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Trust in government across 7 European countries: examining the relationship with values and behavioural antecedents

by

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Abstract

Current research suggests that trust in the UK government is low (Poortinga & Pidgeon, 2003). Lack of political trust also appears to coincide with a lack of support for climate change policy (e.g. Lorenzoni & Pidgeon, 2006). Additionally, there are suggestions that the values of the general public are perceived as differing from those characteristic of government (Poortinga & Pidgeon, 2003). This paper provides an examination of the relationship between trust in government and the acceptability of policy measures, as well as the relationship to environmental value orientations. It also considers the relationships between trust and the various behavioural antecedents posited by the Theory of Planned Behaviour and the Norm Activation Theory (e.g. attitudes, perceived behavioural control), to determine whether trust is in any way linked to the precludes to carrying out certain environmental behaviours.

An online survey was used to examine trust in government. There were two questionnaires which were administered to a total sample of 11,820 participants, across seven European countries: Greece, Hungary, France, the United Kingdom, Norway, Switzerland, and The Netherlands. The significant findings of the study can be summarised according to the relationship between trust in government and the following:

1. Demographic characteristics

Trust in government was generally low, with differentiation in mean trust across the countries; Switzerland and The Netherlands reporting the highest trust, and Greece the lowest. Women reported lower levels of trust than men in the UK and Norway, and those in the UK, Norway, and Hungary who rated their political preference as more to the right, rated a lower trust in government. Conversely, participants in France and Greece who rated their political preference as more to the left, rated a lower trust in government: perhaps related to the type of government currently in power. Additionally, it was found that the level of subjective urbanisation in the area in which participants lived significantly affected trust levels in the UK and The Netherlands; where those living in rural

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areas or villages had lower levels of trust than those in large towns. The level of trust in respondents from Greece, Switzerland and Hungary also varied according to their home ownership status, with those who rented from a state agency differing from those who owned their home. Respondents from The Netherlands and Switzerland also differed in trust levels according to the type of fuel they used to heat their home. Trust also differed according to marital status for respondents from France and The Netherlands.

2. Acceptability of policy

Correlational analyses showed that as trust in government to reduce energy use increased, the acceptability of policy measures to reduce energy-related environmental problems also increased. This was the case for each of the countries with the exception of Greece and Hungary.

3. Values

The relationships between trust and four value orientations – altruism, biospherism, egoism, and hedonism – were not in the direction expected. For each of the countries except for Greece, all four of these values were positively related to a trust in government to reduce car use (for the majority of analyses), and to a lesser extent, related to trust to reduce energy use. It had however been expected that egoism and hedonism be negatively related to trust, in the opposite direction to altruism and biospherism. It is not known why these correlations went in the direction that they did.

4. Behavioural antecedents

The relationship between trust and each of the behavioural antecedents identified by the Theory of Planned Behaviour and the Norm Activation Theory were examined, and it was found that (for the majority of analyses) as trust in government increased:

- awareness of the problem of using too much non-sustainable energy increased;
- the use of sustainable energy in the home was perceived as an increasingly efficient way to reduce the outcome of environmental degradation;

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- attitudes towards increasing the amount of sustainable energy in the household became more positive;
- perceived behavioural control at using more sustainable energy increased;
- the subjective norms of other people using sustainable energy increased;
- the personal norms of participants to use sustainable energy in their home increased.

As with the value orientations, the correlations related to car use reduction were larger than those related to energy reduction. This suggests that car use reduction – as a more specific and tangible concept – may be more useful than the general concept of energy use within this type of research, and in a wider sense in helping to raise awareness of environmental issues.

It should, however, be noted that many of the correlations in these various analyses were small in magnitude, and effect sizes were no greater than medium level (according to Cohen, 1988, 1992).

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1. Introduction

In a review of major studies of public views on climate change, Lorenzoni and Pidgeon (2006) found that the public generally ascribe responsibility for dealing with climate change to the government. However, research has shown that trust in the UK Government in dealing with risks such as that posed by climate change is generally low (Poortinga & Pidgeon, 2003). Lorenzoni and Pidgeon (2006) for instance, write that “regarding the communication of environmental issues and risks, the public tend to mistrust governments, businesses, industry and sometimes experts” (p.85). This mistrust also appears to be negatively related to the public’s support for government led climate change policies. O’Connor et al. (1999, in Lorenzoni & Pidgeon, 2006) for example found that climate change policy support amongst the public was greater in Bulgaria than in the US, where there was greater trust in governmental institutions. This suggests that lower trust in government often coincides with low support for politically initiated climate change policies. As Johnson (1999) suggests then, “those who trust an institution or group seem to find its risk estimates more credible and its hazard policies more acceptable” (p.325).

In relation to the issue of climate change, trust can be defined as “people’s confidence in both the expertise and actions of agencies and institutions that initiate and control risk” (Lorenzoni & Pidgeon, 2006, p.85). Although trust in government appears to be related to support for climate change policy, the exact mechanism for this is unclear. Lorenzoni and Pidgeon (2006) suggest that “the widely observed public ambivalence towards climate change may well reflect an expression of frustration fuelled by disempowerment” (p.85). But Poortinga and Pidgeon (2005) find support for an ‘associationalist’ rather than causal model of trust, whereby trust in the institution to effectively deal with the risk (e.g. climate change) does not result in the acceptability, rather acceptability determines trust. Either way, it is important to understand whether trust in government is related to the intentions to carry out certain environmental behaviours, and to other antecedents to pro-environmental behaviour, when exploring links with low support for climate change policy. This can help us to

understand whether a lack of trust may affect the potential for pro-environmental behaviour. It is also important to understand whether trust is itself related to environmental values, since certain values may be associated with greater mistrust. These areas are the central focus of the following discussion.

According to the findings of a study carried out by Poortinga and Pidgeon (2003), the government's perceived values towards climate change are seen as differing from those of the British people. It is useful then to understand whether specific values are related to a greater mistrust in government. Values relating to environmental issues are often categorised as either more self-enhancing or more self-transcendent (de Groot & Steg, 2007). Based on this distinction, Stern and colleagues (e.g. Stern & Dietz, 1994; Stern, Dietz, & Guagnano, 1998) suggest that there are three value orientations which relate to environmental beliefs and behaviours: altruism (directed towards other humans); biospherism (directed towards the biosphere and other species); and egoism ("self-interest", p.85) (Stern, Dietz, Abel, Guagnano, & Kalof, 1999). Altruism and biospherism are more self-transcendent values, whereas egoism is more self-enhancing. People may hold various levels and degrees of each of these values. The 3-value structure has been replicated across various studies (e.g. de Groot and Steg, 2008;), where it has often been measured using the 13-item questionnaire developed by de Groot and Steg (2008) from Stern et al.'s (1999) short version of Schwartz's (1992) value scale. This questionnaire therefore provides a useful tool through which to measure people's environmentally-related values, and to help determine whether there is a relationship between their values and their level of trust in government to instigate environmental change.

The Theory of Planned Behavior (TPB; Ajzen, 1985, 1991) and the Norm Activation Theory (NAT; Schwartz, 1977) are both concerned with predicting and understanding behaviour, by identifying the causal antecedents of behaviour. The TPB (Ajzen, 2005) suggests that behaviour is determined by the intention to perform that particular behaviour, and that this intention is determined by three basic components: the person's attitude towards the particular behaviour; their "perception of

social pressure to perform or not perform the behavior” (p.118; subjective norm); and their level of perceived ability to carry out the behaviour (perceived behavioural control).

The NAT is a theory of altruism developed by Schwartz (1977), which is often now used to explain pro-environmental behaviour (e.g. Hunecke, Blöbaum, Matthies & Höger, 2001). Within this context, it has been suggested that people are altruistic for the ‘collective good’, by engaging in more pro-environmental behaviour (Wiidegren, 1998). Specifically, the theory posits that personal norms (an individual’s self-expectation to carry out a particular action / behaviour) are the antecedents to behaviour, and that these personal norms are activated by the awareness of the consequences of that behaviour and the belief or ascription of personal responsibility to carry out that behaviour (Schwartz, 1997; Wall, 2007). Unlike the TPB, Schwartz (1997) is careful to make the distinction that personal norms “are experienced as feeling of moral obligation, not as intentions” (p.227).

With regard to the issue of climate change, there is evidence to suggest that perceived behavioural control may be low. In their own research for example, Poortinga and Pidgeon (2003) found that “respondents tended to disagree that they could control risks of climate change” (in Lorenzoni & Pidgeon, 2006). This then places a greater emphasis upon the role of government in controlling the risk, and enhances the dependence on them as an organisation trusted to make the necessary steps towards change. It could be argued therefore that perceived behavioural control, as well as other behavioural antecedents, is related to trust in government.

In order to answer these questions about the relationship between trust in government to create environmental change and people’s values, as well as the antecedents to the activation of pro-environmental behaviours, data from the EU Barenergy study was utilised in the following study.

2. Method

2.1 Design

Two online questionnaires were administered to participants across seven countries: Greece, Hungary, France, the United Kingdom, Norway, Switzerland, and The Netherlands. Each questionnaire was similar in nature and format – with around 120 questions – but focussed on different aspects of environmental behaviour. The questionnaires were translated in to the primary language for each of the seven countries. Participants completed only one of the questionnaires, resulting in a between groups design (where there are two groups / conditions, in this case the two different questionnaires, and each group contains different participants).

2.2 Measures

The two questionnaires both contained several measures relating to the environment, the scope of which is beyond this report. The focus for this (UK) report is on the issues raised within the introduction, and so a selected number of measures from the questionnaire will be examined in the following study. Measures in the questionnaires included those relating to value orientations, the motives behind various environmental behaviours and the antecedents for these behaviours, trust in government, and demographic characteristics; although the exact questions and environmental behaviours varied between the questionnaires. Questionnaire 1 additionally examined the acceptability of policy measures. Questionnaire 1 therefore contained eight sections, and Questionnaire 2, seven sections. This paper will focus on the measures of trust in government, value orientations, behavioural antecedents, and acceptability of policy, which were examined using the following question format:

Trust in government Trust in government was measured by four questions (along a 7-point scale), examining trust according to the perceived knowledge, responsibility, trustworthiness, and concern of the government in response to a specific environmental behaviour. Questionnaire 1 examined trust in

relation to energy use, and Questionnaire 2 examined trust in the government to reduce private car use.

Value orientations: A revised version of de Groot and Steg's (2008) questionnaire, with an additional four items included to measure hedonism, was used to measure the four value orientations of biospherism, altruism, egoism, and hedonism. The questionnaire contained 17 items. Participants were asked to rate how important each value was as a guiding principle in their lives, on an 8-point scale from -1 (values which are opposed to their principles) to 7 (values of supreme importance as a guiding principle).

Behavioural antecedents: This set of questions measured the behavioural antecedents identified by the TPB and the NAT relating to attitudes, subjective norms, perceived behavioural control, behavioural intentions, problem awareness, and personal norms, with the addition of outcome efficiency. Each of these items were measured on a scale of 1 (strongly disagree) to 7 (strongly agree).

Acceptability of policy: The acceptability of various policy measures was measured in terms of the policy's acceptability, fairness, effectiveness, and positive or negative effects on the participant, with one question for each of these dimensions. Participants rated the questions on a scale of 1 to 7 (e.g. 1 = very unacceptable, 7 = highly acceptable). The acceptability of three separate energy policies was examined in the present study (16 questions, 4 for each dimension).

2.3 Participants

Participants were selected from each of the seven countries by the market research company, AMR. Selection was based on six demographic criteria: gender, age, household income, education level, marital status, and the number of persons in the household. Demographic criteria were chosen to try to represent the population of each country as closely as possible. A total sample of 15,414 adults, aged between 18 and 90 ($M = 44$ years), was obtained. Data from several participants had to be removed during the research process, based on the assumption that some of the questionnaires were not completed with the appropriate level of attention. For instance, participants were excluded if they answered all questions identically, if they answered more than 2 or 3 (depending on the measure)

questions identically within a certain battery, or if they gave an improbable number in response to the quality-control questions. The resulting sample for Questionnaire 1 was 6045, and for Questionnaire 2, 5775, with between 750 and 940 participants per country.

3. Results

3.1 Data Transformation

For the data analysis stage, new variables were created to represent each of the measures utilised from the questionnaire. The new variables were created by taking the mean score of the items for each scale, representing an overall value for each of the measures in the questionnaire. Thirteen new variables were created in total. Firstly, two variables were created to represent the two types of trust in government: Trust – Energy Reduction (the mean score of the 4 items measuring the trust in government to reduce energy use) and Trust – Car Use Reduction (the mean score of the 4 items measuring the trust in government to reduce car use). Next, four variables were created from the items of the values scale to represent each of the four values: Altruism, Biospherism, Egoism, and Hedonism. And finally, seven variables were created to represent the behavioural antecedents: Attitudes, Subjective Norms, Perceived Behavioural Control, Behavioural Intentions, Problem Awareness, Outcome Efficiency, and Personal Norms. Cronbach's alpha was then determined in order to check the internal consistency of each measure, which was good for all (α for all scales was greater than .75).

3.2 Trust in Government and Demographic Characteristics

The mean rating for trust in government across both the questionnaires (energy and car use) was relatively low, at 3.64 on the 7-point scale. Analyses of covariance (ANOVAs; see Field, 2005) were used to compare trust in government across the seven countries (the Brown-Forsythe statistic was used for some analyses due to heterogeneity of variance). Trust in government to reduce energy use

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significantly differed across the countries, $F = 195.29(6, 5994.43)$, $p < .001$, with Switzerland having the highest level of trust, and Greece the lowest (see Fig. 1), as did trust to reduce car use, $F = 113.92(6, 5567.82)$, $p < .001$ (see Fig. 2), with Greece again showing the lowest level of trust, and The Netherlands showing the highest.

Figure 1. Mean ratings by country for trust in government to reduce energy use.

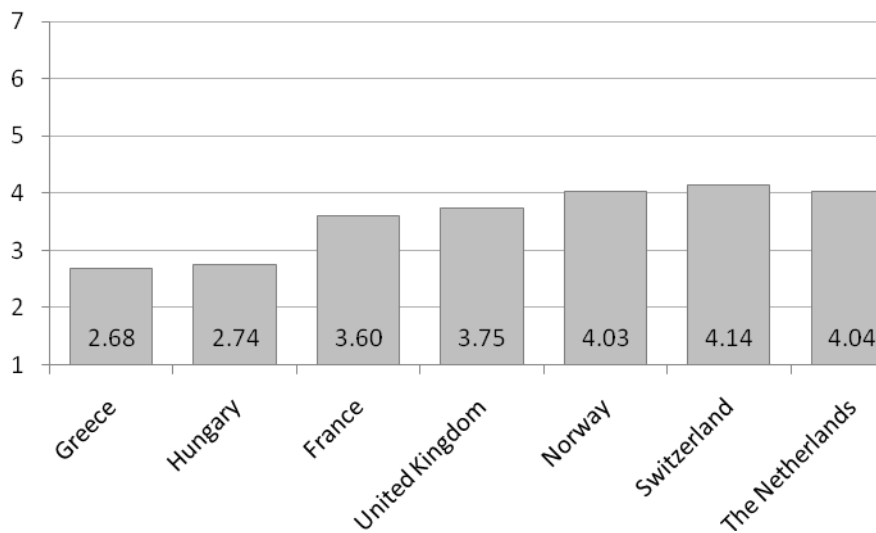
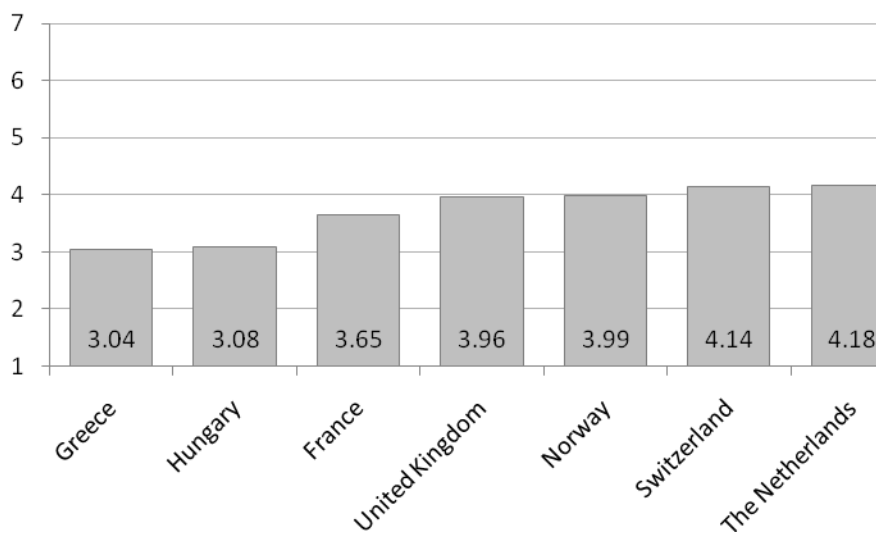


Figure 2. Mean ratings by country for trust in government to reduce car use.



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A series of correlational analyses (Pearson's; see Field, 2005) were performed to determine whether the two types of trust in government varied according to the participant's demographic characteristics (age, political preference, the number of residents in their household, the number of cars owned, the level of education, and the income level). Firstly, correlations were run individually for participants of each of the counties, and then for all the participants across the 7 counties (see Table 2). The obtained correlations were often very small, and so correlations which, although significant, were below .10 will not be discussed in this paper. Insignificant correlations will also not be discussed, although they will be presented in the results tables. The effect sizes of correlations will be discussed according to Cohen (1988, 1992), who suggested that a correlation between $r = .10$ and $r = .30$ was small (explaining 1% - 9% of the variance), $r = .30$ and $r = .50$ was a medium correlation (explaining 9% - 25% of the variance) and over $r = .50$ was a large correlation (explaining 25% plus of the variance).

Table 1 shows that the only significant correlations for the UK sample were between political preference and the two types of trust. This suggests that those who rated their political preference as more to the 'right' rated a lower trust in government.

Table 1. Pearson's correlations for the UK sample for each of the two types of trust with the continuous demographic variables.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Age	.01	-.6
Political preference	-.10**	-.10**
Household residents	-.04	.05
Car ownership	-.06	-.01
Education level	-.03	-.01
Income level	-.02	.03

Note. ** denotes significance at the $p < .01$ level.

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In contrast to the UK, participants from France (Table 2) who rated their political preference as more to the ‘left’ rated a lower trust in government. These correlations between trust and political preference may be a factor of the type of government currently in power. There is also a smaller positive correlation between age and trust to reduce energy use, which shows that as age increases, so does trust.

The opposite from France was the case for The Netherlands, however, where there were small negative correlations between both types of trust and age (Table 3).

Table 2. Pearson’s correlations for France, for each of the two types of trust with the continuous demographic variables.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Age	.11**	-.03
Political preference	.27**	.21**
Household residents	-.00	-.00
Car ownership	.03	-.08*
Education level	.02	-.00
Income level	.14**	.01

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

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Table 3. Pearson's correlations for The Netherlands for each of the two types of trust with the continuous demographic variables.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Age	-.10**	-.15**
Political preference	-.09*	-.04
Household residents	.07	.02
Car ownership	-.02	-.08*
Education level	.05	.03
Income level	-.01	-.07

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

Similar to France, there were positive correlations between political preference and trust for Greece, showing that participants who rated their political preference as more to the 'left' rated a lower trust in government (Table 4).

Table 4. Pearson's correlations for Greece for each of the two types of trust with the continuous demographic variables.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Age	.05	.08*
Political preference	.22**	.26**
Household residents	.07*	.02
Car ownership	.00	-.07*
Education level	-.05	.03
Income level	.00	-.03

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

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For participants in Switzerland, there were only very small correlations between the demographic variables and trust, with those who are more educated rating increasing levels of trust in the government to reduce energy use (Table 5).

Table 5. Pearson's correlations for Switzerland for each of the two types of trust with the continuous demographic variables.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Age	.06	.06
Political preference	.02	-.02
Household residents	.01	-.02
Car ownership	.04	-.09**
Education level	.11**	-.09*
Income level	.09**	-.03

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

Unlike France and Greece, and showing a pattern closer to that of the UK, Norway showed negative correlations between political preference and both types of trust: meaning that the participants then who rated their political preference as more to the 'right' also rated a lower trust in government (Table 6). Additionally, as income level for Norwegian participants increased, so too did a trust to reduce energy use.

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Table 6. Pearson's correlations for Norway for each of the two types of trust with the continuous demographic variables.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Age	.05	.03
Political preference	-.23**	-.16**
Household residents	-.01	.03
Car ownership	-.03	-.02
Education level	.05	.04
Income level	.12**	-.01

Note. ** denotes significance at the $p < .01$ level.

Hungary exhibited the same correlational pattern for political preference as the UK and Norway, with a stronger correlation for energy reduction (medium effect) (Table 7). As with France, as age increased so did trust.

Table 7. Pearson's correlations for Hungary for each of the two types of trust with the continuous demographic variables.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Age	.17**	.18**
Political preference	-.33**	-.16**
Household residents	-.07*	-.07
Car ownership	.02	-.00
Education level	.06	.01
Income level	.07*	.02

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

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Correlations were also conducted for the data from the complete sample (data from all countries together) to provide an overall picture of the findings. These results should be considered with caution, however, given the number of cross-cultural differences identified across the seven countries. Overall, several correlations were found between the demographic characteristics of the complete sample and the two types of trust (Table 8). They show that as age, education level, and income level increased, so did trust in government, and that as the number of residents in the household increased, trust decreased. As the number of cars in the household increased, the trust in government at reducing car use also decreased. Although significant, however, these correlations were very small.

Table 8. Pearson's correlations for the full sample for each of the two types of trust with the continuous demographic variables.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Age	.09**	.05**
Political Preference	-.01	.01
Household residents	-.03*	-.03*
Car ownership	.01	-.05**
Education level	.07**	.04**
Income level	.22**	.12**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

A series of ANOVAs were then performed on the categorical demographic variables, which could not be placed in the correlational analyses: subjective urbanisation, home ownership, heating fuel used, and marital status. These tests sought to determine whether there were any significant differences in the two types of trust (Trust – Energy Reduction and Trust – Car Use) according to participants' responses on each of these measures. For some measures, the data violated the assumption of homogeneity of variances (Levene's statistic was significant) and so the Brown-Forsythe statistic has been taken in the place of the F-ratio (cases are indicated in the tables next to the result). Independent *t*-tests were performed between each of the two types of trust and gender, to

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determine if trust differed between the two genders. Significant results for each of these analyses will now be discussed.

Table 9 shows the ANOVA and *t*-test results for the UK sample. The results show significant differences in both types of trust according to the level of subjective urbanisation in which their home is located (rural / small village, small town, or large town). Post hoc tests (Hochberg's GT2) showed that this significant difference lay between rural area / village dwellers and those who lived in a large town, where the mean of the first ($M(\text{Trust} - \text{Energy Reduction}) = 3.64$, $SD = 1.37$; $M(\text{Trust} - \text{Car Reduction}) = 3.81$, $SD = 1.21$) was significantly lower than that of the second ($M(\text{Trust} - \text{Energy Reduction}) = 3.94$, $SD = 1.27$; $M(\text{Trust} - \text{Car Reduction}) = 4.16$, $SD = 1.25$) ($p < .01$; $p < .001$). This shows that those living in rural areas have more trust in government than those living in large towns. There is also a significant difference according to gender, showing that reported trust in the government to reduce car use is lower for women than for men.

Table 9. ANOVA (and *t*-test) results for the UK sample, comparing trust across the categorical demographic variables (subjective urbanisation, home ownership, heating fuel, marital status, and gender).

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Subjective urbanisation	4.41*	4.77**
Home ownership	.02	1.63
Heating fuel	1.73	1.40
Marital status	1.67	1.03 ^a
Gender ^b	-.05	-3.04**

Note. ^a Denotes Brown-Forsythe statistic used. ^b denotes *t*-test used. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level. Participant 3268 was excluded from the subjective urbanisation analysis due to missing data.

In France (Table 10), there was a significant difference in trust (energy reduction) according to marital status. Post hoc tests (Hochberg's GT2; all reported post hocs in the present study used this

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method) showed that single respondents ($M = 3.39$, $SD = 1.32$) had significantly lower trust in government compared to divorced or widowed respondents ($M = 3.81$, $SD = 1.43$) ($p < .05$).

Table 10. ANOVA (and t-test) results for France, comparing trust across the categorical demographic variables (subjective urbanisation, home ownership, heating fuel, marital status, and gender).

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Subjective urbanisation	1.60	2.08 ^a
Home ownership	1.28	1.35
Heating fuel	1.15	.66
Marital status	3.82*	.45
Gender ^b	1.45	3.47

Note. ^a Denotes Brown-Forsythe statistic used. ^b denotes *t*-test used. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

As with the UK, there was also a significant difference in trust according to the level of subjective urbanisation for The Netherlands (Table 11). Post-hoc tests revealed that those who lived in rural areas / villages reported a lower level of trust ($M = 3.96$, $SD = 1.19$) than those who lived in small / medium sized towns ($M = 4.27$, $SD = 1.15$) and large towns ($M = 4.32$, $SD = 1.21$) ($p < .01$). There were also significant differences in both types of trust according to marital status. Post hoc tests revealed that this difference was between single ($M = 4.15$, $SD = 1.21$) and divorced / widowed respondents ($M = 3.72$, $SD = 1.40$) for a trust in energy reduction, with single respondents reporting more trust ($p < .05$). For a trust in car use reduction, single respondents ($M = 4.36$, $SD = 1.15$) were more trusting than married / cohabiting respondents ($M = 4.08$, $SD = 1.18$) ($p < .05$). Additionally, there were differences in trust levels for car use reduction according to the type of heating fuel respondents used. Post-hoc tests showed that those who used wood ($M = 3.71$, $SD = 1.66$) or natural gas ($M = 4.09$, $SD = 1.20$) to heat their home had lower levels of trust than those who used electricity ($M = 4.57$, $SD = .97$) ($p < .05$; $p < .001$).

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Table 11. ANOVA (and t-test) results for The Netherlands, comparing trust across the categorical demographic variables (subjective urbanisation, home ownership, heating fuel, marital status, and gender).

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Subjective urbanisation	.41	6.45**
Home ownership	.80 ^a	.89
Heating fuel	.33	4.62 ^{a**}
Marital status	3.34*	4.52*
Gender ^b	-1.80	-1.82

Note. ^a Denotes Brown-Forsythe statistic used. ^b denotes *t*-test used. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

In Greece, significant differences were found in both types of trust according to the level of home ownership. Post hoc results showed that trust in the government to reduce energy use was significantly lower for those who owned their own home ($M = 2.71$, $SD = 1.34$) and rented privately ($M = 2.54$, $SD = 1.31$) compared to those who rented from a state agency ($M = 3.57$, $SD = 1.53$) ($p < .05$; $p < .01$). The same pattern was observed for trust to reduce car use, which was significantly lower for those who owned ($M = 2.97$, $SD = 1.45$) and rented privately ($M = 3.03$, $SD = 1.43$) compared to those who rented from the state ($M = 4.30$, $SD = 1.49$) ($p < .001$).

Table 12. ANOVA (and t-test) results for Greece, comparing trust across the categorical demographic variables (subjective urbanisation, home ownership, heating fuel, marital status, and gender).

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Subjective urbanisation	.80	1.79
Home ownership	6.35**	13.15***
Heating fuel	2.32	.52
Marital status	.51	.07
Gender ^b	.12	-.66

Note. ^a Denotes Brown-Forsythe statistic used. ^b denotes *t*-test used. ** denotes significance at the $p < .01$ level. *** denotes significance at the $p < .001$ level.

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In Switzerland, there were significant differences in trust according to home ownership and the type of heating fuel used (Table 13). Post hoc tests showed that those who rented from a state agency ($M = 3.81$, $SD = 1.26$) had significantly lower trust (energy reduction) than those who owned their own home ($M = 4.25$, $SD = 1.23$) ($p < .01$); the opposite pattern to Greece. Trust in car use reduction was higher for those using natural gas to heat their home ($M = 4.35$, $SD = 1.09$) in comparison to those who used oil ($M = 4.05$, $SD = 1.18$) ($p < .05$).

Table 13. ANOVA (and t-test) results for Switzerland, comparing trust across the categorical demographic variables (subjective urbanisation, home ownership, heating fuel, marital status, and gender).

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Subjective urbanisation	.82	2.34
Home ownership	4.55**	.84
Heating fuel	.20	3.03*
Marital status	2.77	.24
Gender ^b	.36	-.35

Note. ^a Denotes Brown-Forsythe statistic used. ^b denotes *t*-test used. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

Similar to the UK, in Norway reported trust in the government to reduce car use was also significantly lower for women than for men (Table 14).

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Table 14. ANOVA (and t-test) results for Norway, comparing trust across the categorical demographic variables (subjective urbanisation, home ownership, heating fuel, marital status, and gender).

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Subjective urbanisation	.07 ^a	1.54
Home ownership	.44	.28
Heating fuel	.37	1.99
Marital status	.78	.52
Gender ^b	-.86	-.21*

Note. ^a Denotes Brown-Forsythe statistic used. ^b denotes *t*-test used. ** denotes significance at the $p < .01$ level.

In Hungary, significant differences in trust were observed according to home ownership and heating fuel type (Table 15). Trust in energy reduction then was higher for those who used natural gas ($M = 2.82$, $SD = 1.33$) compared to those who used wood ($M = 2.42$, $SD = 1.20$) ($p < .05$); and, similar to Greece, trust in car use reduction was higher for those who rented their home from the state ($M = 3.67$, $SD = 1.68$) compared to those who owned their home (3.02 , $SD = 1.45$) ($p < .05$).

Table 15. ANOVA (and t-test) results for Hungary, comparing trust across the categorical demographic variables (subjective urbanisation, home ownership, heating fuel, marital status, and gender).

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Subjective urbanisation	.20	.56
Home ownership	.04	6.00**
Heating fuel	2.63*	1.86
Marital status	1.02	1.18
Gender ^b	.73	-.30

Note. ^a Denotes Brown-Forsythe statistic used. ^b denotes *t*-test used. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

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For the full sample however, there are several significant differences in trust according to these demographic variables (Table 16); although these should again be viewed with caution given the number of cross-cultural differences between the seven countries. As with the UK sample, women overall demonstrated significantly lower trust in government to reduce car use. There were also significant differences in both types of trust according to subjective urbanisation, home ownership, and the type of heating fuel used. Post hoc tests were performed to determine which of the levels of urbanisation and home ownership, and which specific heating fuel types significantly differed from each other. They revealed that trust in the government to reduce energy use was higher for those in rural areas / small villages ($M = 3.65$, $SD = 1.43$) and small / medium sized towns ($M = 3.58$, $SD = 1.41$) compared to those in large towns ($M = 3.44$, $SD = 1.42$) ($p < .001$; $p < .01$); and trust to reduce car use was higher for those in rural areas / villages ($M = 3.79$, $SD = 1.31$) compared to those in large towns ($M = 3.64$, $SD = 1.41$) ($p < .01$). Those who rented from a local or state authority had significantly higher trust in the government to reduce energy use ($M = 3.70$, $SD = 1.40$) than those who owned their own home ($M = 3.52$, $SD = 1.44$). In terms of a trust to reduce car use, post hoc tests also showed that those who rented (either privately or from an authority) had a significantly higher level of trust ($M(\text{private}) = 3.87$, $SD = 1.33$; $M(\text{authority}) = 3.96$, $SD = 1.34$) than those who owned their own home ($M = 3.63$, $SD = 1.39$) ($p < .001$). Post-hoc tests performed on the type of heating fuel used (wood, oil, natural gas, electricity, or other) produced a slightly more complex pattern: trust in government to reduce energy use and car use was significantly higher for participants using electricity compared to the other fuel types ($M(\text{energy}) = 3.80$, $SD = 1.31$; $M(\text{car}) = 4.00$, $SD = 1.27$), with trust decreasing to those who used natural gas ($M(\text{energy}) = 3.57$, $SD = 1.40$; $M(\text{car}) = 3.73$, $SD = 1.38$), to those who used wood ($M(\text{energy}) = 3.54$, $SD = 1.47$; $M(\text{car}) = 3.60$, $SD = 1.47$), and lowest for those using oil ($M(\text{energy}) = 3.30$, $SD = 1.47$; $M(\text{car}) = 3.52$, $SD = 1.42$) ($p < .05$).

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Table 16. ANOVA (and t-test) results for the full sample, comparing trust across the categorical demographic variables (subjective urbanisation, home ownership, heating fuel, marital status, and gender).

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Subjective urbanisation	6.84***	5.24*** ^a
Home ownership	4.56* ^a	24.40*** ^a
Heating fuel	18.76*** ^a	18.76*** ^a
Marital status	1.78	3.41*
Gender ^b	.23	-3.39**

Note. ^a Denotes Brown-Forsythe statistic used. ^b denotes *t*-test used. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level. *** denotes significance at the $p < .01$ level.

3.3 Trust in Government & Acceptability of Policy

Pearson's correlations were conducted for each country individually and the full sample to examine the relationship between trust in government to reduce energy use and the perceived level of acceptability of energy-related policy measures. There were small but highly significant positive correlations for each country apart from Greece and Hungary, as well as for the full sample. This shows that as trust in government increases, the acceptability of policy measures also increases.

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Table 17. Pearson's correlations between trust in government to reduce energy use and the acceptability of energy-related policy measures for both samples (each country individually and all countries).

	Sample	Trust - Energy Reduction (Q1)
Acceptability of Policy	UK	.21**
	France	.13**
	The Netherlands	.26**
	Greece	.05
	Switzerland	.14**
	Norway	.18**
	Hungary	.05
	All Countries	.14**

Note. ** denotes significance at the $p < .01$ level.

3.4 Trust in Government and Values

Pearson's correlations were conducted to examine the relationships between the four values, Altruism, Biospherism, Egoism, and Hedonism, and each of the two types of trust. For the UK sample, there was a very small positive correlation between trust in the government to reduce energy use and Altruism. For trust in government to reduce car use, each of the values were significantly positively correlated to it (see Table 18).

Table 18. Pearson's correlations for the UK sample between the four values, Altruism, Biospherism, Egoism, and Hedonism, and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Altruism	.07*	.17**
Biospherism	.02	.15**
Egoism	.04	.14**
Hedonism	.06	.11**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

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For France, there were small positive correlations between the two types of trust and egoism and hedonism (Table 19), suggesting that as egoism and hedonism increase, so too does trust in government.

Table 19. Pearson's correlations for France between the four values, Altruism, Biospherism, Egoism, and Hedonism, and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Altruism	.01	.04
Biospherism	.02	.08*
Egoism	.19**	.18**
Hedonism	.08*	.13**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

For The Netherlands, there were small positive correlations between both types of trust and altruism and biospherism (Table 20), which can be interpreted in a similar way.

Table 20. Pearson's correlations for The Netherlands between the four values, Altruism, Biospherism, Egoism, and Hedonism, and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Altruism	.13**	.13**
Biospherism	.15**	.10**
Egoism	.07	.04
Hedonism	-.00	.08*

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

Similar to the UK, there were correlations between trust and each of the value orientations in the data from Greece. In this case, however, the correlations were negative for altruism, biospherism, and

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hedonism (Table 21). This means that whilst trust in government to reduce car use increased with egoism, trust decreased as altruism, biospherism, and hedonism increased.

Table 21. Pearson's correlations for Greece between the four values, Altruism, Biospherism, Egoism, and Hedonism, and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Altruism	-.01	-.11**
Biospherism	-.02	-.13**
Egoism	.02	.10**
Hedonism	-.09**	-.12**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

In Switzerland, the pattern was different again: there were positive correlations between the two trusts and altruism and egoism (Table 22).

Table 22. Pearson's correlations for Switzerland between the four values, Altruism, Biospherism, Egoism, and Hedonism, and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Altruism	.11**	.09**
Biospherism	.05	.07*
Egoism	.16**	.20**
Hedonism	.08*	.06

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

In Norway, the pattern was again similar to that of the UK, with trust in car use reduction increasing as each of the four values increased (Table 23).

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Table 23. Pearson's correlations for Norway between the four values, Altruism, Biospherism, Egoism, and Hedonism, and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Altruism	.06	.10**
Biospherism	-.00	.15**
Egoism	-.08*	.09**
Hedonism	-.01	.07*

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

In the sample from Hungary, there were some significant correlations in a similar pattern again to the UK and Norway, but in this case the correlations were extremely small, and therefore much less meaningful (Table 24).

Table 24. Pearson's correlations for Hungary between the four values, Altruism, Biospherism, Egoism, and Hedonism, and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Altruism	.05	.08*
Biospherism	-.02	.01
Egoism	.01	.08*
Hedonism	.02	.07*

Note. * denotes significance at the $p < .05$ level.

For the overall sample across the seven countries, there was a small negative correlation between a trust to reduce energy use and biospherism (Table 25); indicating that as the level of reported biospherism increased, the level of trust decreased. There were also small positive correlations between trust in car use reduction and altruism and egoism.

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Table 25. Pearson's correlations for the full sample between the four values, Altruism, Biospherism, Egoism, and Hedonism, and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Altruism	.01	.03*
Biospherism	-.06**	-.02
Egoism	-.02	.06**
Hedonism	.02	.04**

Note. * denotes significance at the $p<.05$ level. ** denotes significance at the $p<.01$ level.

3.5 Trust in Government and Behavioural Antecedents

Pearson's correlations were conducted between each of the two types of trust and the elements of the TPB and the NAT, including Attitudes (5 items), Subjective Norms (3 items for energy, 2 for car use), Perceived Behavioural Control (2 items), Behavioural intentions (1 item), Problem Awareness (2 items for energy use, 3 items for car use), Outcome Efficiency (3 items), and Personal Norms (3 items).

In the UK sample, all but one of these relationships was significant, and all were positive (Table 26). The correlations for trust in government to reduce car use were all larger than those for energy reduction, something which has been observed throughout many of these analyses. This indicates that car use may possibly be a more tangible or relevant concept than energy reduction, which is less specific, eliciting stronger reactions. The correlations for the UK suggest that as trust in government increased:

1. attitudes towards increasing the amount of sustainable energy in the household became more positive;
2. subjective norms of other people using sustainable energy increased;
3. perceived behavioural control at using more sustainable energy increased;
4. awareness of the problem of using too much non-sustainable energy increased;

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5. the use of sustainable energy in the home was perceived as an increasingly efficient way to reduce the outcome of environmental degradation;
6. the personal norm of participants to use sustainable energy in their home increased.

Table 26. Pearson's correlations for the UK sample between the elements of the TPB and the NAT (Attitudes, Subjective Norms, Perceived Behavioural Control, Problem Awareness, Outcome Efficiency, & Personal Norms) and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Attitudes	.11**	.16**
Subjective norms	.11**	.25**
Perceived behavioural control	.07	.18**
Behavioural Intentions	.07*	.16**
Problem awareness	.13**	.29**
Outcome efficiency	.10**	.29**
Personal norms	.11**	.30**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

A very similar pattern was observed in the data from France (Table 27), where almost all correlations were positive, and the trust in car use reduction correlations were slightly stronger (between $r = .14$ and $r = .27$ for car reduction, compared to a range of $r = .07$ and $r = .11$ for energy reduction).

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Table 27. Pearson's correlations for France between the elements of the TPB and the NAT (Attitudes, Subjective Norms, Perceived Behavioural Control, Problem Awareness, Outcome Efficiency, & Personal Norms) and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Attitudes	-.04	.14**
Subjective norms	.07*	.27**
Perceived behavioural control	.10**	.23**
Behavioural Intentions	.11**	.23**
Problem awareness	.04	.16**
Outcome efficiency	.10**	.18**
Personal norms	.09**	.24**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

For The Netherlands, all correlations were significant, and of a small to medium magnitude (Table 28). There were equally strong correlations for both types of trust for this country.

Table 28. Pearson's correlations for The Netherlands between the elements of the TPB and the NAT (Attitudes, Subjective Norms, Perceived Behavioural Control, Problem Awareness, Outcome Efficiency, & Personal Norms) and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Attitudes	.22**	.11**
Subjective norms	.15**	.18**
Perceived behavioural control	.09*	.17**
Behavioural Intentions	.14**	.15**
Problem awareness	.20**	.31**
Outcome efficiency	.26**	.22**
Personal norms	.19**	.26**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

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Very few significant correlations were identified in Greece (Table 29), and those that were significant were very small. The correlations between the two types of trust and participant attitudes were both negative, showing that as pro-environmental attitudes increased, trust decreased. However, since the correlations are so small, this need not create too much concern, and should not distract from the overall trend.

Table 29. Pearson's correlations for Greece between the elements of the TPB and the NAT (Attitudes, Subjective Norms, Perceived Behavioural Control, Problem Awareness, Outcome Efficiency, & Personal Norms) and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Attitudes	-.15**	-.11**
Subjective norms	.06	.17**
Perceived behavioural control	.04	.11**
Behavioural Intentions	.10**	.06
Problem awareness	-.05	-.05
Outcome efficiency	-.03	-.01
Personal norms	-.08*	.12**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

As with the UK, The Netherlands, and France, for Switzerland positive correlations were again found for almost all correlations between the various elements of the TPB and NAT, and the two types of trust (Table 30). These were also of a small to medium effect size. The same was the case for Norway, which showed stronger correlations for car use reduction (Table 31). There were fewer significant correlations for Hungary, but again, the strongest correlations were for trust in government to reduce car use (Table 32).

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Table 30. Pearson's correlations for Switzerland between the elements of the TPB and the NAT (Attitudes, Subjective Norms, Perceived Behavioural Control, Problem Awareness, Outcome Efficiency, & Personal Norms) and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Attitudes	.03	.15**
Subjective norms	.17**	.26**
Perceived behavioural control	.14**	.14**
Behavioural Intentions	.20**	.15**
Problem awareness	.13**	.15**
Outcome efficiency	.19**	.23**
Personal norms	.10**	.29**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

Table 31. Pearson's correlations for Norway between the elements of the TPB and the NAT (Attitudes, Subjective Norms, Perceived Behavioural Control, Problem Awareness, Outcome Efficiency, & Personal Norms) and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Attitudes	.09**	.16**
Subjective norms	.11**	.27**
Perceived behavioural control	.09**	.18**
Behavioural Intentions	.11**	.16**
Problem awareness	.16**	.34**
Outcome efficiency	.17**	.28**
Personal norms	.16**	.33**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

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Table 32. Pearson's correlations for Hungary between the elements of the TPB and the NAT (Attitudes, Subjective Norms, Perceived Behavioural Control, Problem Awareness, Outcome Efficiency, & Personal Norms) and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Attitudes	.05	.05
Subjective norms	.05	.24**
Perceived behavioural control	.05	.15**
Behavioural Intentions	.05	.11**
Problem awareness	.07	.13**
Outcome efficiency	.06	.15**
Personal norms	.06	.25**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

For the full sample, the majority of correlations were significant and positive, although even smaller than for the UK sample (Table 33). Correlations for trust in car use reduction were again slightly larger than for energy reduction however. Subjective Norms and Outcome Efficiency were positively related to a trust in energy reduction, and all the elements of the TPB and NAT were positively related to trust in car use reduction. This means that similar observations for the all countries sample, and indeed each of the countries individually, about the pattern of results can be made as for the UK sample.

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Table 33. Pearson's correlations for the full sample between the elements of the TPB and the NAT (Attitudes, Subjective Norms, Perceived Behavioural Control, Problem Awareness, Outcome Efficiency, & Personal Norms) and each of the two types of trust.

	Trust - Energy Reduction (Q1)	Trust - Car Use Reduction (Q2)
Attitudes	-.01	.04**
Subjective norms	.07**	.18**
Perceived behavioural control	.09	.11**
Behavioural Intentions	.14**	.09**
Problem awareness	-.01	.17**
Outcome efficiency	.05**	.11**
Personal norms	-.00	.19**

Note. * denotes significance at the $p < .05$ level. ** denotes significance at the $p < .01$ level.

4. Conclusion

Trust in government to reduce energy and car use was generally rated as low by the participants in the present study, extending the findings of Poortinga and Pidgeon (2003), who examined participants in the UK, to Europe. As with the study by O'Connor et al. (1999, in Lorenzoni & Pidgeon, 2006), there was also differentiation in the level of trust between the various countries, with trust being highest in Switzerland and The Netherlands, and lowest in Greece. Women showed a slightly higher level of trust in some countries, something which is both concordant and disparate with the claims of Alford (2001), who suggests only very small differences in trust between the two sexes amongst North Americans (this study also found only a small difference), with men showing slightly higher levels of trust.

Similar to the findings of O'Connor et al. (1999, in Lorenzoni & Pidgeon, 2006), there was also a significant trend demonstrating that the acceptability of energy-related policy increased as trust in the government increased. The relationship between trust in government and the four environmentally-

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related values, biospherism, altruism, egoism, and hedonism, was however not as expected, with all four generally being positively related to trust. Indeed, there was no clear pattern for the correlations between trust and the value orientations across the countries, although it was predicted that hedonism and egoism would be negatively related to trust. It is unclear why this should be the case.

The relationships between trust and the various behavioural antecedents identified in the TPB and NAT were all generally significant and positive. This suggests that trust in government is positively related to precludes to carrying out pro-environmental behaviour (in this case, reducing energy and car usage). This in turn suggests that trust may be related to actual pro-environmental behaviour. Further research is needed to identify the exact nature of the relationship between trust and pro-environmental behaviour, and to identify the direction of this relationship.

For the behavioural antecedents, there were more correlations between trust and car use than with energy use, suggesting that the specificity and tangibility of the concept makes it a good one to measure, whereas energy use per se is a much broader concept and is harder to grapple with, given its less visible nature. Relationships were also stronger for the more emotional antecedents, such as personal norms, in comparison to the less emotionally-evoking rational antecedents such as attitudes.

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