From Ought to Is: Moral Norms in Large-Scale Social Dilemmas

Chris von Borgstede, Ulf Dahlstrand and Anders Biel
Department of Psychology
Göteborg University, Sweden

Von Borgstede, C., Dahlstrand, U., & Biel, A. From ought to is: Moral norms in large-scale social dilemmas. Göteborg Psychological Reports, 1999, 29, No. 5. This study examined the role of social norms in enhancing co-operation in large-scale social dilemmas. One survey and two experiments were conducted. In the survey, respondents were asked to estimate how they ought to act and their behavioural intention in each of five social dilemmas. In the first experiment, norm strength varied according to the percentage of similar others who thought one ought to co-operate. In the second experiment, norm strength was manipulated through how many similar others that had co-operated in the past in each situation. In both experiments, subjects rated their behavioural intention to co-operate. The results supported the role of norm strength. In the survey, for each situation there was a positive correlation between estimated norm strength and behavioural intention. In both experiments, there was a significant effect of norm strength on behavioural intention.

Key words: Social dilemmas, large-scale dilemmas, norms.

A variety of critical issues associated with environmental degradation like human overpopulation, resource depletion, and pollution can be characterised as situations in which individual interests are at odds with collective interest. Shrinking natural resources, air pollution, greenhouse effects or water depletion are all environmental problems, affected by people’s consumption or behaviour in one way or another. Some of these environmental problems can also be characterised as what is called social dilemmas (Dawes, 1980). Other types of large-scale problems where private interest is at odds with collective interest are dilemmas like paying for public transportation and donating blood.

Author Note: This research was financially supported by grant #980438:1 to Anders Biel from the Swedish Council for Planning and Co-ordination of Research.
A social dilemma arises when there is a conflict between private and collective outcomes. If a sufficient number of people choose to maximise the private outcome, which here is called defect, all will be worse off compared to if a sufficient number of people choose to act for the collective best (co-operate). Most research on choice behaviour in social dilemmas has been performed in experimental game settings. These settings are in some ways artificial. The consequences of one’s choices are immediate in experimental simulations of social dilemmas, participants are few in numbers, and they also represent a relatively homogeneous population (students). In large-scale dilemmas conditions are different with more heterogeneous populations and where group identification is more difficult to establish. Such dilemmas represent more mundane situations that frequently occur in everyday life.

Large-scale social dilemmas

A large-scale social dilemma is a situation where more than two persons interdependently act and where the behaviour has short-term as well as long-term consequences. If private outcomes are maximised, short-term consequences usually imply positive outcomes for the individual while long-term consequences often imply negative outcomes for the collective. It is also a situation where these long-term consequences are spread out geographically. Take as an example commuting by car versus public transportation. When choosing the car one receives immediate positive short-term outcomes to the extent that one probably saves time and travels in a more convenient manner. One can also choose to travel by public transportation or by bicycle. These alternatives may reduce personal convenience in favour of a positive outcome for the collective, clean air. This is the positive long-term consequence. However, if everybody chooses the car long-term consequences will be negative for all (the air will be polluted). In other words, a choice between commuting by car (to work or elsewhere) or by public transport is a choice between answering own or collective outcomes in the affirmative. The social dilemma is a situation that is well-known to most people. A problem though is that it is not obvious to all involved that they act in a dilemma situation. This may have some implications for what factors that motivate people to choose, e.g., whether to commute by private car or by public transport.
Factors promoting co-operative behaviour

The lion's share of social dilemma research has been concerned with the crucial question how people could be motivated to act more unselfishly. Various factors have been shown to affect the degree of co-operation in social dilemmas (for reviews, see Dawes, 1980; Komorita & Parks, 1994; Van Lange, Liebrand, Messick, & Wilke 1992). Among such factors are group size (Brewer & Kramer, 1986; Liebrand, 1984), communication (Dawes, McTavish & Shaklee, 1977; Dawes, Van de Kragt & Orbell, 1988), and environmental uncertainty (Rapoport & Suleiman, 1993) as well as social uncertainty (Biel, Eek & Gärling, 1997). It has also been suggested that general interaction norms such as commitment, equity and reciprocity regulate interpersonal behaviour in social dilemmas (Ostrom, 1998). Ostrom emphasised that reciprocity and commitment norms can influence people to behave more pro-socially in a large-scale interdependence situation. However, to what extent this is valid can be disputed.

In a review of factors promoting co-operation in the laboratory, in local resource systems as well as in large-scale social dilemmas, Biel (1999) raised the question to what extent findings from laboratory experiments and studies of common-pool resources can be generalised to large-scale, social dilemmas. In large-scale dilemmas where decisions are made in relative anonymity and without clearly defined group identifies, these norms of commitment, equity and reciprocity are less likely to be perceived as motivating factors for co-operation. Unless the interdependent nature of the situation is recognized, the choice between co-operation and defection may not present itself. Therefore, a moral implication that motivates co-operation is not at hand. If reciprocity or commitment norms are to be established in a particular situation, a prerequisite seems to be that people should have the opportunity to communicate, and hence have the opportunity to make promises to each other, and to monitor each others behaviour (Ostrom, 1990). In a large-scale dilemma where thousands of people independently make their choices, such opportunities are more rare. This does not preclude that norms may be important in such situations, although they may be different in kind.

Norms

Norms are usually divided into two categories: norms that guide how one ought to act (prescriptive norms) and norms that show how people do act (descriptive norms). The threat of sanctions or the promise of rewards (Cialdini, Reno, & Kallgren, 1990; Kerr, 1995) can further enforce the prescriptive norm. In the present study we are concerned with both kinds of social norms.
The prescriptive norm concept can be further divided into two additional subgroups: personal norms and social norms (Schwartz, 1977). The distinguishing feature of personal and social norms is where the sanctions come from. For social norms, it is assumed that sanctions come from other people or institutions. Once social norms are internalised, they become personal norms and sanctions originate from the actor him or herself. Personal norms are assumed to be the link between internalised general values and more specific opinions and expectations about how to behave in a tangible situation (Schwartz, 1977).

**Norms in Social Dilemmas**

Almost every review paper that lists potential solutions to social dilemmas have recognized the importance of norms (Kerr, 1995). Also, recent field studies have emphasised the importance of norms for regulating common-pool resources (Ostrom, 1990). Ostrom has further stressed that the norm of reciprocity should be incorporated as an important element in a theory of collective action. Despite this interest in norms, there have been few attempts to systematically incorporate the norm concept in social dilemma research (Kerr, 1995). Kerr mentioned three factors that have inhibited the study of norms in social dilemmas: the theoretical tradition that social dilemma research sprang from, the use of prisoner dilemma game settings and controlled situations that do not encourage norm developments, and methodological difficulties.

In a recent experimental study Kerr, Garst, Lewandowski, & Harris (1997) showed that a personal norm to honour commitment increased co-operation. Commitment was induced through discussions in groups of five undergraduate students. However, they did not provide any independent measure of commitment. Rather, it was assumed that since subjects discussed, they also made commitments. But as proposed by others (Dawes et al., 1988; Orbell, van de Kragt, & Dawes, 1988) discussion can also promote a group identity and solidarity with the group. They also point out that promises have to be (nearly) universal to promote co-operation and that efficiency in promise making declines with increased group size. Thus, in large-scale dilemmas as compared to a small-group environment, a personal norm to co-operate is less likely to be enforced by commitment. Instead, and in line with Schwartz (1977), we suggest that the perceived strength of a social norm affect the likelihood that the norm is internalised and consequently influences co-operation in large-scale dilemmas.

Another reason why social norms can be of importance is that they reduce social uncertainty. As suggested by Samuelson, Messick, Wilke, & Rutte (1986) fairness, or a desire not to deviate from the group norm, influences subjects’ decisions in resource dilemmas (Wilke, 1991) as well as in public goods dilemmas (Biel, Eek, & Gärling, 1996). If it is known that
few are prepared to co-operate, or do not consider it an obligation to co-operate, people may be less inclined to stand up for the common good. On the other hand, "... a defecting choice may be considered downright immoral if most other people co-operate" (Dawes et al., 1977, p. 10; see also Messick et al., 1983).

The aim of the present study is to investigate the impact of norms on willingness to co-operate in large-scale social dilemmas. We conducted three studies, one survey and two experiments. In the survey we investigated to what extent perceived norm strength guides behaviour. As mentioned above, social norms have been classified as either prescriptive or descriptive. In the first experiment, prescriptive social norm strength was manipulated through how many others that thought that one ought to choose a certain act in each of four dilemmas. In the second experiment, descriptive social norm strength was manipulated according to how many others that choose a particular act in each of three dilemmas.

Survey

The survey investigated the relationship between perceived moral norm strength and willingness to co-operate in large-scale social dilemmas. Our hypothesis is that willingness to co-operate will increase with an increase in perceived norm strength. At the same time, it is not expected that people will disregard consequences for themselves and for others when they make their decision. However, over and above possible consequences it is possible that behaviour in large-scale dilemmas will be mediated by perceived norm strength.

Method

A questionnaire was mailed to a nation-wide sample of 500 residents of Sweden. After two reminders 235 respondents had returned the questionnaire. Another eighteen respondents were excluded because they did not complete the questionnaire. An equal number of females and males responded. The mean age of the respondents was 45 years, ranging from 21 to 72 years of age. Close to one third of the respondents had completed senior high school and another third had a higher education.

Questionnaire

The first section of the questionnaire consisted of five short vignettes, describing everyday social dilemmas: (1) to refrain from watering during
shortage, (2) to commute by public transports during inversion, (3) to donate blood at the nearest hospital during scarcity, (4) to buy organic food and contribute to a cut down in the use of pesticides, and (5) as one of thousand anonymous person contribute to a monetary public good. For each vignette, respondents were asked to indicate how they themselves ought to act (perceived norm strength) and intentional behaviour: how they thought they actually would act. Both judgements were measured on a nine-point scale ranging from (1) *Ought definitely not to / Would certainly not*, to (9) *Ought definitely / Would certainly*. The order of presentation of the two scales was balanced.

The next section asked the respondents to judge the importance for themselves of six different consequences for each vignette (see Appendix for an example of one vignette and consequences). Ratings were made on a nine-point scale ranging from (1) *Not at all important* to (9) *Very important*. The consequences were subdivided according to: (a) co-operating with positive outcomes for myself, (b) co-operating with negative outcomes for myself, (c) co-operating with positive outcomes for the collective, (d) defecting with negative outcome for myself, (e) defecting with positive outcomes for myself, and (f) defecting with negative outcomes for the collective.

**Results and discussion**

To test the relationship between moral norm and intentional behaviour a correlation was computed between ought and intentional behaviour for each situation. These correlations varied from 0.49 for the water dilemma through 0.60, 0.61, 0.64 for the blood, food, and air dilemmas, respectively, to 0.74 for the game dilemma. We interpret these figures such that the stronger a moral norm is perceived to be in an everyday social dilemma, the more likely people are to co-operate.

Next, five principal component analyses with varimax rotation were performed, one for each dilemma. Included in each analysis were the six consequences that described outcomes for oneself and outcomes for the collective. For each situation, two factors with eigenvalues > 1 were extracted. In each of the five analyses the same four consequences loaded high on the first factor and the other two loaded high on the second factor. The group of four consequences (a, c, d, and f) were positive outcomes from co-operation and negative outcomes for defection. That first factor is labelled pro-social. The second factor, pro-self, included a negative outcome for myself from co-operation and a positive outcome for myself from defection (b
and e). The percentage of explained total variance varied between 39% and 49% for the first factor and between 20% and 29% for the second factor.

Five regression analyses were then performed, one for each dilemma, with willingness to co-operate as dependent variable. As Table 1 shows, the two factors describing pro-social and pro-self consequences had an effect on participants willingness to co-operate. Except for the water situation where the pro-self beta coefficient was non-significant, all beta coefficients were significant. Pro-social consequences increased willingness to co-operate while pro-self consequences had the opposite effect. The third independent variable was perceived moral norm strength. That predictor contributed even more to the explained variance, supporting our hypothesis that moral norms will influence people’s choice behaviour over and above considerations about consequences.

Table 1

<table>
<thead>
<tr>
<th>Situation</th>
<th>Independent variable</th>
<th>Beta</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>Pro-social</td>
<td>.32</td>
<td>6.02***</td>
</tr>
<tr>
<td></td>
<td>Pro-self</td>
<td>-.18</td>
<td>-3.65***</td>
</tr>
<tr>
<td></td>
<td>Moral norm</td>
<td>.46</td>
<td>8.32***</td>
</tr>
<tr>
<td>R² adj = .520, F (3, 205) = 76.13, p &lt; .000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Pro-social</td>
<td>.26</td>
<td>4.02***</td>
</tr>
<tr>
<td></td>
<td>Pro-self</td>
<td>-.03</td>
<td>-0.46</td>
</tr>
<tr>
<td></td>
<td>Moral norm</td>
<td>.38</td>
<td>5.70***</td>
</tr>
<tr>
<td>R² adj = .276, F (3, 196) = 26.30, p &lt; .000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donate blood</td>
<td>Pro-social</td>
<td>.15</td>
<td>2.58**</td>
</tr>
<tr>
<td></td>
<td>Pro-self</td>
<td>-.15</td>
<td>-2.67**</td>
</tr>
<tr>
<td></td>
<td>Moral norm</td>
<td>.50</td>
<td>8.21***</td>
</tr>
<tr>
<td>R² adj = .369, F (3, 202) = 40.97, p &lt; .000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air pollution</td>
<td>Pro-social</td>
<td>.29</td>
<td>5.77***</td>
</tr>
<tr>
<td></td>
<td>Pro-self</td>
<td>-.18</td>
<td>-3.58***</td>
</tr>
<tr>
<td></td>
<td>Moral norm</td>
<td>.54</td>
<td>10.60***</td>
</tr>
<tr>
<td>R² adj = .514, F (3, 205) = 75.35, p &lt; .000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Game</td>
<td>Pro-social</td>
<td>.14</td>
<td>2.86**</td>
</tr>
<tr>
<td></td>
<td>Pro-self</td>
<td>-.28</td>
<td>-5.66***</td>
</tr>
</tbody>
</table>

Despite sometimes low reliabilities (Cronbach alpha) for the second factor, we included it in the analysis since it captured the theoretical idea that egoistic incentives are important for which course of action is chosen in a social dilemma.
As has often been pointed out correlation is not tantamount to causation. Thus, respondents could for example have based their estimates of norm strength on their willingness to co-operate in the future. Having decided to perform or not to perform a particular act, a respondent may regard this act as part of or outside the moral sphere. To gain better control of the causal order two experiments, where, respectively, prescriptive and descriptive norm strength were manipulated, were designed.

**Experiment 1**

Results in the survey showed that a personal moral norm explained some of the variance in willingness to act for the collective in large-scale social dilemmas. The aim of the two following studies was to further test the impact of moral norms on choice behaviour. In this second study, we explicitly manipulated prescriptive moral norm strength. Rather than asking subjects how important they thought a moral norm was in various situations, norm strength was manipulated in four dilemmas. The four dilemmas served as replicates. Our hypothesis was that stronger the norm is, the stronger will the willingness to co-operate be.

**Method**

**Subjects**

Sixty-four undergraduate students of economics served as subjects. Included in the sample were 26 women and 26 men, while twelve subjects did not report their gender. The mean age was 23.5 years, ranging from 19 to 30.
Participants were provided with a booklet to complete in their classes. The booklet contained bogus information about how respondents had answered in the past. The front page of the booklet, called "Students in Society Spring 1998", introduced the aim of the study:

“During consecutive years investigations have been carried out among the students at the university. Such investigations are made every sixth month. At each occasion a certain number of situations are described. For each situation, respondents are asked to indicate how people in general ought to act and how they themselves would act. Ought to implies that there is a general agreement about what is the right thing to do. Others may expect a person to act in a certain way and administer criticism if the person deviates from the prescribed behaviour.

We now conduct a new study to see if there has been any opinion changes since our last survey. We ask you to answer as truthfully as possible. Each participant is guaranteed anonymity. Participation is voluntary and you can withdraw whenever you like.”

On top of page one the first situation was presented (for an example, see Appendix). Right below, our manipulation concerning how people had answered in the last survey was introduced. “In the last survey 18% of the respondents thought that one should buy organic food.” To the right of this text there was a pie diagram. In this particular case 18% of the area was grey and the rest was black. The figure 18% was also written above the pie. This percentage could vary around 20%, 40%, 60%, and 80%, respectively. We avoided a round figure to increase credibility. On the bottom part of the page participants were asked whether they will buy organic food during the next half year and responded to a 9-point scale anchored by ‘I scarcely think so’ to ‘yes, absolutely’. On the next three pages, another three situations, each with a new percentage, were introduced. Thus, each participant responded to four situations but with a different percentage for each situation. Percentages were presented in a randomised order.

Results

Mean ratings of willingness to co-operate are presented in Table 2. These ratings are averaged across situations for each level of norm strength. As can be seen in Table 2 the stronger the norm, the more likely were subjects to co-operate. In line with our hypothesis, an ANOVA with repeated measures on norm strength revealed a significant effect, $F_{(3, 189)} = 4.76, p<.01$. 

Experiment 2

In order to extend the findings in Experiment 1, the impact of a descriptive norm on choice behaviour was investigated. Since the differences in behavioural intention were rather weak for the lower levels of norm strength, we reduced the number of levels to three: 20%, 50%, and 80%. At the same time, we reduced the number of dilemmas to three. Thus, each respondent judged 3 situations with a different norm level for each dilemma. Our hypothesis was once again that stronger the norm is, the stronger will the willingness to co-operate be. As in Experiment 1 the three dilemmas served as replicates.

Table 2
Means and Standard Deviations for Willingness to Act for the Collective Good by Percentage Level of Prescriptive Moral Norm Strength

<table>
<thead>
<tr>
<th>Norm strength</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>5.4</td>
<td>2.7</td>
</tr>
<tr>
<td>40</td>
<td>5.7</td>
<td>2.6</td>
</tr>
<tr>
<td>60</td>
<td>6.2</td>
<td>2.6</td>
</tr>
<tr>
<td>80</td>
<td>7.0</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Method

Subjects

Seventy-two undergraduate students of economics served as subjects. Included in the sample were 59 women and 12 men. One subject did not report his or her sex. The mean age was 36 years, ranging from 19 to 51.

Materials and Procedure
The procedure in the present experiment was the same as the procedure in experiment 1 except for how people had answered in the past. This time the manipulation of norm strength was expressed such that “In the last survey 18% of the respondents said that they bought organic food”. This percentage could vary around 20%, 50%, and 80%. Percentages were presented in a randomised order.

Results

Mean ratings of willingness to co-operate are shown in Table 3. As in Experiment 1, ratings are averaged across situations for each level of norm strength. Willingness to act for the collective good increased with increasing descriptive norm strength is. An ANOVA with repeated measures on norm strength revealed a significant effect, \( F(2, 142) = 9.89, p < .000 \).

<table>
<thead>
<tr>
<th>Norm strength</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>4.7</td>
<td>2.9</td>
</tr>
<tr>
<td>50</td>
<td>6.3</td>
<td>2.5</td>
</tr>
<tr>
<td>80</td>
<td>6.7</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Summing up

In both experiments, norm strength had an effect on participants’ willingness to act for the common good. Thus, if people believe that others think that one ought to co-operate or if others in fact do co-operate, they are likely to do the same. If on the other hand others signal that co-operation is not called for, this impairs people’s willingness to co-operate themselves.
However, this was not true for all dilemmas. Although not presented in the result section, since the dilemmas served as replicates, respondents were not swayed by the manipulation in the organ donation dilemma. One possible explanation for why norm manipulation sometimes is ineffective could be that people have a firm conviction about what is the right thing to do. Another potential explanation is that the effect is not always linear. If people believe that there is a strong need for action, and learn that few are prepared to act for the common good, then they feel a stronger responsibility to act themselves.

In Experiment 2 females outnumbered males. Our aim was not to investigate potential sex differences, but this imbalance prompted us to look for any such differences. In Experiment 1 the means regarding intention to co-operate where for the four norm levels for women 5.7, 6.1, 6.5, and 7.0, respectively, while for men they were 4.7, 5.3, 5.9, and 7.5, respectively. The corresponding figures for Experiment 2 were for females 5.1, 6.4, and 6.4 and for men 3.1, 6.7, and 7.2. Thus, in both experiments men seemed to be more susceptible than women to the norm manipulation. Why this was the case is not clear to us. It could be that women had a more pronounced personal norm about what to do in these situations or that they were better tuned to what one is likely to do in the future.

General Discussion

The main purpose of the present study was to investigate the impact of norm strength on willingness to co-operate in large-scale social dilemmas. The overall findings gave support to our hypothesis that moral norms influence people’s choice behaviour in social dilemmas. This influence could be mediated by personal as well as by social norms. In the survey, results showed that a personal norm guided people’s willingness to act for the common good over and above considerations about consequences. This is in line with the suggestion by Kerr and his colleagues that a small inner voice has an impact on behaviour in social dilemmas (Kerr et. al., 1997). In both experiments we found that although people may have a strong view of what is the right thing to do, they are also influenced of what others think they ought to do (prescriptive social norm) and how others actually behave (descriptive social norm). As suggested by Klandermans (1992), the behaviour of others is essential in real-life social dilemmas. That small inner voice may sometimes only whisper unless supported by an articulated social norm.

In the introduction we pointed out that it has been suggested that reciprocity norms probably will elicit pro-social behaviour in social dilemmas (Ostrom, 1998). In small group dilemmas it may be true that co-operation can influence others to reciprocate. However, in large-scale social dilemmas involving thousands of strangers, the reciprocity effect has its
limitations. Nevertheless, a reciprocity norm could be built upon some general idea about what the right thing to do is and the belief that others has this idea too. This phenomenon can be called extended or generalised reciprocity and refers to situations were social norms supporting co-operation are strong. When social norms are strong, there is reason to believe that other people will co-operate. This calls for a positive response.

Related to this reciprocity effect is a decrease of social uncertainty. If people believe that others co-operate in large-scale dilemmas, that would reduce social uncertainty. The results in Experiment 1 and 2 can be interpreted such that social uncertainty was reduced when participants were led to believe that many others thought that they ought to, or actually would act for the common good.

A third possibility is that participants were influenced by efficacy. When many people are prepared to co-operate, a single contribution is likely to be a positive contribution to the collective outcome. However, if few stand up for the common good, personal efforts may be wasted.

Some potential limitations of the present study should be noted. One concerns the presumed differentiation between a prescriptive norm and a descriptive norm. This is a common distinction, but one may signal the other. If a person can sense that a particular act could belong to the moral sphere, then an estimate of how many people that perform that act may at the same time signal degree of support for a prescriptive norm. Imagine that a descriptive norm tells that 80% of a population commutes by public transport. One also knows that CO\textsubscript{2} emissions are a critical problem. The choice of transport mean may be seen as one based on moral considerations enforced by a prescriptive norm. On the other hand, if there are no parking-places close to the places of work, motives for commuting, and hence the nature of the social norm, may be interpreted differently. This suggestion is in line with Kelley’s (1972) augmenting principle. Knowledge about emissions and lack of parking places are facilitative causes that overcome inhibitory causes to choose public transport. We suggest that the nature of the facilitative (or inhibitory) causes can guide the attribution of motives for co-operation.

Another limitation is the lack of knowledge about the actual variation in perceived norm strength in the various dilemmas. If a social norm is firmly established, or if most people agree that no social norm exists, then they will probably not be influenced by a norm manipulation. Above we speculated that an established norm in the organ dilemma blocked the effect of the norm manipulation. In future studies, independent measures of perceived norm strength should be collected. This will also facilitate investigations of the effects of social campaigns. In such campaigns, information to the public can serve the aim to install, activate, and maintain social norms for proper behaviour. Without such information, people may be more occupied with pro-self consequences. However, if they are informed about collective or pro-social consequences they may realize the interdependence structure and the
social dilemma. With such an awareness, people will be more sensitive to social norms. If we learn how feedback about moral opinions and the behaviour in the population at large affects the individual under varying degrees of norm strength, then we know a little more about when such campaigns are more or less likely to promote co-operation in large-scale dilemmas.

References


(Eds.), *Social Dilemmas: Theoretical issues and Research Findings* (pp. 307-318). Oxford: Pergamon.


Appendix

Below five situations are described. For each situation, state what you think you ought to do. (For each situation, encircle the figure that best describes your own opinion).

After a winter with a small amount of precipitation, an unusually dry summer is expected. The ground water level in your municipality is very low. To manage the water supply, citizens are asked to halve their water consumption.

What do you think you ought to do?

1 2 3 4 5 6 7 8 9
Ought definitely not halve my water consumption
Uncertain/ Don’t know
Ought definitely halve my water consumption

Below the same five situations are presented. This time you are asked to state what you are most likely to do in each situation.

What do you think you are most likely to do?

1 2 3 4 5 6 7 8 9
I will definitely not halve my water consumption
Uncertain/ Don’t know
I will definitely halve my water consumption

How important are the following reasons for your decision?

a If I halve my water consumption I can avoid problems with water shortage in the future.

1 2 3 4 5 6 7 8 9
Not at all important Very important

b If I halve my water consumption I cannot wash and shower whenever I like.

c If I halve my water consumption others will have a larger supply.

d If I do not halve my water consumption I can have trouble with water supply in the future.

e If I do not halve my water consumption I don’t have to bother changing my present water usage.

f If I do not halve my water consumption others can have trouble with their water supply in the future.
To check that the moral norm and the four pro-social consequences are not indicators of the same concept, five two-step hierarchical regression analyses with willingness to co-operate as dependent variable were performed for each dilemma. In the first step, either the four consequences or the moral norm together with three of the consequences were entered. In the second step, either the moral norm or one of the consequences was entered. Across the dilemmas, when the moral norm was entered in the second step $R^2$ varied between 0.11 (water) and 0.40 (game). When any of the consequences was entered in the second step $R^2$ varied between 0.00 and 0.04 (air and consequence f). Hence, pro-social consequences and the ought statement do not seem to measure the same concept.