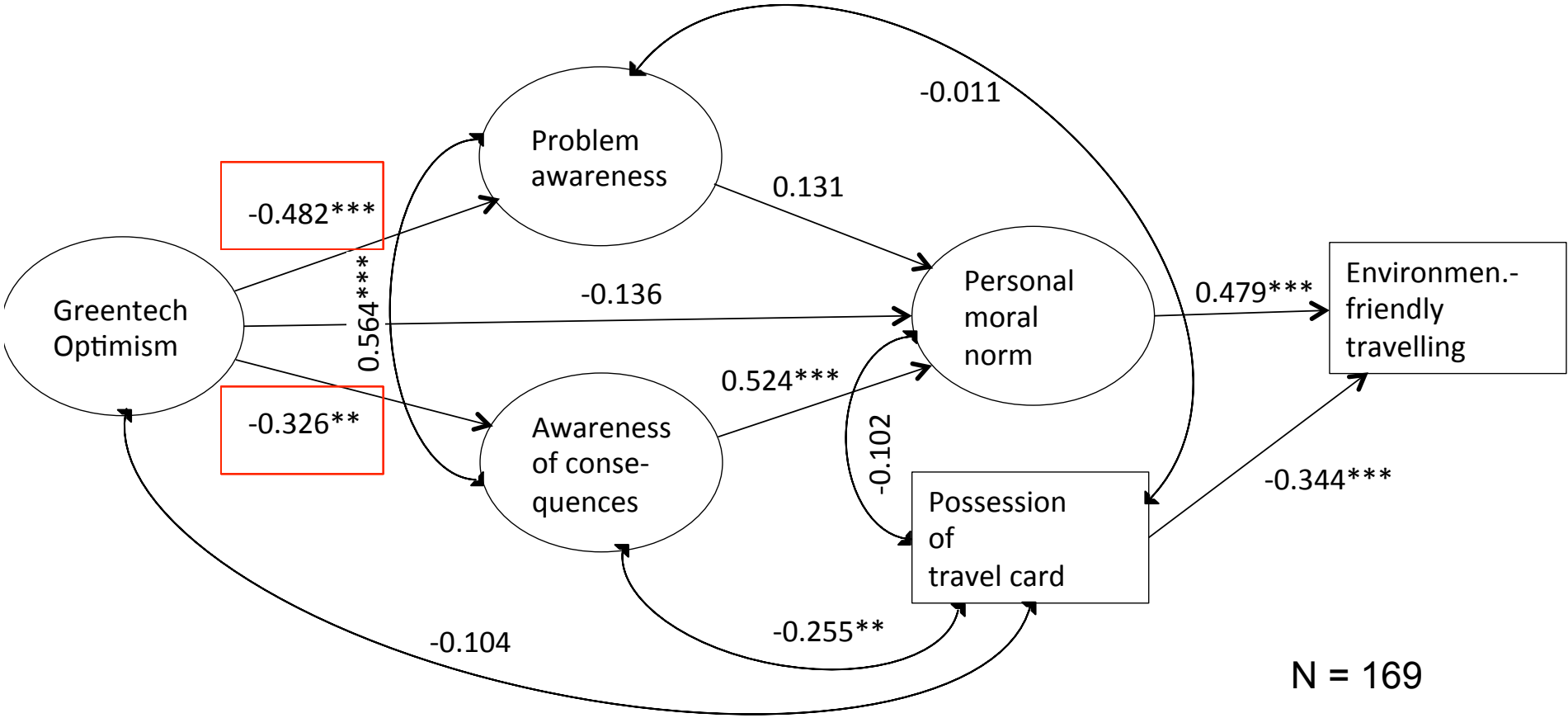
- Negative effect of GTO on PMN only if a critical level of dissonance is existent.

- The stronger the feelings of cognitive dissonance are, the stronger the negative influence of greentech optimism on personal moral norm is.

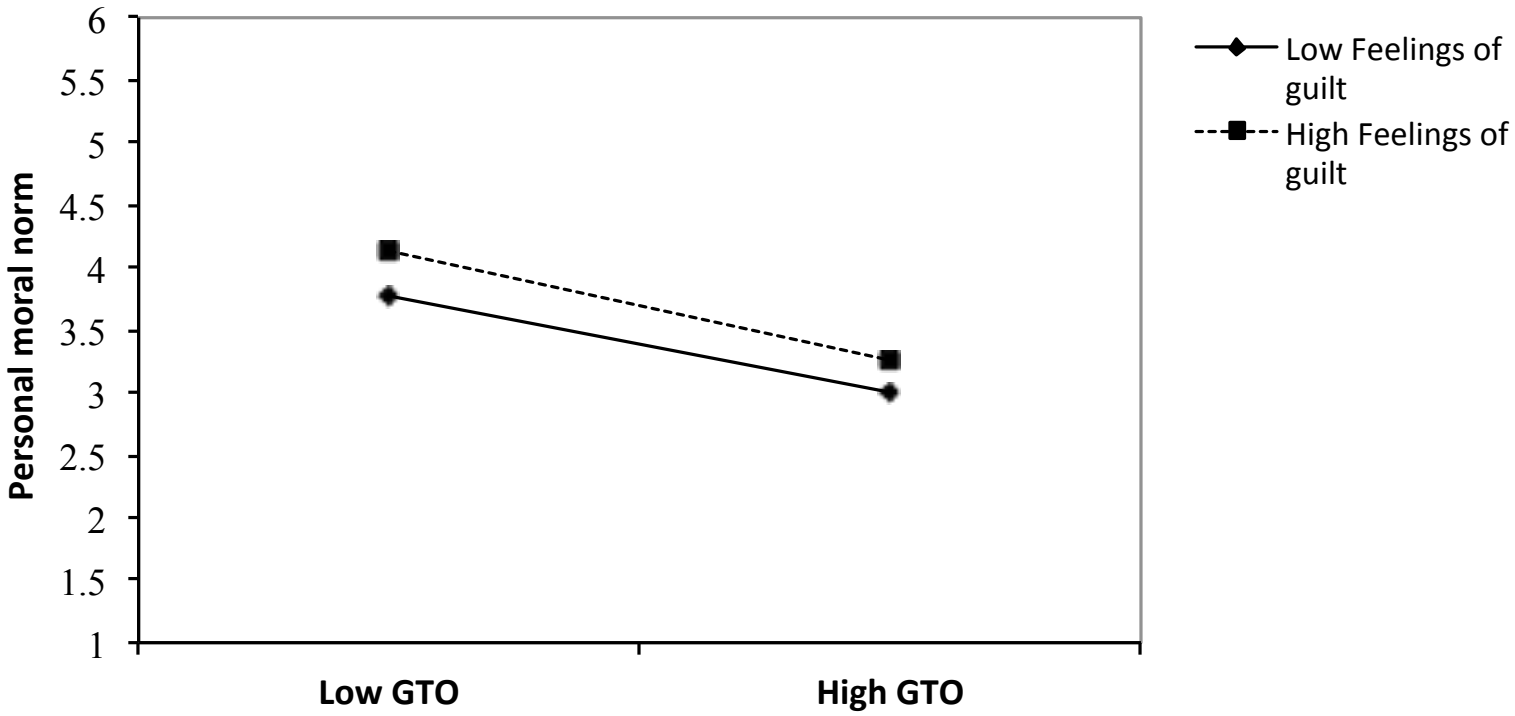
- For the large part of the sample, feelings of dissonance did not reach the critical level.

Study II: Greentech optimism and environmental-friendly travelling

Results: GTO as predictor of PMN and behaviour



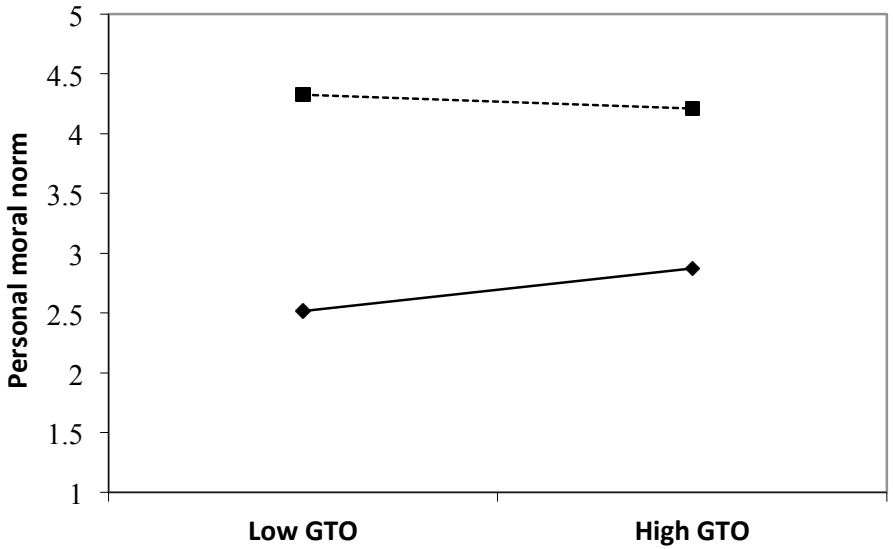
Interaction plot



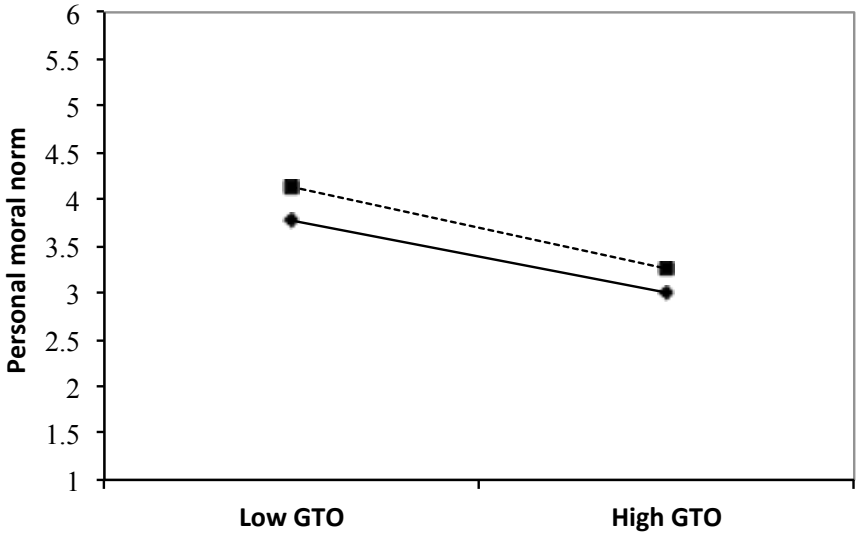
Discussion and outlook

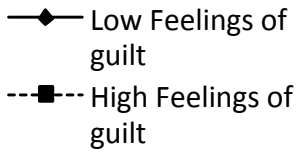
Comparison of the results

Study I: Conservation in households



Study II: Environmental-friendly travelling





Why the different results in the two studies?

- Interaction not linear, but stepwise.
  - Stable negative effect, if a critical level of dissonance is reached
  - If dissonance doesn‘t vary enough above and below such critical level, no statistical interaction is visible.

- *Conservation in households:*
  - Dissonance generally low (due to low behavioural costs)
  - Dissonance with variance above and below the critical level

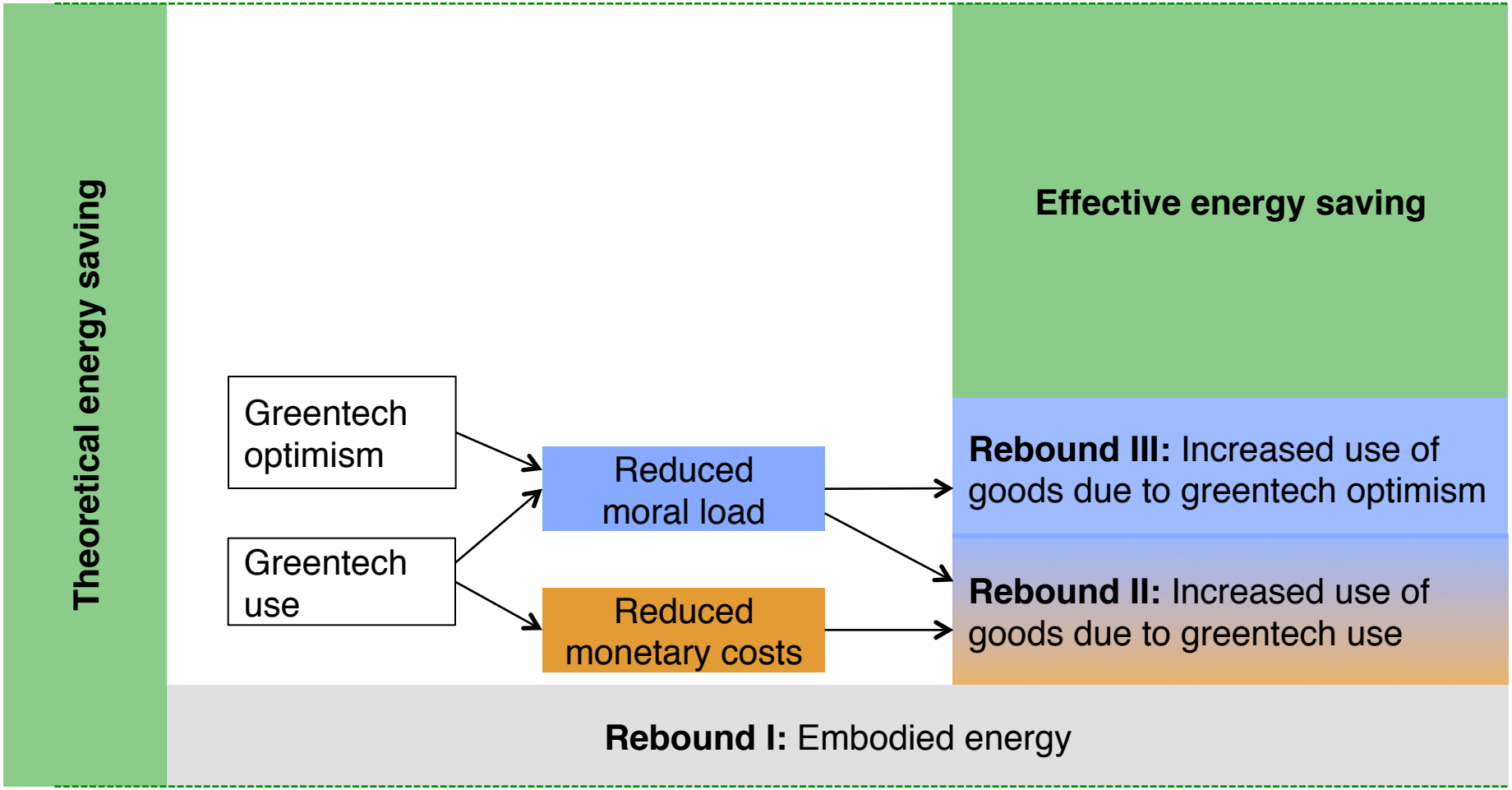
- *Enviromental-friendly travelling:*
  - Dissonance generally high (due to high behavioural costs)
  - Dissonance with variance (almost) completely above the critical level

Conclusion

In ‚high-cost' situations greentech optimism can serve as a justification for inaction and as a consequence foster unsustainable behaviour.

→ Rebound effects due to optimism in greentech

High cost situations = situations, where pro-environmental choices are related to high behavioural costs (loss of comfort, additional effort, perceived loss of freedom, etc.)


Theoretical energy saving
Effective energy saving
Greentech optimism
Greentech use
Reduced moral load
Reduced monetary costs
Rebound III: Increased use of goods due to greentech optimism
Rebound II: Increased use of goods due to greentech use
Rebound I: Embodied energy

Policy implications

- Greentech should not be presented as a panacea for the solution of environmental problems.
- Communication on greentech (by policy makers, media, advertisers): responsibility for environmental protection cannot be shifted towards policy makers or technology.
- Benchmark for labelling a technology as „green“?
- Value discourse. Benefits of sufficient lifestyles.

Future research

- Predictors of greentech optimism?
- Conditions/moderators of negative greentech-optimism effects?
- Positive greentech-optimism effects?

Thanks for your attention!

Study I: Examples of used items

Personal Moral Norm (6 items)

I feel personally obliged to generally save electric power in the household.

Problem awareness (4 items)

High consumption of electric power in households contributes significantly to climate change.

Awareness of consequences (5 items)

I'm aware that my personal energy saving behavior has an influence on climate change.

Study II: Operationalisation of the model constructs

GTO: As in study I, additional items relating to automotive and aircraft technology.

PMN: Feelings of moral obligation to choose to travel by train and not by airplane

Behaviour: Prize draw travel voucher Swiss Railway vs. Swiss Airline

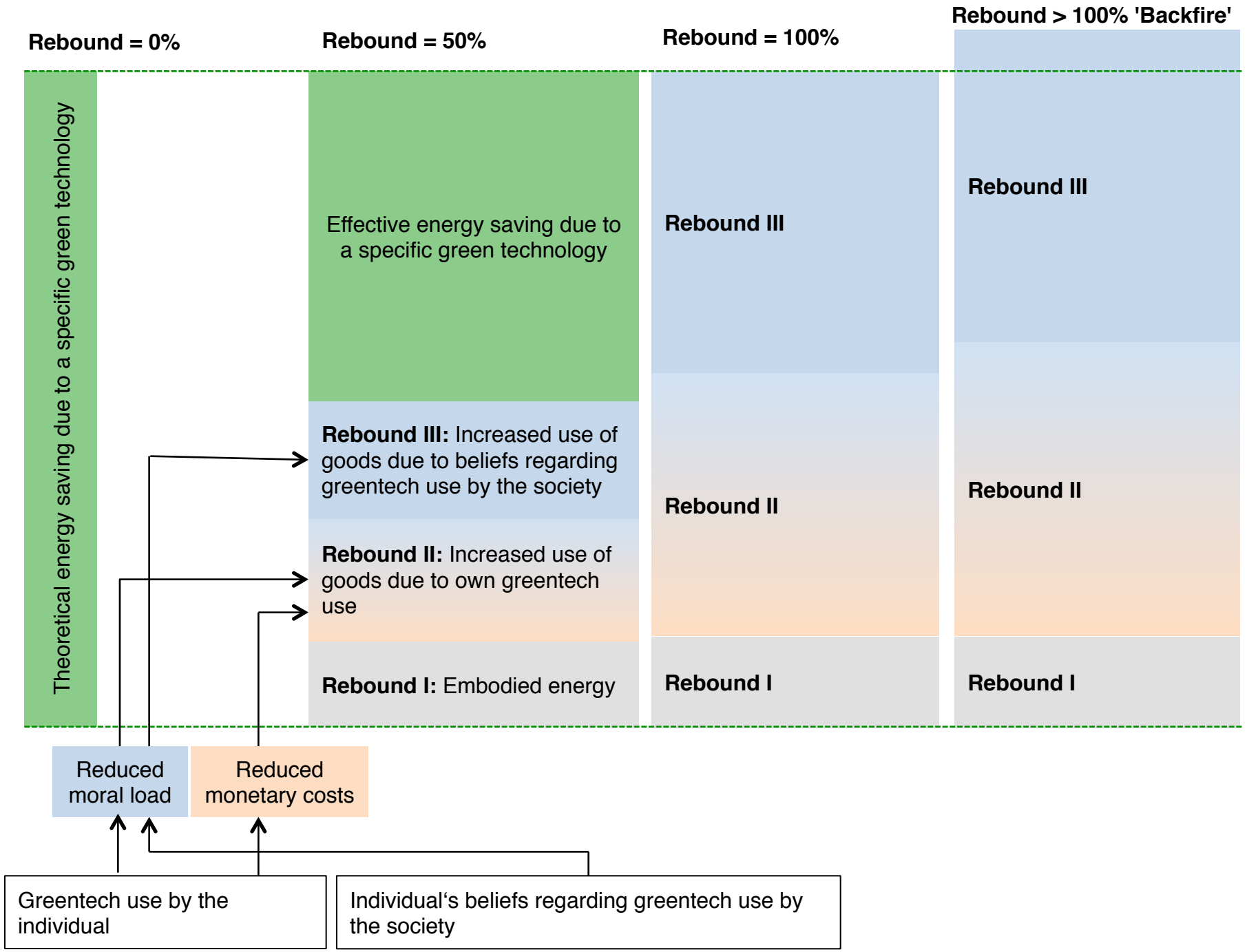
Problem awareness / awareness of consequences: Adapted from study I

Which forms of moral licensing are conceivable regarding greentech?

Moral Licensing due to one's own good deeds

	Direct licensing effects	Indirect licensing effects
Greentech in use	*Direct licensing effect* Hybrid car is used more than conventional car has been used	*Indirect licensing effect* Hybrid car leads to additional holiday flights
Greentech use planned	*Direct anticipating licensing effect*	*Indirect anticipating licensing effect*
Greentech use by others	*Direct vicarious licensing effect*	*Indirect vicarious licensing effect*

Moral Licensing due to beliefs: the future, other's behaviour.... optimism


Rebound = 0%
Rebound = 50%
Rebound = 100%
Rebound > 100% 'Backfire'
Theoretical energy saving due to a specific green technology
Effective energy saving due to a specific green technology
Rebound III: Increased use of goods due to beliefs regarding greentech use by the society
Rebound II: Increased use of goods due to own greentech use
Rebound I: Embodied energy
Rebound III
Rebound II
Rebound I
Rebound III
Rebound II
Rebound I
Reduced moral load
Reduced monetary costs
Greentech use by the individual
Individual‘s beliefs regarding greentech use by the society