

I Don't Want to Hear About it: Rational Ignorance among Duty-Oriented Consumers

Karine Nyborg*

August 22, 2007

Abstract

Individuals with a preference for keeping moral obligations may dislike learning that voluntary contributions are socially valuable: Such information can trigger unpleasant feelings of cognitive dissonance. An increase in the believed social value of contributions affects neither behavior nor the utility of Homo Economicus and of the Standard Impure Altruist. It increases both contributions and utility of a Consequentialist Impure Altruist. For the Duty-Oriented individual, however, it increases contributions, but *decreases* utility. The Duty-Oriented will thus, under certain conditions, be willing to pay to stay uninformed. Attitude campaigns can increase voluntary contributions through providing Duty-Oriented individuals with unwanted information.

JEL codes: D11, D62, D64, D89, H41, Q21.

Keywords: Voluntary contributions, public goods, responsibility, altruism, information campaigns, cognitive dissonance.

Acknowledgements: This research was conducted while I was employed by the Ragnar Frisch Centre for Economic Research, partly during my participation in the project "Environmental economics: policy instruments, technology development, and international cooperation" at the Centre for Advanced Study (CAS) at the Norwegian Academy of Science and Letters in 2005. I am grateful to the Research Council of Norway for funding through the SAMSTEMT/RENERGI programmes, to Geir Asheim, Kjell Arne Brekke, Anniken Greve, Michael Rauscher and many seminar and conference participants for helpful comments, and to CAS for its financial, administrative and professional support.

*Address: Department of Economics, University of Oslo, P.O.Box 1095 Blindern, NO-0317 Oslo, Norway. E-mail: karine.nyborg@econ.uio.no. Phone: +4722857283, fax: +4722855035.

Innocence is ignorance. (Kierkegaard, 1844)

1 Introduction

Voluntary contributions to public goods are frequently observed in everyday life: People contribute money to charities, volunteer in schools and hospitals, recycle their household waste, and pay higher prices for goods produced in ethically responsible ways.

Public authorities sometimes try to stimulate voluntary contributions through various means, including economic incentives such as tax exemptions for charitable contributions, and other instruments like attitude and information campaigns. However, while the effects of economic incentives are thoroughly studied by economists, it is much less clear, viewed from an economist's perspective, why information or attitude campaigns might be expected to affect voluntary contributions to public goods. Still, such campaigns seem to be popular among policy-makers. The present paper proposes some possible explanations for this. I provide conditions under which certain types of information can increase contributions, making information or attitude campaigns a potentially powerful instrument for policy makers and charities.

Such campaigns usually consist of, first, information about the social value of potential contributions. This could be hard facts, such as the number of children who have lost their homes after an earthquake; or information intended to stimulate empathy and feelings of responsibility, such as a photograph of one of those unhappy children. Secondly, campaigns often include information about efficient ways to contribute; where to place your recyclables, or the bank account number of the Red Cross. Although my main focus will be on the former, I will discuss both types of information.

The traditional Homo Economicus model can hardly explain the observed amount of voluntary contributions to public goods (Andreoni 1988).¹ Several alternative models have been proposed in the economics literature. The most popular one seems to be the impure altruism model of Andreoni (1990), assuming that consumers have preferences for a private good, the "warm glow of giving", which is assumed to be increasing in one's own contribution. Although the impure altruism model can explain substantial voluntary contributions to public goods, however, it does not provide any reason why anybody would want to launch a campaign informing people about the social value of their potential contributions: In the standard version of the impure altruism model, such information plays no role. Below, I will propose an extended impure altruism model assuming that the "warm glow", or rather, a preference to be important to others, depends on the believed social *consequences* of one's contribution, not just the contribution as such. In this model of the *Consequentialist Impure Altruist*, beliefs about the social value of contributions will indeed affect con-

¹ Andreoni's (1988) analysis concerns what he calls "pure altruism". His model, however, is formally equivalent to the traditional Homo Economicus model, where individuals have preferences for a private and a public good.

tribution levels. Nevertheless, as I will show, it is still not necessarily the case that *information campaigns* will have any effect: If information on the social benefits of contributions are available at no or low cost, the Consequentialist Impure Altruist may have an incentive to seek this information himself. Thus, unless information is costly to obtain on one's own initiative, information campaigns would be redundant.

For consumers with a preference for keeping their moral obligations, however, those obligations may be felt as a burden; and under certain conditions, information avoidance is one way to keep that burden light. As demonstrated below, for consumers with a moral motivation similar to that proposed by Brekke et al. (2003), which I will call *Duty-Oriented* individuals, information about the social value of contributions can increase the consumer's perceived burden of responsibility: Although there is a "warm glow of giving", there is also a "cold shiver of not giving enough" (Bruvold and Nyborg 2004). This idea is closely linked to the social psychological concept of *cognitive dissonance* (Festinger 1957); i.e. the idea that people experience an unpleasant feeling when discrepancies arise between the values and beliefs that they hold and the action they in fact take. Aronson et al. (2005) define cognitive dissonance as "a drive or feeling of discomfort, originally defined as being caused by holding two or more inconsistent cognitions and subsequently defined as being caused by performing an action that is discrepant from one's customary, typically positive self-conception" (p.166).²

If moral responsibility is a burden to the individual, and if, moreover, this burden is to some extent endogenous to him, he will have an incentive to avoid situations, or types of information, which could face him with a heavier burden of responsibility.³ Economic analysis of voluntary contributions need to take this into account: Although a consumer might contribute a lot the moment he has accepted a personal responsibility for an issue, he might go to quite some lengths to avoid being faced with that responsibility. Hence, public information campaigns could in fact increase contributions by providing consumers with unwanted information.

Recent experimental studies indicate that a substantial number of people seem to avoid situations associated with a moral responsibility. Lazear et al. (2005) conducted a dictator game experiment in which subjects, in a first round, were asked to divide 10 USD between themselves and another participant, being free to take everything for themselves if they so wished. In a second round, the same subjects were given the choice between playing exactly the same game once more or to "pass", where the latter meant receiving 10 USD *without* the

²For economic analyses of cognitive dissonance, see e.g. Akerlof and Dickens (1982), Konow (2000), Oxoby (2004). Note that cognitive dissonance as a concept is not only related to moral issues: "Most of us have a need to see ourselves as reasonable, moral, and smart. When we are confronted with information implying that we may have behaved in ways that are irrational, immoral, or stupid, we experience a good deal of discomfort" (Aronson et al. 2005, p. 166). While Akerlof and Dickens (1982) focus on the need to feel "reasonable" and "smart", the present paper discusses the need to feel "moral".

³While responsibility ascription may seem an alien concept to economics, it is central to social psychologists' analyses of moral decision-making; see Schwartz (1970, 1977).

opportunity to share. The majority of subjects chose to share at least some of their endowment with the recipient in the first round. However, in the second round, most subjects – including many who had given the recipient a substantial share in the first round, thus apparently having preferences for sharing – preferred to pass, avoiding the sharing option altogether. Consequently, the option not to be faced with the "sharing environment" reduced total contributions to about *half* of the first round level. In subsequent rounds, the researchers introduced a strictly positive cost of opting out; but still, a substantial share of subjects chose to pass. These results were observed under both anonymous and non-anonymous conditions.

While this study did not specifically consider information, Dana et al. (2004) did. They found that in a binary version of the dictator game, most subjects choosing between a "fair" (5,5) and an "unfair" (6,1) outcome chose the fair alternative. In another treatment, the researchers made recipients' payoff uncertain, so that payoffs were either (5,5) and (6,1), as above, or (5,1) and (6,5), with equal probability.⁴ However, this uncertainty could be resolved by dictators at no cost, simply by pushing a button. In the uncertainty treatment, dictators behaved more selfishly; moreover, only about half of them chose to resolve the uncertainty. While these findings may undoubtedly be explained in different ways, they are consistent with the view that people feel a heavier personal responsibility for others when their own impact on those others' situation is made unambiguously clear to them. Moreover, it is consistent with a hypothesis that the perceived responsibility to contribute, given that one's impact on others has been made clear, is stronger than the perceived obligation to seek such information.

Throughout the analysis, I will focus on internalized moral motivation, abstracting completely from social interaction effects such as conformism, reciprocity, and social rewards or sanctions from others.⁵ Further, I will limit my attention to situations where the consumer may be willing to pay an extra cost – a contribution – to secure a social benefit *in which he himself will not take part*. The latter assumption implies that the consumer is paying for a credence good: a cognitive or psychological experience that is necessarily related to his *beliefs* about the action's consequences for others, since he will never experience for himself its *actual* consequences. If no information is received from external sources, erroneous beliefs thus cannot be corrected, and the fact that beliefs are wrong will have no impact on the contributor's utility.

2 The model

Consider a large population consisting of n individuals, where individuals are identical except for a characteristic α_i determining the individual's benefits from a public good G . To fix ideas, assume that $\alpha_i \in \{0, 1\}$, and let $\alpha_i = 0$ mean that

⁴ (x, y) denotes x to the dictator and y to the recipient.

⁵ For studies incorporating such effects, see, for example, Sugden (1984), Hollander (1990), Rege (2004), or Nyborg et al. (2006).

person i is healthy, while $\alpha_i = 1$ means that i is an asthmatic. For individuals $i = \{1, \dots, m\}$, $\alpha_i = 1$, while for $i = \{m + 1, \dots, n\}$, $\alpha_i = 0$. To establish the benchmark, let individuals have perfect information; later, this assumption will be relaxed.

Individual i 's utility is given by the following (linear separability is assumed for the sake of simplicity):

$$U_i = u(x_i) + \alpha_i G + S_i \quad (1)$$

Here, u is an increasing and strictly concave function, $x_i \geq 0$ is i 's consumption of private goods, and G is the level of the public good, which we may, for the purpose of illustration, think of as air quality.⁶ S_i is the individual's self-image as a socially responsible or decent individual. While self-image is not a standard ingredient of economic models, its inclusion in the utility function seems well-founded by insights from other social sciences, as indicated, for instance, by the following quote from Aronson et al. (2005, p.166): "For the past half-century, social psychologists have discovered that one of the most powerful determinants of human behavior stems from our need to preserve a stable, positive self-image". For previous economic analyses involving the concepts of self-image and identity, see, for example, Akerlof and Kranton (2000, 2005), Benabou and Tirole (2002, 2003, 2006), Brekke et al. (2003) and Bruvold and Nyborg (2004).

Individual i 's budget constraint is given by

$$F = x_i + g_i \quad (2)$$

where F is an exogenous endowment. The assumption that each individual has the same endowment is not essential and is chosen for the sake of simplicity. Provision of the public good is determined by the sum of individual contributions in the following way:

$$G = \beta \sum_{j=1}^n g_j = \beta(G_{-i} + g_i) \quad (3)$$

where $\beta \geq 0$ measures how efficiently any individual's monetary contribution is transformed into increased supply of the public good. G_{-i} is the public good level provided by others than i , considered exogenously fixed by i .

Finally, since individuals' self-image may depend upon their beliefs about the social importance of their contributions, I need to establish a criterion for normative evaluation of social states. Since normative disagreement in welfare evaluation is not the main focus of the present paper, I will assume – again for simplicity – that every individual agrees that social welfare W can be evaluated using the following simple social welfare function:

$$W = \sum_{j=1}^n (u(x_j) + \alpha_j G) \quad (4)$$

⁶It seems natural to assume that $\lim_{G \rightarrow \infty} v(G) = 0$, which would capture the idea that all else given, an asthmatic is never better off than a healthy person. No such assumption is required for the formal analysis, however.

This corresponds to standard unweighted utilitarianism, except that benefits from self-image are not included. The latter does not, in fact, matter for the model's behavioral predictions; I thus choose the analytically simplest specification.⁷ Below, the term "material well-being" will be taken to include consumption benefits and public good benefits, but not self-image benefits.

To be able to formulate my results in the most straightforward way, I will always assume below that the individual *i whose behavior is considered* is a healthy person, i.e. that $\alpha_i = 0$. Again, this is not essential to the analysis, but since healthy individuals do not take part in the environmental benefits resulting from their contributions, this allows me to disregard possible "selfish" reasons to contribute, focusing exclusively on moral or altruistic motivation.

I will now formalize four different types of motivation through alternative specifications of the self-image function, representing different "household production functions" for self-image (Stigler and Becker, 1977). Below, S_i^j will denote the self-image of person *i* given that he is of motivation type *j*.

3 Homo Economicus

The specification of the self-image function of *Homo Economicus*⁸ is particularly simple:

$$S_i^{HE} = K \tag{5}$$

where *K* is an exogenously given constant.

A healthy ($\alpha_i = 0$) *Homo Economicus* will maximize his utility by contributing nothing. This result is rather trivial, hardly requiring formal proof: Contributions are costly, but yields no benefits whatsoever. If such a person receives information about the social value of his potential contribution, this will influence neither his behavior nor his utility: He simply doesn't care.

4 The Standard Impure Altruist

The second motivation type corresponds to the standard version of Andreoni's (1990) impure altruist, for whom self-image (or, alternatively, "warm glow") is increasing in his own contribution:

$$S_i^{IA} = \gamma(g_i)$$

⁷One argument for not including self-image benefits is that the satisfaction of doing good should not be included in the very definition of "good". On the other hand, I find it hard to claim that self-image benefits are somehow less "real" than other benefits. This is a deep philosophical question which may, indeed, matter a lot in normative welfare analysis. My purpose here, however, is restricted to positive behavioral analysis.

⁸Although most economists (including, until a short time ago, myself) seem to believe that this is Latin for "the economic man", the correct Latin term is in fact, as pointed out to me by Aanund Hylland, "Homo Oeconomicus". With somewhat mixed feelings, I am keeping here to the erroneous, but, by now, widespread convention.

where $\gamma' > 0$ and $\gamma'' < 0$.⁹

The first order condition for utility maximization of a healthy impure altruist, assuming an interior solution, is

$$u' = \gamma'$$

i.e., he contributes until his marginal benefit of consumption equals the marginal warm glow. The healthy standard impure altruist contributes a strictly positive amount provided that $u'(F) < \gamma'(0)$; otherwise, he contributes nothing. Note that none of this depends upon the number of asthmatics m , or on the efficiency of contributions in producing a higher public good supply, β . Thus, just like for *Homo Economicus*, changed knowledge about these variables affects neither behavior nor utility.

5 The Consequentialist Impure Altruist: Being important

In Andreoni's (1990) model, there was no explicit distinction between a person's contribution and the consequences of this contribution. However, it may well be the case that some people care about the *social importance* of their contributions rather than the actual amount g_i that they contributed.

The *Consequentialist Impure Altruist*, thus, has a preference *to be important* (Brekke and Nyborg, 2006). Unlike the *pure* altruist (Andreoni 1988), who cares about the total level of the public good (G) with no regard to his own role in its provision, the Consequentialist Impure Altruist is indeed concerned about his own role. However, like the pure altruist, he primarily cares about *consequences*, not the amount contributed.¹⁰ In the following, I will assume that the Consequentialist Impure Altruist's self-image S_i^C is better *the more important he thinks his contribution is to others*. He evaluates its social importance by asking himself: "If I contribute g_i rather than nothing, all else given, how much will others' welfare increase?" Thus, we can write

$$S_i^C = \mu(\Delta W_{-i}(g_i, m, \beta)) \quad (6)$$

where $0 < \mu < 1$ measures the emphasis the individual places on social welfare concerns in his self-image evaluations, and $\Delta W_{-i}(g_i, m, \beta)$ i 's view of the importance to others of his contribution. $\mu = 0$ would be equivalent to *Homo Economicus*, while $\mu = 1$ would have implied that the individual cared just as

⁹Primes denote derivatives.

¹⁰Francois' (2005) model of "making a difference" is based on the assumption of pure altruism. Dur and Glazer's (2004) model of "the desire for impact" is based on impure altruism, but differs from the Consequentialist Impure Altruist model proposed here in several respects. For example, Dur and Glazer assume that "importance" is evaluated by one's production, not contributions to social welfare; moreover, unlike in the present model, they assume that individuals take general equilibrium effects into account when assessing their own importance.

much about others' material well-being as his own.¹¹

If i is healthy ($\alpha_i = 0$), others' material welfare equals $W - u(x_i)$. Define $\Delta W_{-i}(g_i, m, \beta)$ as the increase in others' material welfare when i 's contribution equals $g_i \geq 0$, as compared to the case where $g_i = 0$, assuming everybody else's behavior fixed:

$$\Delta W_{-i}(g_i, m, \beta) = W_{-i}(g_1^0, \dots, g_i, \dots, g_n^0, m, \beta) - W_{-i}(g_1^0, \dots, 0, \dots, g_n^0, m, \beta) \quad (7)$$

Here, a superscript 0 denotes a variable's value in the initial situation, while the subscript "- i " indicates that i is not included in the welfare measure. Inserting from (1) - (4) and (6) then yields the following expression:

$$\Delta W_{-i}(g_i, m, \beta) = m\beta g_i \quad (8)$$

That is, the self-image of the Consequentialist Impure Altruist is proportional to the social value of his contribution $m\beta g_i$:

$$S_i^C = \mu m\beta g_i. \quad (9)$$

Utility maximization with respect to g_i , given that the individual is a Consequentialist Impure Altruist, now yields the following first order condition for an interior maximum:

$$u' = \mu m\beta \quad (10)$$

That is, he contributes until his marginal utility of consumption equals the marginal self-image benefits, which are in turn determined by the weight he attaches to being important, μ , the number of beneficiaries m , and the productivity of monetary contributions in increasing the public good supply, β . If

$$u'(F) > \mu m\beta, \quad (11)$$

utility reaches its maximum in the corner solution $g_i = 0$; in this case, the marginal warm glow is not strong enough to justify any loss of consumption.

Now, if the social value of a potential contribution increases, this makes the individual – for any given strictly positive contribution level – more important to others than he was before. This increases both his contribution and his utility:

Proposition 1 *With perfect information, the following holds for the healthy Consequentialist Impure Altruist: a) His **contribution** g_i is weakly increasing in the marginal social value of contributions $m\beta$. The increase is strict if $u'(F_i) < \mu m\beta$. b) His **utility** is weakly increasing in the marginal social value of contributions $m\beta$. The increase is strict if $u'(F_i) < \mu m\beta$.*

Proof. See Appendix A. ■

In particular, as more people (others, to be sure) become asthma patients, the utility of the Consequentialist Impure Altruist increases, as this improves his

¹¹The proportional self-image function $\mu(\Delta W_{-i}(g_i, m, \beta))$ could have been replaced by an increasing and strictly concave function $\Lambda(\Delta W_{-i})$, with no substantial implications for the present analysis.

opportunities to be important to others. This may appear somewhat absurd: It seems reasonable that for at least some consumers, such a change would rather increase their feeling of moral obligation, so that keeping one's contribution constant after receiving such news would, in fact, *reduce* self-image. The fourth motivation type I will consider reflects this view.

6 The Duty-Oriented individual: Fulfilling one's obligation

The *Duty-Oriented* individual assesses his self-image, or his own standing as a socially responsible individual, by comparing his actual contributions to what he thinks he *ought to* have contributed. Self-image for this type of individual can thus be specified by some function $f(g_i, g_i^*)$, where $g_i^* \geq 0$ is i 's perception of the "morally ideal" contribution; that is, a value for which increased contributions cannot further improve self-image. The ideal contribution g_i^* can be interpreted as a measure of the individual's perception of his moral or social responsibility: If he contributes less than he thinks he ideally should, his self-image will be impaired. For simplicity, I will use a functional form similar to that used by Brekke et al. (2003):

$$S_i^D = -a(g_i - g_i^*)^2 \tag{12}$$

where $a > 0$. Similar assumptions can be found in Sudgen (1984), Woodward and Warren-Boulton (1984), Bruvold and Nyborg (2004), Konow (2006) and Cappelen et al. (2007); a brief discussion of the importance of this particular functional form can be found in Appendix B.¹²

Just like the Consequentialist Impure Altruist, the Duty-Oriented individual makes a tradeoff between consumption and self-image. First, however, the individual must know the morally ideal contribution g_i^* . A key question for the analysis below is whether the individual is able to influence, directly or indirectly, his moral responsibility g_i^* . As demonstrated by Bruvold and Nyborg (2004), a Duty-Oriented individual's utility will decrease when g_i^* increases, since the burden of moral responsibility becomes heavier; hence, if he can keep g_i^* down, he is likely to do so.

To demonstrate how this may work, I will apply the principle for determination of g_i^* proposed by Brekke et al. (2003). Their proposal can be regarded as inspired by Immanuel Kant's categorical imperative, that is, "one should act only according to those maxims that can be consistently willed as a universal law" (Audi 1995, p. 403). Brekke et al. proposed the following related, but simpler principle: "I should ideally act such that if everybody acted like me, social welfare would be maximized".¹³ This way of reasoning appears to be rather

¹²It may be disputed whether it is reasonable that self-image *decreases* when contributions increase above the ideal contribution g_i^* . However, this does not matter for the analysis as long as S_i^D is not *strictly increasing* in g_i when $g_i > g_i^*$, since the individual will never choose $g_i > g_i^*$ anyway.

¹³Note that although g_i^* is defined through an argument inspired by Kant, actual behavior

common; for example, Bruvold and Nyborg (2004) report that among those who households who claimed to be recycling at least some household waste, 88 percent agreed or partly agreed that "I recycle partly because I should do what I want others to do".

In accordance with the rule outlined above, then, let g_i^* be that contribution which would hypothetically maximize social welfare, as perceived by i , had everyone acted just like i . Formally, $g_i^* = \arg \max_{g_i} \{W(g_1, \dots, g_n, m, \beta)\}$ subject to $g_i = g_j$ for every $i, j \in \{1, \dots, n\}$. Solving this maximization problem yields the following first order condition for an interior welfare maximum

$$m\beta = u', \quad (13)$$

which corresponds to the usual Samuelsonian condition for optimal provision of a public good.¹⁴ The left hand side is the social value per individual of a marginally increased public good supply; the right hand side is its cost per individual.

The individual only feels a moral responsibility to contribute ($g_i^* > 0$) if contributions are more socially valuable than private consumption, that is, if

$$m\beta > u'(F). \quad (14)$$

If this does not hold, the hypothetical welfare maximization problem has a corner solution, $g_i^* = 0$.

Differentiation of (13) with respect to $m\beta$ shows that for interior solutions, $g^*(m\beta)$ is strictly increasing in $m\beta$:

$$\frac{dg_i^*}{d(m\beta)} = \frac{1}{-u''} > 0 \quad (15)$$

Thus, the morally ideal contribution is a function $g_i^* = g^*(m\beta)$ of the marginal social value of contributions, such that whenever $m\beta \leq u'(F)$, $g^*(m\beta) = 0$, while for all $m\beta \geq u'(F)$, $dg_i^*/d(m\beta) = 1/ -u'' > 0$.¹⁵

Once the morally ideal contribution has been determined, based on one's knowledge of $m\beta$, the individual must decide how much to actually contribute. He does so by maximizing utility with respect to g_i , taking $g^*(m\beta)$ as given. This yields the following first order condition for interior utility optimum:

$$-2a(g_i - g^*(m\beta)) = u' \quad (16)$$

The individual contributes until the marginal benefit in terms of an improved self-image (the left hand side) just equals its marginal cost in terms of forgone

will be determined by a tradeoff between self-image and consumption benefits. Since Kant's moral philosophy is categorical and hence does not allow such tradeoffs, the behavior described here can hardly be defined as Kantian. Moreover, note that this principle is not well suited for situations where social welfare maximization requires diversification of individual behavior.

¹⁴If individual endowments were not equal for all, this expression would read $nm\beta = \sum_{j=1}^n u'$.

¹⁵ g_i^* is also a function of income F . I will suppress this below as F will not be varied in the analysis to follow.

consumption benefits (the right hand side). Rearranging, this can be written

$$g_i = g^*(m\beta) - \frac{u'}{2a} \quad (17)$$

which shows clearly that, given an interior solution, the individual will always contribute strictly less than $g^*(m\beta)$ (see also Brekke et al. 2003).¹⁶

Again, we need to consider the possibility of a corner solution. If

$$a[g^*(m\beta)^2 - (g_i - g^*(m\beta))^2] \leq u(F) - u(F - g_i) \quad (18)$$

for every strictly positive g_i , the self-image gain from a contribution cannot outweigh the resulting consumption loss, and the individual maximizes his utility by contributing nothing. If $g^*(m\beta) = 0$, (18) obviously holds: if no moral obligation applies, no self-image loss arises when not contributing. Note, however, that (18) may hold even for low, but strictly positive levels of $m\beta$. In such cases the individual contributes nothing, but does experience cognitive dissonance. In fact, cognitive dissonance will only be completely avoided when the social value of contributions is low enough to yield $g^*(m\beta) = 0$.

Like the Consequentialist Impure Altruist, the Duty-Oriented's contributions are increasing in $m\beta$. Unlike the Consequentialist Impure Altruist, however, the Duty-Oriented's utility is *decreasing* in $m\beta$:

Proposition 2 *With perfect information, the following holds for the healthy Duty-Oriented individual: a) His **contribution** g_i is weakly increasing in the marginal social value of contributions $m\beta$. The increase is strict if $a[g^*(m\beta)^2 - (g_i - g^*(m\beta))^2] \geq u(F) - u(F - g_i)$ for some strictly positive g_i . b) His **utility** is weakly decreasing in the marginal social value of contributions $m\beta$. Utility is unaffected by marginal changes in $m\beta$ if and only if $m\beta \leq u'(F)$. Utility is strictly decreasing in $m\beta$ whenever $m\beta > u'(F)$.*

Proof. See Appendix A. ■

Consequently, if a healthy, duty-oriented individual, who ascribes to the moral reasoning suggested above, learns that the social importance of his contribution has increased, he will increase his contribution. But, unless his private consumption is even more socially valuable than contributions to the public good, *his utility is strictly reduced*: His burden of moral responsibility has become heavier.

7 Information

Let us now relax the assumption of perfect information, and assume, instead, that the marginal social value of contributions $m\beta$ is not directly observable by individuals.

¹⁶Since $\partial S_i^D / \partial g_i = 0$ when $g_i = g_i^*$, contributing g_i^* could be optimal for the individuals only if $u' = 0$, which has been ruled out by assumption. That is, increasing g_i up to or beyond g_i^* would come at a strictly positive cost, but yield no extra self-image benefits.

Most of us are aware that environmental degradation, hunger and injustice exist in abundance throughout the world. Nevertheless, our knowledge about the precise character of each potential sub-problem, its scope and/or severity, and whether and how something could be done to amend it, may still be very poor. In what follows, I will interpret the model as a partial representation of a more complex world in which a large number of public goods and many groups of potential beneficiaries may exist, and use the model to study i 's choice of whether to seek information about and/or contribute to one specific cause.¹⁷

If an individual does not suspect at all that increased provision of the specific public good G might benefit someone, it seems hard to explain why he would even get the idea of seeking, or avoiding, information. Such "complete ignorance" is thus not the most interesting case to consider. Rather, by "ignorance" I will mean a state in which the individual has some vague notion that the social problem might possibly exist and that contributions might possibly be of value, but where he otherwise knows nothing about the number of beneficiaries m (or more generally, the magnitude of the problem) nor the efficiency of potential contributions β . One may think of, for example, a substance which i knows to be emitted into the air, but which he has no further information about; he may simply know, on a general level, that some people react to some substances.

Imagine that there exists a verification agency which can provide perfect information about the true value of $m\beta$. Assume, moreover, that such information can be bought by the individual at a fixed cost C . Hence, the individual can be in one of two states; ignorant (uninformed) or informed. If ignorant, his subjective expectation of the social value of contributions equals his uninformed prior belief B_i^0 ; if informed, either through actively purchasing information or through encountering an information campaign, he knows $m\beta$ perfectly.¹⁸

First of all, note that if B_i^0 is sufficiently high, there is no obvious reason why the individual would want to avoid, nor seek, costless information ($C = 0$). The Duty-Oriented would be worse off if the information revealed that $m\beta > B_i^0$ and better off if $m\beta < B_i^0$; the opposite would hold for the Consequentialist Impure Altruist. If $C > 0$, consumers would hardly seek information; but if information were still provided to them for free, for example through an attitude campaign, its effect on contributions could go either way.

The interesting cases, however, arise when initial beliefs about the social value of potential contributions are low. Below, I will focus on those cases. I have no intention of claiming that B_i^0 is always low; but since it seems, perhaps, somewhat unreasonable, or unusual, to assert that an issue one knows next to nothing about represents a serious social problem, I do find it worthwhile to explore the implications of low prior beliefs.

Assume, now, that when evaluating his own self-image, individuals apply the same self-image function as before, except that $m\beta$ is replaced by the prior

¹⁷I will stick to the use of "healthy" to denote $\alpha_i = 0$. This is less intuitively appealing when the problem at hand is ill known. However, its only function in the analysis is that we disregard "selfish" reasons for contributing, focusing on altruistic or moral motivation.

¹⁸Alternatively, one may assume that prior beliefs are updated in the direction of received information. This would not matter substantially; I stick to the simple assumptions.

belief B_i^0 . The individual is now faced with the choice of staying uninformed, denoted $\tau_i = 0$, in which case he keeps his initial belief B_i^0 , or paying C and becoming perfectly informed, denoted $\tau_i = 1$. That is, beliefs will depend on information acquisition in the following simple way:

$$B_i = \begin{cases} m\beta & \text{if } \tau_i = 1 \\ B_i^0 & \text{if } \tau_i = 0. \end{cases}$$

To incorporate the choice of whether to actively seek information, the budget constraint (2) must be replaced by

$$F = c_i + g_i + \tau_i C \quad (19)$$

The utility of the healthy Consequentialist Impure Altruist can now be written

$$U_i^C = \begin{cases} u(F - g_i - C) + \mu m\beta g_i & \text{if } \tau_i = 1 \\ u(F - g_i) + \mu B_i^0 g_i & \text{if } \tau_i = 0 \end{cases} \quad (20)$$

while for the Duty-Oriented, we have

$$U_i^{DO} = \begin{cases} u(F - g_i - C) - a(g_i - g^*(m\beta))^2 & \text{if } \tau_i = 1 \\ u(F - g_i) - a(g_i - g^*(B_i^0))^2 & \text{if } \tau_i = 0. \end{cases} \quad (21)$$

The decision of whether to collect information is made before the contribution decision. When deciding whether to collect information, the individual does not, of course, know $m\beta$; and since B_i is his best guess about $m\beta$, I will assume that he does not expect his own beliefs to change in any particular direction. The interesting case is when initially, the individual is in a corner solution.

Consider first the healthy Consequentialist Impure Altruist, and assume that his initial assessment B_i is too low to merit contributions. That is, we have that

$$u'(F) > \mu B_i^0. \quad (22)$$

His utility if not seeking information is simply given by $u(F)$. If he seeks information ($\tau_i = 1$), he may find that $m\beta$ is higher or lower than B_i . At this point C will be sunk cost. If he finds that $m\beta < B_i^0$, he will still not contribute, and his utility is $u(F - C)$. If he finds, however, that

$$u'(F - C) < \mu m\beta \quad (23)$$

he will start contributing, and his utility will then be given by $u(F - g_i - C) + \mu m\beta g_i$. If $m\beta$ is sufficiently high, the increased self-image could more than compensate the cost C . Hence, there is a trade-off between the certain consumption loss caused by paying the information cost C and the possible discovery of a new way to be important to others (getting more warm glow).

Now, consider the case where information is costless ($C = 0$). Then, the healthy Consequentialist Impure Altruist has nothing to lose by seeking information. It can never hurt him, since if he has overestimated $m\beta$, this would leave his utility unchanged. It might benefit him, however, since an unexpected opportunity to be important to others may emerge. He would thus strictly prefer to receive free information. This leads directly to the following Proposition:

Proposition 3 *If $u'(F_i) > \mu B_i^0$, there exists a strictly positive information cost $\bar{C} > 0$ such that the healthy Consequentialist Impure Altruist prefers to acquire information.*

Next, consider the healthy Duty-Oriented. Assume that his initial assessment B_i is sufficiently low to imply $g_i^*(B_i) = 0$; that is,

$$u'(F_i) > B_i. \quad (24)$$

The individual does not expect contributions to be socially optimal, and thus does not feel obliged to contribute. Since $g_i^*(B_i) = 0$ there is no self-image loss of not contributing. His utility if not seeking information ($\tau_i = 0$) is then, as for the Consequentialist Impure Altruist, simply given by $u(F)$.

If he seeks information ($\tau_i = 1$), on the other hand, he may find that $m\beta$ is either higher or lower than B_i . If it is lower, he will still feel no obligation to contribute, and his utility will be given by $u(F - C)$. If it is sufficiently high, however, that is, if

$$m\beta > u'(F_i)$$

he will feel obliged to contribute. He will still not necessarily contribute (see eq. (18)); but whether he does contribute or not, he will now face cognitive dissonance. He feels he *should* have contributed; and even if he does contribute, he will not contribute quite as much as he thinks he should, since we always have $g_i < g_i^*$ for interior solutions. His utility will now be given by $u(F - g_i - C) - a(g_i - g_i^*(m\beta))^2$, where $g_i^*(m\beta) > 0$. It should be immediately clear that this is always strictly less than $u(F)$, his utility if not collecting information. Thus, if it turns out that $m\beta < B_i^0$, this will do the Duty-Oriented neither harm nor good; if it turns out that $m\beta > B_i^0$, this may strictly reduce his utility.

Consider, again, the case where information is costless ($C = 0$). The healthy Duty-Oriented will then strictly prefer *not* to seek information. This leads directly to the following Proposition:

Proposition 4 *There exists a strictly negative information cost $\underline{C} < 0$ such that for every information cost exceeding \underline{C} , the healthy Duty-Oriented strictly prefers not to acquire information.*

In other words, the Duty-Oriented may prefer to stay ignorant even if he has to pay to avoid information.

8 Endogenous social value of contributions

As mentioned in the introduction, attitude campaigns often include information about how to contribute: how much to clean one's recyclables, where to place them for collection; what product to avoid because it is especially environment-hostile, which bank account number to use for charitable contributions. Information of this type does not merely provide information about exogenous

parameters β or m : it can actually increase the efficiency of contributions, thus changing β .

This would imply that efficiency of contributions is an individual-specific parameter, whose value is endogenously dependent on whether or not the individual is informed. The production of the public good is determined by

$$G = \sum_{j=1}^n \beta_j(\tau_j) g_j \quad (25)$$

which replaces equation (3), where $\beta_j(\tau_j)$ is the efficiency parameter of individual j as a function of j 's information acquisition.

To illustrate this, assume that the public good G cannot be provided directly by individuals, but must be channelled through a charitable organization. Say that there exists only one truly charitable organization with known efficiency $\tilde{\beta}$; with any other recipient of contributions, no public good supply will result. There exists $K \gg 1$ bank accounts in society, and only one of these belongs to the charitable organization.¹⁹

For the sake of argument, assume now that m , the number of beneficiaries, is perfectly known, and that "being ignorant" simply means not knowing the bank account number of the charity. Contributing in a state of ignorance would then mean to pick a bank account number at random, yielding an expected efficiency of $\frac{\tilde{\beta}}{K}$. Hence, the individual's belief about the social value of his contribution can now be stated as

$$B_i = \begin{cases} m\tilde{\beta} & \text{if } \tau_i = 1 \\ m\frac{\tilde{\beta}}{K} & \text{if } \tau_i = 0 \end{cases} \quad (26)$$

Consider first the case where $C = 0$. Then, just as in the analysis above, the Consequentialistic Impure Altruist's utility will be weakly higher for $\tau_i = 1$, and strictly higher if $g_i(m\frac{\tilde{\beta}}{K}) = 0$ and $g_i(m\tilde{\beta}) > 0$. Knowing how to contribute increases his opportunity to be important to others. Thus, even if the information is associated with a strictly positive cost, he may be willing to seek it.

If $g_i(m\frac{\tilde{\beta}}{K}) = 0$ and $g_i(m\tilde{\beta}) > 0$ and the Consequentialist Impure Altruist is initially ignorant, an attitude campaign informing him about how to contribute will increase both his contribution and his utility. If the cost of information C is sufficiently low, however, he will, even in the absence of a campaign, seek information on his own initiative, and a campaign will be redundant.

For the Duty-Oriented, however, the situation is again different. Let $C = 0$. Proposition 2 implies that the utility of the Duty-Oriented is weakly decreasing in $m\beta$. If $g^*(m\frac{\tilde{\beta}}{K}) = 0$, while $g^*(m\tilde{\beta}) > 0$, the Duty-Oriented does not feel obliged to contribute under ignorance, but *knows in advance* that he will feel an obligation to contribute once he learns the right account number; and his utility will strictly decrease if he becomes informed. In this case, the Duty-Oriented will be willing to pay a strictly positive amount to avoid the information. For him, ignorance is a bliss: Knowing how to contribute gives him a heavier burden of

¹⁹Thanks to Kjell Arne Brekke for suggesting this interpretation.

moral responsibility. Nevertheless, if the charity, or others, succeed in providing him with the unwanted information, he will start contributing.

Hence, although the Duty-Oriented does not want to listen, he will act upon the information if he does receive it. It is, consequently, in the charity's (or rather, the beneficiaries') interest to try to make him know.

9 Discussion

Research within both social psychology and economics has established that a self-serving bias in belief formation is common (see, e.g., Aronson et al. 2005 pp.119-122, Konow 2000). For the Duty-Oriented, a low prior belief B_i^0 could be a result of a such self-serving bias: If having no factual information about the true social value of potential contributions, choosing a low prior belief is as plausible as, and more convenient than, any other belief. For the Consequentialist Impure Altruist, self-serving beliefs would rather imply a high B_i^0 : The Consequentialist Impure Altruist likes to entertain the belief that he is very important to other people. If some people tend systematically to keep high prior beliefs, due to such reasons, an information campaign could in fact *reduce* contributions from these people, by revealing to them that they are not as important as they wanted to believe.²⁰

The logic of the present model, however, does not require that people's beliefs are systematically self-serving or inconsistent. My claim is simply that when initial beliefs about the social value of contributions are sufficiently low, and information is costless, Consequentialist Impure Altruists will strictly prefer to get information, while the Duty-Oriented will strictly prefer not to.

Note, however, an important caveat to the above results. I have assumed that self-image functions are determined by one's actual contributions and their social value; there has been no presumption that the choice of seeking or not seeking information contributes to one's self-image. For the Duty-Oriented, however, it would certainly be possible to impose a "Kantian"-style conception of moral obligation even for the choice to seek information, so that if the individual seeks less information than he would prefer everybody to seek, he suffers a loss of self-image. In that case, it is less obvious that the duty-oriented individual would avoid information.²¹ The experiments by Lazear et al. (2004) and Dana et al. (2004), however, indicates that a substantial number of people in fact resist situations where they feel obligated to contribute, including avoidance of free

²⁰Using this argument to claim that information is *unwanted*, however, would imply an assumption that the individual's set of beliefs is incompatible with Bayes' rule: If B_i^0 is systematically biased, and i expects that $B_i^0 < m\beta$, then i would prefer not getting information; but in this case it seems unreasonable to call B_i^0 i 's "initial belief" about $m\beta$, since it is a biased estimate and i knows its bias. Hence, this case is not symmetrical to the case with initial corner solutions.

²¹Nevertheless, my guess is that, to some extent, he would still resist information. Recall that for interior solutions, a duty-oriented person will always contribute strictly less than $g^*(m\beta)$. In the same way, he would presumably choose to seek less information than he ideally thinks he should. A formal analysis of this remains to be done, however.

information. Thus, many people seem to adopt Kierkegaard's view: Innocence is ignorance.

Further complications arise with issues such as limited memory and attention. To be salient in the mind at the time of decision-making, the information must in practice first be mentally processed, then safely stored, and finally retrieved; all of which requires cognitive effort²². If costly information processing is required to keep and make use of factual knowledge of the type considered here, this would lead to mechanisms quite similar to those discussed above: While the Consequentialist Impure Altruist may choose to invest the cognitive effort required to keep the information in mind, the Duty-Oriented would be much more likely to abstain from making the required cognitive investment, implying that the information is never properly stored, is gradually lost, or is not retrieved at the relevant times. One difference from the above analysis is, however, that in this case, information campaigns could work simply by reminding people of information they already know, but would otherwise not have retrieved from memory. This may provide one explanation to the existence of attitude campaigns not providing factual information at all, but rather seeming to aim at reminding people of their moral obligations. For example, in the city of Oslo, central collection units for delivery of hazardous household waste are placed in easily visible places, decorated by large posters with a photograph of a naked baby and the following text: "You won't poison me, will you?" If information is less easily retrieved by those to whom it implies a burden of responsibility, frequent reminders could be an unpleasant, but effective way to keep obligations salient in the Duty-Oriented's mind.

Social psychologists have pointed out that cognitive dissonance can potentially be reduced by changing one's ideals rather than by changing actual behavior (see, e.g. Aronson et al. 2005). It is well documented that views of fairness tend to be self-serving (e.g., Konow 2000).²³ In the above analysis, the Kant-inspired principle for determination of the Duty-Oriented's moral obligations was assumed fixed; but if the government or others place large burdens of moral obligation on individuals, it is certainly conceivable that those individuals would respond by changing their moral principles.²⁴ If so, this may in turn influence not only the issue at hand, but a wide array of attitudes and behaviors.

Finally, note that information which is *per se* unwanted could, for example, be closely linked to private goods that the individual demands. The most obvious example is art and fiction: When reading a good book, or watching a movie, individuals are often faced with unpleasant information, but the art experience

²²For discussions of the psychology of attention and memory, see, for example, Styles (2005) or Magnussen and Helstrup (2007).

²³Similarly, self-serving interpretation of facts seems to be very common (see, e.g., Aronson et al. 2005, Ch.4); this is presumably particularly important for non-verifiable factual information, such as accounts of others' utility.

²⁴For example, healthy individuals could make up their minds that easing asthmatics' situation is asthma patients' own responsibility; which, in the present formal framework, would amount to changing the functional form of $g^*(m\beta)$. The more complex society is, and the more heterogeneous individuals are, the less obvious it is how to determine the "true" moral obligation.

itself (or the expectation of it) can be valuable enough to outweigh the potential disutility from discovering or being reminded of moral obligations.²⁵

10 Concluding remarks

For the classical *Homo Economicus*, as well as for the standard version of the *Impure Altruist*, information concerning the social value of potential contributions influences neither behavior nor utility. It is thus hard to see how attitude campaigns could have any effects on such individuals. However, for the *Consequentialist Impure Altruist*, who has a preference to be important to others, and for the *Duty-Oriented*, who compares his contribution to what he thinks he should ideally have contributed, beliefs about the social value of contributions are crucial.

I have shown that if prior beliefs about the social value of contributions are sufficiently small, the Consequentialist Impure Altruist will seek information on his own initiative, as long as the cost of information is modest; the Duty-Oriented, however, will be willing to pay to *avoid* information. The reason is that for the Consequentialist Impure Altruist, discovering a social problem provides new opportunities to be important to others; for the Duty-Oriented, it gives him a heavier burden of moral responsibility, leading to the utility-reducing experience of cognitive dissonance.

If individuals are in fact confronted with information that the social value of contributions is higher than they thought, both the Consequentialist Impure Altruist and the Duty-Oriented will react by (weakly) increasing their contributions. This provides a rationale for information and attitude campaigns. Nevertheless, note that if information is cheap to buy privately, the Consequentialist Impure Altruist will demand it in the absence of campaigns.

Thus, attitude campaigns can work: If the cost of information is high, a campaign can inform both Consequentialist Impure Altruists and Duty-Oriented, resulting in increased contributions. If the cost of information is low, however, attitude campaigns will primarily work through imposing unwanted information on Duty-Oriented individuals.

Does this mean that attitude campaigns should be used more extensively, as a cheap means to increase the provision of public goods? Perhaps, but the answer is not quite so straightforward. The outcome of a welfare analysis would depend on the share of different motivation types in the population; and, more fundamentally, on whether or not self-image benefits are included in the social welfare function. If self-image benefits are not included, cognitive dissonance will not be counted as a social cost. This question is basically a philosophical rather than economic one; and since my scope has been positive rather than normative analysis, I will not pursue it further here, except from the following brief remark. If self-image benefits are not included, an attitude campaign that increases contributions will increase aggregate social welfare: the Consequentialist Impure

²⁵In addition, non-verifiable information about others' well-being – for example, how does it really feel being an asthmatic? – is perhaps particularly efficiently revealed through art.

Altruists' utility increase, while the Duty-Oriented would not contribute if they did not find this socially optimal. However, if we define "Pareto optimality" on the basis of individual utility functions, attitude campaigns will not generally lead to Pareto improvement, since they do impose a utility loss on the Duty-Oriented.

My analysis presumed that individuals' moral principles as such are unaffected by the policy. However, if the burden of moral obligation becomes too heavy, this assumption becomes questionable. Since the moral norm is enforced only by the individual himself, a too heavy burden could erode not only norm adherence, but even the norm itself. Hence, appealing to individuals' moral obligations may be useful when it comes to low-cost behaviors; but trying to impose too substantial burdens on individuals' feeling of moral duty could, in fact, undermine moral reasoning itself.

References

- [1] Akerlof, G. A., and W. T. Dickens (1982): The Economic Consequences of Cognitive Dissonance, *American Economic Review* 72 (3), 307-319.
- [2] Akerlof, G. A., and R. E. Kranton (2000): Economics and Identity, *Quarterly Journal of Economics* 115(3), 715-53.
- [3] Akerlof, G. A., and R. E. Kranton (2005): Identity and the Economics of Organizations, *Journal of Economic Perspectives* 19(1), 9-32.
- [4] Andreoni, J. (1988): Privately Provided Public Goods in a Large Economy: The Limits of Altruism, *Journal of Public Economics* 35(1), 57-73.
- [5] Andreoni, J. (1990): Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving, *Economic Journal* 100(401), 464-477.
- [6] Aronson, E., T.D. Wilson, and R.M. Akert (2005): *Social Psychology*. Fifth Edition. New Jersey: Pearson Education International.
- [7] Audi, R. (ed.) (1995): *The Cambridge Dictionary of Philosophy*, Cambridge, UK: Cambridge University Press.
- [8] Benabou, R., and J. Tirole (2002): Self-Confidence and Personal Motivation, *Quarterly Journal of Economics* 117 (3), 871-915.
- [9] Benabou, R., and J. Tirole (2003): Intrinsic and Extrinsic Motivation, *Review of Economic Studies* 70 (3), 489-520.
- [10] Benabou, R., and J. Tirole (2006): Incentives and Prosocial Behavior, *American Economic Review* 96 (5), 1652-1678.
- [11] Brekke, K.A., K. Nyborg and S. Kverndokk (2003): An Economic Model of Moral Motivation, *Journal of Public Economics* 87(9-10), 1967-1983.

- [12] Brekke, K.A., and K. Nyborg (2006): Selfish Bakers, Caring Nurses? A Model of Work Motivation. Paper presented at the HERO/HEB Workshop on Health Economics, Oslo, August-September 2006.
- [13] Bruvold, A., and K. Nyborg (2004): The Cold Shiver of Not Giving Enough: On the Social Cost of Recycling Campaigns, *Land Economics* 80(4), 539-549.
- [14] Cappelen, A., A.D. Hole, E.Ø. Sørensen and B.Tungodden (2007): The Pluralism of Fairness Ideals: An Experimental Approach, *American Economic Review* 97 (3), 818-827.
- [15] Dana, J., R.A. Weber, and J.X. Kuang (2004): Exploiting Moral Wriggle Room: Behavior Inconsistent with a Preference for Fair Outcomes. Unpublished note, Carnegie Mellon University.
- [16] Dur, R., and A. Glazer (2004): The Desire for Impact. Tinbergen Institute Discussion Papers TI 2004-115/1.
- [17] Festinger, L. (1957): *A Theory of Cognitive Dissonance*. Stanford, CA: Stanford University Press.
- [18] Francois, P. (2005): Making a Difference. Unpublished paper, University of British Columbia.
- [19] Hollander, H. (1990): A Social Exchange Approach to Voluntary Cooperation, *American Economic Review* (80) 5, 1157-1167.
- [20] Kierkegaard, Søren (1844): *Begrebet Angest: en simpel psykologisk-paapegende Overveelse i Retning af det dogmatiske Problem om Arvesynden*. København (published under the pseudonym of Vigilius Haufniensis).
- [21] Konow, J. (2000): Fair Shares: Accountability and Cognitive Dissonance in Allocation Decisions, *American Economic Review* 90 (4), 1072-1091.
- [22] Konow, J. (2006): Mixed Feelings: Theories and Evidence of Warm Glow and Altruism, manuscript, <http://ssrn.com/abstract=980349>.
- [23] Lazear, E.P., U. Malmendier, and R.A. Weber (2005): Sorting in Experiments with Application to Social Preferences, unpublished note, Carnegie Mellon University.
- [24] Magnussen, and T. Helstrup (eds.)(2007): *Everyday Memory*, New York: Psychology Press.
- [25] Nyborg, K., R.B. Howarth, and K.A. Brekke (2006): Green Consumers and Public Policy: On Socially Contingent Moral Motivation, Resource and Energy Economics 28 (4), 351-366.
- [26] Oxoby, R.J. (2004): Cognitive Dissonance, Status and Growth of the Underclass, *Economic Journal* 114, 727-749.

- [27] Rege, M., 2004, Social Norms and Private Provision of Public Goods. *Journal of Public Economic Theory* 6(1), 65-77.
- [28] Schwartz, S.H. (1970): Moral Decision Making and Behavior, in J. Macaulay and L Berkowitz: *Altruism and Helping Behavior. Social Psychological Studies of Some Antecedents and Consequences*, New York and London: Academic Press, 127-141.
- [29] Schwartz, S.H. (1977): Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology*, (Vol. 10, pp. 221-279). San Diego, CA: Academic.
- [30] Stigler, G.J, and G.S. Becker (1977): De Gustibus Non Est Disputandum, *American Economic Review* 67(2), 76-90.
- [31] Styles, E.A. (2005): *Attention, Perception and Memory. An Integrated Introduction*. Hove and New York: Psychology Press.
- [32] Sugden, R., 1984. Reciprocity: The Supply of Public Goods through Voluntary Contributions, *Economic Journal* 94, 772-787.
- [33] Woodward, R.S. and F. Warren-Boulton (1984): Considering the effects of financial incentives and professional ethics on ‘appropriate’ medical care, *Journal of Health Economics*, 3 (3), 223-237.

A Proofs

Proof of Proposition 1:

Proof. a) Differentiating (10) wrt $m\beta$ yields the first order condition for an interior optimum

$$\frac{dg_i}{d(m\beta)} = \frac{\mu}{-u''} > 0 \quad (27)$$

Hence, if the initial solution is interior, g_i is strictly increasing in $m\beta$. If the initial solution is not interior, i.e. $g_i = 0$ initially, we know that $u'(F) \geq \mu m\beta$ initially. First, if $u'(F) = \mu m\beta$ initially, a marginal change in $m\beta$ to $(m\beta)^+ > m\beta$, all else given, must imply that $u'(F) < \mu(m\beta)^+$, implying that after the change, the individual will make a strictly positive contribution. Hence, in this case an increase in $m\beta$ strictly increases contributions. Secondly, if $u'(F) > \mu m\beta$ initially and $m\beta$ increases incrementally, say, to $(m\beta)^{++}$, we will have $u'(F) \geq \mu m\beta^{++}$ and the contribution will be unaffected, that is, it will stay at zero.

b) Utility can be written as

$$U_i^C = u(F - g_i) + \mu m\beta g_i$$

Differentiating this with respect to $m\beta$, taking into account that g_i is a function of $m\beta$, yields

$$\begin{aligned}\frac{dU_i^C}{d(m\beta)} &= -u' \frac{dg_i}{d(m\beta)} + \mu[g_i + m\beta \frac{dg_i}{d(m\beta)}] \\ &= \frac{dg_i}{d(m\beta)} [\mu m\beta - u'] + \mu g_i\end{aligned}$$

Inserting from (27), this yields

$$\frac{dU_i^C}{d(m\beta)} = \frac{\mu}{-u''} [\mu m\beta - u'] + \mu g_i \geq 0$$

This holds for an interior solution. If $g_i > 0$ initially, we know from (10) that $\mu m\beta - u' = 0$; so in this case $dU_i^C/d(m\beta) > 0$.

If $g_i = 0$ initially and $u'(F) = \mu m\beta$, then $dg_i/d(m\beta) > 0$, so in this case too, utility is strictly increasing in $m\beta$. Finally, if $g_i = 0$ and $u'(F) > \mu m\beta$ initially, we know from above that $dg_i/d(m\beta) = 0$. In this case nothing changes; contributions are unchanged, hence self-image is unchanged, and utility is unchanged. Hence, in this case, $dU_i^C/d(m\beta) = 0$. ■

Proof of Proposition 2:

Proof. a) Consider first the case where the initial solution is interior. From (17), inserting from (2), we have

$$g_i(m\beta) = g^*(m\beta) - \frac{u'(F - g_i(m\beta))}{2a} \quad (28)$$

where the actual contribution is written as a function of its social value. Differentiating this with respect to $m\beta$, using (15), we get

$$\frac{dg_i}{d(m\beta)} = \frac{2a}{-u''(2a - u'')} > 0 \quad (29)$$

Further, if the initial contribution is zero, contributions will increase if and only if the change implies that (18) ceases to hold; otherwise g_i is unchanged. We know from eq. (15) that g_i^* is strictly increasing in $m\beta$ unless $m\beta < u'(F)$. If $m\beta < u'(F)$, however, (18) holds with strict equality. If, initially, (18) holds with strict inequality, the inequality will still hold after an incremental increase in $m\beta$, so contributions will stay unchanged at zero. If the individual is initially indifferent between contributing and not contributing, that is, if $a[g^*(m\beta)^2 - (g_i - g^*(m\beta))^2] = u(F) - u(F - g_i)$ for some strictly positive g_i , a marginal increase in $m\beta$ will make contributing strictly preferable and the individual will go from $g_i = 0$ to $g_i > 0$, so in this case the increase in g_i is strict.

b) For an interior solution, the change in utility due to a marginal change in

$m\beta$ is given by

$$\begin{aligned}
\frac{dU_i}{d(m\beta)} &= -u' \frac{dg_i}{d(m\beta)} - 2a(g_i - g^*(m\beta)) \left(\frac{dg_i}{d(m\beta)} - \frac{dg_i^*}{d(m\beta)} \right) \\
&= \frac{dg_i}{d(m\beta)} [-u' - 2a(g_i - g^*(m\beta))] + 2a(g_i - g^*(m\beta)) \frac{dg_i^*}{d(m\beta)} \\
&= \frac{-2u'a}{-u''(2a - u'')} - \frac{4a^2(g_i - g^*(m\beta))}{-u''(2a - u'')} + \frac{2a(g_i - g^*(m\beta))}{-u''} < 0
\end{aligned}$$

where the last line is obtained by inserting from (15) and (29). We know from (17) that $g_i - g^*(m\beta) \leq 0$; hence the sign of $dU_i/d(m\beta)$ is unambiguously negative.

For an initial corner solution $g_i = 0$, we have that $U_i = u(F) - a(g^*(m\beta))^2$ initially. Then,

$$\frac{dU_i}{d(m\beta)} = -2a(g^*(m\beta)) \frac{dg_i^*}{d(m\beta)} \leq 0$$

We know from (13) and (15) that whenever $m\beta \leq u'(F)$, $g^*(m\beta) = 0$, while whenever $m\beta \geq u'(F)$, $dg_i^*/d(m\beta) = 1/-u'' > 0$. Thus, $dU_i/d(m\beta) = 0$ if and only if $m\beta \leq u'(F)$. When $m\beta > u'(F)$, $g^*(m\beta) > 0$ and $dg_i^*/d(m\beta)$, and utility is strictly decreasing when $m\beta$ increases. ■

B Functional forms: Self-image of the Duty-Oriented

A more general specification of a duty-oriented consumer's self-image is

$$S_i^D = f(g_i, g_i^*) \quad (30)$$

where f is continuous and differentiable, where for any given value of g_i^* , f has its maximum at $g_i = g_i^*$; moreover, $f'_1 > 0$ whenever $g_i > g_i^*$, $f'_1 = 0$ when $g_i = g_i^*$, while $f'_1 \leq 0$ when $g_i < g_i^*$. Further, $f''_{11} \leq 0$ everywhere, $f'_2 < 0$ when $g_i < g_i^*$, and $f'_2 = 0$ when $g_i = g_i^*$. Some examples of functional forms satisfying the above requirements are $f^I(g_i, g_i^*) = -a(g - g_i^*)^2$ (the specification used above), $f^{II}(g_i, g_i^*) = -a \frac{(g - g_i^*)^2}{g_i^*}$, and $f^{III}(g_i, g_i^*) = -a \frac{(g - g_i^*)^2}{(g_i^*)^2}$ (where $a > 0$). Also, functions of the type $f^{III+k}(g_i, g_i^*) = \{f^j(g_i, g_i^*)$ when $g_i < g_i^*$, and 0 when $g_i \geq g_i^*\}$ satisfy the conditions, for all $k \in \{I, II, III\}$ specified above.

In this general specification, we have that

$$\frac{dg_i}{dg_i^*} = -\frac{f''_{12}}{f''_{11} + u''} \quad (31)$$

Thus, for a duty-oriented individual, the effect of beliefs $m\beta$ on contributions has the same sign as $f''_{12} \frac{dg_i^*}{d(m\beta)}$, provided that one is initially in an interior optimum. If the initial contribution is zero, contributions will increase if and only if the change implies that (18) ceases to hold; otherwise g_i is unchanged.

For $f^I(g_i, g_i^*)$ and $f^I(g_i, g_i^*)$, it is always the case that $f''_{12} > 0$. Hence, with these specifications, contributions are monotonously increasing in g_i^* . However, for $f^I(g_i, g_i^*)$, it can be shown that the cross derivative is given by

$$\partial^2 f^{III}(g_i, g_i^*) / \partial g_i \partial g_i^* = 2a \frac{(2g_i - g_i^*)}{(g_i^*)^3}$$

This is positive if

$$g_i > \frac{1}{2}g_i^*.$$

That is, as long as the contribution is higher than half of the ideal contribution, an increased ideal increases contributions. However, if $g_i < \frac{1}{2}g_i^*$ initially, an increase in g_i^* leads to a discouragement effect: the ideal becomes increasingly out of reach, to the extent that it seems less attractive even to try reaching it.