



# i-STUTE: WP1

## Exploring Consumer Decision Making Processes in the Energy Efficient Solutions Market

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# WP1.1: Review and synthesis of psychological barriers to behaviour change

- ⦿ Aiming to understand consumer decision making processes, applying psychological theory to support the successful integration of i-STUTE outputs to market
- ⦿ Underinvestment in energy efficient technology even when CBA shows clear long-term financial benefits
- ⦿ Review and synthesis of existing behaviour change knowledge, and identification of likely most prominent barriers in energy domain
- ⦿ Framed in terms of seven questions faced by decision makers in context of home heating choice

# WP1.1: Review and synthesis of psychological barriers to behaviour change

Promoting Behavioural Change to Reduce Thermal Energy Demand in Households

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## Abstract (185 words)

A reduction in thermal energy consumption in buildings is vital for achieving the reductions in CO<sub>2</sub> emissions that are part of EU-2020 targets. A key challenge faced by behavioural scientists is to understand what encourages people to adopt more efficient ways of achieving a satisfactory thermal experience. We review the psychological barriers to reducing thermal energy demand and discuss ways these barriers may be overcome. The barriers include: demand on cognitive resources due to decision complexity; the tendency to procrastinate and discount future consequences; deferral to simplifying strategies including repeating past experience and copying the behaviour of others; the desire to act in ways that maintain a positive self-image; and inertia due to the fear of regret that one's decision might be wrong. We discuss behavioural approaches to overcome these barriers, such as emphasising public choice of "green" technology, reframing of benefits, simplifying and optimising the choice environment, and changing the temporal structure of costs and benefits. We provide a framework of suggestions for future research which together constitute an important first step in informing behaviour change efforts designed to reduce thermal energy consumption in buildings.

- Consideration of psychological barriers to behaviour change involved at each of these seven stages, with consideration of how each may counteract or supersede rational economic choices.

- Action inertia: Why do I have to change?
- Social norms: What do my friends or neighbours do?
- Messenger effects: Who told us?
- Emotions: How does it make me feel?
- Perceived behavioural control: Can I do it?
- Delay discounting: When will I get it?
- Habit: What do I usually do?

# WP1.1: Review and synthesis of psychological barriers to behaviour change

## Dissemination Tasks:

- ⦿ Review paper accepted for presentation at upcoming conferences:
  - SusTem2015 (July 2015)
  - BCEP Environmental Psychology Conference, Groningen, Netherlands (August 2015) – invited to present as part of an energy-choice symposium
- ⦿ Submitting for post-conference publication in Journal of Applied Energy
- ⦿ Validation of Synthesis report with Kathryn Chambers of the ETI Smart Systems & Heat team
- ⦿ Collaboration discussions in progress with researchers within Centre for Sustainable Energy use in Food chains (CSEF)

# WP1.4: Behavioural Insights

- ◎ A series of experiments aiming to explore the theoretical choice processes underpinning decisions made in the energy retail market
- ◎ Experiment 1.4.1: Aligned & non-aligned information
  - First experiment focusing on the role of information structure and type on choice outcomes: specifically exploring the role of alignable versus non-alignable information, using boiler versus heat pump plus popcorn control.

# Experiment 1.4.1

## Household Heating Systems 2015

### Scenario

Please imagine you are about to buy a new heating system for your home. you have narrowed your choice down to the two options, which will be presented side by side on the next screen.

Please take your time to carefully consider these provided options.

Both are standard condensing boilers, which are fuelled by gas.

First we will show you the different attribute levels available for the boilers you are choosing between, as provided by the manufacturer

Each attribute has additional explanatory information which is available if you hover your mouse over the info points provided, highlighted by this symbol (?)

Please carefully review the two options as you will then be asked to select which option you would prefer as your new heating system.

When you are ready please click next to view the two options.

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## Household Heating Systems 2015

### Feature Comparison



Boiler P



Boiler Q

	Boiler P	Boiler Q
Product Lifespan	(?)	Lifetime
Appliance Volume (Litres)	(?)	70 (small) 350 (large)
NOx Emission Class	(?)	3
Brand Reliability Rating	(?)	★★★★★ ★
Concealed user controls?	(?)	Yes Yes
Electricity usage on Standby (W)	(?)	2 (?) 10 (?)
Hot Water Temperature Control?	(?)	No No
Warranty (Years)	(?)	15
System Pressure Gauge?	(?)	Yes Yes
Availability of Parts	(?)	Widespread (?)
Timer?	(?)	Yes Yes
Temperature Range	(?)	Extensive (?) Limited (?)
Ease of Installation	(?)	Difficult (?)
Hot Water Flow Rate (Litres/min)	(?)	9
Uptake in UK	(?)	High (?)
Efficiency Rating	(?)	75

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# Experiment 1.4.1

- ◎ Follows from previous decision making research into alignable/non alignable features effect
  - People place more weight on alignable features if options are similar (e.g. same brand)
  - Exploring whether this generalises to choice of new technologies (i.e. similar versus dissimilar product types)
- ◎ Compares boiler/boiler with boiler/heat pump
- ◎ Each feature used interchangeably as alignable/non-alignable
- ◎ Which attribute-type has the greatest influence on choice in this domain?
- ◎ What is the underpinning explanation for this effect?
- ◎ How can we use this knowledge to present new technologies in an optimal way, so as to encourage consideration?

# Experiment 1.4.1

## ◎ Status:

- Survey launch expected in 1 – 2 weeks, currently working with online recruitment company to establish integration requirements, target audience etc.

## ◎ Dissemination tasks

- Study accepted for publication at BCEP Environmental Psychology Conference in Netherland (August 2015)



# Experiment 1.4.2 – Eye-tracking



- Previous eye-tracking research during vehicle purchase decisions showing most notable areas of interest during choice
- Experiment 1.4.2 extends this methodology to heating and cooling decisions, using boiler/boiler versus boiler/heat pump
- What are people taking into account when making choices in this domain?
- How do revealed motivations (non-conscious eye movements) differ from stated motivations? (comparing Experiments 1.4.1 & 1.4.2)

# Experiments 1.4.3 onwards

- ⦿ Experiments to understand the relative importance of barriers to behaviour change identified in the LR for decisions relevant to i-STUTE. Based on the initial two experiments we are:
  - Identifying further areas to focus on first
  - Developing standardised experimental procedures which will enable us to determine the relative importance of identified factors
- ⦿ Initial views are a schedule of experiments to investigate
  - Who else does it? –the role of normative feedback information in guiding choice
  - How does it make me feel? – Exploring the potential for emotion to influence choice, with a particular focus on effects of social scrutiny (choices made in public versus private)
  - When will I get it? – Can re-structuring of benefits offering shorter-term timescales lead to increased investment in new technologies?
- ⦿ Enabling us to develop strategies to overcome barriers and promote consideration of new technologies

# Thanks for listening

Questions?