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Environmental and Pro-Social Norms: Evidence from 30 Countries

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Abstract: The paper investigates the relationship between pro-social norms and its implications for improved environmental outcomes, an area which has been neglected in the environmental economics literature. We provide empirical evidence, demonstrating a strong link between perceived environmental cooperation (reduced public littering) and increased voluntary environmental morale, using European Values Survey (EVS) data for 30 Western and Eastern European countries. The robust results suggest that environmental morale and perceived environmental cooperation, as well as identifying the factors that strengthen these relationships, potentially bring about better environmental outcomes.

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1. Introduction

In recent times, a growing number of studies have been devoted to examining individual environmental preferences. Initial interest in environmental attitudes goes back to the early 1970s (Bord and O'Connor, 1997). An increasing number of economists have been involved in evaluating whether an individual's environmental morale or attitudes could help to reduce environmental degradation or the problems of free riding associated with public goods (Frey and Stutzer, 2006). One possible solution is to 'force' people to cooperate. This is in line with deterrence policy based on the economics-of-crime approach. Expected utility is maximized, taking into account the probability of detection and the degree of punishment. However, empirical and experimental findings indicate that deterrence models predict too little compliance. People are more compliant than these models predict. The level of compliance observed cannot be explained by the amount of risk aversion involved. The literature suggests that social norms help us to explain the high degree of compliance (Torgler, 2007). The high level of individual co-operation has been documented in the experimental literature. According to Ochs and Roth (1989) and Roth (1995), a large number of ultimatum experiments have shown that the modal offer is (50,50), that the mean offer is somewhere around (40,60), and that the smaller the offer, the higher the probability that the offer will be rejected. According to Ledyard (1995) and Davis and Holt (1993), public good experiments indicate that, on average, subjects contribute between 40 and 60 percent of their endowment to a public good.

Prevailing social norms thus tend to generate increased individual cooperation in public good situations and, in some instances, of private goods as well. Violation of social norms has negative consequences, such as internal sanctions (e.g. guilt, remorse) or external legal and social sanctions, such as gossip and ostracism. As Polinsky and Shavell (2000) point out, the corresponding literature focuses on the influence that social norms have on

individual behavior, and their role as a substitute for, or a supplement to, formal laws. Laws themselves can influence social norms. Rege and Telle (2001) suggest that social norms may explain why many individuals don't litter public places. If littering is not acceptable in a society, a "person throwing his ice-cream-paper on the street will feel social disapproval from people observing him… many people do not litter even if they know that nobody is observing them, because littering imposes a feeling of guilt" (p. 3). Feelings of guilt or shame restrict behavior.

Many traditional models have treated public cooperation as an isolated case. However, subjects do not normally act as isolated individuals playing a game against nature. This paper emphasizes the relevance of social context in understanding the willingness of individuals to keep the environment clean. The behavior of other citizens is important to understand why people comply. As a consequence, theories of pro-social behavior, which take the impact of behavior or the preferences of others into account, are promising. The concept of pro-social behavior is widely implemented into daily life. For example, Vesterlund (2003) reports that charitable organizations have an incentive to ask donors who make large contributions to permit the use of their name when a donation is made. Such an announcement is likely to have a positive effect on others who have not yet made a contribution. It also helps to reduce the problem of free-riding and encourages individuals to make larger contributions.

Individuals may be willing to contribute conditionally, depending on the pro-social behavior of others. This applies to an individual's environmental actions as well. The more others are perceived to comply, the more willing individuals are to protect the environment. We hypothesize that the extent to which others contribute triggers more or less cooperation and systematically influences the willingness to participate in environmental actions or

contributions. We use survey data to test whether conditional cooperation can be identified for environmental actions as well.

To our knowledge, our paper provides findings not yet discussed in previous environmental research. There is no study that investigates whether conditional cooperation is relevant in the environmental economics literature. It remains uncertain whether previous results in laboratory experiments or field experiments are directly transferable in a context that deals with environmental aspects. The paper also complements previous studies by providing evidence outside of a lab setting, using a wide-ranging survey that covers 30 Western and Eastern European countries.

Section 2 provides a brief overview of the existing literature on social comparisons. In Section 3, we present our theoretical approach and develop our hypotheses. Section 4 presents the empirical results. In Section 5, we discuss the potential causality problems and Section 6 concludes with a summary and discussion of the main results.

2. Overview of the literature

Several theories have been put forward to explain what constitutes conditional cooperation. Most papers in the literature (cf. Rabin, 1998 and Falk and Fehr, 2002) explain conditional cooperation in terms of reciprocity. In an environmental context, reciprocity means, for example, that if many citizens don't throw litter in a public place, other individuals would feel obliged to do likewise. Several laboratory experimental studies (mainly public good experiments) provide evidence on pro-social behavior (for an overview, see Gächter, 2006). For example, Fischbacher, Gächter and Fehr (2001) find that 50 percent of the subjects were conditionally cooperative. Falk, Fischbacher and Gächter (2003) create a laboratory situation in which each subject is a member of two economically identical groups, where only the group members are different. They observe that the same subjects contribute different

amounts, depending on the behavior of the group. Contributions are larger when group cooperation is higher.

Alternatively, the concept of conformity (cf. Henrich, 2004) has been used to explain conditional cooperation. Conformity refers to the motivation of individuals to fulfill the social norms of keeping the environment clean and therefore acting according to society's rules. This concept is less connected to incentives and benefits than is reciprocity. In this case, individuals would contribute, even if the good in question does not benefit anyone, as long as it is perceived that a sufficient number of individuals are contributing (Bardsley and Sausgruber, 2006).

While several early studies provide evidence of conditional cooperation within a laboratory setting, an increasing number of studies have been conducted to check the validity of such studies outside of a laboratory setting. Frey and Meier (2004a) provide field experimental evidence of conditional cooperation. They analyze students' decisions regarding contributions to two social funds administered by the University of Zurich. Their study shows that, when more individuals expect others to cooperate, they are more willing to cooperate. In another study, Frey and Meier (2004b) observe that the strongest reaction to information about others' behavior is observed in students who are uncertain whether or not to contribute to two Public Funds at their University. Heldt (2005) conducts a natural field experiment on conditional cooperation, in which cross-country skiers in two Swedish ski resorts are faced with the decision of whether or not to contribute to ski track funding. The results suggest that the percentage of subjects making a contribution is higher when they know that a higher percentage of individuals are making a contribution. Shang and Croson (2005) conducted a field experiment at an anonymous public radio station during an on-air fundraising campaign to investigate the influence of social information on the size of an individual's contribution. The results indicate that social information does indeed influence

contributions. Martin and Randal (2005) conducted another natural field experiment at an art gallery. Admission was free, but a donation could be placed in a transparent box in the foyer. The results showed that visitors donate significantly more when there is already some money in the box.

The study of pro-social behavior resulting from perceived public cooperation is an area that has largely been ignored in the environmental economics literature, despite its potential to affect environmental outcomes. The connection between perceived environmental cooperation of other individuals and environmental morale or preferences has not yet been studied in the environmental economics literature. In contrast, studies linking improved environmental behavior, or higher willingness to pay for environmental preservation with education, knowledge, environmental awareness and prior experience are well established in the environmental economics literature (cf. Tisdell and Wilson, 2001). This may be explained by the unavailability of quality survey data, although the concept itself may not be new to researchers in environmental economics. For the first time, the European Value Survey (EVS) provides quality survey data, asking the relevant questions to enable this study to be undertaken.

Pro-social behavior occurs voluntarily. Such behavior is not only linked with public goods but also with particular private goods. The crucial feature here is that an individual acts according to the way the majority of the public is acting, and not because he or she benefits directly from such action. Hence, any strategies to increase pro-social behavior have the potential to improve environmental and social outcomes in a cost effective manner.

In everyday life, there are many environmental outcomes that can be improved through enhanced pro-social actions. We demonstrate the relationship between an individual's perceptions of the public not throwing away litter in public places and an increase in the individual's willingness to also protect the environment. Other areas where

such behavior is useful are, for example, conserving energy and water, contributing to environmental conservation, reducing car pollution and other forms of pollution, engaging in wildlife friendly gardening, becoming members of environmental organizations and taking part in working bees. In fact, the number of environmental activities that can benefit from pro-social behavior is endless.

This study looks at the disposal of litter to examine whether individual behavior is influenced by their perception of how other people behave. Despite litter in public places being recognized as a major public health and safety hazard and diminishing the aesthetic appearance of public places (cf. Ackerman, 1997), few studies have focused on dealing with this issue. Litter and unkempt lawns have also been linked with crime (cf. Brown et al., 2004). Existing studies examine the role that education can play in reducing public litter (cf. Taylor et al., 2007), and the instruments (e.g. taxes, fines, charges and market incentives) that can be used to minimize the problem of public littering (cf. Fullerton and Wolverton, 2000; Ackerman, 1997; Dobbs, 1991). One study (Kinnaman and Fullerton, 1994), dealing with garbage recycling, examines why some households participate in curbside recycling programs, even in the absence of a user fee; why other households do not participate, even in the presence of a user fee; and why some households choose to litter while others do not. However, that paper deals with user fees and does not address the issue of conditional cooperation in littering behavior.

3. Empirical approach

3.1 Data set

In contrast to experimental studies, this paper uses survey data provided by the European Values Survey (EVS) 1999/2000, which is a European-wide investigation of socio-cultural and political change. The survey collects data on the basic values and beliefs of people

throughout Europe. The EVS was first carried out from 1981 to 1983, then in 1990 to 1991 and again in 1999 through 2001, with an increasing number of countries participating over time. The methodological approach is explained in detail in the European Values Survey (1999) source book, which provides information on response rates, the stages of sampling procedures, the translation of the questionnaire, and field work, along with measures of coding reliability, reliability of data, and data checks. All country surveys are conducted by experienced professional survey organizations, with the exception of Greece. Interviews are face-to-face and those interviewed are adult citizens aged 18 years and older. Tilburg University coordinates the project and provides the guidelines to guarantee the use of standardized information in the surveys and the national representativeness of the data. To avoid framing biases, the questions are asked in a prescribed order. The response rates vary from country to country. However, the average response rate is around 60 percent.

Because EVS asks an identical set of questions in various European countries, the survey provides a unique opportunity to examine the impact of conditional cooperation on environmental morale and preferences. This paper considers 30 representative national samples of at least 1,000 individuals in each country. The survey permits us to work with a representative set of individuals, covering a large set of countries. The data allows us to complement previous laboratory and field experiments with survey studies to demonstrate the existence of conditional cooperation.

3.2 Dependent variables and conditional cooperation

To check the robustness of results, we use two dependent variables. The first measures an individual's willingness to keep public places free from litter. This variable is identified as (a particular case of) environmental morale. To assess the level of environmental morale, we use the following question:

Please tell me for each of the following statements whether you think it is always justified, never justified, or somewhere in between: … Throwing away litter in a public place.

A ten-scale index is used for this question, with the two extremes being 'never justified' and 'always justified'. The natural cut-off point is the value 1, where a high amount of respondents assert that throwing away litter in a public place is 'never justified' (68.3 percent). Thus, our environmental morale variable takes the value 1 if the respondent says that throwing away litter in a public place is 'never justified', and zero otherwise.

The second variable is an index on environmental preferences, covering the following two survey questions:

I would give part of my income if I were certain that the money would be used to prevent environmental pollution (0=strongly disagree, 3=strongly agree)

I would agree to an increase in taxes if the extra money were used to prevent environmental pollution (0=strongly disagree, 3=strongly agree)

The index adds the values of both questions, which gives total values between 0 and 6.

In general, the EVS has been designed as a wide-ranging survey, where the danger of framing effects is reduced compared to many other surveys that focus entirely on environmental questions. The available data are based on self-reports, so that subjects may tend to overstate their degree of cooperation. However, the questions are not free of problems. The level of improvement in environmental quality is not clearly stated. Hence,

people do not know exactly how much they have to pay for a particular improvement[1]. The consequences of taxation are not mentioned either (first question). No information is provided as to how much the income or value added taxes, or other taxes, are supposed to be increased. It is thus unclear who will have to bear the highest tax burden. While unspecified payment schemes increase the variance, they may influence the willingness to contribute (Witzke and Urfei, 2001). However, an unspecified statement still helps in measuring environmental preferences and the value attributed to reduce strategic behavior by influencing the quantity or quality of environmental goods. People may intentionally indicate a false willingness to contribute in order to match their own preferences (Hidano et al., 2005). When neither specific goods nor quantitative values are used, the attributes of the environmental goods in question need not be thoroughly explained to ensure that respondents understand and respond by stating their willingness to accept an increase in taxes or to give away part of their income[2].

We use the following question as an independent variable to investigate the impact of conditional cooperation.

"According to you, how many of your compatriots do the following: Throwing away litter in a public place?" (4=almost all, 1=almost none)

In general, we observe an increased interest among economists to use survey data. For example, research that deals with social capital, corruption, happiness and tax compliance explore the causes of attitudes using other attitudinal variables as independent factors (cf. Diener and Suh, 2000; Brewer and Steenbergen, 2002; Uslaner, 2004; Brewer et al., 2004; and Chang and Chu, 2006 and Torgler, 2007). In this paper, we investigate the correlation

[1] It has been shown that the preferences to protect the environment (regarding causes and consequences of environmental damages) depend on the level of information included in the questionnaire (Bulte et al., 2005).

[2] For a detailed discussion regarding possible survey biases, see Carson and Mitchell (1995).

between perceived compliance and environmental morale or attitudes in a multivariate analysis controlling for other factors in order to better isolate the relationship. A specification based on multivariate analysis has the obvious advantage of presenting a more balanced view of the role of conditional cooperation by separating the effects of other exogenous variables. However, if conditional cooperation differs systematically in some other way that also affects the willingness to cooperate, the results could be misleading.

4. Econometric results

Our multivariate analysis includes a vector of control variables. Previous research in environmental economics and social norms demonstrates the relevance to consider socio-demographic and socio-economic variables along with the level of church attendance, formal and informal education and participation in an environmental organization (cf. Torgler and Garcia-Valiñas, 2007; Torgler, 2007). In addition, a further variable is used to identify a potential conditional cooperative effect, namely individuals' interest in others[3]. The question measures how individuals experience their environment. We differentiate between two different regions of Europe (i.e. Western and Eastern Europe) because of the reform process in the transition countries. The rapid collapse of institutional structures in Eastern European countries produced a vacuum in many, if not all, of these countries. This led to large social costs, especially in terms of worsening income inequalities, increasing poverty and poor institutional conditions resulting from uncertainty and high transaction costs. Torgler (2003) and Alm et al. (2006) show that such circumstances have an impact on social norms.

Table 1 presents the first results of the multivariate analysis. In these first estimates, we exclude income. This is because the ten-point income scale in the EVS is based on

[3] Question: People should stick to their own affairs and not show too much interest in what others say or do (1=agree strongly, 5=disagree strongly).

national currencies, which reduces the possibility of comparing nations in a cross-country comparison.[4] The self-classification of the respondents' economic situation into various economic classes may be used as a proxy. However, data for this purpose has not been collected in all countries. Thus, we include economic status sequentially in the specification (see *Table 2*). In general, a probit estimation is appropriate when working with our first dependent variable (ENVIRONMENTAL MORALE) and an ordered probit model when using our INDEX OF ENVIRONMENTAL PREFERENCES to take into account the ranking information of the scaled dependent variables. To measure the quantitative effect of this variable, we calculate the marginal effects, because the equation is nonlinear. Marginal effects indicate the change in the probability of individuals having a specific level of environmental morale/preferences when the independent variable increases by one unit. For simplicity, the marginal effects in all the estimations are presented for the highest value only. In addition, we present ordinary least squares estimations for our second dependent variable, providing *beta* or *standardized* regression coefficients to indicate the relative importance of conditional cooperation compared to the other variables used. Weighted estimates are conducted to make the samples correspond to the national distribution.[5] Furthermore, answers such as 'don't know' and missing values are eliminated in all estimations.

Consistent with our main hypothesis, the estimation results in *Table 1* indicate that the lower the perceived environmental cooperation of other persons (higher values of the variable), the lower the environmental morale. In all three regressions, the coefficient PERCEIVED ENVIRONMENTAL COOPERATION is statistically significant. Overall, the size of the effect is substantial in the first regression; if the perceived lack of cooperation

[4] Moreover, income is coded on a scale from 1 to 10 and these income intervals are not fully comparable across countries.

[5] The weighting variable is provided by the EVS.

rises by one unit, the percentage of persons reporting highest environmental morale falls by 2.3 percentage points (specification 1). Not surprisingly, the quantitative effects are lower, but still visible, when using the index of environmental preferences. The index measures the multidimensional aspect of environmental pollution. As *Table 2* indicates, the results remain robust when including the proxies for individuals' economic situation.

Looking at the other variables, we observe that being active in an environmental organization has a positive effect on both dependent variables, with marginal effects between 4.0 and 9.3 percentage points. Moreover, being interested in others is also positively correlated with environmental morale and preferences. Consistent results can also be found for CHURCH ATTENDANCE[6]. In all cases, the coefficient is positively correlated with our dependent variables. This supports the argument that churches can act as social norm enforcers (cf. Torgler 2006).

The results obtained using the variable INDEX ENVIRONMENTAL PREFERENCES is consistent with the literature on environmental attitudes and preferences. Several studies stress that age is negatively correlated with the willingness to contribute to additional environmental protection, since older people are unlikely to enjoy the long-term benefits of preserving resources (Whitehead, 1991; Carlsson and Johansson-Stenman, 2000). Our results also indicate a negative correlation between age and environmental preferences. The reference group (AGE below 30 years) has the strongest environmental preferences and the marginal effects increase consistently for higher age groups.

[6] Apart from weddings, funerals and christenings, how often do you attend religious services these days? More than once a week, once a week, once a month, only on special holy days, once a year, less often, practically never or never (8= more than once a week to 1=practically never or never).

In a meta-study, Zelezny et al. (2000) find strong evidence that environmentalism does not begin in adulthood, which contradicts the statement that gender differences arise due to motherhood and child protection. Regardless of age, women show more concern for the environment than men. In our analysis, we observe strong gender differences. Being a woman rather than a man increases the probability of reporting the highest environmental preferences by 0.6 percentage points (see Table 1). The beta coefficients indicate a strong quantitative effect relative to other variables.

Regarding educational issues, the literature shows that formal education[7] has a significant positive influence on environmental willingness to contribute (Blomquist and Whitehead, 1998; Engel and Pötschke, 1998; Witzke and Urfei, 2001; Veisten et al., 2004). On the other hand, informal education is also important (Whitehead, 1991; Blomquist and Whitehead, 1998; Carlsson and Johansson-Stenman, 2000; Hidano et al., 2005). Well-informed citizens are more aware of environmental issues and problems and have stronger environmental attitudes, because they are more knowledgeable about the possible damage (Danielson et al., 1995; Torgler and Garcia-Valiñas, 2007). The strength of formal and informal education is also visible in *Tables 1* and *2*[8]. All respective coefficients are statistically significant and show considerable quantitative effects.

The economic situation of an individual is also a significant aspect (Whitehead, 1991; Stevens et al., 1994; Blomquist and Whitehead, 1998; Popp, 2001; Witzke and Urfei, 2001; Bulte et al., 2005; Dupont, 2004; Veisten et al., 2004; Hidano et al., 2005). These studies

[7] Formal education is usually expressed as the level of education or degrees a person has obtained. It can alternatively be expressed as the number of years spent in education (Blomquist and Whitehead, 1998).

[8] Formal education: At what age did you complete or will you complete your full time education, either at school or at an institution of higher education? Please exclude apprenticeships. Informal education/political discussion: When you get together with friends, would you say you discuss political matters frequently, occasionally or never (3=frequently, 2=occasionally, 1=never)?

show a positive relationship between income and a preference to contribute to environmental causes. Our study also points to a positive relationship between lower income classes and lower environmental values. However, the marginal effects for the variables UPPER CLASS and MIDDLE CLASS are similar.

In line with Veisten et al. (2004), unemployed people are found to have lower preferences for environmental protection. Finally, marital status might influence environmental attitudes as well. It can be argued that married people are more compliant or more concerned about environmental degradation than others, especially compared to singles. They are more constrained by their social network and are often strongly involved with the community (Tittle, 1980). This argument also holds true when focusing on moral attitudes or, in our case, environmental morale. Overall, the estimates indicate a tendency for married individuals to have relatively high environmental preferences and high levels of environmental morale, although the differences are not always statistically significant.

In general, the results on environmental morale are in line with the literature on social norms or morality, such as tax morale (cf. Torgler, 2007). Age is positively correlated with environmental morale and the economic situation is negatively correlated. Consistent with the literature on environmental preferences, a gender effect is observable. Education is statistically significant in *Table 1*. However, once the economic situation of the individual is controlled for, the coefficient is insignificant.

In sum, the first two tables provide evidence to demonstrate the existence of individual conditional cooperation in relation to environmental issues.

5. Causality

Causality remains an issue, because one's own attitudes may lead to the expectation that others behave in the same way. However, results from 'strategy method' experiments

conducted by Fischbacher et al. (2001) and Fischbacher and Gächter (2006) suggest that causality goes from beliefs about others' cheating to one's own behavior rather than vice versa. The EVS is not a panel survey. A survey that follows individuals over time would help us to study the dynamics of adjustment more deeply. The question referring to conditional cooperation was only asked in the last EVS of 1999 through 2001. Longitudinal data would help us to reduce problems caused by unobserved individual heterogeneity. In this section, we present two-stage least squares (2SLS) estimations for both dependent variables in order to deal with the causality problem. We try to filter out a possible systematic bias in our conditional cooperative behavior by correcting for differences between what an individual thinks and what that individual projects on others. This provides the possibility of minimizing potential bias.

Table 3 reports the results of two-stage least squares (2SLS) estimations together with the first stage regressions. The instruments used are individuals' interest in friends[9], an index of perceived honesty[10] and a dummy variable that measures whether an individual has or had children. *Table 3* shows that the instruments and the *F*-tests for the instrument exclusion set in the first-stage regression are statistically significant. Consistent with our main hypothesis, the estimation results indicate that the lower the perceived environmental cooperation of other persons, the lower the environmental morale and environmental preferences.

Table 4 uses yet another approach to deal with a potential endogeneity problem. It filters out a possible bias in the conditional cooperative effort. A causality problem may arise because an individual's willingness to cooperate or protect the environment (high

[9] Please say how important each of the following is in your life… friends and acquaintances (4=very important, 1=not at all).

[10] Index covering the sum of the following questions: *According to you (on a scale from 1 to 4), how many of your compatriots: (1) Pay cash for services to avoid taxes?(2) Go over the speed limit in built-up areas?*

environmental morale or preferences) could lead to the expectation that others would also behave in the same way. Thus, individuals with a higher environmental morale or preferences have a lower perception of others not cooperating or contributing. To deal with this possibility, the first step is to calculate the average perceived environmental cooperation for each country. The next step is to calculate the average perceived environmental cooperation in each country for individuals having the highest environmental morale[11] or environmental preferences. In a further step, the difference between the two average values is considered. These values may measure a particular bias in perceived environmental cooperation due to the level of environmental morale or preferences. This bias is then added to the individual values of the group with the highest environmental morale and preferences. As a consequence, the values between the group with higher and lower environmental morale and preferences are brought closer to together, depending on the perceived environmental cooperation in each country. This procedure may help to better isolate the existence of a conditional cooperative effect. *Table 4* presents the results for the filtered perceived environmental cooperation variable. The results remain robust. Only in specification (10) do we observe that the z-value is below the 10 percent level. However, once the economic situation of the individual is included in the specification, the coefficient remains statistically significant at the 10 percent level and similar marginal effects are obtained.

6. Conclusions

This paper investigates whether perceived environmental cooperation by the public is an important determinant of explaining environmental morale and environmental preferences of individuals. Our hypothesis is that an individual's behavior is likely to be influenced by their perception of the behavior of other citizens. For example, if an individual believes that

[11] Value 1, stressing that throwing away litter in a public place is never justifiable.

throwing litter in a public place is common, then the environmental morale or preference of the individual decreases. Alternatively, if an individual believes others to be compliant, then the environmental morale/preference increases. Using recent EVS data for Western and Eastern European countries, we find strong empirical support for the hypothesis. The results remain robust using 11 different specifications and after dealing with potential causality issues.

By investigating the public's littering and environmental preferences, the paper underlines the importance of using a rich set of theories to fully understand what influences people's willingness to contribute towards improving outcomes. Individuals indeed do not act in isolation.

To our knowledge, this is the first study of this nature demonstrating the relationship between perceived environmental cooperation of others and the environmental morale in the form of not littering public places and willingness to protect the environment. This relationship can be used to bring about positive environmental outcomes in other areas. The interesting and attractive feature of this behavior is its voluntary nature. Such behavior is not only cost effective but can be more effective in areas where law enforcement and market incentives fail. The results of the study have implications for both developed and developing countries. In developing countries, for example, there is a major problem with litter in public places. City councils spend large sums of money to clean up litter. Heavy fines and strict law enforcement have been tried to discourage littering, without much success. Hence, the results of this study should be useful for decision-makers as well.

Understanding what shapes environmental morale and preferences needs to be investigated further. Only a limited number of studies have explored the relevance of social interactions. A good understanding of the interactions between environmental morale and

preferences and perceived environmental cooperation, and the factors strengthening these relationships, has the potential to bring about better environmental outcomes.

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Table 1
ENVIRONMENTAL AND CONDITIONAL COOPERATION

	Coeff.	*z-Stat.*	*Marg. Effects*	*Coeff.*	*z-Stat.*	*Marg. Effects*	*Coeff.*	*t-Stat.*
	WEIGHTED PROBIT			*WEIGHTED ORDERED PROBIT*			*WEIGHTED OLS*	
DEPENDENT V.	ENVIRONMENTAL MORALE			INDEX ENVIRONMENTAL PREFERENCES				
	Robust standard errors			*Robust standard errors*			*Robust standard errors*	
	(1)			(2)			(3)	
PERCEIVED ENVIRON. COOPERATION	-0.065***	-6.19	-0.023	-0.015*	-1.71	-0.002	-0.010*	-1.66
INTERESTED IN OTHERS	0.010***	9.04	0.003	0.020***	21.74	0.002	0.142***	21.85
Voluntary Organization								
ENVIRON. ORGANIZATION	0.114***	3.16	0.040	0.540***	18.94	0.093	0.108***	19.53
Demographic Factors								
AGE 30-39	0.099***	3.59	0.035	-0.045**	-2	-0.005	-0.018**	-2.17
AGE 40-49	0.159***	5.41	0.056	-0.075***	-3.09	-0.009	-0.029***	-3.32
AGE 50-59	0.219***	6.8	0.075	-0.119***	-4.54	-0.014	-0.042***	-4.8
AGE 60-69	0.269***	6.74	0.091	-0.119***	-3.64	-0.013	-0.039***	-3.84
AGE 70+	0.237***	5.01	0.080	-0.184***	-4.76	-0.020	-0.050***	-5.01
WOMAN	0.089***	5.03	0.032	0.046***	3.2	0.006	0.021***	3.21
Formal and Informal Educ.								
EDUCATION	-0.001	-0.67	0.000	0.023***	17.02	0.003	0.106***	17.42
POLITICAL DISCUSSION	-0.036***	-2.84	-0.013	0.150***	13.86	0.018	0.091***	14.02
Marital Status								
WIDOWED	-0.037	-1.09	-0.013	-0.106***	-3.82	-0.012	-0.026***	-3.77
DIVORCED	-0.083***	-2.65	-0.030	-0.064**	-2.37	-0.007	-0.015**	-2.45
SEPARATED	-0.102	-1.64	-0.037	-0.019	-0.36	-0.002	-0.002	-0.4
NEVER MARRIED	-0.113***	-4.55	-0.041	-0.048**	-2.31	-0.006	-0.019**	-2.37
Employment Status								
PART TIME EMPLOYEE	-0.128***	-3.95	-0.047	0.032	1.21	0.004	0.007	1.16
SELFEMPLOYED	0.048	1.36	0.017	0.069**	2.54	0.009	0.015**	2.57
UNEMPLOYED	0.106***	3.18	0.037	-0.100***	-3.66	-0.012	-0.039***	-3.83
AT HOME	0.176***	5.34	0.060	-0.015	-0.59	-0.002	-0.005	-0.71
STUDENT	-0.158***	-3.89	-0.058	0.091***	2.8	0.012	0.018***	2.74
RETIRED	0.010	0.33	0.004	-0.134***	-4.87	-0.015	-0.034***	-5.12
OTHER	0.091	1.44	0.032	0.011	0.21	0.001	0.001	0.13
Religiosity								
CHURCH ATTENDANCE	0.010***	3.01	0.004	0.011***	4	0.001	0.028***	4.59
REGIONS	YES			YES			YES	
Pseudo R2	0.024			0.026			0.086	
Number of observations	32433			30691			30691	
Prob > chi2 / Prob > F	0.000			0.000			0.000	

Notes: The reference group consists of AGE<30, MAN, MARRIED, FULL-TIME EMPLOYEE, EASTERN EUROPE. The symbols *, **, *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Table 2
FURTHER SPECIFICATION INCLUDING THE ECONOMIC SITUATION

	Coeff.	*z-Stat.*	*Marg. Effects*	*Coeff.*	*z-Stat.*	*Marg. Effects*	*Coeff.*	*t-Stat.*
	WEIGHTED PROBIT			*WEIGHTED ORDERED PROBIT*			*WEIGHTED OLS*	
DEPENDENT V.	ENVIRONMENTAL MORALE			INDEX ENVIRONMENTAL PREFERENCES				
	Robust standard errors			*Robust standard errors*			*Robust standard errors*	
	(4)			(5)			(6)	
PERCEIVED ENVIRON. COOPERATION	-0.044***	-2.96	-0.016	-0.028**	-2.32	-0.003	-0.020**	-2.35
INTERESTED IN OTHERS	0.006***	4.30	0.002	0.021***	16.01	0.002	0.148***	16.32
Voluntary Organization								
ENVIRON. ORGANIZATION	0.099*	1.82	0.035	0.498***	11.37	0.079	0.093***	11.65
Demographic Factors								
AGE 30-39	0.082**	2.14	0.029	-0.080**	-2.58	-0.009	-0.033***	-2.81
AGE 40-49	0.145***	3.47	0.050	-0.114***	-3.41	-0.012	-0.045***	-3.70
AGE 50-59	0.199***	4.45	0.069	-0.133***	-3.67	-0.014	-0.048***	-3.99
AGE 60-69	0.166***	3.00	0.057	-0.124***	-2.78	-0.013	-0.042***	-3.02
AGE 70+	0.033	0.51	0.012	-0.163***	-3.13	-0.017	-0.046***	-3.42
WOMAN	0.029	1.15	0.010	0.004	0.19	0.000	0.002	0.21
Formal and Informal Educ.								
EDUCATION	-0.006**	-2.27	-0.002	0.024***	10.60	0.003	0.101***	10.85
POLITICAL DISCUSSION	-0.038	-1.04	-0.014	0.205***	6.96	0.026	0.065***	6.93
Income								
UPPER CLASS	-0.115***	-4.36	-0.041	0.084***	4.01	0.010	0.037***	4.11
MIDDLE CLASS	-0.041**	-2.29	-0.015	0.110***	7.20	0.012	0.067***	7.36
Marital Status								
WIDOWED	-0.009	-0.19	-0.003	-0.053	-1.36	-0.006	-0.012	-1.33
DIVORCED	-0.149***	-3.12	-0.055	-0.115***	-2.69	-0.012	-0.025***	-2.82
SEPARATED	-0.168*	-1.87	-0.062	0.038	0.49	0.004	0.004	0.45
NEVER MARRIED	-0.077**	-2.19	-0.028	-0.076**	-2.59	-0.008	-0.030***	-2.71
Employment Status								
PART TIME EMPLOYEE	-0.050	-1.01	-0.018	0.035	0.89	0.004	0.008	0.86
SELFEMPLOYED	0.112**	2.28	0.039	0.074**	2.03	0.009	0.017**	2.13
UNEMPLOYED	0.196***	4.31	0.068	-0.080**	-2.18	-0.009	-0.032**	-2.32
AT HOME	0.252***	5.72	0.086	0.073**	2.12	0.009	0.021**	2.08
STUDENT	-0.124**	-2.06	-0.045	0.054	1.15	0.006	0.011	1.22
RETIRED	-0.014	-0.29	-0.005	-0.095**	-2.32	-0.010	-0.023**	-2.50
OTHER	0.049	0.58	0.017	-0.025	-0.40	-0.003	-0.004	-0.46
Religiosity								
CHURCH ATTENDANCE	0.021***	4.87	0.008	0.015***	4.31	0.002	0.041***	4.94
REGIONS	YES			YES			YES	
Pseudo R2	0.023			0.029			0.099	0.023
Number of observations	16987			16305			16305	
Prob > chi2 / Prob > F	0.000			0.000			0.000	

Notes: The reference group consists of AGE<30, MAN, MARRIED, FULL-TIME EMPLOYEE, LOWEST CLASS, EASTERN EUROPE. The symbols *, **, *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Table 3
2SLS REGRESSIONS

	Coeff.	*t-Stat.*	*Coeff.*	*t-Stat.*	*Coeff.*	*t-Stat.*	*Coeff.*	*t-Stat.*
	WEIGHTED 2SLS		*FIRST STAGE REGRESSION*		*WEIGHTED 2SLS*		*FIRST STAGE REGRESSION*	
DEPENDENT V.	ENVIRONMENTAL MORALE (7)				INDEX ENVIRON. PREFERENCES (8)			
PERCEIVED ENVIRON. COOPERATION	-0.022***	-2.74			-0.028***	-3.28		
INTERESTED IN OTHERS	0.003***	8.77	0.001**	2.42	0.008***	17.91	0.001**	2.54
Voluntary Organization								
ENVIRON. ORGANIZATION	0.038***	3.05	-0.065***	-3.74	0.196***	14.58	-0.065***	-3.68
Demographic Factors								
AGE 30-39	0.031***	2.97	-0.061***	-4.58	-0.012	-1.08	-0.067***	-4.91
AGE 40-49	0.057***	5.08	-0.059***	-4.10	-0.017	-1.45	-0.059***	-4.02
AGE 50-59	0.073***	6.16	-0.042***	-2.71	-0.031**	-2.47	-0.043***	-2.68
AGE 60-69	0.090***	6.38	-0.073***	-3.76	-0.030*	-1.90	-0.078***	-3.92
AGE 70+	0.073***	4.35	-0.082***	-3.60	-0.050***	-2.72	-0.084***	-3.56
WOMAN	0.033***	5.03	0.049***	5.71	0.018**	2.54	0.046***	5.26
Formal and Informal Educ.								
EDUCATION	-0.001	-1.16	0.001	0.88	0.008***	11.80	0.001	1.04
POLITICAL DISCUSSION	-0.012**	-2.52	-0.022***	-3.44	0.051***	10.05	-0.023***	-3.52
Marital Status								
WIDOWED	-0.015	-1.26	-0.008	-0.51	-0.036***	-2.77	-0.010	-0.61
DIVORCED	-0.035***	-2.96	0.010	0.64	-0.027**	-2.16	0.014	0.84
SEPARATED	-0.033	-1.46	0.055*	1.78	0.014	0.55	0.062*	1.94
NEVER MARRIED	-0.045***	-4.77	0.023*	1.91	-0.023**	-2.40	0.023*	1.82
Employment Status								
PART TIME EMPLOYEE	-0.043***	-3.44	0.012	0.76	0.002	0.17	0.008	0.48
SELFEMPLOYED	0.020	1.52	0.020	1.19	0.011	0.84	0.011	0.65
UNEMPLOYED	0.044***	3.91	0.034**	2.16	-0.036***	-2.77	0.030*	1.81
AT HOME	0.057***	5.05	0.035**	2.29	0.003	0.25	0.028*	1.79
STUDENT	-0.063***	-3.84	0.062***	3.16	0.055***	3.29	0.064***	3.14
RETIRED	0.002	0.16	0.000	-0.01	-0.044***	-3.48	0.000	0.01
OTHER	0.039*	1.74	-0.019	-0.67	0.001	0.02	-0.004	-0.12
Religiosity								
CHURCH ATTENDANCE	0.004***	3.26	0.007***	4.25	0.001	1.07	0.007***	4.24
REGIONS	YES		YES		YES			YES
Instruments								
Interest in friends			0.021***	3.49			0.023***	3.81
Index perceived honesty			0.323***	96.18			0.323***	93.87
Children			0.073***	4.87			0.082***	5.27
Test of excluded instruments			0.000				0.000	
Centered R2	0.031				0.051			
Number of observations	29733				28349			
Prob > F	0.000				0.000			

Notes: The reference group consists of AGE<30, MAN, MARRIED, FULL-TIME EMPLOYEE, EASTERN EUROPE. The symbols *, **, *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Table 4
FILTERED PERCEIVED ENVIRONMENTAL COOPERATION

	Coeff.	*z-Stat.*	*Marg. Effects*	*Coeff.*	*z-Stat.*	*Marg. Effects*	*Coeff.*	*z-Stat.*	*Marg. Effects*
	WEIGHTED PROBIT			*WEIGHTED ORDERED PROBIT*			*WEIGHTED ORDERED PROBIT*		
DEPENDENT V.	ENVIRONMENTAL MORALE			INDEX ENVIRONMENTAL PREFERENCES					
	Robust standard errors			*Robust standard errors*			*Robust standard errors*		
	(9)			(10)			(11)		
FILTERED PERCEIVED ENVIRON. COOPERATION	-0.043***	-4.10	-0.015	-0.009	-1.05	-0.001	-0.022*	-1.81	-0.002
INTERESTED IN OTHERS	0.010***	9.05	0.003	0.020***	21.74	0.002	0.021***	16.03	0.002
Voluntary Organization									
Environ. Organization	0.116***	3.21	0.040	0.541***	18.96	0.093	0.498***	11.37	0.079
Demographic Factors									
AGE 30-39	0.101***	3.67	0.036	-0.044**	-1.97	-0.005	-0.080**	-2.57	-0.009
AGE 40-49	0.162***	5.50	0.056	-0.074***	-3.06	-0.009	-0.114***	-3.40	-0.012
AGE 50-59	0.222***	6.90	0.076	-0.118***	-4.51	-0.013	-0.132***	-3.65	-0.014
AGE 60-69	0.274***	6.85	0.093	-0.118***	-3.60	-0.013	-0.123***	-2.76	-0.013
AGE 70+	0.242***	5.12	0.082	-0.183***	-4.73	-0.020	-0.162***	-3.12	-0.016
WOMAN	0.088***	5.00	0.032	0.045***	3.19	0.006	0.004	0.18	0.000
Formal and Informal Educ.									
EDUCATION	-0.001	-0.67	0.000	0.023***	17.01	0.003	0.024***	10.60	0.003
POLITICAL DISCUSSION	-0.036***	-2.81	-0.013	0.150***	13.87	0.018	0.110***	7.20	0.012
Income									
UPPER CLASS							0.206***	6.96	0.026
MIDDLE CLASS							0.084***	4.01	0.010
Marital Status									
WIDOWED	-0.037	-1.08	-0.013	-0.106***	-3.82	-0.012	-0.053	-1.35	-0.006
DIVORCED	-0.083***	-2.65	-0.030	-0.064**	-2.37	-0.007	-0.115***	-2.69	-0.012
SEPARATED	-0.102*	-1.65	-0.037	-0.019	-0.36	-0.002	0.038	0.48	0.004
NEVER MARRIED	-0.113***	-4.58	-0.041	-0.048**	-2.32	-0.006	-0.076**	-2.59	-0.008
Employment Status									
PART TIME EMPLOYEE	-0.128***	-3.96	-0.047	0.032	1.20	0.004	0.035	0.88	0.004
SELFEMPLOYED	0.048	1.34	0.017	0.069**	2.53	0.009	0.074**	2.03	0.009
UNEMPLOYED	0.104***	3.14	0.037	-0.100***	-3.67	-0.012	-0.081**	-2.18	-0.009
AT HOME	0.175***	5.33	0.060	-0.015	-0.59	-0.002	0.073**	2.11	0.009
STUDENT	-0.159***	-3.92	-0.059	0.090***	2.79	0.012	0.053	1.14	0.006
RETIRED	0.011	0.36	0.004	-0.134***	-4.86	-0.015	-0.095**	-2.32	-0.010
OTHER	0.092	1.45	0.032	0.011	0.21	0.001	-0.026	-0.40	-0.003
Religiosity									
CHURCH ATTENDANCE	0.010***	2.97	0.004	0.011***	3.98	0.001	0.015***	4.30	0.002
REGIONS	YES			YES			YES		
Pseudo R2	0.023			0.026			0.051		
Number of observations	32433			30691			16305		
Prob > chi2	0.000			0.000			0.000		

Notes: The reference group consists of AGE<30, MAN, MARRIED, FULL-TIME EMPLOYEE, LOWEST CLASS, EASTERN EUROPE. The symbols *, **, *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

APPENDIX

Table A1

Countries

Western European Countries	**Eastern European Countries**
Germany	Belarus
Austria	Bulgaria
Belgium	Croatia
Denmark	Czech Republic
Finland	Estonia
France	Greece
Great Britain	Hungary
Iceland	Latvia
Ireland	Lithuania
Italy	Poland
Malta	Romania
Netherlands	Russia
North Ireland	Slovak Republic
Portugal	Ukraine
Spain	
Sweden	

Table A2

Descriptive Statistics

VARIABLES	Obs	Mean	Std. Dev.	Min	Max
ENVIRONMENTAL MORALE	40674	0.683	0.465	0	1
INDEX ENVIRONMENTAL PREFERENCES	38071	3.034	1.598	0	6
PERCEIVED ENVIRONMENTAL COOPERATION	37437	2.710	0.777	1	4
INTERESTED IN OTHERS	38473	2.635	1.167	1	5
INDEX CONCERN FOR THE SOCIETY	38540	34.864	7.727	11	55
ENVIRON. ORGANIZATION	41125	0.049	0.216	0	1
AGE 30-39	40963	0.197	0.398	0	1
AGE 40-49	40963	0.191	0.393	0	1
AGE 50-59	40963	0.150	0.357	0	1
AGE 60-69	40963	0.135	0.342	0	1
AGE 70+	40963	0.102	0.302	0	1
WOMAN	41114	0.540	0.498	0	1
EDUCATION	39840	18.712	5.125	5	74
POLITICAL DISCUSSION	40713	1.886	0.654	1	3
UPPER CLASS	21335	0.136	0.343	0	1
MIDDLE CLASS	21335	0.338	0.473	0	1
WIDOWED	39861	0.097	0.295	0	1
DIVORCED	39861	0.070	0.256	0	1
SEPARATED	39861	0.016	0.124	0	1
NEVER MARRIED	39861	0.228	0.420	0	1
PART TIME EMPLOYEE	40919	0.068	0.252	0	1
SELFEMPLOYED	40919	0.052	0.222	0	1
UNEMPLOYED	40919	0.229	0.420	0	1
AT HOME	40919	0.095	0.293	0	1
STUDENT	40919	0.061	0.240	0	1
RETIRED	40919	0.073	0.261	0	1
OTHER	40919	0.018	0.131	0	1
CHURCH ATTENDANCE	40762	3.871	2.456	1	8
INSTRUMENTS					
INTEREST IN FRIENDS	40885	3.289	0.690	1	4
INDEX PERCEIVED HONESTY	34478	5.429	1.162	2	8
CHILDREN	41125	0.077	0.266	0	1