

**Barriers and Incentives to
Pro-Environmental Behaviour:
Third-Level Students Living
Independently in Student
Accommodation**

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Barriers and Incentives to Pro-Environmental Behaviour:
Third-Level Students Living Independently in Student Accommodation.

Abstract

One hundred and seven Irish third-level students currently living independently in student accommodation participated in a study investigating the effects of barriers and incentives on pro-environmental behaviours. A further 10 students were involved in 3 focus groups in order to gain qualitative information on beliefs and perceptions of environmental issues. Data was collected online with questionnaires and focus groups were recorded. The study used a mixed-method design of non-experimental correlations and qualitative analyses of the focus groups. Results showed that participants' ecological behaviours were more influenced by the level of barriers than by their ecological worldview.

Introduction

Previous Research

The following study aims to investigate the effects of barriers and incentives on pro-environmental behaviours. It will investigate the relationship that these barriers and incentives have on predicting pro-environmental behaviours as well as their relationship with measures of environmental concern. Evidence from Gardner & Stern (2002) suggests that, despite growing awareness of environmental issues, there has not been an equivalent growth in pro-environmental behaviours. This suggests that awareness of the problem is not a sufficient incentive for positive action. Kaiser, Wolfing & Fuhrer (1999) investigated the effect of environmental attitudes on pro-environmental behaviours. They sought to see if environmental attitudes could significantly influence pro-environmental behaviours. Their results demonstrated that, contrary to their hypothesis, environmental attitudes were not strong predictors of pro-environmental behaviours. Gardner & Stern (2002) suggest that this is because people only change their behaviours once these are no longer rewarding to them. In this case, people do not engage in pro-environmental behaviours, despite their strong ecological attitudes, because there is nothing for them to gain from engaging in these behaviours. There is no immediate reward or immediate justification. The potential benefits are often distant and not necessarily of personal value. This suggests that, regardless of a person's own attitude or opinion regarding environmental issues, there isn't much that will inspire them to act pro-environmentally.

However, Guagnano et al (1995) propose that barriers play a more significant role in predicting pro-environmental behaviour. They analysed participants who had high levels of environmental concern and other who did not feel strongly about the environment. They found that those who were not particularly concerned with environmental issues would recycle more if there were fewer external barriers. That is, when recycling facilities were offered to them on their doorstep, they engaged in recycling regardless of their feelings towards the environment. However, this research only looked at

differentiating between people who had no nearby recycling facilities, and those who were given facilities on their doorstep. This does not give a sufficiently accurate idea of how small the barriers have to be to encourage pro-environmental behaviour and at what point does the distance to a recycling facility become too much of a barrier. That is, do the facilities need to be on one's doorstep or can they be nearby in a communal recycling area. At what point do people decide not to bother recycling?

Hansla (2011) investigated the effect of awareness of consequences on environmental concern. He found that an increased awareness of the consequences of climate change had an influence on environmental concern. Furthermore, an EU report from TNS Opinion & Social (2009) highlighted a significant disbelief in Irish participants regarding the adverse effects of CO₂ emissions. They found that 50% of Irish participants felt that CO₂ emissions only had a marginal impact on climate change. These results were significantly higher than the EU average of 30%. With Hansla's (2011) research in mind, this suggests that there is a low level of awareness in Irish participants regarding the consequences of man-made climate change. This is likely due to the lack of there being any significantly detrimental changes to the Irish climate in recent years. The temperate climate means that the weather remains quite stable and predictable. There are no significant unpredictable threats from the weather. These concerns were similarly highlighted by Lorenzoni et al (2007) when they investigated public perception of barriers to pro-environmental in UK participants. The wealth of insight from this study came in the form of qualitative data which explored people's opinions on climate change and what they felt were the reasons stopping them or encouraging them to engage in pro-environmental behaviours. A prominent theme in participants' answers was the idea of climate change being such a distant possibility with no immediate consequences. Participants largely felt as though there was little point in doing anything about the climate because, even if it did result in adverse environmental changes, it didn't affect people at that time and likely wouldn't affect them in

their lifetimes. Again, this is further support for Gardner & Stern's (2002) assertion that people's behaviour is motivated by immediate consequences and immediate rewards.

An effective way of getting past the struggles of motivating people to act environmentally is available in the use of incentives. It seems unrealistic to expect that there will ever be complete acceptance from the public of the effects and presence of significant man-made climate change. However, a growing body of evidence suggests that this issue of motivating pro-environmental behaviour can be addressed by means of creating clear incentives to encourage people to conserve energy (Abrahamse et al, 2005; Allen et al, 2005; Petersen et al, 2007; Bekker et al, 2010). The value of this method is well illustrated in Petersen et al.'s study on electricity consumption in student dormitories (2007). By offering students rewards for reducing their electricity consumption, as well as the means to monitor their consumption via visual feedback, they found a significant decrease in overall consumption. Given that these students paid a fixed all-inclusive rate for their accommodation, they had no monetary incentive to reduce their consumption. They just had the incentives given to them by the experimenter. These were simple rewards such as being given a movie night in the dormitories and free popcorn for reaching certain targets.

This is important to note when looking at Slavin et al's (1981) research on differences in household energy consumption between households where energy bills are included in the rent payments, and others where the energy bills vary based on consumption and are paid separately. They found that those who paid their bills as part of their rent used on average 35% more energy. In the case of a household where the bills vary based on consumption and are paid separately, it is clear to see how much money can be an incentive for conserving energy. However, as compelling as the results of Petersen et al's research are, they only apply to students in a dormitory context. In this context, the possibility of rewards is a lot more likely given that the accommodation services were part of a

particular university that may have felt it was in their best interest to promote energy efficiency, regardless of the cost. These same results might not be found in student accommodation that works in the form of privately run apartments in which groups of a few students live together and have their own kitchens, living rooms and bedrooms, much like the apartments that other non-students would live in. This is because the management companies of the apartments would not necessarily have the same incentives to reduce the energy consumption as long as the residents are paying for it. They wouldn't be as likely to willingly offer residents a reward for using less energy.

Rationale & Aims

Previous research by Petersen et al (2007) and Bekker et al (2010) only looked at the energy conservation habits of students. Recycling habits were not addressed in either of these studies. The current study seeks to include the analysis of recycling behaviours in third-level students. Furthermore, the significance of the structure of rent and bills has yet to be addressed. Bekker et al's (2010) study offered students rebates for conserving energy but it did not look at how conservation behaviours differ between students who live in fixed cost housing and others who live in consumption-based variable cost housing. General theories of conservation have yet to be applied to third-level students. Theories of incentives have been the only ones to be analysed in this context. Furthermore, the issue of the Irish public's perception of climate change presents a potentially significant factor in inspiring ecological behaviour. As Lorenzoni et al's (2007) research suggests, the threat of climate change is perceived as being very distant to people in the UK. Likewise, Ireland would share a similar temperate climate that is not currently subject to significant changes. The current study seeks to investigate and establish an understanding of how climate change is perceived by students in Ireland.

With this evidence in mind, it is proposed that the habits and opinions of third level students

currently living away from home be studied. Previous research has yet to look at the behaviours of this subgroup of students who are living independently. Third level students often live in student apartment complexes and rented housing in which they pay fixed rates for their rent and bills. In some cases they have a single rent payment per semester or for the year, some may pay a fixed rate per month, and, in the best of circumstances, they pay a separate bill for their gas and electricity every month based on their consumption. As highlighted above, people are most influenced by the immediate consequences of their actions (Gardner & Stern, 2002). Students in these living conditions have absolutely no immediate consequences for their over-consumption and are likely left with no incentives to recycle or conserve energy. These circumstances diminish the responsibilities involved in living independently as adults. This presents a period of transition from home-living where bills likely were not a concern, to living independently where bills are the student's responsibility. This transition creates an environment where the household consumption of energy will likely increase due to a lack of accountability for their energy use. This is a significant portion of the population that are going to be prone to over-consumption of energy. In such circumstances, the evidence suggests that students would be highly unlikely to engage in any significant amount of pro-environmental behaviours.

Third level students represent a sample who are in a formative period and are more likely to be open to new information than people who are settled in their work and lives. With an insight into their habits and beliefs, potential interventions designed to influence pro-environmental behaviours may be outlined. The current study aims to specifically find out what students perceive as the barriers that are preventing them from engaging in ecological behaviour. It seeks to understand what can be done to overcome these barriers and facilitate ecological actions. Beyond this, it seeks to investigate the validity of common environmental psychology findings in the context of third-level students living independently.

When considering the use of qualitative research in this study, Glaser & Strauss' Grounded Theory (1967) appeared as valuable tool for accurate analysis of the data. Grounded Theory suggests that data be analysed from an unbiased starting point with no previous evidence in mind. In this way, researchers can identify patterns and themes in the data that offer a richer insight. Once these are unbiasedly identified, inferences can be made. In qualitative data this is done by looking at each piece of information and asking the question, "what is this about?" (Borgatti, 2013). That is, what is the main theme in this sentence and what are the details of what is being said. With this approach in mind, the current research looks to find its own themes in students' perception of climate change. Because there is little in the way of research concerning third-level students and their ecological habits and opinions, this offers a chance to potentially draw new conclusions that are not drawn from research in completely different contexts.

It is hypothesised that Total NEP scores will only be positively significantly correlated with Total GEB scores in the Low Barrier group. That is to suggest that, participants' positive ecological worldview (Total NEP scores) will only be correlated with their self-reported ecological behaviours (Total GEB scores) when there are few or no barriers preventing them from engaging in pro-environmental behaviour. It is hypothesised that Total NEP scores will only be positively significantly correlated with Total GEB scores in the High Incentive group. It is hypothesised that mean GEB scores will be significantly different between Low and High Barrier groups. That is to suggest that, participants will have significantly higher levels of self-reported environmental behaviour (Total GEB scores) when they have low barriers to environmental behaviour. It is hypothesised that mean NEP scores will not be significantly different between Low and High Barrier groups. That is to suggest that regardless of what barriers are in place, participants will have similar ecological worldviews across both groups.

Method

Participants

Participants were currently involved in third-level education, living away from home, and responsible for paying their rent and bills. The questionnaire was posted on a number of online forums including Facebook in which people could choose to participate or not. While the study was not limited to Dublin Business School students, it is likely that these represent the majority of questionnaire participants as most forums used were affiliated with this university and these students were a convenient sample. In total 107 people took part in the questionnaire portion of the study. Forty-three per cent were male (46) and 57% were female (61). Participants had a mean age of 22.76 and ages ranged from 19 to 53. A further 10 students took part in one of three focus groups, 7 were male and 3 were female. These were aged between 21 and 25, with a mean age of 22.6. Focus group 1 was made up of 4 males, focus group 2 was made up of 3 males, and focus group 3 was made up of 3 females. Residents of Shanowen Square Student Accommodation, Shanowen Hall Student Accommodation and student residents of the Santry area were approached to take part in the focus groups. The apartments and houses approached were all in the environs of Dublin City University.

Focus group one was made up of the four participants from Shanowen Square. They had rent payments per semester with all of their bills included. Focus group two was made up of the three participants from Shanowen Hall. They paid a fixed rent on a monthly basis with their bills included. Their bills would only vary if they went significantly above average consumption. The third group was made of the three participants who lived in a rented house in the same area. Their gas and electricity bills were separate from their rent and varied based on their consumption.

Design

The study is a mixed-method design consisting primarily of non-experimental correlations and

descriptive analyses, additional qualitative data from 2 qualitative components to the questionnaire and three focus groups. The focus groups were carried out separately from the quantitative research with different participants. For the qualitative components of the research, the grounded theory approach of analysis was employed in order to gain an insight into participants' own beliefs and the themes inherent in these beliefs, rather than to simply look for the themes commonly identified in previous research.

The predictor variable for the first hypothesis is 'Barriers to Recycling'. This is a between-groups variable that is determined based on the participants' answers to the question: "Are recycling facilities available to you?". This variable seeks to identify how much of a barrier there is to engaging in recycling. Based on their answers, participants are divided into either Low Barrier groups or High Barrier groups. The criterion variable for the first hypothesis is 'Total Ecological Garbage Removal'. This variable is a subscale of the General Ecological Behaviour scale and it measures the amount of ecological waste removal that a participant engages in.

The predictor variable for the second hypothesis is 'Conservation Incentives'. This is a between-groups variable that is determined based on the participants' answers to the question: "Do you pay a fixed rate for gas and electricity?". This variable seeks to identify the potential for an incentive to increase energy conservation. Based on their answers, participants are divided into either high Incentive or Low Incentive groups. The criterion variable for the second hypothesis is 'Total Water and Power Conservation'. This variable is a subscale of the General Ecological Behaviour scale and it measures the amount of water and energy conservation that a participant engages in.

The independent variable for the third and fourth hypotheses is 'Barriers to Recycling'. The dependent variable for the third hypothesis is 'Total GEB Score' and the dependent variable for the

fourth hypothesis is 'Total NEP Score'.

The focus groups took the form of brief discussions on climate change and individual beliefs and behaviours related to climate change. These were conducted with students who fell into similar categories of accommodation identified in the questionnaire. That is, students from three common types of student accommodation were approached for the focus groups. These were: students who live in rented housing with separate and variable bills; students who live in purpose-built student accommodation complexes with monthly rent payments and fixed bills; and students who live in purpose-built student accommodation complexes with semesterised rent payments including all energy expenses covered within the rent payments. The discussion followed a rough outline of specific topics and questions to be addressed. However, it was left somewhat open in order to allow participants to discuss freely around the main topics. This meant that a significant amount of insight could be gained while still staying within certain boundaries that would allow for a thorough analysis and comparison between the different focus groups.

Materials - Questionnaire

A questionnaire was designed using the General Ecological Behaviour scale, the Revised New Eco Paradigm scale, 6 qualitative components designed by the researcher, and demographic questions at the start of the questionnaire. The entire questionnaire was designed on Google Drive and was only available online. Participants were first asked if they would consent to take part in the research. Following this, they were asked if they were in third level education, what their gender was, and how old they were.

Kaiser's (1998) General Ecological Behavior scale (GEB) was used for the first portion of the questionnaire. It is a 40 item scale concerning conservation behaviours. Questions are answered with a

‘Yes’ or ‘No’ depending on whether or not the participant has ever engaged in a particular behaviour. An overall score is gotten by summing all the items with high scores indicating higher level of pro-environmental behaviour. The GEB scale is also made up of seven subscales (Prosocial Behavior, Ecological Garbage Removal, Water and Power Conservation, Ecologically Aware Consumer Behavior, Garbage Inhibition, Volunteering in Nature Protection Activities, and Ecological Automobile Use). Scores for these are also gotten by summing the scores of all the items. For the purpose of this study, question 8 of the GEB (“I would feel uncomfortable if Turks lived in the apartment next door”) was removed as it was felt that it was inappropriate and did not offer any significant value to the research.

Two subscales of the GEB were focused on for this study. These were 'Ecological Garbage Removal' and 'Water and Power Consumption'. These were chosen because they related specifically to the investigation of barriers to recycling and incentives for conservation in third level students. The 'Ecological Garbage Removal' subscale measures participants' levels of responsibility in the ecological removal of waste. In this case, it relates to the potential for recycling in students. Total scores in this subscale range from 0 to 5, with high scores suggesting that the participant engages in ecological waste removal. The 'Water and Power Conservation' subscale measures participants' levels of water and energy conservation. It simply seeks to identify the extent to which participants make an effort to conserve water and energy. Similarly, it is scored from 0 to 5 and the higher scores denote a greater level of water and power conservation behaviours in the participant.

Dunlap et al's (2000) Revised New Ecological Paradigm (NEP) was used for the second portion of the questionnaire. It is designed to measure participants' ecological worldviews. That is, it assesses the degree to which humans feel they are a part of nature or separate from nature. It contains 15 items that are answered using a 5-point Likert scale, ranging from 1 (strongly disagree), 2 (mildly disagree),

3 (unsure), 4 (mildly agree), 5 (strongly agree). Responses are summed to create a total score that ranges from 15 to 75. High scores point to high acceptance of the NEP. The NEP is also made up of five subscales (Reality of Limits to Growth, Antianthropocentrism, The Fragility of Natures Balance, Rejection of Exemptionalism, and The Possibility of Ecocrisis)

Following the two questionnaires, participants were asked two open qualitative questions: “What motivates or discourages you from engaging in pro-environmental behaviour?” and “Is Ireland strongly affected by climate change?”. Participants were given space to write as much or as little as they wanted for their answers. These questions were designed by the researcher to allow for a more specific insight into general opinions and beliefs in ecological issues. This would allow for a number of themes to be identified in the participants' responses. Following this, participants were asked 2 groups of 2 questions. The first group of questions looked at recycling behaviours and the barriers involved in engaging in these behaviours. Participants were first asked “Are recycling facilities available to you?”, and were given three options: “Yes, in my building/house”; “Yes, within walking distance”; and “No, there are none within walking distance”. These answers indicated low barrier, medium barrier and high barrier conditions, respectively. Next, participants were asked “Do you use these facilities?” and were given three options: “Yes”; “No”; and “No, but I would if they were available to me.

The second group of questions looked at energy conservation behaviours and their incentives. Participants were asked “Do you pay a fixed rate for gas and electricity?”, and were given three options: “Yes, my bills are fixed and included in my rent”; “Yes, my bills are fixed unless I go significantly above average consumption”; and “No, my bills vary based on my consumption”. The answers indicated low incentive, medium incentive and high incentive conditions, respectively. Next, participants were asked “Do you take measures to reduce the cost of your gas and electricity bills?”

and were given three options: “Yes, I try to reduce my consumption as much as possible”; “No, I use what I need”: and “No, my bills are fixed”.

Materials – Focus Groups

For the focus groups, a general outline of questions was devised. Participants were given the same consent form used in the online questionnaire. Following this, participants were asked: “Do you believe that climate change is happening?”; “Do you think that Ireland is strongly affected by climate change?”; “Do you think anything can be done to reduce climate change?”; “Do you have recycling facilities available to you?”; “Do you use these facilities?”: “Do you pay a fixed rate for your gas and electricity?”; and “Do you take any measures to reduce the cost of your gas and electricity bills?”.

Given that participants would be responsible for their own bills, the qualitative components of the online questionnaire and the questions used in the focus groups were designed to identify the extent to which participants are motivated by money to conserve energy.

Apparatus

For the audio recordings of the focus groups, a Philips DVT3000 Voice Tracer digital recorder was used. All files were stored in password-protected folders in two different locations.

Procedure

Participants were sent an online link to the questionnaire. The cover page of the questionnaire introduced the researcher and their aims. It outlined the research's voluntary nature and informed prospective participants that they could withdraw from the study at any time. Participants were informed that there was complete anonymity in their participation and that there would be no way of identifying them from their answers. Participants were then told that the study would take no more

than 12 minutes to complete. Finally, the participant criteria was outlined (i.e. Currently in third level and responsible for paying their rent and bills) in order to ensure that those who chose to continue with the study would represent the right demographic. Following their consent, participants began the questionnaire. Upon submission of their responses, participants were prompted with a number of resources, including contact details of the researcher, from which they could seek further information or counseling, in light of any distress that the study may have caused them. The resources provided were aimed at providing further information on climate change and pro-environmental behaviour. A link to the Samaritans website was also included. However, it is highly unlikely that participation in the study would have caused any participant any form of discomfort or distress.

For the focus groups, the management companies of the two student apartment complexes were contacted to gain permission to interview the student residents on location. They then informed their residents by e-mail that the researcher would be around the apartment grounds on specific days looking to carry out brief focus groups on climate change and conservation behaviour. This was done in order to assure participants that the conducting of the focus groups had been approved by the management companies. Within the complex, the experimenter went door-to-door to invite residents to take part in a brief discussion on the issues of climate change. For focus group 3, the experimenter went door-to-door to houses in the same area as the two student apartment complexes. Tenants were invited to take part in a brief discussion on the issues of climate change. All interested participants were then given a consent form to sign which clearly stated that they could withdraw from the focus group at any time and that their participation would be kept entirely confidential. Participants would only be identified by their gender and age in the research. The participants also had to confirm that they were currently enrolled in third level education and that they were responsible for the costs of their accommodation.

Following participants' consent, the experimenter began recording the discussion. The 6 devised questions were kept as a general outline and guide for the discussion but were not necessarily followed exactly. This was done in order to allow for the discussion to move and develop freely based on the participants' responses and interest in the topic. On the other hand, the outline meant that the discussions would have some uniformity and structure in order to allow for an accurate identification of dominant themes throughout the different focus groups. Following completion of the discussion and once the recording had stopped, participants were thanked for their involvement and asked if they had any concerns or questions following the discussion. Each participant was given an information sheet with the researcher's contact details and the details of organisations and websites that could provide further information on climate change and pro-environmental behaviour, if necessary. The anonymity of their involvement was reiterated and their consent to have their information used in the research was sought one final time before concluding the focus group.

Results

Descriptive Statistics

Of the 107 participants who took part, 46 were male and 61 were female. The mean age of respondents was 22.76 with a range of 19 to 53. Participants were divided into Low Barrier groups and High Barrier groups based on their responses to the third qualitative question, “Are recycling facilities available to you?”. If participants answered “Yes, in my building/house” they were grouped as Low Barrier because this meant that they would have nothing or very little in their way to prevent them from recycling. Participants who answered, “Yes, within walking distance” or “No, there are none nearby” were grouped as High Barrier because their living circumstances presented them with notable obstacles to recycling. There were 47 participants in the Low Barrier group and 60 in the High Barrier group.

For the purpose of the investigation, participants were also divided into High Incentive and Low Incentive groups based on their responses to the fifth qualitative question, “Do you pay a fixed rate for gas and electricity?”. Participants who answered, “No, my bills vary based upon my consumption” were grouped as High Incentive because the variability of their bills gave them a clear monetary incentive for energy conservation. Those who answered, “Yes, my bills are fixed and included in my rent” or “Yes, my bills are fixed unless I go significantly above average consumption” were grouped as Low Incentive because their billing circumstances presented them little to no monetary incentive to reduce energy consumption. There were 72 participants in the High Incentive group and 35 in the Low Incentive group.

The average Total NEP score for all participants was 55.63 and a standard deviation of 10.55, with 75 being the highest possible score. Participants showed a notable variance in scores with the lowest score being 29 and the highest being 71. Participants in the Low Barrier group had a mean NEP

score of 58.77, a standard deviation of 7.43, and a range of scores from 40 to 69. Participants in the High Barrier group had a mean NEP score of 53.77, a standard deviation of 11.96, and a range of scores from 29 to 71. See Table 1 for NEP descriptives.

Table 1: *Descriptive Statistics of Average NEP Scores.*

	Total NEP Scores		
	All Participants	Low Barrier Group	High Barrier Group
Valid	107	47	60
Mean	55.63	58.77	53.77
Standard Deviation	10.55	7.43	11.96
Minimum	29	40	29
Maximum	71	69	71

The average Total GEB score for all participants was 18.63 and a standard deviation of 3.71, with 39 being the highest possible score. Participants showed a notable variance in scores with the lowest score being 10 and the highest score being 29. Participants in the Low Barrier group had a mean GEB score of 19.36, a standard deviation of 3.53, and a range of scores from 13 to 29. Participants in the High Barrier group had a mean GEB score of 18.05, a standard deviation 3.77, and a range from 10 to 26. See table 2 for GEB descriptives.

Table 2: *Descriptive Statistics of Average GEB Scores.*

	Total GEB Scores		
	All Participants	Low Barrier Group	High Barrier Group
Valid	107	47	60
Mean	18.63	19.36	18.05
Standard Deviation	3.71	3.53	3.77
Minimum	10	13	10
Maximum	29	29	26

Participants in the Low Incentives group had a mean NEP score of 52.23, a standard deviation of 10.66, and a range of scores from 31 to 69. They had a mean GEB score of 17.66, a standard deviation of 4.18, and a range of scores from 10 to 29. Participants in the High Incentives group had a mean NEP score of 57.28, a standard deviation of 10.17, and a range of scores from 29 to 71. They had a mean GEB score of 19.10, a standard deviation of 3.38, and a range of scores from 12 to 26. See Table 3 for details on NEP scores between both groups.

Table 3: *Descriptive Statistics of Average NEP & GEB scores between Incentives groups*

	Total NEP		Total GEB	
	Low Incentives Group	High Incentives Group	Low Incentives Group	High Incentives Group
Valid	35	72	35	72
Mean	52.23	57.28	17.66	19.1
Standard Deviation	10.66	10.17	4.18	3.38
Minimum	31	29	10	12
Maximum	69	71	29	26

Inferential Statistics - Hypotheses

Hypothesis 1

It was hypothesised that Total NEP scores would only be positively significantly correlated with Total GEB scores in the Low Barriers group. The relationship Total NEP (as measured by the NEP-R scale) and Total GEB (as measured by the GEB scale) was investigated in two conditions using a Pearson correlation coefficient. Participants in Low Barrier groups and High Barrier groups (as measured by Barriers to Recycling) were compared to investigate the significance of Barriers to Recycling on predicting environmental behaviours. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. A Pearson correlation coefficient found that there was a weak positive relationship between Total NEP and Total GEB in the Low Barriers group ($r(47) = 0.10$, $p > .01$) with high scores in NEP-R having no significant association with high scores in GEB. There was a moderate positive significant correlation between Total NEP and Total GEB in the High Barriers condition ($r(60) = 0.39$, $p < .01$) with high scores of

NEP-R having a significant association with high scores in GEB. Therefore, the null hypothesis cannot be rejected. See table 4 for Correlations.

Hypothesis 2

It was hypothesised that Total NEP scores will only be positively significantly correlated with Total GEB scores in the High Incentive group. The relationship between Total NEP (as measured by the NEP-R scale) and Total GEB (as measured by the GEB scale) was investigated in two conditions using a Pearson correlation coefficient. Participants in Low Incentive groups and High Incentive groups (as measured by Incentives for Conservation Behaviour) were compared to investigate the significance of monetary incentives to energy conservation behaviours. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity.

A Pearson correlation coefficient found that there was a weak positive relationship between Total NEP and Total GEB in the Low Incentives group ($r(35) = 0.14, p > .01$), with high scores of NEP-R having no significant association with high scores in GEB. There was a moderate positive significant relationship between Total NEP and Total GEB in the High Incentive group ($r(72) = 0.40, p < .01$), with high scores of NEP-R having a significant association with high scores in GEB. Therefore, the null hypothesis is rejected. See table 4 for Correlations.

Table 4: *Correlation Table*

		Total GEB	Total NEP
Low Barriers Group	Total GEB	Pearson Correlation	.102
	Total NEP	Pearson Correlation	.102
High Barriers Group	Total GEB	Pearson Correlation	.396**
	Total NEP	Pearson Correlation	.396**
Low Incentives Group	Total GEB	Pearson Correlation	.141
	Total NEP	Pearson Correlation	.141
High Incentives Group	Total GEB	Pearson Correlation	.403**
	Total NEP	Pearson Correlation	.403**

** p significant at .01 level

Hypothesis 3

It was hypothesised that mean GEB scores will be significantly different between Low and High Barriers groups. An independent-samples t-test was conducted to compare Total GEB scores for Low Barrier and High Barrier groups. The Low Barriers group (mean = 19.36, SD = 3.54) was found to have higher scores for self-reported general ecological behaviour than the High Barriers group (mean = 18.05, SD = 3.77). The 95% confidence limits show that the population mean difference of the variables lies somewhere between -.10 and 2.72. An independent samples t-test found that there was no statistically significant difference between Total GEB scores of Low Barriers and High Barriers groups ($t(105) = 1.84, p = .069$). Therefore the null cannot be rejected. See table 5 for information T-Test information.

Hypothesis 4

It was hypothesised that mean NEP scores would not be significantly different between Low and High Barriers groups. An independent-samples t-test was conducted to compare Total NEP scores for Low and High Barriers groups. The Low Barriers group (mean = 58.77, SD = 7.44) was found to have higher scores for a positive ecological world-view than the High Barriers group (mean = 53.17, SD = 11.96). The 95% confidence limits show that the population mean difference of the variables lies somewhere between 1.65 and 9.55. An independent samples t-test found that there was a statistically significant difference between ecological world-view of Low Barriers and High Barriers groups ($t(105) = 2.81, p = .006$). Therefore the null hypothesis may be rejected. See table 5 for information T-Test information.

Table 5: *Independent Samples T-Test Comparing Total GEB & Total NEP between both groups.*

Variables	Groups	Mean	SD	<i>t</i>	<i>df</i>	<i>p</i>
Total GEB	Low Barriers	19.36	3.54	1.84	105	0.69
	High Barriers	18.05	3.77	1.84	105	0.69
Total NEP	Low Barriers	58.77	7.44	2.81	105	0.01
	High Barriers	53.17	11.96	2.81	105	0.01

Note: *p* significant at .05 level.

Focus Groups and Qualitative Questions

The first focus group yielded interesting results because it included the most opinionated participants of all of the focus groups. These also offered the widest range and most significant contrast in environmental beliefs. Several themes were particularly prominent throughout the discussion. The recurring themes in this group included: the distance of the threat; consequent

indifference towards the threat; helplessness; dependency on fossil fuels; corruption; disinformation; greed; control; inaccurate public perception; poor communication; inconvenience; effects are irreversible; no way of knowing if effects are definitely irreversible; need for accurate information; need for tragedy; motivation; threat needs to be personal; education; habits; instantly understandable information. This group paid fixed rent and bills and express concern over the lack of control that they had over their bills. They explained that they would take greater measures to reduce their consumption if they knew what their habits cost. Furthermore, they expressed a concern for the lack of adequate recycling facilities in their apartment. While recycling bins were available for them within the grounds of the complex, they had no means of gathering their recycling in their apartment as they were only provided with one general waste bin. Because of this, they had to make a conscious effort to keep an empty box in which they could collect recyclable packaging. In spite of their positive feelings towards ecological behaviours and their general willingness to be proactive, this presents a notable barrier to recycling. This is a clear indication of how little a barrier needs to be in order to impede ecological behaviour.

The second focus group displayed the least amount of knowledge on the subject of climate change. The most common themes in the discussion were: contrasting and misleading information; uncertainty over the existence of climate change; lack of knowledge on the subject; monetary incentives. The overwhelming theme was that of scepticism towards climate change, with two of the participants expressing significant doubts about the reliability of environmental claims. Only one of the three participants expressed his belief in climate change. However it is worth noting that, in spite of their general lack of knowledge on the subject and their scepticism, participants in this group still reported engaging in recycling and making a conscious effort to reduce their energy consumption. The motivation for energy conservation, however, appeared to be purely monetary. Given that they paid variable energy bills, it is likely that their energy conservation behaviour would not translate to the

context of a fixed energy bill household.

The third and final focus group displayed a notable concern and proactive behaviour towards the environment. The major themes in their discussion were: no immediate changes; changes starting to become visible; reversible; lack of information; lack of understanding; lack of control; habits. The participants had a positive attitude towards pro-environmental behaviours overall and indicated the greatest amounts of proactive behaviour, compared to other groups. Their main concerns came from a lack of understanding of how to measure the cost of their energy consumption. They paid separate energy bills but they paid a fixed rate every two months and were only reimbursed every 6 months if their energy use was below average. Because of the extended periods of time before they could see the effects of their consumption, they felt that it was hard to make an effort to reduce their consumption because they had no direct way of monitoring their consumption on a regular basis. They felt that the fee structure only encouraged them to be concerned with going over the consumption limit.

As expressed in the focus groups, the responses to the question, “Is Ireland strongly affected by climate change?” in the questionnaire suggests a growing awareness of climate change. In particular, the recent snow in March and freezing temperatures crop up as a common concern among several participants. Others point to the particularly unpredictable winters in the past few years that have been so bad as to significantly disrupt many aspects of day-to-day life to the point that the nation could not handle the changes. Some mention the increasingly wet summers as another sign of noticeable changes to the environment. Overall, the general theme displays an acknowledgement of significant changes to the Irish climate. Out of the 107 participants, only 10 participants believe that Ireland is not strongly affected by climate change. Several others suggest that Ireland isn't significantly affected but that some slight changes are happening while others are unsure about it. However, the pattern suggests an increasing belief and acknowledgement of the reality of climate change in Ireland.

Discussion

It was hypothesised that Total NEP scores would only be positively significantly correlated with Total GEB scores in the Low Barriers group. However, there was no significant relationship between the two variables in the Low Barrier group and, furthermore, there was a moderate positive significant correlation in the High Barriers group. These findings go completely against the previous research by Guagnano et al (1995) which suggests that one's ecological world-view has little influence on reported environmental behaviours when barriers to pro-environmental behaviours are high. On the other hand, hypothesis 2 showed significant results. It was hypothesised that Total NEP scores would only be positively significantly correlated with Total GEB scores in the High Incentive group. This supports Guagnano et al. (1995), Abrahamse et al. (2005) and Bekker et al.'s (2010) research as it suggests that participants with positive ecological world-views will be significantly more likely to engage in ecological behaviour if there are high incentives in place. In both of these hypotheses, it must be considered that the low number of participants may have adversely affected the results. It was expected that both hypotheses would show similar levels of accuracy as they relate to very similar measures and are based on the same previous findings.

It was hypothesised that mean GEB scores would be significantly different between Low and High Barriers groups. However, there was no significant difference between the mean scores in both groups. On the other hand, hypothesis 4 showed no statistically significant difference in mean NEP scores between Low and High Barrier groups, as hypothesised. This supports the belief that ecological behaviour is more influenced by barriers than by ecological ideology. In the case of hypothesis 3, it is possible that the insignificant results are due to lack of cohesion between the GEB measure and the grouping criteria for the Low and High Barrier groups. The GEB scale measures overall levels of self-reported ecological behaviour. On the other hand, the Low and High Barriers groups were defined

based on individual participants' access to recycling facilities. Recycling behaviours only account for a small portion of the overall GEB score. Because of this, a participant could potentially have displayed high GEB scores because they engage in a large number ecological behaviours. However, they may not have engaged in recycling behaviours because they simply did not have access or the means to do so. With this in mind, it is clear to see that it is highly likely that participants could have engaged in large amounts of ecological behaviours (as measured by the GEB) yet not engaged in recycling behaviours (as measured by the Low and High Barriers groups). Future research could address this oversight and perhaps, with a greater number of participants, produce more significant results.

The three focus groups present very contrasting beliefs and ecological habits. While they display different levels of commitment to the environment, ranging from passionate (in group 1) to apathetic (in group 2), all displayed levels of ecological behaviour that were seemingly more dependent on the barriers to pro-environmental behaviour than their individual beliefs. In spite of the strong positive feelings towards the environment in group 1, they displayed the greatest concerns and reported the greatest barriers to engaging in ecological behaviour. These were barriers linked to their living situation. Furthermore, group 2 displayed a significant level of indifference towards the environment. However, they still engaged in recycling and energy conservation. Recycling was motivated out of habit and social norms, and most importantly because the recycling facilities were available to them. Energy conservation was motivated by monetary savings.

The findings from the quantitative components of the questionnaire contrast significantly with Lorenzoni et al's (2007) study in which the overwhelming sentiment was one of climate change being a distant and insignificant threat in the eyes of UK participants. It is possible that, rather than there being a vastly different view on climate change between the two nations, this discrepancy is due to the environmental changes which have occurred over the past 6 years. This possibility may serve as a

means of gaining some perspective on how these changes are perceived. As found by Lorenzoni et al (2007) and as suggested by data in current research, climate change is often perceived as being something that's only going to adversely affect people in generations to come. However, the current findings propose a sharp increase in public awareness in a short period of time.

In light of the time constraints governing this research, it must be noted that future research in the area should seek to allow a greater amount of time for data collection on a greater scale. As addressed above, the small sample of participants presented a significant limitation to the research, particularly once the participants had been divided into either Low or High Barriers or Incentives groups. These concerns are particularly relevant to the focus groups. Future research should certainly look to carry out more than 3 focus groups.

It is possible that the differences between the samples used for the questionnaire and the focus groups may also be of concern. Participants involved in the questionnaire were mostly from Dublin Business School, a private college. On the other hand, most participants involved in the focus groups were from Dublin City University, a public college. Significantly different socio-economic status could potentially influence participants' responses to incentives. Furthermore, as proposed in the introduction, students at this stage are in a stage of transition to a life of greater responsibility. The current research might have addressed this more accurately by investigating the habits and beliefs of students at different levels of their third-level education, such as first year students compared to final year students. While this was not specifically asked, it is likely that most participants were in or nearing their final year of study, given the mean age of 22.

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Appendix

Information and Consent Form for Focus Groups

My name is Paul-André Morand and I am a final year psychology student in Dublin Business School. As part of my final year thesis I am researching the barriers to pro-environmental behaviours in third level students. The research will involve a discussion lasting no more than 40 minutes. This discussion will look at outlining your thoughts on climate change as well as how and why you choose to engage, or abstain, from pro-environmental behaviours. This is a voluntary study and you may discontinue your participation at any point of the interview, should you feel that you do not wish to be involved. An audio recording will be done of the interview for later analysis. However, all responses will be kept strictly confidential and no data released will identify you by name, it will only identify your age and gender when discussing your individual opinions. If, following participation in the interview, you change your mind and wish to have your data withdrawn, you may contact me at paul.morand2@mail.dcu.ie or on 087 322 5045 and I will remove all record of your participation. Participants must currently be in third level education and must be responsible for paying their rent and bills.

Do you consent to taking part in this research?

YES NO

Are you currently in third level education?

YES NO

What is your gender?

MALE FEMALE

What is your age?

—

Focus Group 1

Participant 1 (P1) - Male, 25

Participant 2 (P2) - Male, 23

Participant 3 (P3) - Male, 23

Participant 4 (P4) - Male, 23

Experimenter (Exp.)

Experimenter: Do you believe that climate change is happening?

P1: Yes, I do believe that this is happening.

P2: Yes

P3: Yes

P2: I think it's pretty ridiculous for people to even say that it's not.

P3: It's definitely happening but who cares though? It doesn't make a difference.

P2: It definitely makes a difference!

P1: It does!

P3: How?

P1: It's going to make a difference once New York is under water. And we've already seen tsunamis wreak havoc more than in any other time in history so yes, it definitely matters.

P3: But we don't live in New York.

P1: Exactly, we live in worse...we live in Dublin. At least in New York they have tall buildings. IN Dublin we'll be absolutely swamped. We'll have to go up to the Dublin mountains.

P2: It's true, most major towns are built on rivers and in the last few years flooding has been a huge problem.

Exp: So, would you think that Ireland is strongly affected by climate change, regardless of anywhere else?

P3: I think we're probably less affected than most places.

P2: Yeah, I think at the moment...

P3: Because of our moderate climate

P2: Well I think at the moment obviously the climate has changed too much, like it's still very temperate. The only thing that's mainly affected is, like I said, flooding is probably worst it's been in history.

P4: Summers are wetter. We have one decent summer in ten years which was 2006 I think and every summer other than that has been mostly rain and floods...

P2: I think last year was the summer with the most rainfall.

P1: Like yeah, we're not being affected but if you look at like the skiing industry in the alps you're getting far less snow. Like I remember back when we were really young, like 9 or 10, and you'd have like 2 metres of snow on the banks of the roads and now, like the amount of times that they have to bring out the fake snow just so people can ski. I mean, that's going to affect the local economies quite a bit. For Ireland, no, I guess we have...there isn't that much...because we're so temperate...there aren't really any extremes...but that's not to say there won't be.

P4: If your climate is already prone to extreme weather as its normal weather, so you've got like hurricanes anyway... well if you make a hurricane worse then it's a really bad hurricane.

P1: And we've seen a few... I mean, wasn't it this year they had that...I mean you look at New York and they got completely destroyed...and like, you know, that was unheard of before...it didn't happen. And even in New Zealand there were hurricanes in Auckland...it was a tornado in Auckland. I'm not saying that's definitely global warming but, you know...

P2: Yeah

Exp: And do you feel like there's something that can be done about it?

P3: Not really...because, like, what are you going to do about it?

P2: I think it's unfortunate in a way because there's only so much you can...like really do to cut back global warming. There's obviously like... people need...crude oil is needed and you have to burn crude oil. Whether it's for your car or your bus or even to make electricity at a power plant, you have to burn a certain amount of carbon fossil fuels...

P3: It's possible to cut back on that but...you need governments to actually have some sort of action involving that.

Exp: But you think that there's something that can be done to reduce it, regardless of how unlikely it is?

P3: Well, if you build a massive network that's made up of a range of different sources...so obviously, nothing but wind is irrelevant because, if there's no wind then it's pointless. But if you have a lot of wind, and tidal, and solar and a bunch of other stuff then...apparently, the area that a wind farm takes up, even in Ireland, if you cover the same area, like, in between all the windmills with solar panels then you can apparently generate the same amount of energy. So like, if it's not windy, then it's possibly sunny...so you're grand.

P1: And I think it's important...like, a lot of Americans think it's not economically viable to go sustainable...when there's a huge possibility for expansion as far as jobs and so on and...in the long run your costs are probably lower because you're less reliant on digging out coal and transporting it...whereas everything...if you build it, it's right there and there's no need for this huge infrastructure to sustain it...

P3: And oil rigs and tankers are pretty expensive...

P1: Yeah, exactly, yeah...and you look at...and they're risky.

P2: I think you look at it from the point of view of finite resources and finite materials because the petrochemical and crude oil industry is one of the biggest on the planet because everything you use, even down to the medicines we use, can be made from crude oil and carbon compounds made from crude oil...so, if you're spending less time on crude oil for things like electricity and you're using renewable sources instead, then you're freeing up more of the finites resources of crude oil for things like buses, cars, plastics, chemicals... There will be a day when crude oil is scarce and we do need all these alternative technologies.

P1: The problem is at the moment, if you look at all the lobbies in America...you've got all these oil companies that have a stranglehold on politics and they're going to be propagating this...sort of...anti...

P4: Disinformation

P1: Yeah, disinformation about all these issues. And it's not only oil, it's just disinformation on everything to increase their gains. And that needs to be addressed, but the problem is...how do you eliminate all of these people who have so much control.

P2: Yeah, I think the financial gain of drilling for oil is, like you said, a stranglehold on things like...even if you look at hydrogen fuel cells for cars...I think there could've been greater advances made in developing that if there wasn't so much money to be made in crude oil. There's too much financial gain for them there to allow people to invest significantly in alternatives.

P4: That has a secondary effect then where people look at it and say, 'well, where are all the technological advances in renewable energy that you have been working on for years. Why is it taking so long?' But it's taking so long because there isn't as much money being put into it. Because people like that don't want to put money into it.

P2: And then also governments don't have the money now...obviously with the recession now they barely have the money to put into basic public services, let alone develop renewable energies.

P1: Also, people have this idea of environmental change being linked to crazy hippies who chain themselves to trees and...they don't understand that there are real effects to their own lives, they just think, 'this doesn't affect me', when they see this type of thing...and then you have all these climate scientists coming out with results, and then others saying, 'oh yeah, they fixed the results'... it just seems like this in-fighting thing... it just seems like politics...

P3: But you get disinformation from both sides.

P1: Well yeah.

P3: That's the thing like. Say the likes of getting natural gas inland with fracking, people make all this fuss about how it pollutes the water supply and...like, there's no evidence of that at all...and I think it's one of the most environmentally friendly ways of getting gas.

P1: Yeah. And that feeds into this whole crazy hippies view...that needs to be changed...

P4: There's something else. I was reading about it today...there's this kind of issue with communicating scientific findings to the public so that it's media friendly. There's a course in DCU that's like, science and journalism, where you learn...well, social skills so you can tell people what's going on.

P1: It's basically just PR.

P4: Yeah, exactly. It's just improving communication.

P3: See, it's all...talking about reducing emissions is a bit irrelevant at this point because, say if all of these things are caused by global warming, even if you turn everything off now the planet would still be getting warmer for a few more decades at least...

P1: But is it irreversible? I don't know but, if we had the information...you know, if we did know it was irreversible but we knew we could do this, this and this to reduce it, or say, 'actually, it is reversible. We have to do this, this, this'. The problem is that there isn't. There doesn't seem to be those resources.

P3: But then you could use the argument that it can't get any worse so we might as well burn it all.

P1: Well...that's a viable argument...if that's the message then it's quite depressing...

P4: Like, no one actually knows what'll happen, especially if we go on as we are. People in the future won't have planet to live on in the first place, it'll be like Wall-E.

P1: But I remember an argument and it was basically about being environmentally responsible, and it was like, 'ok, even if global warming isn't correct, you can still go and make the earth cleaner and live a better, cleaner life and maybe it doesn't have an effect and global warming will still happen, but at least there are no negative consequences for that, for being responsible. Whereas as, say it's true, say we are making things worse, and there are all these potential apocalyptic things...so, there's no

negative effects from actually being responsible but there are a whole of potentially negative effects for being irresponsible.

P3: That's not...I think what it is is that there are no short term negative effects of being irresponsible, there's only short effects of being responsible. So, if you have to walk all the way to the bottle bank to recycle your bottles, or if you have to sort out all your rubbish, or if you have to turn off your lights when you like to have them on, it's an inconvenience for those people at that time...

P1: Yeah, but it's not a negative effect, people just need to cop on and do it.

P3: Don't tell them that!

P1: But environmentally speaking it doesn't have a negative effect. yeah, sure, people are lazy...

P3: But that's a great barrier.

P1: But if you can get people to just do it and for them to know what's at stake then there are no immediate negative effects to the environment.

Exp: So, what would be something that would motivate you, what would give you a good enough reason to recycle, save energy, do any of these things?

P4: I do any of those things anyway. I know there are a lot of things you can't prove and because of that we're not sure about everything but like, why is it that cancer is so prevalent and things like that...these things are tangible...like, people are dying in front of you when we know that there are carcinogens in plastic and plastic is everywhere and used for everything...it's...like, you can't disprove that, it's just fact...

P1: It seems to be linked nearly to that idea of when someone drives drunk and they think, 'sure, this won't happen to me'. It'll happen to someone else but it won't happen to me'. I don't know what it is but it seems to be this in-built thing in humans, this arrogance that it could happen to them but it won't

happen to me. You might get tsunamis and all that but it won't happen to me, it won't happen in Ireland because the climate is too temperate. It'll happen in the Caribbean, or maybe New York, but it won't happen to me. It's like we have this need to constantly reassure ourselves or dupe ourselves into feeling we're immortal, which is exactly why people drive drunk.

P4: tragedy motivates people.

P1: Yeah, that's why people who have a family member who dies of cancer all of sudden go on a cancer fighting crusade, but unless it absolutely affects you directly you're going to be like, 'why would I bother'.

P4: And that's why Obama has signed this initiative about climate change because of what happened in New York. It's really sad to say but you need more Hurricane Katrinas to get these things to change.

P1: Exactly, just look at the school shootings. Oh, let's repeal gun laws as soon as they've shot, you know, like 6 kids. To think that that's what it takes for people to be like, 'Oh wait, we need to fix something'.

P2: I think it takes the negatives really to just motivate people to do the responsible things, regardless of what the issue is. But

21:20

Exp: So, what do you think could be put in place to make this as easy as possible? What are the potential incentives?

P1: I think a lot of it is education, like I think a lot of people who are intelligent and well educated people clearly see the benefits and say, 'ok, I'm going to do this, even though it's a bit annoying'. The problem is there are too many people who aren't educated in that manner and are like, 'well, I have other problems. I don't care about that.' And I definitely think that having your head screwed on properly is very important because then you can just be like, 'ok, this is annoying, but I have to deal

with it'. You have the self discipline and the kind of intelligence to believe you just have to go through this small inconvenience to do good. The problem is that lots of people don't have that.

P3: To be honest, i don't think getting people to do things is going to help anything. Getting the odd person to throw a few bottles in a recycling bin is good and it'll reduce oil consumption to a certain extent, but I think you need large scale projects that go beyond that. Even if you had half the population recycling the whole time and stuff, it's not going to do much good if they're still going home and turning their TVs on all day. to actually cut down on emissions you have to sort out the big causes first.

P2: But that's where education comes in. Like, the only reason I recycle is because I always have, ever since I was in primary school we were always told to recycle. And if you get in at such a young age and build these habits and get people to reduce their consumption, sure it might just be things like turning off lights and TV, and we might just be one country, but that's one producer.

P1: It's about building a national conscience and a set of habits built around this so that it becomes second nature. It's not right now but it has to become second nature so that in generations to come it's foremost in our mind. If you create habits in people, you don't even question it.

50:20

P2: As well, there needs to be a simplicity about how information about climate change and energy consumption is presented to us. It needs to be made into simple, short bullet points. People should be able to pick it up instantly and know what's going on.

P1: Yeah, or like info-graphics, like a government sponsored info-graphic about energy consumption.

Exp: And now I just want to ask you a few questions about your own habits. Are recycling facilities available to you?

P1: Yeah

P3: Yeah, they're just down in the car park.

P4: Yeah

P2: Yeah, there's general waste bins and a bin for dry recyclables. It's up to you to collect them.

Exp: And do you use these facilities?

P2: Yeah, we usually try to do our best. We usually have like a cardboard box or something that we use for recycling stuff.

P3: Sometimes you throw stuff in the bins anyway

P2: Yeah

P3: Just if you weren't thinking about it.

P2: It's all the way down in the car park so, you know, it's just sometimes you get lazy or whatever but we try our best to do it. But it's not made very easy for us to recycle like, yeah, it's in the car park but it's up to you to do it. You need your own bin to do it so it's kind of annoying cause we don't have a second bin, we just have a general waste bin which you need for the messy waste but other than that it's just up to you.

P1: Yeah, I would tend to but the problem often is that you don't have two dedicated bins so you kind of have to create your own system.

Do you pay a fixed rate for your gas and electricity?

P4: Yeah

P2: Yeah, it's kind of a fixed rate for the semester.

P3: It's all included in what you pay.

P1: Yeah, so we don't really have much control over the whole thing. You just pay what you pay...

P2: And like, the limit, as far as we can tell, is relatively high, you'd be hard pushed to go over it.

And would you take measures to reduce the cost of your gas and electricity?

P2: Not really, no.

P3: If anything I'd probably use it more, seen as I've paid for it already, might as well get my money's worth.

P1: Yeah but like, I'd unplug the x-box and so on and turn off the lights; make a point of that.

P3 Yeah.

P1: And I wouldn't...I'd still do everything I could...like, I'm not going to go cold but yeah, I'd still turn off lights and unplug stuff that shouldn't be plugged. It's a balance really, rather than going all out.

P4: Yeah, so you turn off the lights but there's no way of you knowing how much electricity your apartment's using. There's no meter in your apartment though so you're not conscious about what you use.

So do you feel like if you did have bills that vary, that you got every month, would that change your consumption?

P3: Probably

P4: I think so.

P2: Yeah, because at the end of the day it's not just about environmental issues, it's about saving money as well.

P1: The main motivation would be saving money. It's not the only motivation but it is a big motivator.

P4: Yeah

P3: Yeah

Focus Group 2

Participant 1 (P1) - Male, 21

Participant 2 (P2) - Male, 22

Participant 3 (P3) - Male, 22

Experimenter (Exp.)

Exp: Do you believe that climate change is happening?

P3: Yes

P1: I don't know, I think it's hard to tell...I mean, it's kinda the type of thing that you hear so much mixed things about it, and I don't really know enough about the science of climate change to really say if it is happening or not.

P2: I'd pretty much agree with that...

P1: Yeah, like I mean, because you hear a lot of people...you can be kinda misled by a lot of people who say, 'oh, you know, climate change is such a big thing' but really they're just people who aren't that well informed, they're just coming down on the side of the argument that's in fashion...you know.

P3: There is that too but there is a lot of actual evidence as well that shows that something's happening...

P1: Well like, what evidence? I know what you're saying but I personally don't know the arguments for or against it...

P2: I don't know enough about it...

P1: Yeah, like I mean, I'm not saying or making a definitive case for it either way but personally I just don't know...I can't say definitively whether it is happening or not...

P2: The only thing is it's snowing in March...

P1: Yeah, that's true!

P3: That's almost something that could be evidence

So, would you think that Ireland is strongly affected by climate change?

P3: No, it's not like we're going to get the worst of it but there are whole areas in the developing world that their crops are going to fail...but we're going to be grand...it only gets a little bit warmer, a little colder...

Do you think anything can be done to reduce climate change?

P3: Yeah, there are obviously some things you can do...cause if we're causing it then there must be something we can do to not cause it...

P1: But are we causing it? That's the other argument, like is it...like, some people say it's going to happen regardless and that, actually, our contribution is minimal...it's just what's happening, what does happen...the climate does change over time...

P2: What does actually cause it?

P1: I don't know...I know so little about this.

Do you have recycling facilities available to you?

P3: Yeah

P1: Yeah

P2: Yeah

Are they in your apartment or building, or nearby?

P3: Nearby

P2: Nearby

P1: Nearby and then like the ole green bin...

Do you use these facilities?

P1: Yeah

P3: Yeah

P2: Yeah

Do you pay a fixed rate for gas and electricity?

P3: No, it's based on usage

Would you take any measures to reduce your consumption?

P1: Well, for stuff like electricity and gas you would, simply because you don't want to spend loads...I think monetary is...it's the big motivator.

P3: I wouldn't just leave everything on because I would have to then pay for it.

Focus Group 3

Participant 1 (P1) - Female, 22

Participant 2 (P2) - Female, 23

Participant 3 (P3) - Female 22

Experimenter (Exp)

Exp: Do you believe that climate change is happening?

P3: Yeah

P1: Yeah

P2: Definitely

Exp: Do you think Ireland is strongly affected by it?

P2: I don't think so. i think we notice a change in the weather but because we don't have a particularly extreme climate we don't get to see any of the real extremes...if you know what I mean, we notice that the weather isn't the same as it was 20 years ago but because we never had extreme weather to begin with it's not really affecting us much.

P3: It kind of seems like we're starting to get extreme weather and more unpredictable weather as well. It's march and we have snow and the sun was shining two weeks ago.

P1: Yeah, like one of my friends in Meath was snowed in today and she couldn't get into college so...I'd say we weren't, like I would never have noticed it before but we probably are getting it and we are starting to get it a bit more...

P2: Like, we're not a place that would really experience the likes of snow and snow melting like all the ski resorts and that sort of thing but like, they can see the change then and there or people who, say, suffer from intense hurricane seasons can see that they're getting more than they used to whereas we don't have any of that so, like, we're slowly seeing it but it's not as serious as everywhere else...

P1: Like, it would probably be easy to miss if you weren't thinking of climate change. You might not...it might not occur to you that this is climate change, if you know what I mean? Because it's just a wee bit colder...

Exp: What do you think can be done to reduce climate change? Do you think there's anything that's worth doing?

P1: Yeah, I think there's loads of stuff you can do but...like, the only obvious one that comes to my head is recycling, and stuff like that.

P2: Anything that lowers greenhouse emissions would obviously be important so...like all the electric cars and that sort of thing and anything that moves away from the burning of fossil fuels.

P1: And all that stuff like, you can get cleaning products that don't have chemicals that are harmful to the environment but...I wouldn't know what they are, I wouldn't know what to look out for...

Do you have recycling facilities available to you?

P3: Yeah

P2: Yeah

P1: We have a green bin and it's being collected tomorrow

P2: And a brown bin. It's basically compost.

Do you use these facilities?

P2: Yeah

P1: Yeah

P3: Yeah

P1: We actually use it more than we use the black bin.

P3: Yeah, we're really good...

P2: We hardly ever put stuff out in the black bin. The green bin is almost always going out.

Do you pay a fixed rate for your gas and electricity?

P2: No

P1: No

P2: Electricity, yes, but not our gas...Actually, we don't have gas, we have oil. We pay a fixed amount for, like, three months or something and then...it checks to see if you're within the limit...

P3: Yeah, you're on your fixed rate and you're charged that every month and you're supposed to get a bill for two months and then twice a year you go back and track your usage.

And if you use significantly under or over that do you have to pay extra or do you...?

P1: Yeah, so like they base it, say, on like the previous years consumption and they say well that's what you used last year so we're going to charge you this this year, and if you use a lot less then they'll reimburse you, if you use a lot more then you have to pay a lump sum.

And is that an incentive to reduce your usage or are you aware of it?

P2: I think in some ways it is in that you don't want to go over, like you don't want to get a shock when it comes around but...I don't think it really is like...if you were seeing your bill come in month by month and knowing the difference it, like...maybe turn off the lights or having the heating on...if you could see the difference that that makes then you would be more aware of it and you would be turning off...but when it's over, you know, six months, you can't say for definite when...

P1: What the thing was...

P3: And then one month it could go up really high and then you might not be here the next month so it would balance out and you wouldn't really see much of a difference in the bill...

Exp: And in general, would you take any measures to reduce the cost of your bills?

P1: Well, i would try to turn off lights

P2: You do, yeah, and you always turn off the TV

P1: Yeah, like we wouldn't leave lights on over night but, I mean, everyone forgets stuff the odd time but it would always be in mind head, like I would try and do it, but sometimes I would forget

P2: But like we'd never wake up and find we have a light on in the kitchen. We'd always make sure that all the lights are off

P1: If we left a switch on it wouldn't be the standard, it would just be by accident...

Exp: What do you feel motivates that?

P2: I think it would be more concern for the environment than monetary...

P1: Yeah

P3: Yeah, I'd be the same. You'd always be conscious of that kind of thing.

P2: Like I wouldn't be like, 'oh, that's a few more euro.' I'd be more, 'oh, poor trees...poor climate.

P1: Yeah, everything with electricity and all that it would never really be money that would motivate me cause, like, when I was living in student accommodation I never had to worry about bills and you always had, like, your recycling and your bins and whatever paid for your, and it was always a standard rate so it would never change...but I would still try and turn off lights and everything but it wouldn't be because I was motivated by, like, reducing money...reducing costs...I couldn't tell you how much it costs for a light to be left on overnight or not...I would have no clue what that cost would be and what kind of a difference that would make in your bill.

Focus Group 1 Scoring Sheet

Indifference

Distant

Doesn't affect us

Not as bad as other places

Concern for other places

Affects local economies

No extreme weather patterns

Change

Never happened before

Helpless

Limitations of interventions

Dependent on fossil fuels

Possible

Government responsibility

Renewable energy - variety

Single approach useless

Generate jobs

Expansion

Reduce costs

Reduced infrastructure

Oil rigs are dangerous

Large business dependent on oil

Everything we use

Will eventually run out

Finite resources

Need alternatives

Politics

Disinformation

Greed

Corruption

Control

Financial Gain

Too much money in crude oil - don't develop alternatives

Stranglehold

Public opinion

Why aren't we seeing advances?

Recession

No money

Public Perception - tree hugger perception

Real effects

Affects everyone

Think it doesn't affect them

Discrediting evidence

Politics

Disinformation on both sides

better alternatives discredited by those who seek better alternatives

Perception needs to change

Communication

Scientific data - public understanding

Need to be understandable to general public

Journalism & Science

Improve communication

Reducing emissions irrelevant

Not going to change anything

Even if you do everything now, still too late

Get worse for years still

Is it irreversible?

Need information

Need to know how much can be done

Need to know what can still be achieved

Need to know what's at stake

No resources for this

Can't get worse

Do whatever you want

No one knows what will happen

environmentally responsible - no adverse consequences

irresponsible - potentially devastating

No negative effects

Potentially negative effects

Inconvenience

Immediate inconvenience

Great barrier

People need to just do it

Suck it up

Do these things anyway

Don't have proof

There's some link

Tangible

Disease

Reason for this

It won't happen to me

Arrogance

In-built human drive/state of mind

Happen to others, not me

Convince ourselves we're immortal

Tragedy

Motivation

Need motivation

Need to be affected directly

Needs to affect important things and places to inspire us to make changes

School shootings

Hurricane Katrina

Change only after the problem

Retroactive

Ignore it until it happens to us

Negatives motivate people

Incentives

Education

Intelligence

Seeing clear benefits

Can overcome slight inconveniences

Mental discipline

Most people lacking in this

Pointless trying to get people to do things

Can't make them do everything

Will always do some bad things

Big causes more important

Individuals are powerless

Importance of education

Habits

Started in primary school

Repetition

Start at young age

Only one person but it's still a contribution

National conscience

Habits

Second nature

Future generations - Foremost in mind

No question of it

Information

Simplicity

Bullet points

Instant understanding

Infographics

Recycling facilities

Yes, within walking distance

Responsibility

Have to go out of way to recycle

Only 1 bin in apartment

Sometimes don't recycle

Sometimes don't think about it

Too lazy

Not made easy

Have to create own system

Pay fixed rate for gas and electricity

Yes, fixed all-inclusive

No control

Pay the same

No measures taken

Use more - get money's worth

Unplug things, turn off lights

Don't make sacrifices

Live comfortably

No way of knowing impact/costs

No meters

No information

Not conscious of usage

Bills would influence consumption

Save money

Significant motivator

Focus Group 2 Scoring Sheet

Hear mixed things

No consensus

Misleading

Skepticism

Don't know arguments for or against

Don't know enough

Not strongly affected

Affects other areas

Some things can be done

Are we the cause?

Is it happening anyway?

Inevitable?

What causes it?

Recycling facilities:**Yes, within walking distances****Gas and Electricity bills:****Based on usage**

Monetary concerns

Don't want to pay for extra use

Focus Group 3 Scoring Sheet

Slight changes in weather

Snow in March

Getting worse

No extremes

Don't see immediately

Things can be done

Lower greenhouse emissions

Develop ecological alternatives

No information

Want to make more ecological decisions

Don't know what to look for

Recycling facilities?

Yes, in house

Use these a lot

Fixed rate gas and electricity?

No - pay fixed cost of predicted consumption for 2 months then get money back every 6 months

Incentive?

Try not to go over

But don't try to reduce as much

Prefer to get monthly bills

Lack of control

Hard to interpret costs

Concern for environment

Habits

No understanding of cost of electricity

Information and Consent Form for Online Questionnaire

My name is Paul-André Morand and I am a final year psychology student in Dublin Business School. As part of my final year thesis I am researching the barriers to pro-environmental behaviours in third level students. This is a voluntary study and you may discontinue your participation at any point of completing the questionnaire, should you feel that you do not wish to be involved. All responses will be kept strictly confidential and no data released will identify you by name, or any identifiable information. Due to the complete anonymity of this research, once your questionnaire has been submitted to the researcher you will no longer be able to withdraw your responses. Data collected will be strictly confidential and will only be accessible to the researcher and the researcher's supervisor. The following questionnaire should take no more than 12 minutes to complete. As stated above, if you change your mind during the course of the questionnaire, you can withdraw from taking part. Responses will only be recorded if you agree to submit them upon completion. Participants must currently be in third level education and must be responsible for paying their rent and bills.

General Ecological Behaviour Scale (Kaiser, 1998)

Please indicate whether or not you have ever engaged in a particular behavior (Yes or No).

1. Sometimes I give change to panhandlers.
2. From time to time I contribute money to charity.
3. If an elderly or disabled person enters a crowded bus or subway, I offer him or her my seat.
4. If I were an employer I would consider hiring a person previously convicted of a crime.
5. In fast food restaurants, I usually leave the tray on the table.
6. If a friend or relative had to stay in hospital for a week or two for minor surgery (e.g. appendix, broken leg), I would visit him or her.
7. Sometimes I ride public transportation without paying a fare.
8. I put dead batteries in the garbage.
9. After meals, I dispose of leftovers in the toilet.
10. I bring unused medicine back to the pharmacy.
11. I collect and recycle used paper.
12. I bring empty bottles to a recycling bin.
13. I prefer to shower rather than to take a bath.
14. In the winter, I keep the heat on so that I do not have to wear a sweater.
15. I wait until I have a full load before doing my laundry.
16. In the winter, I leave the windows open for long periods of time to let in fresh air.
17. I wash dirty clothes without prewashing.
18. I use fabric softener with my laundry.
19. I use an oven-cleaning spray to clean my oven.
20. If there are insects in my apartment I kill them with a chemical insecticide.
21. I use a chemical air freshener in my bathroom.
22. I use chemical toilet cleaners.

23. I use a cleaner made especially for bathrooms rather than an all-purpose cleaner.
24. I use phosphate-free laundry detergent.
25. Sometimes I buy beverages in cans.
26. In supermarkets, I usually buy fruits and vegetables from the open bins.
27. If I am offered a plastic bag in a store I will always take it.
28. For shopping, I prefer paper bags to plastic ones.
29. I usually buy milk in returnable bottles.
30. I unwrap useless (i.e. nonfunctional packages) in the store.
31. I often talk with friends about problems related to the environment.
32. I am a member of an environmental organization.
33. In the past, I have pointed out to someone his or her unecological behaviour.
34. I sometimes contribute financially to environmental organizations.
35. I do not know whether I may use leaded gas in my automobile.
36. Usually I do not drive my automobile in the city.
37. I usually drive on freeways at speeds under 100 k.p.h. (62.5 m.p.h.).
38. When possible in nearby areas (around 30 km, i.e. 18.75 miles), I use public transportation or ride a bike.
39. My automobile is ecologically sound.

Revised New Ecological Paradigm (Dunlap et al, 2000)

Now we would like to get your opinion on a wide range of environmental issues. For each of the following statements please indicate the extent to which you agree or disagree.

1 (strongly disagree), 2 (mildly disagree), 3 (unsure), 4 (mildly agree) to 5 (strongly agree).

1. We are approaching the limit of the number of people the earth can support.
2. Humans have the right to modify the natural environment to suit their needs.
3. When humans interfere with nature, it often produces disastrous consequences.
4. Human ingenuity will insure that we do NOT make the earth unlivable.
5. Humans are severely abusing the environment.
6. The earth has plenty of natural resources if we just learn how to develop them.
7. Plants and animals have as much right as humans to exist.
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.
9. Despite our special abilities humans are still subject to the laws of nature.
10. Human destruction of the natural environment has been greatly exaggerated.
11. The earth has only limited room and resources.
12. Humans were meant to rule over the rest of nature.
13. The balance of nature is very delicate and easily upset.
14. Humans will eventually learn enough about how nature works to be able to control it.
15. If things continue on their present course, we will soon experience a major ecological disaster.

Qualitative Questions

What motivates or discourages you from engaging in pro-environmental behaviour?

Is Ireland strongly affected by climate change?

Please choose the answer which most applies to you.

Are recycling facilities available to you?

Yes, in my building/house.

Yes, within walking distance.

No, there are none within walking distance.

Do you use these facilities?

Yes.

No.

No, but I would if they were available to me.

Do you pay a fixed rate for gas and electricity?

Yes, my bills are fixed and included in my rent.

Yes, my bills are fixed unless I go significantly above average consumption.

No, my bills vary based upon my consumption.

Do you take measures to reduce the cost of your gas and electricity bills?

No, my bills are fixed.

No, I use what I need.

Yes, I try to reduce my consumption as much as possible.

Confirmation Message and Debriefing

Your response has been recorded. Thank you for taking part.

If you require more information regarding the study or wish to discuss any particular concerns, you may contact me at XXX XXX XXXX or myemail@mail.com

If this questionnaire has caused you any form of concern, advice and further information can be sought from the following resources:

<http://www.askaboutireland.ie/enfo/irelands-environment/Change/>

<http://www.epa.ie/whatwedo/climate/>

<http://www.recyclemore.ie/>

http://www.seai.ie/Power_of_One/

<http://beta.dublinsamaritans.ie/>