



i-STUTE: WP1

MC Update

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WP1.1: Overview and Output

- ◎ WP1 - Review of psychological barriers to the adoption of new heating/cooling technologies relevant to i-STUTE known to contribute to the energy efficiency gap
 - Presented as paper at SUSTEM 2015 conference, July 2015, organised by the Newcastle IDRIST, one of the working with EUED teams
 - <http://research.ncl.ac.uk/sustem/sustem2015conference/proceedings/>
 - Also presented as part of a behaviour change symposium at 11th Biennial Conference on Environmental Psychology, August 2015, in Groningen, The Netherlands
- ◎ Paper now also accepted for presentation at BEHAVE2016, 8th – 9th September 2016 in Portugal, and under review at associated Journal 'Energy Efficiency'

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 (199 words)

A reduction in thermal energy consumption in buildings is vital for achieving the reductions in CO₂ 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 in the context of energy-efficient technology adoption, 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 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, focusing on symbolic attributes of new technologies, 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.

Keywords Behavioural science; sustainability; energy-efficient technology; demand reduction; behaviour change; choice optimisation

- Consideration of these seven psychological barriers to behaviour change, with consideration of how each may counteract or supersede rational economic choices, and how each may be overcome in order to reduce the energy efficiency gap and encourage uptake of new technologies

- 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?

WP1.4: Overview

- ⦿ Programme of empirical work to explore the theoretical choice processes underpinning decisions made in the energy retail market

Progress since last MC meeting:

- ⦿ Experiment 1.4.1a – Aligned versus non-aligned information
 - Status and output: Complete
 - Experiment 1.4.1b – Follow-up on alignability effects
 - Status and output: **Pilot and main experiments complete and written up as two study paper with 1.4.1a**
 - **These studies also accepted for presentation at BEHAVE2016, and are under review at associated Journal 'Energy Efficiency'**
- ⦿ Experiment 1.4.2a – Temporal Discounting
- ⦿ Status: **Study complete, and written up as white paper**
- ⦿ Experiment 1.4.2b – Follow-up on discounting effects
 - Status: **Design complete, data collection to commence shortly**
- ⦿ Experiment 1.4.3 – Norms and Action Inertia
 - Status: **Design complete, data collection to commence shortly**
- ⦿ Experiment 1.4.4 – Messenger Effects
 - Status: Design discussions underway

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WP1.4: Behavioural Insights

Experiment 1.4.1a – Boiler/Heat Pump Choice (Alignability effects)

- ⦿ Study complete
- ⦿ Key findings – evidence for an increased probability of selecting superior alignable options when products were similar; mediated by an increased tendency to copy non-aligned information over when options are similar. No effects of alignability found for differing products – leading to rationale for Experiment 1.4.1b, that a shift in construal levels elicited by the added consideration of environmental concern
- ⦿ Study 1.4.1b designed to explore this interplay between alignability and construal level in greater detail. We predicted that there would be an interaction between construal level and alignability – with non-aligned information and high-level construals providing the conditions under which ‘green’ choice will be most viable

WP1.4: Behavioural Insights

Study 1.4.1b – METHOD

- ⦿ Participants were primed with a thought task prior to taking part in the same choice task (boiler versus heat pump)
- ⦿ Task used to manipulate level of concrete versus abstract thought, by asking people to consider ‘how’ versus ‘why’ they choose to engage in a particular activity, in this case “care for the environment”
- ⦿ Manipulation check – participants given Vallacher and Wegner's Behaviour Identification Form (BIF) to complete. This scale contains 25 items, each of which describe an action (such as ‘making a list’) along with two ways that the behaviour might be identified (i.e. ‘writing things down’ vs. ‘getting organised’). Participants select the identification they personally believe best describes the behaviour. An average abstraction score is then calculated by counting the number of higher-level actions identified by participants.
- ⦿ Pilot task ($N= 413$) revealed task worked as intended, with participants in the abstract prime condition demonstrating a higher level of later abstract thought than those in the concrete prime condition (M 's = .60 vs. .55 respectively), $F(1,411) = 4.60, p= .033$

WP1.4: Behavioural Insights

Study 1.4.1b – RESULTS

- ⦿ Main experiment completed with 454 participants, randomly assigned to abstract versus concrete thought prime prior to choice task
- ⦿ Unfortunately thought task didn't work as intended with similar average BIF scores generated in the abstract ($M=.60$), and concrete ($M=.57$) prime conditions, $F(1,445) = 2.35$, $p = .13$, $\eta^2 = .005$.
- ⦿ However, regardless of prime condition, t-tests revealed that, when faced with a choice of differing technologies, there was a preference for non alignability: $t(446) = 18.08$, $p = .000$
- ⦿ This was found to be irrespective of whichever option was presented as superior alignable vs. non-alignable: similar proportions of people were found to prefer the superior non-alignable option when presented with a superior alignable boiler (58.7%) vs. heat pump (56.8%).

WP1.4: Behavioural Insights

Study 1.4.1b – RESULTS

- ⦿ At this stage, we cannot conclude that this is due to differences in construal level, as we find no evidence of this from BIF scores according to thought prime condition. However, we do get a significant overall effect of BIF scores (above versus below group average): $t(446) = 27.21, p=.00$: in general it appears that the majority of participants were more inclined towards higher versus lower level construals, as indicated by the frequency of participants appearing in the above (62.4%) versus below (37.6%) average BIF groups.
- ⦿ Prime task involving consideration of environmental issues may have induced both groups to think in more abstract terms
- ⦿ As such still in research stages and a study three needed to disentangle the effects of alignability and construal levels, using a less emotive prime task
- ⦿ However appears to be the case that when faced with a choice between dissimilar goods, involving new technologies, that we find a general preference for non-alignability, which can be used in development of marketing strategies
- ⦿ These studies have been accepted for presentation at BEHAVE2016, and have been written up as a two study paper and under review at associated journal 'Energy Efficiency'.

Thanks for listening

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