# Being the best or doing the right thing? An investigation of positional, prosocial and conformist preferences in provision of public goods

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**Abstract:** Based on a simple theoretical framework, we show that when individuals exhibit positional, prosocial or conformist preferences which are endogenous, the end outcomes in terms of private provision of public goods can differ significantly from traditional neo-classical predictions. Indeed, when a given individual selects a specific subset of preferences according to what others do, he/she will contribute positively to the public good provision. We provide anecdotal evidence to support our theoretical analysis by using data from an Internet survey on a sample of French individuals. Analyses of individual responses confirm our theoretical arguments. For instance, we show that relative concerns matter, that is, for several environmental goods, people might prefer polluting more in absolute terms but less than others in society. Moreover, we also test whether people exhibit a social desirability bias and show that they attribute more (less) positional (prosocial) concerns to others in society.

**Key words:** positional concerns, prosocial preferences, public goods.

**JEL Classification:** Q0, Q50.

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*'In 1996, Slate editor Michael Kinsley was struck by remarks Turner made in an interview with Maureen Dowd: The CNN founder bemoaned the influence of the Forbes 400 list of richest Americans, saying it discouraged the wealthy from giving away their money for fear of slipping down the rankings. Turner suggested that a list of charitable contributions could inspire rich Americans to compete in a more beneficial way.'*[1]

## 1. Introduction

What drives people to participate to social causes or adopt an eco-friendly behavior? Several rationales have been developed to explain why individuals contribute to the provision of public goods significantly more than what is predicted by neoclassical theory. Most analyses relate to reciprocity effects, commitment to a social norm or pure and impure altruism (*e.g.*, Croson, 2007 and references therein). Without negating the previous rationales, we contend that social comparisons matter and may shape individuals' behavior. Relative concerns interact with the altruistic or egoistic type of the consumer and can lead together to surprising outcomes regarding the level of contribution to public goods provision (Carlsson *et al*., 2010).

There is considerable evidence that people are influenced by others' choices even if they do not admit it or severely underestimate it (Cialdini, 2005). People frequently compare themselves to others. For instance, it is well-know that individuals enjoy status benefits from doing more than relevant others rather than having more in absolute terms (Veblen 1899; Hirsch 1976; Solnick and Hemenway, 1998, 2005). In itself, the argument is not new, but its application to the environmental realm is scarce and constitutes an originality of this paper. We distinguish *positional behavior* (where the individual's utility depends on his relative consumption level, *e.g.*, consuming products that are less harmful for the environment than the products consumed by other individuals in his reference group) and *prosocial behavior* (where the individual's utility depends on the welfare effects of his choice on society, *e.g.*, by purchasing a product that reduces the negative externality for the whole economy). For instance, the success of the hybrid car of Toyota, the Prius model, among environmentalists was partly attributed to its ability to confer social status on Prius drivers

[1] http://www.slate.com/id/2136385/.

compared to other car manufacturers (*e.g.*, Honda) with similar hybrid models (e.g., Civic) but failing to confer status on their drivers (Naughton, 2007; see also Griskevicius *et al.*, 2010). In other words, consumers have positional preferences if they gain (non-monetary) benefits from providing more public goods than other consumers in society. They have prosocial preferences if they gain (non-monetary) benefits from providing public goods, *per se*. For instance, using a field experiment, Schultz *et al.* (2007; see also Sunstein and Thaler, 2008) show that when households are informed on their bills about their electricity consumption and how it compares to that of their other households in the same community, people tended to decrease or increase their electricity use to fit the induced social norm. We also consider the case of conformism, since consumers may also feel better if their behavior fits the average behavior in society. Theoretical models of conformity are developed in Bernheim (1994) and Benabou and Tirole (2006).[2] Shang and Croson (2008) informed individuals willing to donate money to a public radio station how much another listener had donated and found a positive correlation. In a recent contribution, Carlsson *et al.* (2010) present results of a choice experiment where conformity in green consumption is tested. They show that women have a higher willingness to pay when they are asked to consider that a large share of consumers choose the ecologically friendly alternative.

The originality of our contribution is at least twofold. First, in our framework, consumers do not just have predefined preferences which are fixed once for all. They have a set of others-dependent preferences among which they can select the preferences that will deliver the highest net utility, given others' behaviors. Individuals can switch from one type of preferences to another. A consumer may have prosocial preferences under some circumstances and positional ones in other circumstances. For example, the same individual can use different sets of preferences according the social group and spaces (*e.g.*, colleagues at workplace, neighbors at home) with which he/she is interacting. In short, preferences are endogenous (Bowles, 1998) and strongly shaped by others' choices. Second, using a quasi-experimental survey, we investigate whether individuals exhibit these three kinds of others-dependent preferences, namely positional, prosocial and conformist preferences. Rather than testing the switch from a subset of preferences to another according to others' behavior, we only explore the co-existence of these three kinds of others-dependent preferences. Interestingly, our design allows us to disentangle people motivated by inequity-aversion (Fehr and Schmidt, 1999) and positional concerns (Solnick and Hemenway, 1998) thanks

[2] The model of Benabou and Tirole (2006; see also Ariely *et al.* 2009 for empirical evidence) shows that prosocial behavior arises from a mix of intrinsic, extrinsic and reputational motivations which interact. Simply put, people care about how other peoples perceive them. Prosocial behavior is not only driven by the good cause *per se* but also a desire to obtain appreciation of oneself and others.

to the introduction of an egalitarian option (Celse, 2012). Moreover, our design allows us to test whether people exhibit a social desirability bias leading them to overestimate (respectively, underestimate) options perceived as more (respectively, less) morally acceptable, which corresponds to prosociality and equality (respectively, positionality) (Epley and Dunning, 2000).

The remainder of our contribution is organized as follows. The next section develops the analytical framework. Section 3 presents the empirical strategy used to investigate the issues raised in the analytical section. Section 4 is devoted to the main results and discussion. Section 5 provides some policy implications, suggests some orientations for further research and concludes.

## 2. Theoretical framework

The model considers a group of *N* individuals. Each individual chooses *D* units of a private good and should decide the amount of units *x* of a public good he/she wants to provide. The marginal investment rate of the provision of one unit of public good is considered to be equal to *p* such that the remaining private units can be written as $y_i = D - px_i$. The public good is an aggregate of all individual contributions. Thus the amount of public goods provided is $G = \frac{g}{N}(x_i + (N-1)\bar{x})$ where $\frac{g}{N}$ is the marginal per capita return of public good and $\bar{x} = \frac{1}{N-1}\sum_{j \neq i} x_j$ the average contribution level of all other individuals in society. We suppose that the average contribution by other consumers is exogenous and given. Consumers enjoy utility $u_i^{y}(x_i)$ from private good consumption and $u_i^{G}(x_i)$ from public good consumption.[3]

Moreover, consumers might have different moral or social motivations to contribute to public good provision. We assume these preferences to be endogenous. Consumers can adopt three types of social preferences, that is, positional (contributing more than others), prosocial (optimizing the total contribution level) and conformist preferences (following the average behavior in society). In other words, consumer *i* will adopt the type of preferences that maximizes his/her utility: $U_i = Max\ (U_i^{S}(x_i^{S*}, \bar{x}), U_i^{A}(x_i^{A*}, \bar{x}), U_i^{C}(x_i^{C*}, \bar{x}))$ .Let us define the objective function for each type of preference.

[3] For simplicity, we suppose that the direct utility resulting from the individual's own contribution to the public good provision is nil, that is, $\frac{\partial u^{G}}{\partial x_i} \approx 0$ .

The utility function of a *positional consumer* depends on both private and public good consumption and utility from status, and can thus be written as: $U_i^S(x_i^{S*}, \bar{x}) = u_i^y(x_i^{S*}) + u_i^G(x_i^{S*}, \bar{x}) + u_i^S(x_i^{S*}, \bar{x})$. A consumer who searches for status enjoys utility if his/her relative contribution to the public good is higher than the average contribution by others.[4] Consuming environmentally-friendly products or services allows an individual to distinguish himself/herself from other consumers by being 'greener' and thus gaining social status. This status can be defined by $S = \sigma(x_i - \bar{x})$. Net utility from status increases when consumer *i* increases his/her contribution to the public good $\frac{\partial u_i^S}{\partial x_i} = \frac{\partial u_i^S}{\partial S} \cdot \frac{\partial S}{\partial x_i} = \sigma \frac{\partial u_i^S}{\partial S} \geq 0$. Conversely, an increase in the average contribution by others will harm consumer *i*'s net utility from status $\frac{\partial u_i^S}{\partial \bar{x}} = \frac{\partial u_i^S}{\partial S} \cdot \frac{\partial S}{\partial \bar{x}} = -\sigma \frac{\partial u_i^S}{\partial S} \leq 0$. We suppose that marginal utility from status is decreasing with the relative status level, that is, $\frac{\partial^2 u_i^S}{\partial S^2} \leq 0$.

When consumer *i* focuses on his *prosocial preferences*, his/her utility function can be written as: $U_i^A(x_i^{A*}, \bar{x}) = u_i^y(x_i^{A*}) + u_i^G(x_i^{A*}, \bar{x}) + u_i^A(x_i^{A*}, \bar{x})$. A prosocial consumer feels better if public goods are produced, *per se*. We suppose that the end-motivation of a prosocial consumer is the provision of public goods and the well-being of other individuals in society. Therefore, prosocial behavior depends not only on private contribution levels but also on the total amount of public goods provided. We assume that the benefit from public goods provision can be defined as $A = \alpha G$. A prosocial consumer feels better if his/her contribution to the public good is higher, *ceteris paribus* $\frac{\partial u_i^A}{\partial x_i} = \frac{\partial u_i^A}{\partial A} \cdot \frac{\partial A}{\partial x_i} = \alpha \frac{g}{N} \frac{\partial u_i^A}{\partial A} \geq 0$. In addition, a prosocial consumer benefits from contributions by others $\frac{\partial u_i^A}{\partial \bar{x}} = \frac{\partial u_i^A}{\partial A} \cdot \frac{\partial A}{\partial \bar{x}} = \alpha \frac{g(N-1)}{N} \frac{\partial u_i^A}{\partial A} \geq 0$. However, the marginal utility is decreasing with the global public goods provision, that is, $\frac{\partial^2 u_i^A}{\partial A^2} \leq 0$, which means that the marginal benefit of public goods provision for a prosocial individual is lower when the global quantity of public goods increases.

In the case of *conformist preferences*, the utility function can be written as: $U_i^C(x_i^{C*}, \bar{x}) = u_i^y(x_i^{C*}) + u_i^G(x_i^{C*}, \bar{x}) + u_i^C(x_i^{C*}, \bar{x})$. Conformist consumers feel better if their behavior fits the average behavior in society, *i.e.*, near the average contribution by others. The well-being of

[4] We consider that status-seekers compare themselves to the average consumer.

a conformist consumer decreases if his contribution is lower or higher than the average contribution level of others. In other words, the utility that consumers get from contributing to public goods provision is higher if their contribution is equal to the average contribution level. We assume that the benefit from public goods provision can be defined as $C = \Phi - \gamma \left| x_i - \bar{x} \right|$. A conformist consumer can increase his/her utility as long as his/her contribution to the public goods provision is below the average contribution level of others, *i.e.*, $\frac{\partial u_i^C}{\partial x_i} = \frac{\partial u_i^C}{\partial C} \cdot \frac{\partial C}{\partial x_i} = \gamma \frac{\partial u_i^C}{\partial C} \geq 0$ if $x_i < \bar{x}$. Similarly, if his/her contribution is above the average contribution level, his/her utility will decrease if his/her contribution to public goods provision increases, *i.e.* $\frac{\partial u_i^C}{\partial x_i} = \frac{\partial u_i^C}{\partial C} \cdot \frac{\partial C}{\partial x_i} = -\gamma \frac{\partial u_i^C}{\partial C} \leq 0$ if $x_i \geq \bar{x}$. The same reasoning can be applied to a change in others' contribution. An increase of others' contribution will rise (respectively, harm) the utility of an individual if his/her contribution is above (respectively, below) the average contribution level. However, the marginal utility of such conformism is increasing, that is, $\frac{\partial^2 u_i^C}{\partial C^2} \geq 0$, which means that the marginal benefit of public goods provision for a conformist individual is higher when his/her behavior gets close to average behavior.

In the following, we suppose a two-stage decision making for consumers. First, each consumer adopts one of the above-mentioned preferences. Second, he/she chooses the contribution level to the provision of public goods. Alike the existing literature on what motivates prosocial behavior and how these motivations interact (*e.g.*, Benabou and Tirole, 2006; Ariely *et al.*, 2009), our design aims at examining how what others do will push the individual to use a particular subset of preferences in order to maximize his utility.

*2.1. Optimal contribution levels*

For each type of preferences, we can determine optimal contribution levels $(x_i^{A*}, x_i^{S*}, x_i^{C*})$. Giving the preceding discussion, an important factor in the decision of consumers to contribute voluntarily to the provision of public goods is the average contribution level by other consumers in the economy. As stated above, we suppose that the average contribution level, $\bar{x}$, is given and exogenous. This means that other consumers will not adapt their behavior according to consumer *i*'s contribution level. The optimal contribution levels are depicted in Figure 1. Three cases can be distinguished:

- ✓ Individuals who have decided to be status-seekers in the first stage choose their contribution level $x_i^{S*}$ such that the utility increase from status counterbalances the utility decrease due to a reduction in private consumption. Of course, this decision is balanced by the unit value of private good and status: $u^{S'} = \frac{p}{\sigma} u^{y'}$. When the average contribution level increases, status *S* is reduced. Since $\frac{\partial^2 u_i^S}{\partial S^2} \leq 0$, the incentive to contribute rises with $\bar{x}$. In order to gain status,the positional consumer will contribute more and more if the average contribution level in the economy increases.

- ✓ Individuals who privilege prosocial preferences choose their contribution level $x_i^{A*}$ such that the utility increase from the whole public goods provision counterbalances the utility decrease due to a reduction in private consumption $u^{A'} = \frac{pN}{\alpha g} u^{y'}$. The incentive to contribute will decrease when the average contribution level by others increases. Indeed, an increase in $\bar{x}$ will rise the value of *A*. Since $\frac{\partial^2 u_i^A}{\partial A^2} \leq 0$, the optimal contribution by consumer *i* will fall.

- ✓ Individuals who have decided in the first stage to be conform to average behavior choose their contribution level $x_i^{C*}$ such that the utility increase from fitting the social norm counterbalances the utility decrease due to a reduction in private consumption $u^{C'} = \frac{p}{\gamma} u^{y'}$. We can notice that the optimal contribution level for a conformist consumer will never exceed the average contribution level of others. Then, an increase of $\bar{x}$ will induce a decrease of *C*. Since $\frac{\partial^2 u_i^C}{\partial C^2} \geq 0$, conformist consumers have incentives to increase their contribution to the public good.

[Insert Figure 1 around here]

Interestingly, the contribution level by an individual does not only vary with the average contribution level of others but also with the preference type. So, in order to determine the optimal contribution level, a consumer will compare the marginal utility of one public good provision in terms of positional, prosocial and conformist behavior, *i.e.*, $\sigma \frac{\partial u_i^S}{\partial S}$, $\frac{\alpha g}{N} \frac{\partial u_i^A}{\partial A}$, and $\gamma \frac{\partial u_i^C}{\partial C}$ with respect to the marginal disutility of losing one unit of private good, $p \frac{\partial u_i^y}{\partial y}$. Marginal utilities depend on the average contribution level of others. In the case where marginal utilities are diminishing, we might

expect the contribution by the prosocial consumer to diminish with an increase by others, whereas the contribution by the status-seeker to increase with an increase of average contributions. *A contrario*, if others contribute a large amount to the public good, both the conformist and positional consumers need to contribute a large amount to gain a positive utility. The prosocial consumer will reduce his/her contribution since his/her aim is public good provision, which is already assured by others. So, according to the type of social motivation chosen by the individual, his/her contribution level to public good provision differs.

*2.2. Consumer motivation choice*

We assume that consumers possess social motivations when they contribute voluntarily to the provision of public goods. However, according to average behavior in the economy, these social or moral motivations might differ. For example, positional preferences might no longer be desirable in an economy where others allocate large amounts of their income to the provision of public goods. The increase of utility relative to status becomes more and more costly as the individual contribution should rise. According to the optimal individual contribution levels determined in the previous section, we can analyze the variation of utility with respect to the average contribution level by other consumers in society. If the average contribution level in society is very low (or even nil), the effort required to enjoy status is relatively low, *i.e.*, even a small contribution allows gaining a positive status. On the other hand, the joy of being a prosocial consumer will be highly reduced as the consumer does not enjoy any prosocial utility of others. His/her effort is therefore costly.

We illustrate the consumer behavior with respect to social preferences in Figure 2. The consumer will choose his/her social preference in order to maximize utility. So the consumer is expected to become a positional consumer if the average contribution level by others is relatively low. We expect consumers to be conformist for intermediate contribution levels. For high contribution levels of others, the consumer is better off by being prosocial, which is an interesting case since he/she enjoys utility of contribution by others, without needing to contribute a large amount.

[Insert Figure 2 around here]

In the following part, we provide evidence regarding *whether* people exhibit the various kinds of preferences developed above. We explore whether different individuals will negotiate different subsets of preferences in some domains, when they are informed about what other people do. The objective of this empirical part is more limited than the insights drawn from the theoretical analysis. Indeed, our empirical strategy does not allow us to test a switch between different subsets of preferences according to what others do. Nevertheless, it constitutes a first step to document the co-

existence of the three subsets of preferences and the need to examine later how people will select from these subsets according to others' behavior.

## 3. Data and Methods

In summer 2009, we conducted an Internet survey on a representative and randomly selected sample of 25,000 French individuals. The questionnaire was developed and tested on a convenience sample to make it easy to understand and plausible. For instance, values were chosen to be meaningful for respondents and reflect plausible real world choices.[5] We received 1108 responses (4.43%). 440 responses were eliminated because of non-complete answers. 211 others were eliminated because of non-sense answers, as explained below. Thus, the final sample includes 457 observations. This low response rate raises concerns regarding the reliability of responses and representativeness of the sample. Nevertheless, given the exploratory nature of the survey and the current practice in experimental economics and psychology (*e.g.*, non-random samples, small samples), we argue that these potential biases do not jeopardize the validity of the obtained insights. The sample is relatively gender misbalanced (about 62% female and 38% male) with an average age of 45. Regarding the matrimonial status, about 26% are single while 74% have a live-in couple relationship. A more detailed figure of descriptive statistics on the surveyed sample is reported in Table 1.

[Insert Table 1 around here]

In line with several prior studies devoted to related issues (*e.g.*, Solnick and Hemenway, 1998, 2005; Greene and Nelson, 2007), the survey consisted of nine hypothetical questions in the same format (see Appendix 1). Respondents were asked about a set of environmentally-friendly considerations: car $CO_2$ emissions, electric power consumption, driving an ecologically-friendly car, donations to an environmental association, using bikes or public transport, and recyclable products consumption. To test the effect of visibility on individuals' decisions, the questions about

[5] Selecting values is a non-neutral choice. Several works using these quasi-survey methods show that people seem to be more positional on domains for which they enjoy higher absolute levels. For example, people can be more positional on vacations if they already have longer absolute vacations (Solnick and Hemenway, 1998). Johansson-Stenman *et al.*, (2002) discuss the modeling of positionality and introduce the degree of positionality, showing that people have different degrees of relative concerns (see also Carlsson *et al.*, 2007; Carlsson and Qin, 2010). Consequently, the explicit values used in the survey instrument will influence which alternative respondents will choose. For example, if someone has a lower degree of positionality than implied by the positional alternative, will he/she then prefer that alternative or the alternative with equality? We are aware that the design can influence the classification of respondents. Investigating the degree of positionality is interesting but beyond the scope of the used design. We mainly aim at examining whether these different kinds of preferences co-exist and how people select a particular subset according to what others do.

electric power consumption and donation to an environmental association have been repeated by introducing a visibility mechanism. A question about wage was also asked in order to control for the private/public issue.

Each question presented three hypothetical situations structured as follows. The positional situation is a one where the respondent is more environmentally-friendly than others (*i.e.*, the average other person in society) with regards to the above-mentioned items. This situation is also the least socially desirable one. The prosocial situation is a one where both the respondent and others are more environmentally-friendly than in the positional situation, but the respondent is worse than others. This situation is the most socially desirable one. Finally, we presented an equality situation, corresponding to the conformism to the social norm, where the respondent and others behave the same, are better than in the positional situation and worse than in the prosocial situation. An example related to car $CO_2$ emissions is given below:

*A. You drive a car that emits 150g of $CO_2$/km; others' cars emit 170g of $CO_2$/km.*
*B. You drive a car that emits 130g of $CO_2$/km; others' cars emit 110g of $CO_2$/km.*
*C. You drive a car that emits 130g of $CO_2$/km; others' cars emit 130g of $CO_2$/km.*

Here situation A is the positional, situation B is the prosocial, and situation C is the conformist case. The order of presentation of the three situations varies in the nine questions. Respondents were asked to pick the situation they most prefer and the situation they least prefer. We clearly stipulate to respondents that the three situations only differ with regards to the mentioned characteristic (*e.g.*, level of $CO_2$/km) to make them focusing their attention on a specific dimension. We explicitly asked respondents not to take into account other considerations, such as the relative cost of each situation. Respondents were also informed that the questions are independent.

As in Greene and Nelson (2007, see also Boyle *et al.*, 2007), this allows us to eliminate non-sense answers. Following these authors, we regarded five possible answers as non-sense. The first three cases are those where respondents choose the same situation as the most and the least preferable. We also regarded as non-sense the case where respondents most prefer the positional situation and least prefer the equality situation. An individual who prefers polluting more in absolute terms, but less than others, that is, an individual for whom position matters, should choose the prosocial situation as the worst for him, since his/her preference is the same in the prosocial and equality situation, but his/her position is better in the equality situation. Similarly, we considered as non-sense the case where respondents most prefer the prosocial situation and least prefer equality. In

total, 211 individuals gave inappropriate answers and were excluded from our sample.[6]

Moreover, as stressed by Epley and Dunning (2000; see also Johansson-Stenman *et al.*, 2002; Carlsson and Qin, 2010), generally respondents do not want to give a bad image of themselves and thus might underestimate positional concerns and overestimate options perceived as more morally acceptable, that is, the prosocial and equality situation. To account for this effect, we created two versions of the survey. While in the first version individuals (half of the whole population, *i.e.*, N=12,500) were asked to give answers about their own preference, in the second version they (the other half of the population, N=12,500) were asked to give answers about others' preferences (sometimes referred to as the impartial spectator), that is, pick the situations that a hypothetical average individual would most and least prefer. For instance, in the second version, the question about car $CO_2$ emissions was structured as follows:

A. *He (i.e., the hypothetical average individual) drives a car that emits 150g of $CO_2$/km; others' cars emit 170g of $CO_2$/km.*
B. *He drives a car that emits 130g of $CO_2$/km; others' cars emit 110g of $CO_2$/km.*
C. *He drives a car that emits 130g of $CO_2$/km; others' cars emit 130g of $CO_2$/km.*

Furthermore, we also investigate in a multinomial logistic model whether the socio-demographic variables presented in Table 1, *i.e.*, age, gender, education, income, matrimonial situation, presence of children, professional situation and the environmental sensitiveness may explain the likelihood of choosing either the positional or prosocial situation. Given that for each of the nine questions, respondents choose one of the mutually exclusive alternatives, that is, positional, prosocial and equality situation, we specify an unordered multinomial logistic model (discrete choice method) as follows (Greene, 2003):

$$Prob(Y_i = j) = \frac{e^{X_i \beta_j}}{\sum_{k=1}^{3} e^{X_i \beta_k}} \; with \; j = 1,2,3.$$

where $Y_i$, the dependent variable, represents the considered domain (*i.e.*, wage, car $CO_2$ emissions, electric power consumption, driving an ecologically-friendly car, donations to an environmental association, using bikes or public transport, and recyclable products consumption) and takes the values of 1, 2 or 3 if the respondent chooses the positional, prosocial or equality situation, respectively. Here equality is used as the base category. $X_i$ represents the vector of explanatory variables (*AGE*, *GENDER*, *EDUCATION*, *INCOME*, MAT_SIT, CHILDREN, JOB and

[6] We also investigated the percentage of positional, prosocial and equality answers without deleting nonsense answers. The main results remain unchanged, except regarding their magnitude.

ENV_SENS). $\beta_i$ represent slope coefficients to be estimated.

## 4. Results and discussion

For each of the nine questions asked in the survey, the percentage of positional, prosocial and equality choices are presented in Table 2.

[Insert Table 2 around here]

Several results can be drawn from Table 2. First, positional and prosocial behaviors matter in both versions of the survey, and their magnitude varies among domains. In various domains, different people will refer to different subsets of preferences according to what others do. When asking people about their own preferences the percentage of individuals who picked the positional (respectively prosocial) situation with regards to environmentally-friendly considerations ranges from 7 to 11 percent (respectively from 31 to 53 percent). For instance, while only 7 percent of surveyed individuals prefer to take their bikes or public transport more than others, 11 percent of them prefer consuming less electric power than others.[7] Second, in both versions of the survey the percentage of positional (respectively prosocial) answers is the highest (respectively the lowest) with regards to wage. This result may be explained by the fact that all domains have a public attribute, while wages have exclusively a private attribute. Third, Table 2 shows that visibility does not necessarily matter. With regard to electric power consumption, whereas only 7 percent of respondents choose the positional situation when a visibility mechanism exists, 11 percent choose the positional situation when their consumption is not public information. However, when looking to donations and driving an eco-friendly car, the percentage of positional answers is about the same (or even increases) in presence of a visibility mechanism. Regarding cars, the decision can be mainly motivated by cost savings considerations, regardless of visibility but this argument is insufficient to explain donations. Moreover, there seems to have an endogeneity bias because we cannot guarantee which aspect (visibility or positional concerns) influences the other one. Fourth, when asking people about others' preferences the percentage of positional (prosocial) answers significantly increases (decreases). In other words, people are more (less) likely to attribute positional (prosocial) preferences to others than to themselves. For example, when asked about car

[7] Noteworthy, even if individuals do not choose the positional (respectively, prosocial) situation as the one they most prefer, they can be considered to some extent as positional (respectively, prosocial) if they most prefer the equality situation and least prefer the prosocial (respectively, positional) one. In other words, respondents can be considered as highly positional (those who most prefer the positional situation), highly prosocial (those who most prefer the prosocial situation), slightly positional (those who most prefer the equality situation and least prefer the prosocial one), and slightly prosocial (those who prefer equality and least prefer the positional one). Despite its interest, this distinction is beyond the scope of this paper.

$CO_2$ emissions, 5 percent of respondents picked the positional situation and 31 percent picked the prosocial situation in the first version. However, in the second version the percentage of positional answers increased to 26 percent while the percentage of prosocial answers decreased to 19 percent.

Finally, we present the results of the multinomial logistic regression regarding the effect of socio-demographic variables (Table 3). Our findings do not indicate a clear effect of these variables. Nevertheless, some results can be derived from our analysis, as developed below. For ease of exposition, we do not discuss the magnitude of coefficients.

[Insert Table 3 around here]

First, younger people are more likely to choose positional situations over equality situations when asked about car $CO_2$ emissions, use of a bike or public transport, recyclable products consumption and donations to an environmental association with a visibility mechanism (half of the investigated domains). Second, our findings show that environmental sensitiveness significantly decreases the potential to pick positional situations over equality situations. Lastly, Table 3 shows that asking people about their own preferences significantly decreases their potential to choose the positional situation over the equality one. This result is robust for all domains. Consistently with the recent findings of Grolleau *et al.* (2012), this result can indicate a bias where people are more (less) likely to attribute desirable features to themselves (others).

**5. Conclusion**

Positional, prosocial and conformist preferences matter and may explain voluntary contribution to public goods. In various domains and spaces, different people use different subsets of preferences according to what others do. Interestingly, when these preferences are endogenous, social comparisons can determine whether people will behave in socially desirable directions. These preferences do not lead to identical contribution levels and thus do not have identical impacts on social welfare. In some domains, the individual can be interested by positional rewards while the same individual can be motivated by prosocial rewards in other domains. Our results suggest that regulators have vested interest in avoiding one-size-fits-all policy. Investigating how people form preferences according to others' ones can help policymakers to design innovative policies and implement tailored interventions that can use the concerns at stake for the considered individuals in the considered domains. In sum, providing information about what relevant others (*e.g.*, colleagues in the workplace, neighbors at home) do in different contexts can push different consumers or citizens to use different subsets of preferences. For instance, providing or not information about the average behavior in a group is likely to shape preferences in predictable directions. Moreover, when positional concerns are strong, increasing/decreasing the visibility of the behavior at stake can push

people to behave in socially desirable directions (Griskevicius *et al.*, 2010). More practically, this contribution constitutes an appeal to explore how social comparisons shape individuals' preferences and can be used to promote socially desirable goals.

**References**


Ariely, D., Bracha, A., Meie, S., 2009, Doing Good or Doing Well? Image Motivation and Monetary Incentives in Behaving Prosocially, *American Economic Review*, 99, 544-555.

Benabou, R., Tirole, J., 2006, Incentives and Prosocial Behavior, *American Economic Review*, 96, 1652-1678.

Bernheim, D., 1994, A Theory of Conformity, *Journal of Political Economy*, 102, 841-877.

Boyle, G., Greene, K., Nelson, P. and Pagliero, M., 2007, A Comparative Study of Student Demand for Status in Ireland, Italy and the United States, ICER Working Papers, ICER, http://EconPapers.repec.org/RePEc:icr:wpicer:01-2007.

Bowles, S., 1998, Endogenous Preferences: The Cultural Consequences of Markets and Other Economic Institutions, *Journal of Economic Literature*, 36(1), 75-111.

Carlsson, F., Johansson-Stenman, O., Martinsson, P., 2007, Do You Enjoy Having More Than Others? Survey Evidence of Positional Goods, *Economica*, 74(296), 586-598.

Carlsson, G., Garcia, J.H., Lofgren, A., 2010, Conformity and the Demand for Environmental Goods, *Environmental and Resource Economics*, 47, 407-421.

Carlsson, F., Qin P., 2010, It is Better to Be the Head of a Chicken than the Tail of a Phoenix: A Study of Concern for Relative Standing in Rural China, *Journal of Socio-Economics*, 39, 180-186.

Celse, J., 2012, Is the Positional Bias an Artefact? Distinguishing Positional Concerns from Egalitarian Concerns, *Journal of Socio-Economics*, 41, 277-283.

Cialdini, 2005, Basic Social Influence is Underestimated, *Psychological Inquiry*, 16(4), 158-161.

Croson, R., 2007, Theories of Commitment, Altruism and Reciprocity: Evidence from Linear Public Goods Games, *Economic Inquiry*, 45(2), 199-216.

Epley, N., Dunning, D., 2000, Feeling "Holier Than Thou": Are Self-Serving Assessments Produced by Errors in Self- or Social Prediction? *Journal of Personality and Social Psychology*, 79(6), 861-875.

Fehr E., Schmidt, K.M., 1999, A Theory of Fairness, Competition and Cooperation, *Quarterly Journal of Economics*, 114, 817-868.

Greene, W., 2003, *Econometric Analysis*, Upper Saddle River, NJ: Prentice-Hall.

Greene, K., Nelson, P., 2007, Is Relative Income of Overriding Importance for Individuals? *International Journal of Social Economics*, 34(11), 883-898.

Griskevicius, V., Tybur, J., Van Den Bergh, B., 2010, Going Green to Be Seen: Status, Reputation and Conspicuous Conservation, *Journal of Personality and Social Psychology*, 98(3), 392-404.

Grolleau, G., Mzoughi, N., Saïd, S., 2012, Do You Believe that Others Are More Positional than You? Results from an Empirical Survey on Positional Concerns in France, *Journal of Socio-Economics*, 41(1), 48-54.

Hirsch, F., 1976, *Social Limits to Growth*, Cambridge: Harvard University Press.

Johansson-Stenman, O., Carlsson, F., Daruvala, D., 2002, Measuring Future Grandparents' Preferences for Equality and Relative Standing, *Economic Journal*, 112, 362-383.

Naughton, K., 2007, A Case of Prius Envy, *Newsweek*, September 3 (http://www.newsweek.com/2007/09/02/a-case-of-prius-envy.html#, accessed November 29, 2010).

Shang, J., Croson, R., 2008, Field Experiments in Charitable Contribution: The Impact of Social Influence on the Voluntary Provision of Public Goods, *The Economic Journal*, 119(540), 1422-1439.

Solnick, S., Hemenway, D., 1998, Is More Always Better? A Survey on Positional Concerns, *Journal of Economic Behavior and Organization*, 37(3), 373-383.

Solnick, S., Hemenway, D., 2005, Are Positional Concerns Stronger in Some Domains Than in Others? *American Economic Review*, 95(2), 147-151.

Schultz, W., Nolan, J., Cialdini, R., Goldstein, N., Griskevicius, V., 2007, The Constructive, Destructive, and Reconstructive Power of Social Norms, *Psychological Science*, 18(50), 429-34.

Sunstein, C., Thaler, R., 2008, *Nudge: Improving Decisions about Health, Wealth, and Happiness*, New Haven and London: Yale University Press.

Veblen, T., 1899 [1970], *The Theory of the Leisure Class: an Economic Study of Institutions*, London: Unwin Books.

**Figure 1: Optimal individual contribution levels with regard to positional, prosocial and conformist preferences**

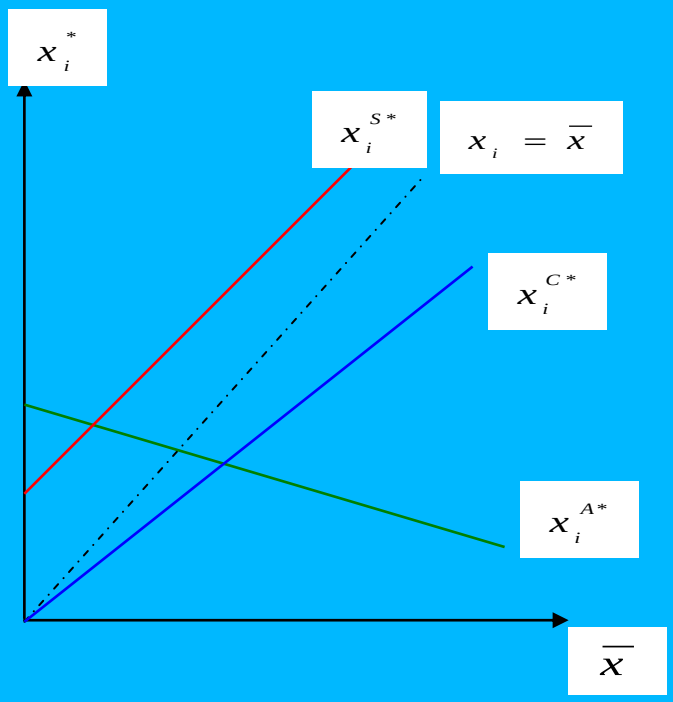

**Figure 2: Optimal utility with regard to positional, prosocial and conformist preferences**

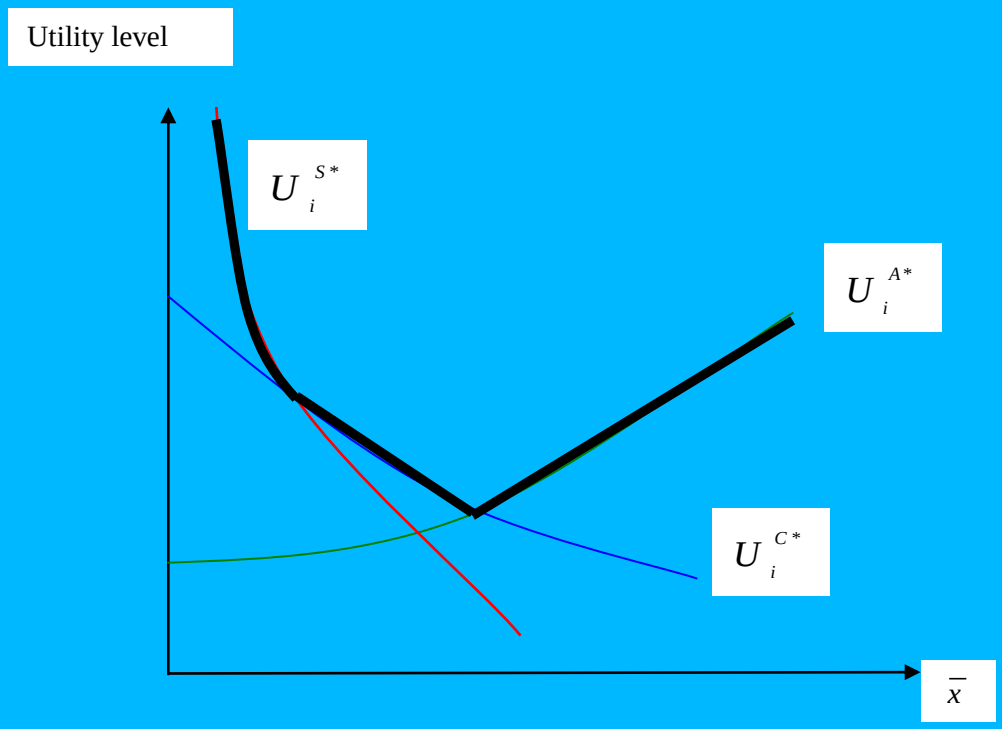

**Table 1: Sample characteristics (N=457)**

| Variable | Description | Mean | Std. deviation |
|---|---|---|---|
| AGE | Dummy variable (=1 if the respondent's age is under 35) | 0.234 | 0.423 |
| GENDER | Dummy variable (=1 if the respondent is a male) | 0.387 | 0.487 |
| EDUCATION | Dummy variable (=1 if the respondent's level of education is high school and more) | 0.610 | 0.488 |
| INCOME | Dummy variable (=1 if the respondent earns more than €2500/month) | 0.538 | 0.499 |
| MAT_SIT | Dummy variable (=1 if the respondent is single) | 0.258 | 0.438 |
| CHILDREN | Dummy variable (=1 if the respondent has at least 1 child younger than 12 years) | 0.347 | 0.476 |
| JOB | Dummy variable (=1 if the respondent has a job) | 0.623 | 0.485 |
| ENV_SENS[a] | Environmental sensitiveness of the respondent (continuous) | 28.934 | 4.439 |

[a]: This variable was computed as follows. All respondents were asked to indicate on a 5-point Likert scale the frequency of eight day-to-day environmental actions: waste sorting, turning off TV when leaving the house or sleeping, turning off the light when leaving a room, buying eco-labeled or organic products, using less energy-consuming bulbs, turning off the tap when cleaning teeth or dishes, walking in green areas, and volunteering in environmental associations. Then, for each individual we computed a score as the sum of all his/her answers. Thus, this variable can take values between 8 when these actions never occur, and 40 when the frequency of these actions is very high.

**Table 2: Percentage of positional, prosocial and equality answers (N=457)**

| | When asking individuals about their behavior (N=245) | | | When asking individuals about others' behavior (N=212) | | | Wilcoxon test[a] |
|---|---|---|---|---|---|---|---|
| | Positional | Prosocial | Equality | Positional | Prosocial | Equality | |
| Wage | 19 | 4 | 77 | 48 | 3 | 49 | *** |
| Car $CO_2$ emissions | 5 | 31 | 64 | 26 | 19 | 55 | *** |
| Electric power consumption | 11 | 35 | 54 | 33 | 17 | 50 | *** |
| Eco-friendly car | 9 | 47 | 44 | 29 | 30 | 41 | *** |
| Donation to an environmental association | 9 | 37 | 54 | 24 | 29 | 47 | *** |
| Use of a bike or public transport | 7 | 46 | 47 | 23 | 29 | 48 | ns |
| Electric power consumption II | 7 | 44 | 49 | 36 | 21 | 43 | *** |
| Recyclable products consumption | 7 | 53 | 40 | 21 | 33 | 46 | ns |
| Donation to an environmental association II | 9 | 38 | 53 | 34 | 19 | 47 | *** |

[a]: For each item, we used a Wilcoxon-Mann-Whitney test to see whether the mean when asking people about their preferences is significantly different from the mean when people are asked about others' preferences. (***) stands for parameter significance at the 1 percent level. (ns) stands for not significant.

**Table 3: Multinomial logit estimates (N=457)**

| | Wage | | Car $CO_2$ emissions | | Electric power consumption | | Eco-friendly car | | Donation to an environmental association | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variables** | **Positional** | **Prosocial** | **Positional** | **Prosocial** | **Positional** | **Prosocial** | **Positional** | **Prosocial** | **Positional** | **Prosocial** |
| Intercept | 1.928** | -4.425** | 0.471 | -0.607 | 0.727 | -0.766 | 0.104 | 0.025 | 0.109 | 0.139 |
| SURVEY | **-1.430*** ** | -0.346 | **-1.808*** ** | 0.334 | **-1.298*** ** | **0.609** ** | **-1.251*** ** | **0.368*** | **-1.154*** ** | 0.056 |
| AGE | 0.302 | -0.521 | **0.709** ** | -0.182 | 0.312 | -0.192 | 0.159 | 0.257 | 0.159 | 0.205 |
| GENDER | -0.082 | **0.986*** | 0.315 | 0.175 | 0.217 | 0.250 | 0.059 | -0.299 | 0.306 | **0.396*** |
| EDUCATION | 0.337 | **-1.128** ** | 0.081 | **0.701*** ** | **-0.459*** | 0.384 | -0.015 | 0.042 | 0.119 | 0.170 |
| INCOME | 0.143 | 0.523 | 0.087 | 0.233 | 0.024 | 0.082 | **0.601*** | **0.793*** ** | -0.184 | **0.456*** |
| MAT_SIT | -0.335 | -1.482 | 0.030 | 0.493 | 0.027 | 0.362 | 0.181 | 0.470 | -0.235 | 0.084 |
| CHILDREN | **-0.623** ** | -0.288 | 0.020 | 0.053 | -0.031 | 0.067 | -0.428 | -0.129 | -0.031 | -0.088 |
| JOB | 0.112 | 0.672 | 0.012 | -0.222 | 0.180 | -0.168 | 0.172 | -0.279 | 0.244 | **-0.387*** |
| ENV_SENS | **-0.070*** ** | 0.049 | **-0.056*** | -0.037 | -0.039 | -0.022 | -0.027 | -0.021 | -0.033 | -0.031 |
| Pseudo R2 | 0.1148 | | 0.0805 | | 0.0623 | | 0.0571 | | 0.0427 | |
| Log Likelihood | -313.60381 | | -394.71087 | | -436.79948 | | -449.78357 | | -439.30457 | |
| LR Chi2 (18) | 81.37 | | 69.08 | | 58.08 | | 54.50 | | 39.23 | |

| | Use of a bike or public transport | | Electric power consumption II | | Recyclable products consumption | | Donation to an environmental association II | |
|---|---|---|---|---|---|---|---|---|
| **Variables** | **Positional** | **Prosocial** | **Positional** | **Prosocial** | **Positional** | **Prosocial** | **Positional** | **Prosocial** |
| Intercept | 0.892 | 0.113 | 1.752* | -0.587 | 1.697 | 1.224 | 1.731* | 0.432 |
| SURVEY | **-1.218*** ** | **0.475** ** | **-1.798*** ** | **0.603*** ** | **-1.116*** ** | **0.578*** ** | **-1.532*** ** | **0.489** ** |
| AGE | **0.706** ** | **0.479*** | 0.394 | 0.301 | **0.616*** | **0.525** ** | **0.704** ** | 0.449 |
| GENDER | 0.082 | 0.006 | -0.006 | 0.339 | 0.260 | 0.084 | -0.047 | 0.092 |
| EDUCATION | -0.184 | 0.041 | 0.041 | 0.247 | **-0.755** ** | -0.107 | 0.387 | 0.233 |
| INCOME | -0.035 | 0.303 | -0.170 | 0.227 | 0.400 | **0.553** ** | 0.001 | -0.165 |
| MAT_SIT | **-0.741*** | 0.026 | -0.298 | 0.370 | **0.719*** | **0.517*** | -0.502 | -0.286 |
| CHILDREN | **-0.607*** | -0.230 | -0.161 | -0.014 | -0.233 | 0.062 | -0.293 | -0.264 |
| JOB | **0.638*** | -0.208 | 0.150 | -0.373 | -0.045 | **-0.545** ** | 0.350 | -0.152 |
| ENV_SENS | **-0.061*** | -0.025 | **-0.067** ** | -0.017 | **-0.089** ** | **-0.060** ** | **-0.083*** ** | -0.041 |
| Pseudo R2 | 0.0552 | | 0.0910 | | 0.0676 | | 0.0801 | |
| Log Likelihood | -430.76988 | | -434.38279 | | -422.25254 | | -433.86161 | |
| LR Chi2 (18) | 50.30 | | 87.00 | | 61.25 | | 75.52 | |

*, ** and *** stand for parameter significance at the 10, 5 and 1 percent level, respectively.

**Appendix 1: Survey instrument (translated from French)**

We present below the first version of the questionnaire, that is, when asking individuals about their own preferences. The second version has exactly the same format, but instead of picking the option they would prefer, respondents were asked to pick the option a hypothetical average individual in society would do.

In the questions below, there are three hypothetical situations A, B and C. You are asked to pick which of the three you most prefer and which of the three you least prefer, by checking the box A, B or C. Hence, for each question, there are 2 boxes out of 6 to check. The three situations only differ with regards to the mentioned characteristic. Consequently, do not take into account other considerations, such as the relative cost of each situation. The questions are independent. There is no good or bad answer. 'Others' is the average other person in society.

| | Situation I most prefer | Situation I least prefer |
|---|---|---|
| 1. (Note that prices are what they are currently and the purchasing power of money is the same in situations A, B and C) | | |
| A. Your wage is €3000/month, others' wage is €2500/month. | ❒ | ❒ |
| B. Your wage is €3500/month, others' wage is €4000/month. | ❒ | ❒ |
| C. Your wage is €3500/month, others' wage is €3500/month. | ❒ | ❒ |
| 2. A. You drive a car that emits 150g of CO2/km; others' cars emit 170g of CO2/km. | ❒ | ❒ |
| B. You drive a car that emits 130g of CO2/km; others' cars emit 110g of CO2/km. | ❒ | ❒ |
| C. You drive a car that emits 130g of CO2/km; others' cars emit 130g of CO2/km. | ❒ | ❒ |
| 3. A. You electric power consumption is 130kw/month; others' one is 170kw/month. | ❒ | ❒ |
| B. You electric power consumption is 100kw/month; others' one is 100kw/month. | ❒ | ❒ |
| C. You electric power consumption is 100kw/month; others' one is 60kw/month. | ❒ | ❒ |
| 4. (Assume car ecologically-friendliness is easily recognizable thanks to a logo from the less (ECOLO1) to the most ecologically-friendly one (ECOLO5)) | | |
| A. Your car is ECOLO3; others' car is ECOLO3. | ❒ | ❒ |
| B. Your car is ECOLO2; others' car is ECOLO1. | ❒ | ❒ |
| C. Your car is ECOLO3; others' car is ECOLO4. | ❒ | ❒ |
| 5. A. You donate €300/year to an environmental association; others donate €400/year. | ❒ | ❒ |
| B. You donate €300/year to an environmental association; others donate €300/year. | ❒ | ❒ |
| C. You donate €200/year to an environmental association; others donate €100/year. | ❒ | ❒ |
| 6. (Assume you work in a company where people sometimes go to work bikes or public transport in order to protect the environment) | | |
| A. You take a bike or public transport 4 times/week; others 4 times/week. | ❒ | ❒ |
| B. You take a bike or public transport 3 times/week; others 2 times/week. | ❒ | ❒ |
| C. You take a bike or public transport 4 times/week; others 5 times/week. | ❒ | ❒ |
| 7. (Assume in your neighborhood everyone knows the individual electric power consumption of others) | | |
| A. You electric power consumption is 130kw/month; others' one is 170kw/month. | ❒ | ❒ |
| B. You electric power consumption is 100kw/month; others' one is 100kw/month. | ❒ | ❒ |
| C. You electric power consumption is 100kw/month; others' one is 60kw/month. | ❒ | ❒ |
| 8. A. 60% of products you consume are recyclable; 60% of others' products are recyclable. | ❒ | ❒ |
| B. 60% of products you consume are recyclable; 80% of others' products are recyclable. | ❒ | ❒ |
| C. 40% of products you consume are recyclable; 20% of others' products are recyclable. | ❒ | ❒ |
| 9. (Assume the names of donators to environmental association and amounts given are published) | | |
| A. You donate €300/year to an environmental association; others donate €400/year. | ❒ | ❒ |
| B. You donate €300/year to an environmental association; others donate €300/year. | ❒ | ❒ |
| C. You donate €200/year to an environmental association; others donate €100/year. | ❒ | ❒ |