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Samahita, Margaret

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Margaret S Samahita
Lunds Universitet

Abstract

The model of moral motivation as developed by Brekke et al. (2003) is analysed with the new assumption that self-image is an increasing function of effort. While the effects of increased efficiency and new information on optimal effort levels are similar, different results are obtained when individuals are faced with volunteering opportunities with and without non-participation fees. Most significantly, participation is sustainable as a Nash equilibrium even when it is not considered morally ideal. All results adhere to previously established theories on responsibility and crowding-out.

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Contact: Margaret S Samahita - margaret.samahita@nek.lu.se.

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1. Introduction

An often-quoted paper on self-image as the motivation behind a moral action is "An economic model of moral motivation" by Brekke *et al*. (2003). The authors built the model in two steps: firstly, an individual finds the morally ideal effort level by maximizing total social welfare assuming everyone else acted like him. In the next stage, he finds the optimal actual effort level by maximizing his own utility, taking into account that the more effort exerted the higher his self-image is, but the lower his leisure time will be. In their model, self-image is assumed to be of the shape of an inverted-U: increasing up until effort is morally ideal, and decreasing when effort exceeds the morally ideal level. This represents a person who is satisfied when his effort goal is reached, and having reached that goal, sees no reason to put in any more effort beyond that to the point that any extra effort lowers his self-image.

However, as first described by Hamachek (1978), there are people highly motivated by self-image, categorized as "neurotic perfectionists", whose self-esteem are negatively affected when unrealistic goals are not met. This seems to imply an internal effort goal which far exceeds the morally ideal effort level such that their self-image is monotonically increasing in effort level.

An example of this is the common phenomenon of volunteer tourism. This is where participants from developed countries travel to developing countries to perform tasks to help the local community, such as building houses, schools or other infrastructure, all of which are considered morally ideal. A simple monetary donation to the value of the tourist's time and effort towards the project would often achieve this goal and more than fully cover his contribution, simply because the value of labor from a developed country is much higher than that in a developing country. With the amount of money paid corresponding to the individual's labor as valued in his developed home country, the local community can hire a much bigger labor force than just one person. However, the tourist still goes beyond that by choosing to volunteer in these projects, suggesting that he derives higher self-image from his participation and giving support to a monotonically increasing self-image function.

This paper will challenge Brekke *et al*.'s self-image assumption by applying a monotonically increasing self-image function to the model. The effects of increased efficiency and new information yield generally similar results. The conclusions drawn from investigating individual actions when faced with volunteering opportunities, however, are different. Most significantly, a monotonically increasing self-image function gives rise to individual participation in voluntary activities even when non-participation is morally ideal.

The result may sound trivial – that if utility is increasing in self-image, and self-image is monotonically increasing in effort level, participation naturally follows. However, effort also affects utility negatively through the loss of leisure. Hence non-participation may still result despite the monotonically increasing self-image function.

2. Monotonically Increasing Self-Image Functions

In analysing the consequences of a monotonically increasing self-image function, this paper will make use of the model presented in Brekke *et al*. (2003). While their model has successfully explained certain individual behaviours when faced with responsibility and economic incentives, there are reasons to investigate their conclusions with the more general

case of a monotonically increasing self-image function.[1] All aspects of that model except for the self-image function have therefore been retained, and the reader is advised to refer to Brekke *et al*. (2003), Sections 2-4, for a fuller description and analysis of the model.

The self-image function is now assumed to be

$$I_i = f(e_i, e_i^*) \tag{1}$$

where e_i is the individual's effort level in contributing to the public good supply, and e_i^* is his morally ideal effort level. i's self-image I_i is also assumed to be such that $I_e > 0$, $I_{ee} < 0$, and $I_{e^*} < 0$. The function is thus monotonically increasing in effort level at a decreasing rate, and decreasing in morally ideal effort level (as an increase in e^* makes e relatively smaller, thus decreasing self-image). Let the function also be normalized such that $I_i = 0$ when $e_i = e_i^*$.

Brekke *et al*. use the example of '*dugnad'*, a Norwegian tradition whereby members of an organization participate voluntarily in practical work once or twice a year, to investigate the effort level of individuals when faced with responsibilities and economic incentives. The results will now be analyzed using a monotonically increasing self-image function as in (1). Due to the normalization of the self-image function, $I(0,1) < 0$ and $I(1,0) > 0$.[2]

While the results from Brekke *et al*.'s paper generalize with the modified self-image function, the main difference is found when participation is not a morally ideal action, which counter-intuitively still sustains individual participation. This will therefore be the focus of this paper, while the rest of the results can be found in the appendix.

Proposition 1. When participation is not morally ideal, both individual participation and non-participation can be sustained as a Nash equilibrium regardless of fees.

Proof. The proof is given here for the case when non-participation results in a sufficient fee. The proofs for no non-participation fee and when the fee is symbolic are similar and are left to the reader.

Using the utility function

$$U = u(x, l) + v(G) + I^3 \tag{2}$$

if non-participation is the morally ideal action, the following will hold:

$$u(m - c, T) + v(Ng^p) > u(m, T - 1) + v(Ng^p) \tag{3}$$

In this case, individuals may still participate if they derive high enough utility from self-image:

$$u(m, T - 1) + v(Ng^p) + I(1,0) > u(m - c, T) + v(Ng^p) \tag{4}$$

Otherwise, non-participation will be the Nash equilibrium, implying

[1] Refer to Section 5, "Empirical evidence" in Brekke *et al*. (2003).
[2] In Brekke *et al*. (2003), $I = -a(e - e^*)^2, a > 0$ implies that both $I(0,1) < 0$ and $I(1,0) < 0$.
[3] It is possible that an individual derives some private material utility from the act of volunteering itself, such as travelling, meeting new people and learning the culture in the case of volunteer tourism. However, for comparison purposes these will not be considered and x is assumed to be unaffected by the volunteering act.

$$u(m-c,T)+v(Ng^p)>u(m,T-1)+v(Ng^p)+I(1,0) \qquad (5)$$

Both (4) and (5) are possible, and may hold together if the gain from self-image and utility of c exactly offset the loss in leisure.[4] ■

So far this only shows the possibility of participation. To explore further the case in which participation is a certainty, (4) must hold and not (5), yielding:

$$I(1,0)>u(m-c,T)-u(m,T-1) \qquad (6)$$

That is, the gain from self-image and the utility from keeping c units must outweigh the lost utility from reduced leisure time. Without knowing the specific utility and self-image function, it is not possible to make any further conclusion. However, since $I(1,0)>0$, participation will always result as long as $u(m-c,T)\leq u(m,T-1)$, which will be attained with a utility function that values monetary gain much more than leisure time.

3. Discussion and Conclusion

The most significant result is obtained when non-participation is morally ideal. When self-image is decreasing in effort beyond e^*, as modeled by Brekke *et al*., it is impossible to induce participation because any extra effort is 'punished' by the negative effect on self-image and therefore utility. For many individuals, this might not necessarily be the case. An individual who is highly driven by self-image, for example, will reasonably experience a higher self-image when he donates more of his time or money to a cause. If self-image is instead monotonically increasing in effort level, participation can still be sustained as a Nash equilibrium even if it is not morally ideal. This is arguably a fruitful modification to the self-image function, supported by economic examples whereby a project is not viable to participate voluntarily in, and yet individuals still contribute to it in order to improve their self-image.

When there is no fee for non-participation, this paper will proceed with the morally ideal action of $e^*=1$.[5] That is, the project is socially desirable. Suppose a fee is imposed that is sufficient to cover the cost of non-participation. Then individuals are effectively given the choice of either paying the fee or participating in the project – both options will result in the same amount of public good provision. If leisure is socially valued more than the non-participation fee, the morally ideal option would be non-participation, $e^*=0$. With a monotonically increasing self-image function, it is possible that individuals derive enough utility from participation (through the increase in self-image) to deviate from the morally optimal action.

When the fee for non-participation is symbolic, individuals trade off the benefits of paying a less than sufficient fee and keeping their leisure time versus the less than full provision of public good. If everyone would rather pay the small symbolic fee and have a smaller supply of public good than lose their leisure time, then the morally optimal option would also be non-participation. However when self-image is considered, it can induce participation at the individual level.

[4] In the absence of fees or when the fee is not sufficient, the concavity of v implies a unique Nash equilibrium solution.

[5] If $e^*=0$ with no non-participation fee, the project is socially undesirable or unfeasible. This case occurs very rarely in practice and requires a steeply increasing self-image function for participation.

Going back to the example of volunteer tourism mentioned in the introduction, it is non-debatable that the project is socially desirable as it improves the local facilities. An individual therefore has two choices: either pay the non-participation fee (in effect donating the amount of money that would have been sufficient to replace his labor cost, or donating only part of it as a symbolic fee) or volunteering his own time and effort. It would be morally ideal not to participate and pay the fee instead, as a monetary contribution is in fact of more value in a developing country. This would often be the case as well even if only a symbolic fee is paid. However many people still choose to volunteer in these projects, potentially deriving higher self-image.

The fact that others still do not participate in volunteer tourism shows the non-triviality of the result. This paper serves to provide a separate framework to be used alongside the original model, giving expression to those individuals who do indeed gain self-image monotonically with effort level. However, even within this group of people, the way self-image interacts with monetary utility and leisure clearly varies. Hence participation does not always follow despite monotonically increasing self-image function.

The generalization of the self-image function to be monotonically increasing retains all results from Brekke *et al*. (2003) with respect to under-provision of public good, the effect of changes to the efficiency parameter, and the model's prediction of individual behavior when participation is morally ideal. The results also conform to the well-established Crowding Theory. However this generalization contributes to the field by being able to successfully explain individual participation when it is not morally ideal.

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Appendix

In this section, the generalization of Brekke *et al.*'s results with a monotonically increasing self-image function is presented for the reader's convenience.

Proposition A1. Maximization of social welfare is inconsistent with maximization of individual utility, and will therefore result in the under-provision of public good.

Proof. With the utility function as in (2), maximization of social welfare and individual utility yield respectively the following first-order conditions:

$$u_l = N v_G \gamma_{e_i} + I_{e_i} \tag{7}$$

$$u_l = v_G \gamma_{e_i} + I_{e_i} \tag{8}$$

Comparing equations (7) and (8) shows that individual utility maximisation cannot produce the socially optimal effort level unless $N = 1$. ■

This result holds for all well-behaved self-image functions[6]. The marginal benefit of actual effort from the individual's point of view is never as high as the marginal benefit when all individuals exert their morally ideal effort, resulting in the under-provision of public good.

Proposition A2. The effects of an increase in the efficiency parameter θ on $e^*,\ e,\ g$ and U are all ambiguous.

Proof. The proof is similar to Brekke *et al*. (2003) and is left to the reader. ■

Proposition A3. When participation is morally ideal, both individual participation and non-participation can be sustained as a unique Nash equilibrium in the cases of no fee or a symbolic fee. A sufficient fee always yields individual participation.

Proof. The proof is similar to Brekke *et al*. (2003) and is left to the reader. ■

Proposition A4. All results are consistent with the Crowding Theory (Frey, 1997), whereby participation is weakly decreased by a sufficient fee, and weakly increased by a symbolic fee.

Proof. Suppose participation is morally ideal, and is chosen, when there is no non-participation fee. Then the following will hold:

$$u(m, T-1) + v(Ng^p) > u(m, T) + v\big((N-1)g^p\big) + I(0,1) \qquad (9)$$

If a sufficient fee is imposed, and non-participation becomes morally ideal, it may be chosen by the individual so that the following holds:

$$u(m-c, T) + v(Ng^p) > u(m, T-1) + v(Ng^p) + I(1,0) \qquad (10)$$

Both (9) and (10) can hold together, thus a sufficient fee weakly reduces participation as the responsibility for public good provision is shifted from the individual to the authority.

If a symbolic fee instead is imposed, with the monotonically increasing self-image function participation may still be ideal and chosen by the individual so that the following holds:

$$u(m, T-1) + v(Ng^p) > u(m-t, T) + v\left((N-1)g^p + \frac{g^p t}{c}\right) + I(0,1) \qquad (11)$$

Brekke *et al*. make the assumption that $u(m-t, T) + v\left(\frac{g^p t}{c}\right)$ decreases with t. The right-hand-side of (11) is then less than the right-hand-side of (9), making (11) more likely to hold. Thus the symbolic fee weakly increases participation as individuals retain the responsibility for public good provision. ■

[6] The function $I_i = -|e_i - e_i^*|$, for example, produces a first-best optimal solution.