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Empathy, Sympathy, and Tax Compliance

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Abstract

This paper examines the effect of empathy and sympathy on tax compliance. We run a series of laboratory experiments in which we observe the subjects decisions in a series of one-shot tax compliance games presented at once and with no immediate feedback. Importantly, we employ methods to identify subjects sympathy, such as the Davis Empathic Concern Scale and questions about frequency of prosocial behaviors; we also use priming in order to promote subjects empathy. Our results suggest that the presence of sympathy in most cases encourages more tax compliance. Our results also suggest that priming to elicit empathy also has a positive impact on tax compliance. These results support the inclusion of noneconomic factors in the analysis of tax compliance behavior.

Keywords: tax evasion; emotions; morality; identity; behavioral economics; experimental economics
JEL: H26; C91

Empathy, Sympathy, and Tax Compliance

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ABSTRACT
This paper examines the effect of "empathy" and "sympathy" on tax compliance. We run a series of laboratory experiments in which we observe the subjects' decisions in a series of one-shot tax compliance games presented at once and with no immediate feedback. Importantly, we employ methods to identify subjects' sympathy, such as the Davis Empathic Concern Scale and questions about frequency of prosocial behaviors; we also use priming in order to promote subjects' empathy. Our results suggest that the presence of sympathy in most cases encourages more tax compliance. Our results also suggest that priming to elicit empathy also has a positive impact on tax compliance. These results support the inclusion of noneconomic factors in the analysis of tax compliance behavior.

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1. Introduction

One intriguing, and largely unexplained, aspect about tax compliance is that most people pay most of their legally due taxes most of the time. Even though there are very strong incentives to evade taxes due to low probabilities of audit and small penalties, taxpayer compliance is typically higher than predicted by the standard Allingham and Sandmo (1972) economic theory of compliance (Webley et al., 1991; Alm, McClelland, and Schulze, 1992; Feld and Frey, 2007).

Some researchers have given noneconomic arguments for this compliance behavior. An important factor here is morality. As Eisenhauer (2006) argues, many terms have been used as synonyms for "morality", including "…ethics, virtue, a conscience, a feeling of guilt over wrongdoing, honesty, altruism, willingness to cooperate, fairness, a sense of duty, and social responsibility". We consider "morality" to be a set of personal rules that may lead to a feeling of happiness if the individual acts according to these standards of conduct and to a feeling of guilt or embarrassment if the individual acts differently.

As emphasized by Alm and Torgler (2011), it is crucial to consider such ethical dimensions of individuals in order to understand tax compliance. Individuals may have personal moral rules, they may incur psychic costs for not paying taxes and free-riding on the tax payments of others, or they may feel good about themselves for being virtuous and paying taxes. In fact, there is some evidence that morality affects how individuals make decisions generally and tax compliance decisions specifically (Schwartz and Orleans, 1967; Baldry, 1986; Coricelli et al., 2010). We believe that morality should be considered when studying tax compliance behavior, especially as a factor that can explain compliance levels that are higher than predicted by standard economic theory.

Of course, morality is a complex issue, and we are not able to cover all of its aspects. Instead, we focus on two moral emotions that have not often been explored in economics, especially in the analysis of tax compliance: sympathy and empathy. "Empathy" is an affective state of "putting yourself in someone else's shoes", in which an individual feels the same or a similar emotion as the other person (Batson and Coke, 1981). "Sympathy" is considered an emotional response of sorrow or concern for another's wellbeing caused by the other's emotional state, a response that is not identical to the other's emotion.[1] Many psychologists argue that sympathy and empathy motivate moral behavior and play an important part in morality (Eisenberg, 2000). To our knowledge, there is no evidence on the association of these moral emotions with tax compliance.[2]

We include the concepts of sympathy and empathy in order to examine the effects of morality on tax compliance via an individual's moral identity. For this, we create a theoretical model including a moral self-perception component that is affected by those two moral emotions, and we analyze theoretically how these influence individual behavior in paying taxes. In order to test the main hypothesis from our theory, we then run a series of laboratory experiments in which we observe the subjects' decisions in a series of one-shot tax compliance games presented at once and with no immediate feedback. Importantly, we employ methods such as the Davis Empathic Concern Scale and questions about frequency of prosocial behaviors in order to

[1] There are other related and overlapping notions, such as "altruism", typically interpreted as a concern for others, unconditional upon rewards or punishments. Altruism is often modeled via the inclusion in an individual's utility function of another agent's utility or monetary payoff. It should be noted that in our theory (as demonstrated later) an individual does not gain utility from feeling empathy or sympathy and that utility does not depend upon other individuals' utilities or monetary payoffs. Rather, we assume that an individual's utility depends on her actual behavior compared to her morally ideal behavior.

[2] However, some effort has been done in terms of adding other moral emotions, such as guilt and shame, on theoretical models of tax compliance, as we discuss later. Also, Coricelli et al. (2010) provide an important contribution linking emotions to tax compliance. In their experiment, they measure emotions by skin conductance responses and self-reported questionnaires, and they find that higher emotional arousal (which may be interpreted as feelings of anxiety or guilt based on their study) are positively associated with the probability of evading taxes and the amount evaded. As they state, their "findings also strongly support the importance of tax morale and justify incorporating moral dimensions in the standard models of tax compliance".

identify subjects' sympathy. We also use priming in one session in order to promote empathy, in an attempt to examine the impact of moral appeals on tax compliance.[3]

Our results suggest that the presence of sympathy in most cases encourages more tax compliance. Our results also suggest that priming to elicit empathy also has a positive impact on tax compliance. These results support the inclusion of noneconomic factors in the analysis of tax compliance behavior.

2. Theoretical Framework

The basic theoretical model in nearly all tax compliance analysis begins with the economics-of-crime model of Allingham and Sandmo (1972). An individual taxpayer *i* is assumed to receive an income I_i that is known to him but not to the tax authority. The taxpayer chooses income to declare D_i, on which he pays taxes at rate *t*. He does not pay taxes on undeclared income, but he faces a fixed and exogenous probability of audit *p*, in which case all evaded taxes are detected and fined at rate *f*, based on the evaded taxes. Defining I_{NC} (after-tax income if not caught) and I_C (after-tax income if discovered) as $I_{NC} = I_i - tD_i$ and $I_C = I_i - tD_i - f[t(I_i - D_i)]$, the individual is assumed to choose D_i so as to maximize a von Neumann-Morgenstern expected utility function (where *E* is the expectation operator), or $EU = (1-p)U(I_i - tD_i) + pU(I_i - tD_i - f[t(I_i - D_i)])$. Comparative statics analysis is straightforward and (largely) intuitive (Alm, 2012).

[3] In related work, Schwartz and Orleans (1967) and Blumenthal, Christian, and Slemrod (2001) also examine the effect of moral appeals on tax compliance behavior. In each case, they use a field experiment in which a group of taxpayers receive a moral appeal letter before filling their tax returns. Schwartz and Orleans (1967) find that conscience appeals have a greater effect on declared income compared to punishment threats; Blumenthal, Christian, and Slemrod (2001) find a significant impact for some groups but only a small overall effect. Similarly, McGraw and Scholz (1991) present to a group of taxpayers a video appealing to social responsibility, and find that their moral appeal does not change compliance.

This framework has proven enormously useful. Its central result – that compliance depends upon enforcement – is important and insightful. However, this approach (together with its many extensions) also concludes that an individual pays taxes *only* because of the economic consequences of detection and punishment, and it is clear to many observers that compliance cannot be explained entirely by such purely financial considerations, given the actual levels of audits and fines. Although compliance varies significantly across countries (and across taxes) and is often quite low, compliance seldom falls to a level predicted by the basic Allingham and Sandmo (1972) theory of compliance.

Accordingly, our framework incorporates some notions from this basic economics-of-crime model, but it is also incorporates additional notions that rely on morality. There are many ways of incorporating morality in the tax compliance decision. Gordon (1989) adds an individual's "honesty characteristic", which acts as a private psychic cost and which affects evasion negatively. Erard and Feinstein (1994) offer a model with one's moral sentiments of guilt and shame when evasion is chosen. They find that, when they use their more realistically constrained models, the effects of guilt and shame diminish the extent of tax evasion. Guilt is the most common moral emotion used in research, and in the mathematical formulations of behavior it is often considered a psychic cost, or an emotion that may result from not behaving according to one's own ideal behavior. According to Akerlof and Kranton (2010), one's "ideal behavior" may be defined in terms of "exemplary characteristics and behavior associated with a social category". In this view, individuals in different social categories "should" behave differently because they follow different norms or prescriptions in order to preserve their self-image or identity within these social categories.

We use the idea of a moral identity to determine its effects on tax compliance. We separate individuals into two groups: moral and amoral. As suggested by Alm and Torgler (2011), we view a "moral" individual as one who considers paying taxes as the ethical norm; if the individual behaves differently, then he or she may incur a psychic cost, and may also feel pleased if there is full compliance for doing "the right thing". An "amoral" individual has an ideal behavior that may not be to comply fully with taxes, and indeed he or she may feel happy if behavior is noncompliant.

Specifically, our framework is based on the idea that every individual has two different components in his utility function. The first part is expected utility, as in the Allingham and Sandmo (1972) formulation. The second part is called the "moral identity utility" (Akerlof and Kranton, 2010), which is the gain or loss in utility from conforming or not to an individual's "ideal behavior".[4] This part of utility is denoted $\theta_i (\overline{D} - D_i)$, where θ_i is the moral utility or preference coefficient, $\overline{D}$ is the ideal behavior that individual i wants to follow, and D_i is again declared income. The ideal behavior is based on the category to which the individual belongs, either "moral" or "amoral". The moral identity utility is then a function of the difference between what the individual considers ideal behavior $\overline{D}$ and the actual behavior D_i. This ideal behavior $\overline{D}$ is assumed to equal to I_i (i.e., full income) for moral individuals, while it is less than I_i for amoral individuals. Thus, if he does less than his morally ideal behavior, then his moral identity and his utility are affected negatively, a negative effect that can be considered a feeling of guilt or frustration that is independent of tax evasion being detected. If actual behavior approaches the morally ideal behavior, then the individual may feel happy for doing what he thinks it is right.

[4] Note that moral identity utility is consistent with a number of other approaches that often (although not always) emerge from behavioral economics, invoking notions such as social norms, social customs, tax morale, appeals to patriotism or conscience, or feelings of altruism, guilt, and alienation. For example, see Cowell and Gordon (1988), Elster (1989), Gordon (1989), Myles and Naylor (1996), Kim (2003), Fortin, Lacroix, and Villeval (2007), and Traxler (2010).

The resulting utility function is a convex combination of the basic model of tax compliance by Alllingham and Sandmo (1972) and the moral identity utility by Akerlof and Kranton (2010). Specifically, we assume that the individual now maximizes

$$EU_i^T = EU_i(I_i) - \theta_i(\overline{D} - D_i), \tag{1}$$

where EU_i^T is the total expected utility of individual i, EU_i is expected utility defined as before, and $\theta_i(\overline{D} - D_i)$ is the moral identity utility.

It is through the moral identity utility that empathy and sympathy enter. We make several assumptions here. First, we assume that a moral individual has higher levels of empathy and sympathy, since these emotions are related to morality, and thus his moral coefficient has a higher value than an amoral individual. Second, we assume that the moral identity utility can be changed or manipulated by a third party. For example, eliciting empathy can affect one's moral identity by increasing the importance of the moral coefficient θ_i, hence changing an amoral individual's ideal behavior to a moral individual's level. Third, we assume that sympathy and empathy increase the utility impact of morality at a decreasing rate. Overall, then, we assume that the moral identity coefficient θ is determined by $\theta = \theta_i(\varepsilon_i, \sigma_i)$, where ε_i is the level of empathy for individual i and σ_i is the degree of sympathy.[5]

Maximizing (1) gives the following first- and second-order conditions:

$$\frac{\partial EU^T}{\partial D} = -t(1-p)\frac{\partial U}{\partial I_{NC}} - tp(1-f)\frac{\partial U}{\partial I_C} + \theta = 0 \tag{2}$$

$$\frac{\partial^2 EU^T}{\partial D^2} = t^2(1-p)\frac{\partial^2 U}{\partial I_{NC}^2} + pt^2(1-f)^2\frac{\partial^2 U}{\partial I_C^2} < 0. \tag{3}$$

[5] It is straightforward to introduce a public good that is financed by all individuals' tax payments. Our experimental design allows for such a public good. For now, we limit our analysis to the case where no public good is provided.

Under standard assumptions (e.g., $\frac{\partial^2 U}{\partial I^2} < 0$), the second-order condition is satisfied.

Some insights into the effects of morality on compliance can be determined from the conditions for an interior solution. These conditions require that

$$\left.\frac{\partial EU^T}{\partial D}\right|_{D=0} = -t(1-p)U'(I) - pt(1-f)U'[I(1-ft)] + \theta > 0, \tag{4}$$

$$\left.\frac{\partial EU^T}{\partial D}\right|_{D=I} = -t(1-pf)U'[I(1-t)] + \theta < 0, \tag{5}$$

which can be rewritten as

$$\theta > t\{(1-p)U'(I) + p(1-f)U'[I(1-ft)]\} \tag{4'}$$

$$\theta < t(1-pf)U'[I(1-ft)]. \tag{5'}$$

Equation (4') says that and individual declares more than zero income if his moral coefficient is higher than the marginal utility of income from declaring zero income. Equation (5') states that he declares less than full income if his moral coefficient is lower than the marginal utility of income from declaring full income. In other words, a higher moral coefficient makes it more likely that an individual declares at least some income and that he declares his full income.

Other insights can be determined from comparative statics analysis. Using the implicit function theorem, the impact of empathy ε is given in general by

$$\frac{\partial D^*}{\partial \varepsilon} = -\frac{\partial \theta / \partial \varepsilon}{t^2(1-p)\frac{\partial^2 U}{\partial I_{NC}^2} + pt^2(1-f)^2\frac{\partial^2 U}{\partial I_C^2}}. \tag{6}$$

It is easily shown that that $\frac{\partial D^*}{\partial \varepsilon} > 0$, so that an increase in the degree of empathy leads to an increase in declared income. A symmetric result can be derived for the level of sympathy σ, so that greater sympathy also has a positive effect on declared income.

This theoretical framework provides the basis for our experimental tests. Specifically, we test the hypotheses that an increase in the level of empathy and in the level of sympathy encourages more tax compliance from individuals. Our experimental design is discussed next.

3. Experimental Design

We use experimental methods to study how moral emotions affect tax compliance behavior. As argued by Alm and McKee (1998), laboratory methods seem well designed to examine at least some aspects of compliance behavior. Theoretical models are not able to incorporate fully, appropriately, or tractably many factors deemed relevant to the individual compliance decision. Empirical studies of tax compliance based on field data are plagued by the absence of reliable information on individual compliance decisions, and they are often unable to achieve the identification necessary to determine the independent impacts of many factors that affect the compliance decision. Laboratory methods allow many factors suggested by theory to be introduced separately and independently in controlled settings. Also, experiments generate precise data on individual compliance decisions. Indeed, laboratory methods have examined a wide range of factors in the compliance decision, factors that have not proven amenable to either theoretical analyses or empirical analyses with field data. There are some obvious limitations of experimental methods. However, given the weaknesses of other methodologies, we believe that there are some compelling reasons for the use of experiments.

The experiment is conducted in four sessions (S1 to S4) involving different groups of subjects. Each session has several common features. Each session starts with General Instructions on basic experimental procedures. Then, subjects play the "Tax Compliance Game", as discussed in detail later. Each session concludes with a questionnaire used to elicit

information on the subjects, including the frequency of prosocial behaviors and the Davis Empathic Concern Scale that we assume measures different aspects of sympathy. Finally, one session (Session 3) includes a "Priming" activity designed to generate feelings of empathy. The priming activity is also discussed in detail later. Basic instructions are included in Appendix A, and the Priming instructions are in Appendix B.

3.1. Identifying and Promoting Empathy and Sympathy

The experiment is designed to identify and to promote the moral emotions of empathy and sympathy on participant. We use two methods to identify information about sympathy: the Davis Empathic Concern Scale (DECS) and the frequency of prosocial behaviors. We use one method to promote empathy: priming.

One measure to identify sympathy is based on the DECS. All participants are asked to respond to the DECS in their questionnaire after all decision tasks. The DECS is a subset of the Interpersonal Reactivity Index (IRI) developed by Davis (1980, 1983). The entire scale has the goal of assessing the empathy of the individual, defined as the degree to which "the individual puts himself or herself in the position of someone who is more 'unfortunate'". In order to focus on how much someone is concerned about other people in need, we use a subset of the IRI, the DECS, which evaluates the propensity of an individual to experience feelings of sympathy for unfortunate people. This scale consists of seven items. For example, one of the items is "I often have tender, concerned feelings for people less fortunate than me". The respondents are asked to specify if these items describe them well or not, with values ranging from 0 ("does not describe me very well") to 4 ("describes me very well"). The scale is very simple, and it has been shown to have internal and test-retest reliability (Davis, 1983).[6] Indeed, our estimation of the

[6] Internal reliability refers to how consistent a measure is within itself. Usually questions that measure the same concept (e.g., empathy) are divided into groups, and asked to the same participant. If the responses for these groups

Chronbach's alpha coefficient is 0.81, meaning that the scale has good reliability. The scores of our subjects range from 0 to 28, and we separate the sample into three groups based on their scores: those with a score of 21 or higher; those with a score between 14 and 20 inclusive; and those who got less than 14.The median value of DECS score is 21.

A second measure to identify sympathy uses the results of our questionnaire in which there are questions about the frequency of prosocial behaviors in the past year. These variables can be considered as an approximation for one's level of sympathy. Subjects are asked to answer how many times they have donated blood, given money or food to a homeless person, given money to a charity, and/or done volunteer work in the past 12 months. We create one dummy variable for each type of prosocial behavior identified in the questionnaire, equal to 1 when the individual has done the activity at least once in the past year and 0 otherwise. Subjects who have donated blood or money to charities or homeless people at least once in the past year are grouped as *Donors*, and subjects who have been done volunteer work are grouped as *Volunteers*; those who have not participated in these types of activity are grouped as *Non-donors* and *Non-volunteers*, respectively.

To promote empathy, we use another technique: "priming". Many psychologists have used different tasks to elicit attitudes or values explicitly or implicitly (i.e., to "prime"). According to Bargh and Chartrand (2000), "…priming studies are concerned with the temporary activation states of an individual's mental representations and how these internal readiness interact with environmental information to produce perceptions, evaluations, and even motivations and social behavior". Our purpose is to promote empathy in a group of subjects before they face tax compliance decisions. In one session (S3), we ask subjects to write in their

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of questions provide similar results, then there is internal reliability. Test-retest reliability occurs if the same participant has similar results when she takes the same test again after a period of time. See Davis (1980).

own words the definition of the Golden Rule after reading versions of the same moral rule in six different religions; following this priming, the subjects complete the tax compliance pat of the experiment. In all other sessions, subjects do not complete the priming task.

3.2. Tax Compliance Game

In all sessions, subjects participate in a "Tax Compliance Game". The game consists of 6 independent one-shot tax compliance decisions with different settings of audit probabilities, penalties, and returns from the tax amount paid. These decisions are presented at the same time, and are made without any feedback about other participants' decisions. The design of the Tax Compliance Game is summarized in Table 1.

Subjects are organized in groups of 4, and each subject is given an income of ten dollars for each decision. Subjects are told that they must decide how much of their income they want to declare to a "Tax Authority". Subjects pay taxes on declared income, and they do not pay any taxes on undeclared income. However, subjects face a possibility of an audit, at which point all undeclared taxes will be discovered and they will have to pay taxes on their undeclared income plus a penalty equal to a multiple of that value. The audit is determined by the draw of a ball from a box that contains a total of ten red and white balls. If a red ball is drawn, everybody is audited; if a white ball is drawn, there is no audit. The tax rate is the same for all decisions (or 30 percent). The audit and fine rates vary throughout the session.

There is also a public fund for most decisions (Decisions 2 to 6). Here the original amount of taxes collected in each group is doubled, and the resulting amount is the "public fund". This public fund does not include tax and penalties paid due to failure to comply with taxes. In most cases (Decisions 2 to 5), the public fund is returned fully to the group, divided equally among its members, so that the individual share is1/4. In Decision 6, the public fund is

divided equally between the group and a set of charities chosen by its members; in this case, each member gets half of the amount they would receive if the public fund returned in full to the group, so that the individual share is 1/8. In Decision 1 there is no public fund.

There are several reasons to have a tax compliance game designed as 6 independent one-shot games. First, we want to have information about subject behavior under different values of the main parameters that can affect decisions in a tax setting: audit probability, penalty rate, and returns from tax payments. The manner by which the game was designed allows us to isolate the separate effect of variations in each parameter. Second, by not providing feedback about others' decisions, there is no chance of potentially confounding negative or positive reciprocity effects among players, even when there is a public fund. Third, even though there are reasons to have many rounds for tax compliance game such as learning through experience, we believe that collecting the same amount of information about the effects of those main parameters without making the subjects being overly tired from the experimental session, and so we limit the number of decisions to 6.

3.3. Experimental Procedures

The experiment was conducted in the Experimental Economics Center (ExCEN) at Georgia State University. Over one hundred participants overall were recruited from the pool of undergraduate and graduate students, and they can participate only once. No subjects previously participated in any tax compliance experiments. Of the total participants, 62 percent were females, 58 percent were African-Americans, 24 percent were white, and 13 percent were Asian. Over eighty percent of the subjects self-identified their religion as Protestant, Catholic, Christian, or Eastern (i.e., Buddhism, Hinduism, Islam), and another 11 percent said that they had some "Spiritual" beliefs even if they did not follow a specific religion. In all sessions we retained one

additional participant who volunteered to be a monitor whose function was to verify that the experiment was conducted according to the instructions. Each monitor was paid based on the average of the highest payoff possible in each session.

This was a hand-run experiment with computer assistance for calculations. Upon arrival at the laboratory, participants were assigned to a computer station. General instructions for the experiment were given at the beginning of each session, telling subjects the structure of the experiment and the way in which payoffs would be determined. Subjects knew how many parts and how many decisions they would face; however, they were not yet aware of the specific nature of the decisions. Only when the instructions for each part were distributed did they have access to this information. After the general instructions, the instructions for the first part were distributed. Once they completed this part, the instructions were collected. Then, the following instructions were distributed and also collected after completion. This process went on until all parts of the experiment, including the questionnaire, were done. All subjects had reasonable time to complete each part.

In all sessions, no communication among the participants was allowed. If the subjects had any questions, the experimenter came to them and answered the question in private. If the experimenter believed that the question was one that other subjects would benefit from, then the question and the explanation were given to the entire group. Also, subjects could only be identified by their key numbers (only they know that number), and the subject payoffs were distributed through the use of mailboxes. Thus, neither the subjects nor the experimenter could associate a specific person with specific decisions, keeping privacy and anonymity. At the end of each session, each subject collected the payoff using a key to open a mailbox, inside which was an envelope containing the earnings.

All decisions in the experiment, excluding the priming activity, were numbered successively. The final payoffs were determined by the draw of a numbered ball from a cage containing all the numbers of decisions. Participants were paid only for the decision randomly chosen. Goeree, Holt, and Laury (2002) argue that paying for only one decision stimulates subjects to think more clearly about each individual decision and the consequences that each decision may have on their future payoffs, compared to paying for all decisions.

In addition to the earnings for the decision selected, participants were paid a $5 show-up fee, and they received $1 for completing each of the two examples, $5 for the priming activity, and $8 for the questionnaire. They did not know in advance how much they would receive for each of these items. Earnings ranged between $23.50 and $33, with an average payoff of $27.35. The sessions lasted about two hours, including the time for subject payment.

Before their actual decisions were made in the Tax Compliance Game, subjects were required to write their decisions and their respective payoffs with and without an audit in two practice examples that were similar to the real ones. The purpose of the practice examples was to check subjects' understanding of the task. After they completed the practice examples, the decision sheet containing all of the six scenarios as presented in Table 1 was distributed. During the completion of the practice examples and of the real tasks, each participant was able to consult a computer that presents in a protected Excel spreadsheet the calculations for each type of decision. In the Excel worksheets, there was also a cell in which they could enter their expectations about how much they think someone else in the group would declare. This information is important in order to provide more accurate numbers for the returns of the public fund in the decisions in which this public fund was available.

In order to provide the appropriate tax setting context, the Tax Compliance Game used tax terminology (e.g., tax rates, penalty rates, audit rates, reported income), rather than more neutral terms. The full sets of instructions for all parts of the experiment are in the Appendices.

4. Results

We separate the results into summary statistics showing the effects of empathy and sympathy variables on the average individual compliance rates and regression results in which those separate effects are better isolated. We also use principal component analysis in our analysis, in order to construct a composite index of sympathy.

4.1. Summary Statistics: Average Individual Compliance Rates

The definitions and summary statistics for all variables are shown in Table 2. In Table 3 we show the average individual compliance rates disaggregated across groups by treatment. The *Individual Compliance Rate* is calculated by dividing the tax reported by the total tax owed for each subject, and the *Average Individual Compliance Rate* is calculated as a simple average across all subjects and decisions within each group.

As shown in Table 3, we observe statistically significant differences in compliance at 5 percent level for groups that are primed versus not primed, demonstrating the impact of our attempts to promote empathy on compliance. As for our attempts to identify sympathy, we also see statistically significant difference in compliance for blood donors versus non-donors and for volunteers versus non-volunteers. These results indicate a positive relationship between empathy and sympathy measures and tax compliance, although the relationship is relatively small, or about 4 percent for both empathy and sympathy. However, these results do not control for other determinants of compliance.

4.2. Summary Statistics: Sympathy Measures

It is also of interest to analyze the effect of sympathy on tax compliance by grouping the variables used in this study, the DECS measure and the various measures of prosocial behavior. We first present some summary statistics of these variables, and we later create a composite index using principal components analysis (or factor analysis).

Table 4 shows the percentage of subjects broken down into the relevant groups that have done one of the prosocial behaviors at least once in the past year. It is important to note that some of those who are considered either non-donors or non-volunteers in some activities may engage in other prosocial behaviors. For instance, 15 of 16 blood donors (94 percent) volunteered in the past year at least once, while 53 of 71 subjects who have not donated blood (75 percent) have volunteered in the past year. Moreover, those who have volunteered are more likely to donate money to the homeless and to a charity. About 81 percent of volunteers have given money to the homeless, and about 71 percent have given money to a charity. Also, a lower percentage of non-volunteers have done these two prosocial activities, which amounts to more than a half of all non-volunteers.

These results suggest that our variables are relative, but not absolute, measures of sympathy. Therefore, grouping these variables could lead to a better measure of sympathy since grouping takes into account the possibility of an individual having a higher level in only one or more of our variables. We do this grouping next.

4.3. Creating a Composite Index of Sympathy

To create a composite index, we use principal component analysis. This multivariate analysis method examines the underlying relationships for a number of variables (e.g., test scores and questionnaires responses), and establishes if the information can be summarized in a smaller

set of hypothetical variables (Hair et al., 1995; Kim and Mueller, 1978). Our goal is to create a composite index using our sympathy variables. These variables are *DECS Score* and the dummy variables of the prosocial behaviors (*Blood donor*, *Giving to homeless*, *Giving to charity*, and *Volunteer*). We use the *DECS Score* as an ordinal variable varying from 0 to 28; we also use the frequency of the prosocial behaviors each measured as the number of times that a subject has performed the activity in the past year (from 0 to 3).

The first step is to examine the correlation among these variables, as shown in Table 5. These measures do not seem to have very strong correlations. However, the Barlett test of sphericity indicates that the correlations in general are significant at the 0.01 percent significance level. Also, the measure of sampling adequacy is 0.557, which is acceptable according to Hair et al. (1995).

Because of the low correlation coefficients between *DECS Score* and the prosocial behavior variables (mostly around 0.1), we eliminate *DECS Score* from our analysis. Among the other sympathy variables, the highest correlation coefficient, 0.33, is between *Volunteering* and *Blood donation*. The other high coefficients are *Giving to homeless* and *Giving to charity* (0.32), and between *Giving to charity* and *Blood donation* (0.28). As expected, all these relationships are positive. Nevertheless, some correlation coefficients indicate a weak negative, even a zero, relationship between some sympathy variables. For example, the coefficient between *Volunteering* and *Giving to homeless* is -0.015, which may indicate that there are other factors affecting an individual's preferences for a specific prosocial behavior.

One important issue to consider is the difference in the costs of certain prosocial behaviors for example. Some activities are considered high-cost prosocial behavior because they require some cognitive understanding of other people's needs and because they may elicit a

cognitive conflict between values, motives, personal needs, and desires (e.g., donating blood or volunteering); low-cost prosocial actions are performed without any cognitive reflection or moral considerations (e.g., helping someone pick up dropped papers) (Miller, Bernzweig, Eisenberg, and Fabes, 1997; Eisenberg, Losoya, and Guthrie, 1997). Thus, there may be personal traits or other factors affecting the decision to choose one prosocial action over another, perhaps based on the costs associated with them.

The principal component analysis identifies the underlying structure among variables (called "factors") and creates a new set of variables based on that. Table 6 presents the information about four possible factors and their relative explanatory power shown by their "eigenvalues".[7] A high eigenvalue means that the factor contributes significantly to the explanation of variances in the variables; a low eigenvalue means the opposite. The most commonly used method to select the factors to keep in the principal components analysis (latent root criterion) is to consider only the factors whose eigenvalue is greater than 1. Based on the latent root criterion and on the eigenvalues shown in Table 6, there are two factors that summarize the original set of observed prosocial behavior variables: *Factor1* and *Factor2*.[8] Moreover, in Table 7, it is possible to visualize the "factor loadings" (i.e., the correlation between the original variables and the "factors"). *Factor1* has a high correlation coefficient with *Volunteering* and *Blood donation* whereas *Factor2* is strongly correlated to *Giving to homeless* and *Giving to charity*. These results suggest that we can separate the prosocial behaviors into two groups. We decide to separate them based on the cost of performing the activity, as explained earlier in this section. We believe that volunteering and donating blood require more effort (in

[7] As defined by Hair et al. (1995), a "factor-underlying structure" summarizes the original set of observed variables, and an "eigenvalue" is the amount of variance in all the variables accounted for by a factor.
[8] It is possible to restrict the number of factors extracted from the principal components analysis. When we limit the extraction to only one factor that could group the original variables to one variable of "sympathy", we do not find statistically significant results. Thus, we follow the latent root criterion, which gives some significant results.

terms of time and disposition) than giving money to charity or to the homeless. We therefore have *Factor1* representing the high-cost prosocial actions (*Volunteering* and *Blood donation*) and *Factor2* indicating the low-cost prosocial actions (*Giving to homeless* and *Giving to charity*). The effects of *Factor1* (high-cost) and *Factor2* (low-cost) on tax compliance are examined next, along with other variables.

4. 4. Regression Results

In order to control for the many possible determinants of compliance, especially sympathy and empathy, we use regression analysis. We measure tax compliance in two different ways: *Individual Compliance Rate* and *Individual Full Compliance*. *Individual Compliance Rate* is calculated by dividing the tax reported by the total tax owed for each subject; *Individual Full Compliance* is a binary variable showing if the subject reported the entire income to the Tax Authority, equal to 1 for full compliance and 0 otherwise. We use both pooled OLS regressions and logit regressions. These results are reported in Table 8.

The first two regressions in Table 8 are based on pooled OLS estimation for *Individual Compliance Rate*. The difference between these two regressions is how the sympathy variables are presented. In specification (1), we show the level of importance of the relationship between each prosocial behavior variable and the *Individual Compliance* Rate. In specification (2), instead of examining each prosocial behavior separately, the variables derived from our factor analysis, *Factor1* and *Factor2*, are taken into account. Specifications (3) and (4) repeat the analysis using *Individual Full Compliance* as the dependent variable, where we use logit methods to estimate these specifications given the binary nature of the dependent variable.

Of main interest are the empathy and sympathy variables. As can be seen in the OLS regressions, *Priming* has a statistically significant and positive relationship with compliance. At

the 5 percent significance level, *Priming* increases compliance by 10 percent, which is higher than the effects of, say, an increase in the penalty rate or of church attendance (approximately 8 percent and 3 percent, respectively). Hence, empathy created from the priming activity encourages positive behavior such as tax compliance.

As for the sympathy variables, only *Giving to charity* is statistically significant (at 10 percent). Perhaps surprisingly, donating money to a charity at least once in the past year is associated with less compliance, or a decrease of 7 percent. This result can also be seen in the second OLS regression in which participating in low-cost prosocial behaviors or *Factor2* (which is strongly correlated to *Giving to charity*) is related to lower tax compliance. This negative relationship between sympathy (as measured by *Giving to Charity* variable) and tax compliance differs from our expectations. Either sympathy seems to encourage negative behavior such as tax evasion or *Giving to Charity* may not be an adequate measure of sympathy.

The logit regressions for *Individual Full Compliance* give results that are similar to the OLS estimation. Based on specification (3), those who participated in the priming activity are 76 percent more likely to comply fully with taxes than those who did not. The probability decreases to 57 percent in specification (4), using the factor analysis variables. These results, both at 10 percent significance level, reinforce the positive relationship between *Priming* and tax compliance, thus meaning that some exposure to moral instruction may change the inclination to a negative behavior such as tax evasion.

In terms of sympathy, there are two variables that are statistically significant at the 1 percent level in the logit estimations: volunteering and giving money to a charity. Being a volunteer has a positive impact on the probability of full compliance. However, *Giving to charity* again increases the probability of tax evasion. Similar results are observed in the logit regression

with the factor variables. We expect to see sympathy variables affecting tax compliance in the same way since they represent the same concept in our study. Nevertheless, they seem to have different effects. This indicates that some variables may not be good proxies for sympathy.

Furthermore, enforcement variables (*Audit rate* and *Penalty rate*) have the expected positive impact on compliance at the 1 percent level. This impact is greater than the amount observed for the empathy and sympathy variables. This result is in accordance with the idea that tools that are likely to enhance morality should not be a replacement for punitive fines, but should be used in conjunction with deterrence. As Bardach (1989) argues, if punishment is more costly than moral improvement tools, then the latter may be a worthwhile strategy even if they increase compliance by a small amount.

5. Conclusions

The standard portfolio model of tax compliance does not adequately explain why there is so much tax compliance even when the rates of detection and penalties are small. Many researchers emphasize that there are noneconomic reasons that may influence this decision. In this paper, we investigate the moral aspects of the tax compliance decision by considering the roles of two moral emotions in tax compliance: sympathy and empathy.

In our theoretical model, we observe that, with higher levels of sympathy and empathy, the moral preference coefficient increases and tax evasion decreases. We test this theory using experimental methods, in which we both identify and promote these moral feelings. Regarding our measures of sympathy, the experimental results are consistent with the notion that our measures are often associated with more tax compliance. For example, we observe a positive relationship between giving (broadly defined) and tax compliance; that is, those who have

donated blood or who have done volunteer work at least once in the past year are less inclined to evade taxes than those who have not. Somewhat surprisingly, giving money to a charity tends to increase tax evasion (as does giving money or food to the homeless). These somewhat inconsistent results reinforce the notion that some of the sympathy variables may not be good proxies for this moral emotion.

Regarding our promotion of sympathy, we investigate the effect of priming that elicits empathy on tax compliance. We find that priming has a positive and significant impact on tax compliance.

In total, these results reinforce the idea that noneconomic factors should be taken into consideration not only in tax compliance behavior but likely in many individual decisions as well. There is increasing evidence that moral considerations play an important role in behavior. Our results contribute to the view that individuals are influenced by morality, social norms, and a sense of fairness.

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Table 1. Design of One-shot Tax Compliance Game

Decision	Tax rate	Audit rate	Fine rate	Public fund multiplier	Public fund	Individual share (public fund)
1	30%	30%	3	-	No	-
2	30%	30%	3	2	Fully returned	1/4
3	30%	50%	3	2	Fully returned	1/4
4	30%	10%	3	2	Fully returned	1/4
5	30%	30%	5	2	Fully returned	1/4
6	30%	30%	3	2	Partially returned	1/8

[a] In Decision 6, 50 percent of the public fund goes to the charity and 50 percent goes to the group, so the individual share of the public fund is 1/8.

Table 2. Summary Statistics

Variable	Definition	Mean	Standard Deviation
Priming	Dummy variable equal to 1 if the subject has the priming activity and 0 otherwise	0.500	0.505
DECS score group (21-28)	Dummy variable equal to 1 if the subject got 21 or more in the Davis Empathic Concern Scale and 0 otherwise	0.505	0.503
DECS score group (14-20))	Dummy variable equal to 1 if the subject got a score between 14 and 20 in the Davis Empathic Concern Scale and 0 otherwise	0.374	0.486
DECS score group (0-13)	Dummy variable equal to 1 if the subject got a score between 0 and 13 in the Davis Empathic Concern Scale and 0 otherwise	0.121	0.328
Blood donor	Dummy variable equal to 1 if the subject has donated blood during the past 12 months and 0 otherwise	0.181	0.387
Giving to homeless	Dummy variable equal to 1 if the subject has given food or money to a homeless person during the past 12 months and 0 otherwise	0.792	0.408
Volunteer	Dummy variable equal to 1 if the subject has done volunteer work during the past 12 months and 0 otherwise	0.791	0.409
Giving to charity	Dummy variable equal to 1 if the subject has given money to a charity during the past 12 months and 0 otherwise	0.685	0.467
Declared income	Income declared to the Tax Authority	7.937	3.378
Individual compliance rate	Individual tax paid/tax owed	0.794	0.338
Audit rate	Probability of an audit	0.332	0.125
Penalty rate	Penalty rate on evaded taxes	3.253	0.666
Public fund	Dummy variable equal to 1 if there is a public fund and 0 otherwise	0.833	0.373
Public fund to charity	Dummy variable equal to 1 if the public fund goes partially to charities chosen by the group and 0 otherwise	0.127	0.333
Experienced	Dummy variable equal to 1 if the subject is familiar	0.869	0.339

	with other economic experiments		
Times of experience	Number of times the subject has participated in economics experiments if experienced	4.430	2.822
Sophomore	Dummy variable equal to 1 if the subject is a sophomore and 0 otherwise	0.162	0.370
Junior	Dummy variable equal to 1 if the subject is a junior and 0 otherwise	0.343	0.477
Senior	Dummy variable equal to 1 if the subject is a senior and 0 otherwise	0.384	0.489
Graduate	Dummy variable equal to 1 if the subject is a graduate student and 0 otherwise	0.111	0.316
Economics major	Dummy variable equal to 1 if the subject is an economics or business major and 0 otherwise	0.286	0.454
Age	Age of the subject	21.768	3.738
Female	Dummy variable equal to 1 if the subject's gender is female and 0 if male	0.616	0.489
White	Dummy variable equal to 1 if the subject's race is white and 0 otherwise	0.235	0.426
Black	Dummy variable equal to 1 if the subject's race is black and 0 otherwise	0.582	0.496
Asian	Dummy variable equal to 1 if the subject's race is Asian and 0 otherwise	0.133	0.341
US born	Dummy variable equal to 1 if the subject was born in the U.S. and 0 otherwise	0.828	0.379
Protestant	Dummy variable equal to 1 if the subject is Protestant and 0 otherwise	0.303	0.462
Catholic	Dummy variable equal to 1 if the subject is Catholic and 0 otherwise	0.121	0.328
Christian	Dummy variable equal to 1 if the subject is Christian without any denomination (neither Protestant nor Catholic) and 0 otherwise	0.242	0.431
Eastern religions	Dummy variable equal to 1 if the subject's religion is one of the following: Islam, Buddhism or Hinduism and 0 otherwise	0.091	0.289
Spiritual	Dummy variable equal to 1 if the subject does not follow any religion but has spiritual beliefs and 0 otherwise	0.111	0.316
Church attendance	How often the subject has attended religious services last year	1.779	1.400
Number of Subjects [a]			99

[a] Note that each session also had one subject who volunteered as a monitor. The summary statistics do not include these monitors' responses or characteristics.

Table 3. Average Individual Compliance Rate per Empathy/Sympathy Groups

	Average Individual Compliance Rate
Empathy Treatment	
Primed	0.826
Not Primed	0.784
Difference	*0.042***
Sympathy Treatments	
DECS Score	
21-28	0.815
0-13	0.801
Difference	*0.014*
Blood Donation	
Donor	0.826
Non-donor	0.784
Difference	*0.042***
Giving to homeless	
Donor	0.782
Non-donor	0.812
Difference	*-0.03*
Volunteering	
Volunteer	0.795
Non-volunteer	0.749
Difference	*0.046***
Giving to Charity	
Donor	0.797
Non-donor	0.795
Difference	*0.002*

** denotes a significant difference at the 5 percent level in the average individual compliance rate in a standard t-test.

Table 4. Number and Percentage of Subjects Who Participated in Prosocial Behavior at Least Once in Past 12 Months

	Blood donation		Giving to homeless		Giving to charity		Volunteering	
	Total	*Percentage*	*Total*	*Percentage*	*Total*	*Percentage*	*Total*	*Percentage*
Donors (blood)			13	76%	15	88%	15	94%
Non-donors (blood)			59	79%	44	64%	53	75%
Donors (homeless)	13	18%			53	78%	57	81%
Non-donors (homeless)	4	20%			7	35%	13	68%
Donors (charity)	15	25%	53	88%			47	82%
Non-donors (charity)	2	7%	15	54%			19	70%
Volunteers	15	22%	57	81%	47	71%		
Non-volunteers	1	5%	13	68%	10	56%		

Table 5. Correlation Matrix for Sympathy Variables

	DECS Score	Blood donation	Giving to Homeless	Volunteering	Giving to charity
DECS Score	1				
Blood donation	-0.0148	1			
Giving to homeless	0.1922*	0.0589	1		
Volunteering	0.1366*	0.3318*	-0.0144	1	
Giving to charity	0.1625*	0.2788*	0.3158*	0.1453*	1

* Significant at the .01 level.

Table 6. Extraction of Component Factors

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.588	0.487	0.397	0.397
Factor2	1.102	0.395	0.275	0.673
Factor3	0.706	0.103	0.177	0.849
Factor4	0.604	-	0.151	1

Table 7. Pattern Matrix (Rotated Factor Loadings)

	Factor1	Factor2	Uniqueness [a]
Blood donation	0.730	0.163	0.395
Giving to homeless	-0.199	0.881	0.250
Volunteering	0.837	-0.181	0.324
Giving to charity	0.280	0.711	0.341

[a] Uniqueness is related to the proportion of variance of the variable that is not accounted for by all of the factors considered. If the uniqueness value is high, it indicates that the importance of the variable in the principal components analysis model is low.

Table 8. Regression Results: Determinants of Individual Compliance Rate and Individual Full Compliance [a]

	Dependent Variable: Individual Compliance Rate ($0 \leq r \leq 1$)		**Dependent Variable: Individual Full Compliance (equal to 1 for full compliance, 0 otherwise)**			
	(1)	(2)	(3)		(4)	
Selected Independent Variables	OLS coefficients	OLS coefficients	Logit coefficients	Odds ratio	Logit coefficients	Odds ratio
Priming	0.099**	0.101**	0.563*	1.756	0.453*	1.573
	(0.040)	(0.039)	(0.287)		(0.273)	
DECS score group (21-28)	0.055	0.062	0.170	1.186	0.352	1.421
	(0.060)	(0.058)	(0.431)		(0.401)	
DECS score group (14-20)	-0.023	-0.016	-0.012	0.988	0.172	1.188
	(0.062)	(0.059)	(0.432)		(0.407)	
Blood donor	0.002		0.337	1.400		
	(0.042)		(0.303)			
Giving to homeless	-0.018		0.344	1.410		
	(0.044)		(0.308)			
Volunteer	0.049		1.266***	3.547		
	(0.046)		(0.336)			
Giving to charity	-0.073*		-1.101***	0.333		

	(0.041)		(0.302)			
Factor1 (High-cost)		0.000			0.232*	1.261
		(0.017)			(0.121)	
Factor2 (Low-cost)		-0.035**			-0.274**	0.76
		(0.017)			(0.118)	
Audit rate	0.669***	0.643***	4.704***	110.373	3.949***	51.895
	(0.131)	(0.130)	(0.962)		(0.917)	
Penalty rate	0.078***	0.081***	0.264	1.303	0.303*	1.354
	(0.025)	(0.024)	(0.177)		(0.173)	
Age	0.011**	0.012**	0.023	1.024	0.015	1.015
	(0.005)	(0.005)	(0.034)		(0.034)	
Female	0.031	0.028	0.049	1.050	0.002	1.002
	(0.038)	(0.037)	(0.263)		(0.253)	
Church attendance	0.027*	0.030**	-0.051	0.950	0.003	1.003
	(0.015)	(0.014)	(0.102)		(0.097)	
Observations	444	444	444		444	
Adjusted R^2	0.0987	0.101				
Pseudo R^2			0.157		0.124	
Log Likelihood			-253.4		-263.4	

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

[a] Each regression also includes a public fund dummy (equal to 1 if there is a public fund in the decision and 0 otherwise), experiment session dummies, an experience dummy variable (equal to 1 if the subject has participated in other (non-compliance) experiments and 0 otherwise), a race dummy variable (equal to 1 if the subject is white and 0 otherwise), the subject's college year, an economics major dummy variable (equal to 1 if the subject is an economics major and 0 otherwise), a U.S. citizen dummy variable (equal to 1 if the subject was born in the U.S. and 0 otherwise), and various religious affiliation dummy variables.

APPENDIX A: BASIC INSTRUCTIONS

GENERAL INSTRUCTIONS

This is an experiment in decision making under uncertainty. You will receive $5 for your participation. You may earn an additional amount of money determined by your choice and by the choice of other participants. All your earnings will be paid to you in cash at the end of the experiment.

Please follow the instructions carefully.

No Talking Allowed
You will not be permitted to speak with anyone during the experiment.

Complete Privacy
You will never be asked to reveal your identity to anyone during the experiment. Each participant will receive a key with a unique number. This will be your identification number that only you will know. Furthermore, you will be able to collect your earnings with privacy in an adjacent room where you can find a mailbox with your identification number that only your key can open.

A monitor
One of the persons in this room will be chosen to be the monitor for this experiment. The monitor will be paid $25 in addition to the participation fee of $5. He or she will verify that the instructions have been followed as they appear here.

Structure of the experiment
This experiment is divided into two parts. At the end of the experiment, you will be asked to answer a questionnaire.

We will first distribute the rules for part I (*priming activity as seen in Appendix B*). The instructions for the next part (*tax compliance game*) will be distributed later.

Identifying Number:

PART I – INSTRUCTIONS

Now, you will make a series of choices in a tax setting. In this part, you have an income of $10. You are expected to pay tax on your income. Your task will be to decide how much of your income to report to the Tax Authority in different scenarios.

A Group
You will be randomly assigned to a group of 4 (you plus 3 others). At the end of the experiment, we will draw numbered balls containing the identifying numbers of all subjects in the room to form each group.

The Income
Each member of your group including yourself will receive an income of $10.

The Tax
The tax rate is 30% for all participants. Thus, if you declare X, you will pay 30% of X and your after-tax income is $10 minus 30% of X.

The Audit
A specific number of red balls and white balls will be placed in a box. These numbers may vary from one decision to another. If a red ball is drawn, then everyone will be audited. If a white ball is drawn, then no one will be audited.

The Penalty
If you are audited, then any amount of income that you did not report in that period will be detected. Then, you will pay tax on the non-reported income plus a penalty proportional to that amount.

The Public Fund
In some decisions, there may be a public fund. If there is a public fund, after all tax and penalty payments are made, the total amount of taxes originally collected from your group will be summed up and doubled (the "public fund" of your group). *Note that this amount does NOT include additional payments resulting from the failure to comply with the tax if you are audited*. The public fund will be divided equally among all members of your group. However, in a few decisions, a portion of the public fund may go to charity (i.e., divided equally among the institutions chosen later by the members of your group) and the other portion returns to your group.

YOUR DECISION FOR THIS PART:
Decide how much income you want to declare to the Tax Authority for each scenario.

How are earnings determined?
You will be asked to make **6** *independent* decisions in this part. These decisions are independent because, from one decision to another, your balance will NOT be carried over.

After all decision sheets have been collected, we will check if everyone has completed all decisions. Then we will draw a ball numbered from 1 to 6 from a cage. The number of the ball drawn will determine *which one* of your decisions will be your final earnings. *Only this decision chosen randomly will count towards your earnings.* For instance, if we draw the ball with the number 1, you will be paid for "Decision # 1" or your first decision.
Examples of choices you will make in this experiment (You will receive $2 for completing this task.)

Each decision you will make is similar to the following examples. To assist you, we provide an Excel workbook that already contains all calculations. Each example is in one worksheet. In order to be sure that you understand how your earnings will be calculated, you are asked to fill out the blanks. Be sure you are on the right spreadsheet when completing this task.

Your only decision is to choose the amount of income you want to declare to the Tax Authority. In column C of all spreadsheets, you have in intervals of $0.25 the options of income you can declare. Pick one number and find the values of interest (such as final income without an audit) by being in the same row and moving to the other columns.

For instance, in example 1, if I decide to declare $8.25, my tax payment will be $2.48 and my final income may be $7.53 if there is no audit and $5.95 if an audit occurs.

In example 2, you will be asked to enter an estimate of how much you think another member of your group would declare. *This is only to illustrate how your earnings are calculated. During the actual experiment, everyone will make their own decisions.*

In examples 1 and 2:

- You are in a group of 4;
- Each member has an income of $10;
- Each member faces a tax rate of 30%;
- Public fund = 2 x (total tax payments originally collected from your group);
- If audited, you will have to pay both:
  1. A tax (30% of non-reported income);
  2. A penalty (2 times 30% of non-reported income).

Example 1 (Go to Worksheet "Example 1"):

a. Amount of income you want to declare to the Tax Authority (Column C) _____

b. Tax payment (Column D) _____

If you are NOT audited:

c. Final income (Column F) _____

If you ARE audited:

c'. Total of taxes and penalty to be paid (Column K) _____

d'. Final income (Column L) _____

Example 2 (Go to Worksheet "Example 2"):

Now, there is a public fund that will be fully returned to your group.

a. Amount of income you want to declare to the Tax Authority (Column C) _____

b. Tax payment (Column D) _____

c. Your share of the public fund (Column G) _____

If you are NOT audited:

d. Final income (Column I) _____

If you ARE audited:

d'. Total of taxes and penalty to be paid (Column N) _____

e'. Final income (Column O) _____

PART I – DECISION SHEET

Identifying Number:

Please fill out the blanks for each decision below**.** Remember:

- You are in a group of 4;
- Each member of your group has an income of $10;
- Each member faces a tax rate of 30%;
- Public fund = 2 x (total tax payments originally collected from your group);
- If a red ball is drawn, everybody will be audited.
- If audited, you will have to pay both:
  1. A tax (30% of non-reported income);
  2. A penalty.

	Audit rate	**Penalty rate**	**Public fund**	**Amount of income you want to declare to the Tax Authority** **(Fill out this column)**
Decision # 1	30 % (3 red + 7 white balls)	2 times 30% of non reported income	No	
Decision # 2	30 % (3 red + 7 white balls)	2 times 30% of non reported income	Fully returned (you get 1/4 of the public fund)	
Decision # 3	50 % (5 red + 5 white balls)	2 times 30% of non reported income	Fully returned (you get 1/4 of the public fund)	
Decision # 4	10 % (1 red + 9 white balls)	2 times 30% of non reported income	Fully returned (you get 1/4 of the public fund)	
Decision # 5	30 % (3 red + 7 white balls)	4 times 30% of non reported income	Fully returned (you get 1/4 of the public fund)	
Decision # 6[9]	30 % (3 red + 7 white balls)	2 times 30% of non reported income	Partially returned: 50% goes to the charities that will be chosen by your group; 50% returns to your group. (you get 1/8 of the public fund)	

[9] If this is the decision randomly chosen to be the final earnings in the experiment, the experimenter will calculate the total donations to the charities. We will make online donations of these amounts to the respective charities. The monitor will validate these transactions.

Identifying Number:

PERSONAL RECORD SHEET

PART I	**Decision #1**	Reported Income:
	Decision #2	Reported Income:
	Decision #3	Reported Income:
	Decision #4	Reported Income:
	Decision #5	Reported Income:
	Decision #6	Reported Income:

Information about you:

1. What year are you at school?
____ Freshman ____ Sophomore ____Junior ____ Senior ____ Graduate

2. What is your intended or declared major? _____

3. What is your age? _____

4. What is your gender?
____ Female ____ Male

5. What is your race?
____ White ____ Black ____ Asian ____ Hispanic ____ Other

6. Where were you born?
____ U.S.A. ____ Other (Please specify: _____)

7. What is your religion? (Please check the one that you feel best represents your beliefs or religion)

- ❑ Christian (Which denomination? _____)
- ❑ Jewish
- ❑ Muslim
- ❑ Buddhist
- ❑ Hindu
- ❑ Other (Please specify: _____)
- ❑ I don't follow any specific religion, but I do have spiritual beliefs (for example, you believe there is some other power or force outside yourself which might influence your life).
- ❑ None
- ❑ Prefer not to respond

8. About how often, if ever, have you attended religious services in the last year?

- ❑ Once a week or more
- ❑ Two or three times a month
- ❑ Once a month
- ❑ A few times a year or less
- ❑ Never
- ❑ Not applicable

9. Which, if any, of the following do you believe in?

God	❑ Yes	❑ No	❑ Prefer not to respond
Life after death	❑ Yes	❑ No	❑ Prefer not to respond
❑ Free will OR ❑ Predestination			❑ Prefer not to respond
Heaven / Hell	❑ Yes	❑ No	❑ Prefer not to respond

Reincarnation	❑ Yes	❑ No	❑ Prefer not to respond
Judgment of soul after death	❑ Yes	❑ No	❑ Prefer not to respond
If we sow goodness, we will reap goodness; if we sow evil, we will reap evil.	❑ Yes	❑ No	❑ Prefer not to respond

10. Please indicate the degree to which the following statements describe you:

	Does NOT describe me well **1**	**2**	**3**	**4**	***Describes me very well*** **5**
I often have tender, concerned feelings for people less fortunate than me.					
Sometimes I don't feel very sorry for other people when they are having problems.					
When I see someone being taken advantage of, I feel kind of protective towards them.					
Other people's misfortunes do not usually disturb me a great deal.					
When I see someone being treated unfairly, I sometimes don't feel very much pity for them.					
I am often quite touched by things that I see happen.					
I would describe myself as a pretty soft-hearted person.					

11. During the past 12 months, how often have you done each of the following:

a. Donated blood
- ❑ More than 3 times in the past year
- ❑ At least 2 or 3 times in the past year
- ❑ Once in the past year
- ❑ Not at all in the past year
- ❑ Don't know
- ❑ Prefer not to respond

b. Done volunteer work
- ❑ More than 3 times in the past year
- ❑ At least 2 or 3 times in the past year
- ❑ Once in the past year
- ❑ Not at all in the past year

c. Given food or money to a homeless person
- ❑ More than 3 times in the past year
- ❑ At least 2 or 3 times in the past year
- ❑ Once in the past year
- ❑ Not at all in the past year
- ❑ Don't know
- ❑ Prefer not to respond

d. Given money to a charity
- ❑ More than 3 times in the past year
- ❑ At least 2 or 3 times in the past year
- ❑ Once in the past year
- ❑ Not at all in the past year

- ❑ Don't know
- ❑ Prefer not to respond

- ❑ Don't know
- ❑ Prefer not to respond

12. For decision #6, please select a charity of your choice. Pick one and only one of the following charities or write in a charity at the bottom:

	American Red Cross Offers blood donation information and services, disaster relief, many helpful educational classes, as well as HIV/AIDS support groups.
	Big Brothers Big Sisters of America Provides one-to-one mentoring for youth and children residing in a one parent family for the purpose of creating caring, confident and competent young adults.
	American Cancer Society Provides many services to cancer patients and their families such as information, medical equipment, transportation to treatment locations, and a support system.
	Doctors without Borders Doctors and nurses volunteer to provide urgent medical care in some 70 countries to civilian victims of war and disaster regardless of race, religion or politics
	Feed The Children Provides food, clothing, medical care, education and emergency relief to children in the United States and overseas.
	UNICEF Works for children's rights, their survival, development and protection.
	Salvation Army Performs social and charitable work, and helps provide disaster relief.
	Humane Society of the United States Is a disaster relief agency for animals: provides direct care for thousands of animals at rescue facilities, wildlife rehabilitation centers, and mobile veterinary clinics
	Other:_____ *(The organization must limit its purposes to being charitable, and permanently have its assets committed to charitable purposes and to public benefit. In order words, it must have 501(c)(3)status as defined by the Internal Revenue Service.)*

If you have comments or suggestions about this experiment, please use this space.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

THANK YOU FOR PARTICIPATING!

APPENDIX B: INSTRUCTIONS FOR PRIMING

PART I – INSTRUCTIONS

This part consists of only one decision task. We ask you to read the following statements and answer a question. You will receive $5 for completing this task.

"Treat not others in ways that you yourself would find hurtful."

The Buddha, Udana-Varga 5.18

"In everything, do to others as you would have them do to you; for this is the law and the prophets."

Jesus, Matthew 7:12

"One word which sums up the basis of all good conduct: loving-kindness. Do not do to others what you do not want done to yourself."

Confucius, Analects 15.23

"This is the sum of duty: do not do to others what would cause pain if done to you."

Mahabharata 5:1517

"Not one of you truly believes until you wish for others what you wish for yourself."

The Prophet Muhammad, Hadith

"What is hateful to you, do not do to your neighbour. This is the whole Torah; all the rest is commentary. Go and learn it."

Hillel, Talmud, Shabbath 31a

These are 6 written versions of the Golden Rule. How would you express the Golden Rule in your own words?

_____
_____
_____
_____
_____
_____
_____
_____