



Prosocial and moral behavior under decision reveal in a public environment

Per A. Andersson^{a,b}, Arvid Erlandsson^b, Daniel Västfjäll^{a,b,c}, Gustav Tinghög^{a,d,*}

^a JEDILab, Division of Economics, Department of Management and Engineering, Linköping University, 581 83 Linköping, Sweden

^b Department of Behavioral Sciences and Learning, Linköping University, 581 83 Linköping, Sweden

^c Decision Research, Eugene Oregon, USA

^d Division of Health Care Analysis, Department of Health, Medicine and Caring Sciences, Linköping University, 581 83 Linköping, Sweden

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ABSTRACT

People may act differently in public environments due to actual reputation concerns, or due to the mere presence of others. Unlike previous studies on the influence of observability on prosocial behavior we control for the latter while manipulating the former, i.e. we control for implicit reputation concerns while manipulating explicit. We show that revealing decisions in public did not affect altruistic behavior, while it increased cooperation and made subjects less likely to make utilitarian judgments in sacrificial dilemmas (i.e., harming one to save many). Our findings are in line with theoretical models suggesting that people, at large, are averse to standing out in both positive and negative ways when it comes to altruistic giving. This “wallflower effect” does however not seem to extend to decisions on cooperation and moral judgments made in public.

1. Introduction

It has become a truism that people often act differently when others are observing them, as compared to when they are alone. Reputational concerns and signaling are widely theorized to be a driving mechanism explaining why people become more prosocial and moral when observed in public (see e.g. Andreoni & Bernheim, 2009; Ariely et al. 2009; Bénabou & Tirole, 2006; Ellingsen & Johannesson, 2008; Harbaugh, 1998). Still, experimental studies that separate the influence of implicit and explicit reputational concerns in moral and prosocial behavior are widely lacking. Thus, we simply do not know whether people are affected by having their moral decisions revealed in public or if reputation concerns stems from merely being surrounded by others. In this study we investigate this by keeping the presence of an audience constant across conditions while manipulating whether decisions are publicly revealed or not. Moreover, we investigate these reputational concerns for a wide range of moral and prosocial behaviors (altruistic giving, cooperation, and judgments in sacrificial moral dilemmas) in a strictly randomized experiment.

A current debate in behavioral sciences concerns which types of reputational concerns and experimental manipulations that may or may

not influence people to alter their behavior when in public (see, for instance: Bradley et al. 2018; Fehr & Schneider, 2010; Lamba & Mace, 2010). An important distinction in this literature is that between explicit and implicit reputation concerns. Explicit reputation concerns refer to situations where people's behavior is influenced through signaling motives to real others. Implicit reputation concerns, however, refer to situations where people's behavior is influenced by mere cues about being surrounded by others¹. For example, when paying for dinner at a restaurant your company might not see how much you tip, but you may still feel observed and tip differently compared to when eating out by yourself. The distinction between explicit and implicit reputation concerns is important for theoretical models of prosocial behavior (such as Bénabou & Tirole, 2006; Ellingsen & Johannesson, 2008), as reputation motives in these models rely on behavior being visible to others, while being silent on the role implicit reputational concern.

The separation of explicit and implicit reputational concern relates to one of the earliest strands of research in psychology, namely, research on social facilitation (Allport, 1924; Zajonc, 1965). Studies on social facilitation have consistently shown that people have a heightened level of arousal when they are observed by or anticipate being observed by an audience² (Bond & Titus, 1983; Brooks, 2014;

* Correspondence to: Gustav Tinghög, Department of Management and Engineering, Division of Economics, Linköping University, 581 83 Linköping, Sweden. Tel.: +46 733 223091.

E-mail address: gustav.tinghog@liu.se (G. Tinghög).

¹ An intermediate category is “pseudo observability” referring to situations where decisions are revealed but personal identity is not (Bradley et al., 2018).

² Bond and Titus (1983) showed that such effects persist even in situations where there is no real possibility to assess each other, i.e. when people are present in the same room but have no ability to observe each other.

Muth et al. 2017). This suggests that implicit reputational concerns play a role in when and why behavior is affected in public environments. In regard to moral and prosocial behavior, another strand of studies has focused on implicit cues of being observed. For example, presenting images of watchful eyes to people when making a donation decision have been shown to increase prosocial behavior (Ekström 2012; Haley & Fessler 2005; Vogt et al., 2015). In these studies, the images of watchful eyes presumably activates reputational concerns, which, in turn, increase prosocial behavior. The replicability of these findings have, however, been called into question (Matsugasaki et al. 2015; Northover et al. 2017).

In this study, we investigate the effect of explicit and implicit reputational concerns on three different but related types of prosocial behavior: altruistic behavior, cooperation, and judgments in sacrificial moral dilemmas. Our study contributes to the existing literature in the following ways: (i) we explore the influence of public reveal on a broad set of moral and prosocial behaviors in a large-scale strictly randomized experiment involving real incentives; (ii) we use a novel experimental design that keeps the presence of an audience constant across conditions, allowing us to separate explicit reputational concerns from implicit reputational concerns; (iii) we use an experimental paradigm where decisions are revealed instantly on a screen (together with name and picture) to an audience, thereby creating a more salient manipulation of public reveal compared to any previous study³; and (iv) we elicit data on social norms, allowing us to explore if individuals increasingly adhere to these when their decisions are publicly revealed compared to when making the same decisions anonymously.

If the desire to appear honorable is an important motivator for prosocial behavior, as suggested in theoretical models by e.g. Benabou and Tirole (2006) and Ellingsen and Johannesson (2008), then public reveal should induce individuals to contribute more to charitable causes and public goods. A straightforward prediction about how public reveal should influence behavior in our experiment is that it should increase prosocial and ethical behavior. Appearing as prosocial and honorable to others might have positive consequences in future interactions, providing the basis for long-term benefits both socially and monetarily. However, people may also predominantly care about behaving in a manner that is consistent with social norms. These social norms do not necessarily coincide with being maximally prosocial. For example, in standard dictator games there usually exist a common norm of sharing the endowment 50-50 and only about 10 % give more (Engel, 2011). In terms of one's reputation, Klein and Epley (2014) show that people do not judge selfless actions more positive than equitable actions, suggesting that "it pays to be nice but pays no more to be really nice". Jones and Linardi (2014) advanced the idea that people increasingly become "wallflowers" in situations where behavior is visible to others. This implies that when making publicly revealed decisions, people become averse to standing out in both positive and negative ways and therefore seek to mimic what they believe is the most socially appropriate or common behavior. In an experiment where participants were asked to contribute to a charitable cause either in a private or in a visible condition, Jones and Linardi (2014) observed that visibility is associated with higher levels of giving only in situations where others also contribute a large share, and that this wallflower behavior is more pronounced among women compared to men. However, they did not investigate the existence of wallflower behavior for other types of pro-social and moral behavior. For example, in situations that explicitly involve strategic concerns, like cooperation in the public goods game, where the decision-maker knows that the decision will have direct effects on fellow group members. Consequently, it is

important to investigate if this wallflower effect replicates across different samples and experimental settings and if it extends to other types of prosocial and moral behavior.

It is possible that public reveal increases concerns for public norms rendering more norm-consistent decisions. For a number of reasons, it is not always clear what the perceived norms are in a given situation. First, social norms can refer to either injunctive norms (i.e. which behaviors are seen as appropriate by the majority of individuals in a community) or descriptive norms (how do people actually behave; Cialdini, Reno & Kallgren, 1990; Krupka & Weber, 2009; Schultz et al., 2007). Second, perceived norms are not necessarily the same as actual norms. Perceived norms are accessible to us and influence our behavior but people are sometimes mistaken both about how appropriate different behaviors are in a given community (injunctive norms) and how people actually behave (descriptive norms). Third, small situational differences can change our perception of norms. For example, List (2007) showed that adding a very selfish option (i.e. take \$1 from the other player) in a dictator game made the second most selfish option (i.e. give nothing of the endowment to the other player) seem much more appropriate. Fourth, norms can change a lot depending on the group at hand. For example, a person might find a joke inappropriate when doing volunteer work at the local church, but appropriate when socializing with death metal friends. In the current study, we therefore measure both injunctive norms and descriptive norms for the exact same scenarios from a similar student sample.

1.1. Previous studies

The type of prosocial behavior that has been most extensively explored with regard to the influence of observability is altruistic behavior, i.e., when people act unselfishly in order to benefit others. In lab experiments many studies have shown that various forms of informing others about the decision typically lead to more altruistic behavior (Alevy, Jeffries, Lu, 2014; Ariely et al. 2009; Barmettler et al. 2012; Bohnet & Frey 1999; Franzen & Pointner, 2012; Hoffmann et al. 1994; Hoffmann et al. 1996; Izuma et al. 2010; Satow, 1975). Similar results have also been found in field experiments on charitable giving (Alpizar & Martinsson, 2013; Harris et al. 1975; Karlan & McConnell 2014; Soetevent, 2005). However, there are also studies showing that people are averse to standing out, and therefore often conform around mean levels of giving when being observed (Jones & Linardi, 2014). Moreover, perceived norms of one's in-group have been shown to predict actual donation amounts both when focusing on descriptive norms (Croson, Handy & Shang, 2009; Hysenbelli, Rubaltelli & Rumiati, 2013; Agerström et al., 2016) and when focusing on injunctive norms (Everett et al., 2015). A common problem in the design of most studies on the effect of observability on altruistic behavior is that the manipulations used confound the effect of having decisions publicly revealed with the effect of merely being surrounded by others. Therefore, it is unclear if explicit reputational concerns has an effect above and beyond the effect of merely being watched in a public environment. Another common weakness of these studies is that the audience usually consist of experimenters observing participants' decisions. The experimenter is a particular kind of observer, who does not exist in everyday public environments. Thus, effects that arise when being observed by an experimenter do not necessarily extend to public contexts with other types of observers (see e.g. Barmettler et al. 2012).

Compared to altruistic giving, the influence of observability on cooperation in social dilemmas has been less extensively investigated and the few existing studies show mixed results. Some studies show positive effects of revealing decisions (Andreoni & Petrie, 2004; Rege & Telle, 2004; Samek & Sheremeta, 2014), while others find no or negative effects on cooperation (Martinsson et al., 2013; Noussair & Tucker, 2007). Conditions where observability increased cooperation only when another factor was added include effort-based earnings (Filiz-Ozbay & Ozbay, 2014), interactions with gender (Van Vugt &

³ Some previous studies have used similar manipulations of public and private decision making to study other outcomes, such as willingness to compete (Buser et al. 2017) and misreporting of own skills (Ewers & Zimmermann 2015).

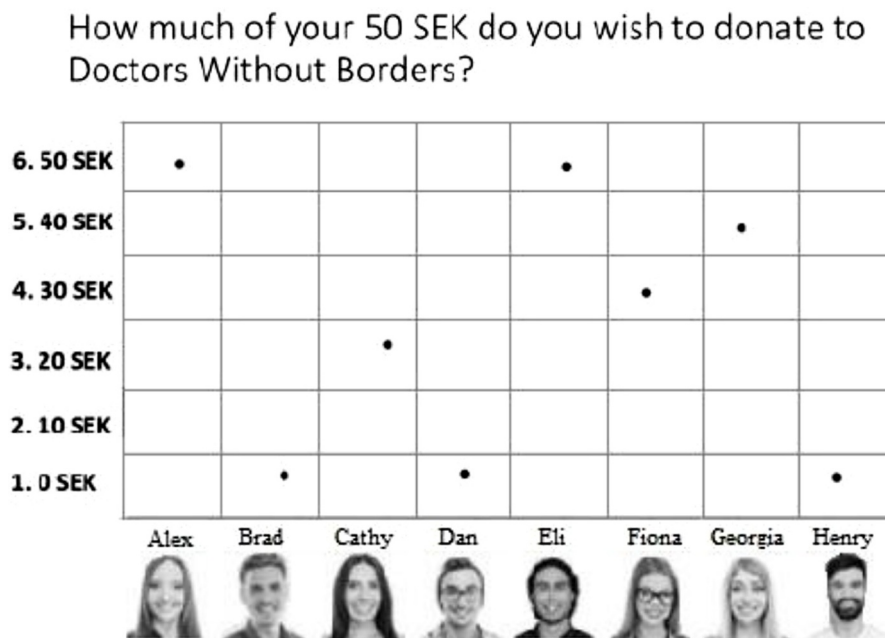


Figure 1. Example of revealed decisions in the public condition for the altruistic giving task.

Iredale, 2013), and prior familiarity and exchange (Gächter & Fehr, 1999), which is a form of communication that could enhance trust (Balliet, 2010). As for altruistic giving, no previous study, to our knowledge, has kept constant a public environment while varying the reveal of decisions.

Although sacrificial dilemmas (i.e., Trolley problems) have been extensively used in research on moral judgment, studies on the influence of the observability are lacking. However, studies on conformity have shown that moral judgments are malleable to social influence, in that people are highly influenced by judgments by surrounding people (Kundu & Cummins, 2012). It remains unexplored, however, whether being observed, without a prior norm established by others' behavior, affects preferences in these dilemmas. People rate other people who make utilitarian moral judgments (e.g. sacrificing one to save five persons) as being less moral and less empathic than people making deontological moral judgments (Uhlmann et al. 2013). People also hold the belief that others will judge utilitarian decisions more positively in contexts that emphasize competence over warmth and vice versa (Rom & Conway 2018). People who display characteristically utilitarian judgments have been shown to be less preferred as partners than those who display characteristically deontological moral judgments (Everett et al 2016). This suggests that people should be more inclined to make deontological judgements when they are publicly observed.

2. Method

2.1. Participants and procedure

In total 374 participants (44.1% female, mean age 23.27, SD = 3.98) were recruited among students at Linköping University using ORSEE (Greiner, 2015). Data was collected in two waves. Everything was similar across data collections except for some minor alterations (noted below) and the addition of a public goods game in the second data collection. All decisions except the moral judgments were fully incentivized and participants were paid in cash at the end of the experiment, in accordance with their decisions. In order to make sure that participants' decisions were not revealed to the experimenters, participants received an id-number at the beginning of the experiment. After the experiment, participants picked up a marked envelope containing their earnings. Thus, decisions made in the private condition

were double-blind. This procedure was clearly explained at the beginning of the experiment.

In both conditions, participants sat around a table in a semi-circle, each chair turned towards a projector screen, yet clearly in view of each other (see Figure S1 in supplementary materials). The group's size was kept at four to ten participants ($M = 8.00$) in Data collection 1, and lowered to four or eight participants in Data collection 2 ($M = 5.86$) in order to facilitate payments from decisions made in the Public Goods Game. As the experiment commenced, instructions were displayed on a projector screen, followed by oral instructions by the experiment leader. The physical presence of an audience was held constant between conditions, while the public reveal of decisions made by the participants was manipulated. Thus, an element of social attention was held constant for each participant, which should provide implicit reputation cues across both conditions. The experiment was programmed and conducted using an add-in program for PowerPoint, called "Mentometer". The program was connected to clickers resembling small pocket calculators, which were used by subjects to answer questions. These clickers were small enough to fit into the palm of a hand, and silent, making it impossible for others to tell what decision was made and when (see Figure S2 in supplementary materials). Mentometer instantly registered which button had been pressed for each clicker, making it possible for subjects to answer questions simultaneously and for the experimenter to then display all answers directly on screen after everyone had made a decision. Thus, decisions could be revealed instantly following a task, and participants who responded slower did not see the others' decisions prior to making their own decision.

2.2. Experimental design

Subjects were randomly assigned to either the public decision condition ($n = 183$) or private decision condition ($n = 191$). Thus, data for private and public conditions were collected at the same time but in different rooms. In the public condition, participants' names and photos were taken at the start of the experiment and clearly displayed on a projector screen in the room. After each decision, the choices of each participant were presented on screen with their name and face. Figure 1 illustrates a typical decision reveal in the public condition, although actual names and photos were used rather than the placeholders. In order to make the public reveal manipulation extra salient, each

individual decision was also read aloud by the experimenter, naming the participant and the choice made. In the private condition, participants' decisions were not revealed in any way. Neither participants nor experimenters could oversee decisions made by others. The same screen which displayed results was also used for displaying instructions and choice options for each task in the private condition, ensuring that participants were paying attention.

The experiment started with a practice block to familiarize the participants with the clicker and the public reveal of decisions in the public condition. The practice block began with participants first being asked to click the number of their control device, with the two following questions asking for their handedness and gender. The practice block was followed by the altruistic giving task, then the moral dilemmas. The experiment ended with a couple of follow-up questions. In the second data collection the Public Goods Game followed the altruistic giving task prior to the moral dilemmas task, while otherwise keeping the same block structure.

2.3. Materials

The exact instructions can be found in the supplementary material. To measure altruistic giving participants played a modified Dictator Game where the recipient was a charitable organization. Participants were instructed that they would receive 50 SEK (approx. \$6) as part of their payment for participation, and that they could choose to donate any amount of this money to a charity organization. Following this information, a short description of the charitable organization was presented on the screen, and participants were given the option to donate between 0 and 50 SEK (in rounded amounts of ten) to the organization.

To measure cooperation participants played a simple one-shot Public Goods Game. In order to minimize issues related to comprehension, the instructions that were given before participants made their choice included examples of how distributions would turn out if nobody cooperated, everyone cooperated, or all but one cooperated. Participants had two options, to cooperate or defect. Participants who cooperated gave 50 SEK to the common pool, while participants who defected kept 25 SEK for themselves. Money contributed to the common pool was distributed equally to participants in the group (i.e. participants in the room).

To measure moral preferences four utilitarian sacrificial dilemmas were used. These were all based on classical Trolley problems used extensively in the literature on moral judgments (e.g., Foot 2002; Greene et al. 2008; Tinghög et al 2016). Four dilemmas were included: the Switch dilemma, Footbridge dilemma, Lifeboat dilemma, and Crying baby dilemma. All dilemmas involved the assessment of a harmful action that maximizes good consequences. In the Switch dilemma, for example, participants were presented with the following: "Imagine there is a runaway trolley headed for five railway workmen who are on the tracks. You are at a railway switch next to the railway tracks. The only way to stop the trolley from running over the five railway workmen is to switch the tracks over to a sidetrack. On this sidetrack one railway workman is working. The lone railway workman will die if you do it, but the five railway workmen will be saved." Participants then answered a dichotomous yes/no question regarding if they would make the utilitarian choice or not. For example, "Would you switch the track to the sidetrack, in order to avoid that the five railway workmen die?"

At the end of the experiment participants responded to a series of follow-up questions and demographics. In Data collection 1 participants responded to the question "Did you feel anonymous when answering the various questions?" on a scale from 1-3 (1=Not anonymous, 2=Somewhat anonymous, 3=Completely anonymous). In Data collection 2 a Likert-type item was used where participants rated their agreement from 1 (completely disagree) to 7 (completely agree) with the statement "I felt that my answers were anonymous when I answered

the various questions". Familiarity of present co-participants was rated in both studies by asking subjects how many participants they recognized from before the experiment.

2.4. Norm elicitation

In order to investigate social norms, we conducted an incentivized norm-elicitation experiment where data on both descriptive and injunctive norms for the decisions made in the experiment were collected. The design for this procedure closely followed the design used by Krupka and Weber (2013) and d'Adda, Drouvelis, and Nosenzo (2016). Participants were presented the exact same decision scenarios as in our original experiment but with the important difference that participants were now asked to estimate the norms regarding the decisions in the experiment for each condition rather than making decisions oneself. Specifically, to elicit descriptive norms participants were asked to state their beliefs about others behavior "What do you believe is the most common response among students at Linköping University in the described situation?". To collect responses on injunctive norms participants were asked to rate how "socially appropriate" or "socially inappropriate" each decision alternative was on a four-point scale. All participants rated beliefs and social appropriateness for both the public and private condition where the first condition described was counterbalanced between subjects.

In total, 195 participants were recruited (50.8% female, 2.5% other or missing, mean age 25.61, SD = 5.54). We recruited participants from the same student participant pool at Linköping University as in the original experiment, but excluded participants who had participated in the original experiment. Data was collected online in a survey programmed in Qualtrics. The norm-elicitation was incentivized as participants who correctly guessed the norm in the sample, took part in a lottery which paid four winners (randomly chosen from correct estimates of the norms) scratch-lottery tickets worth 200 SEK (around 20\$).

2.5. Data analysis

Kolmogorov-Smirnov and Shapiro-Wilk tests were used to test the assumption of normally distributed data, with non-parametric tests replacing or complementing t-tests where the normality assumption was violated. For contribution amounts in altruistic giving, complimentary analyses were conducted using OLS regression with amount contributed as dependent variable and treatment, familiar peers, age and gender as predictors. "Public decision" is a dummy for the experimental condition, public decision (coded as 1) and anonymous decision (coded as 0). "Familiar peers" is a dummy for having familiar peers present in the room during the experiment (coded as 1) or not (coded as 0). "Age" is the participant age in years. "Female" is a dummy for genders female (1) and male (0). The Public Goods Game decision was analyzed using a chi-square test, with a complimentary analysis using a Linear probability model. For the moral sacrificial dilemmas, the total number of utilitarian choices was used as a dependent variable in the main analysis, with complimentary OLS regression following the same variable coding as for the altruistic giving analysis. All reported regression analyses are clustered on standard errors at session (with session being each experimental session). Primary analyses were conducted using SPSS 24 with complimentary regression analyses conducted using SAS.

Previous studies showed mixed results in relation to gender effects, but it has been suggested that female participants would be more sensitive to contextual manipulations (Croson & Gneezy, 2009), thus we included an interaction effect between gender and treatment condition in the regressions. As having familiar peers present was previously found to have a potential moderating effect on acting more prosocial when being observed (Alpizar & Martinsson, 2013) we included this factor in our regression models. Because the previous study did not

differentiate between making decisions in a social environment and having ones decisions publicly revealed, we included having familiar peers present both as a main effect and as an interaction with treatment condition. This allowed us to investigate if potential reputational concerns with peers was sensitive to the treatment condition or not.

3. Results

3.1. Manipulation check

We start by reporting the results from our manipulation check and data collection of social norms. The manipulation check confirmed that participants in the private condition experienced anonymity to a higher degree than participants in the public condition in data collection 1 where anonymity were measured on a scale from 1 to 3, mean difference = 1.289, SE = 0.086, $t(133) = 15.0$, $p < .001$. Similar results were found in Data collection 2, where a Likert-scale from 1 to 7 was used, mean difference = 3.753, SE = 0.176, $t(232) = 21.4$, $p < .001$.

3.2. Altruistic behavior

Figure 2 shows the mean contributions given to the charitable organization by condition. As shown, contributions were similar across the public and private conditions (Mean contribution_{public} = 28 SEK; Mean contribution_{private} = 30 SEK, $t(372) = 0.813$, $p = .417$). Thus, we find no support for the hypothesis that people act more altruistically in public. Figure 3 shows the raw frequency of decisions across conditions, further illustrating the lack of an overarching effect of making decisions in public.

To further analyze the effect of public reveal on altruistic behavior, we conducted OLS regressions controlling for gender, age, and presence of familiar peers during the experiment⁴. Table 1 displays the results from these regressions. In line with the descriptive results presented in Figure 2, we detected no significant main effect of public reveal. Presence of familiar peers had a positive effect on altruistic behavior, indicating that people are more likely to engage in altruistic behavior when they are surrounded by people they know, compared to when they are surrounded by previously unfamiliar people. Also, female participants were more altruistic than male participants, which is in line with findings from studies on gender differences in pro-social behavior (e.g., Tinghög et al 2016). Importantly, however, the experimental manipulation of public reveal did not interact with either of these two effects.

3.3. Cooperation

Figure 4 shows the cooperation rate in each condition. Making decisions in public had a positive effect on cooperation, with 84.3 % of participants cooperating in the public condition compared to 72.0 % in the private condition ($\chi^2 = 5.28$, $p = .022$). Table 2 presents the linear probability model regression analysis carried out using decision to cooperate as dependent variable, controlling for gender, age, and presence of familiar peers⁵. The results confirm the descriptive results presented in Figure 4. That is, public reveal had a significant positive effect on cooperation. Unlike the results for altruistic behavior, there was no significant general effect of presence of familiar peers on cooperation. However, we found a significant interaction effect between gender and our experimental manipulation showing that males were

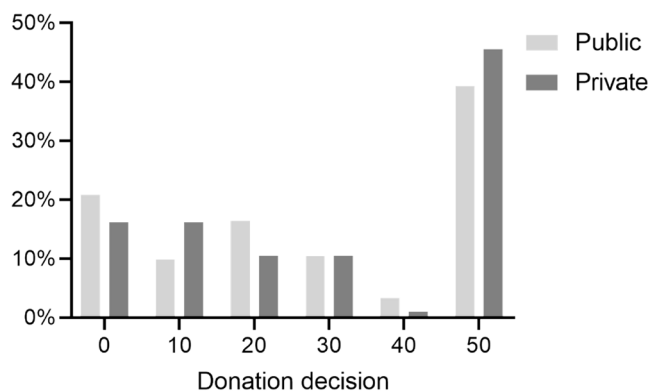


Figure 3. Distribution of decisions in the altruistic giving task by treatment condition. Percentages show how common each decision was within its respective treatment condition.

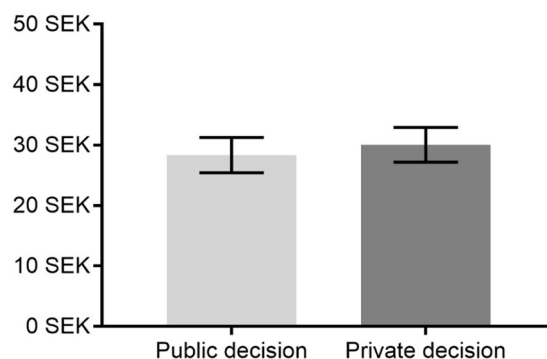


Figure 2. Mean contributions in Swedish kronor for the altruistic giving task by treatment condition (with error bars for 95% confidence intervals).

Table 1

Altruistic behavior as a function of public reveal and other characteristics.

	[1]	[2]	[3]	[4]
Public decision	-0.590 (2.314)	-1.499 (2.998)	-0.232 (2.398)	-1.152 (2.940)
Age	-0.053 (0.233)	-0.060 (0.234)	-0.051 (0.234)	-0.058 (0.234)
Female	6.440*** (1.827)	5.419** (2.339)	6.402*** (1.825)	5.396** (2.351)
Familiar peers present	6.188** (2.397)	6.267** (2.401)	6.622** (2.924)	6.674** (2.929)
Public decision * Female		2.088 (3.707)		2.063 (3.680)
Public decision * Familiar peers present			-0.979 (4.961)	-0.918 (4.952)
Constant	25.566*** (6.020)	26.154*** (6.094)	25.333*** (6.119)	25.929*** (6.177)
n	374	374	374	374

Note: All regressions are ordinary least square. The dependent variable is amount contributed to a charitable organization (0, 10, 20, 30, 40 or 50 SEK). "Public decision" is a dummy for the experimental condition, with public decision (coded as 1) and private decision (coded as 0). "Age" is the participant age in years. "Female" is a dummy for genders female (1) and male (0). "Familiar peers present" is a dummy for having familiar peers present in the room during the experiment (coded as 1), or not having any (coded as 0). "Public decision * Female" is the interaction of the respective variables. "Public decision * Familiar peers present" is the interaction of the respective variables. Standard errors clustered on session in parentheses. Total n was distributed between condition Public decision (n = 183, group size M = 6.65) and Private decision (n = 191, group size M = 6.62).

* $p < .10$, ** $p < .05$, *** $p < .01$

⁴ Separate regressions were also conducted controlling for group size and male/female ratio during experimental session, showing similar results.

⁵ Separate regressions controlling for differences in group size (4 to 8 players, with a mean of 5.86), and for the prior group mean contributions to charity cause. These regressions show similar results as those presented in Table 2 (See Tables S1 and S2 in supplementary materials).

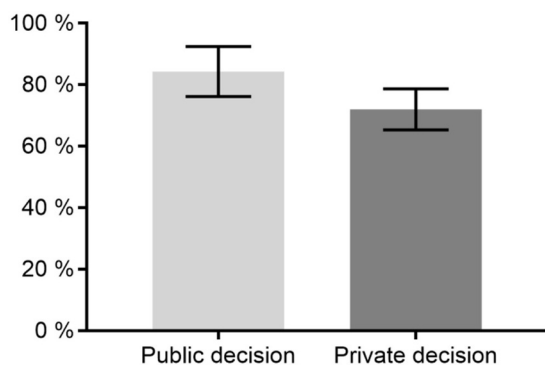


Figure 4. Mean cooperation rate per condition, showing percentages choosing to cooperate (with error bars for 95% confidence intervals).

Table 2

Cooperation as a function of public reveal and other characteristics.

	[1]	[2]	[3]	[4]
Public decision	0.115** (0.054)	0.197*** (0.070)	0.158** (0.065)	0.240*** (0.069)
Age	0.010* (0.005)	0.010* (0.005)	0.010* (0.005)	0.010* (0.005)
Female	0.069 (0.046)	0.157** (0.062)	0.064 (0.044)	0.152** (0.063)
Familiar peers present	-0.075 (0.056)	-0.082 (0.056)	-0.016 (0.060)	-0.023 (0.061)
Public decision * Female		-0.175** (0.083)		-0.175** (0.083)
Public decision * Familiar peers present			-0.128 (0.111)	-0.128 (0.114)
Constant	0.491*** (0.151)	0.439** (0.148)	0.471*** (0.157)	0.418** (0.151)
n	239	239	239	239

Note: All regressions are linear probability models. The dependent variables is a dummy variable indicating whether the participant chose to cooperate (coded as 1) or defect (coded as 0). “Public decision” is a dummy for the experimental condition, with public decision (coded as 1) and private decision (coded as 0). “Age” is the participant age in years. “Female” is a dummy for genders female (1) and male (0). “Familiar peers present” is a dummy for having familiar peers present in the room during the experiment (coded as 1), or not having any (coded as 0). “Public decision * Female” is the interaction of the respective variables. “Public decision * Familiar peers present” is the interaction of the respective variables. Standard errors clustered on session in parentheses. Total n was distributed between condition Public decision (n = 121, group size M = 5.96) and Private decision (n = 118, group size M = 5.76).

* $p < .10$, ** $p < .05$, *** $p < .01$

more affected by making decisions in public. Cooperation rate among male subjects increased with 19.7 percentage points ($p = .008$), while cooperation among female participants increased only by 2.3 percentage points ($p = .740$). Thus, the main effect of public reveal on cooperation was largely driven by male participants in our sample.

3.4. Moral judgments

Figure 5 shows the percentages of utilitarian judgements for each dilemma, separated by condition. The general pattern across all dilemmas, was that participants in the public condition were less likely to make utilitarian judgements compared to participants in the private condition (Mean number of utilitarian judgements public condition = 2.03; Mean number of utilitarian judgements private condition: $M = 1.75$; $t(372) = 2.361$, $p = .019$). Table 3 displays the OLS regression analysis carried out using the total number of utilitarian decisions as dependent variable. The effect of public reveal remains also when controlling for gender, age, and presence of familiar peers. In line

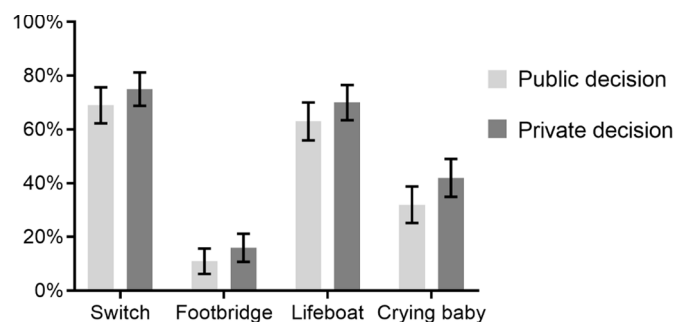


Figure 5. Mean number of utilitarian decisions for each dilemma per condition, showing percentages choosing characteristically utilitarian choice (with error bars for 95% confidence intervals).

Table 3

Utilitarian judgments as a function of public reveal and other characteristics.

	[1]	[2]	[3]	[4]
Public decision	-0.314** (0.133)	-0.382** (0.159)	-0.361** (0.163)	-0.433** (0.183)
Age	-0.024 (0.015)	-0.024 (0.015)	-0.024 (0.015)	-0.025 (0.015)
Female	-0.518*** (0.102)	-0.595*** (0.133)	-0.513*** (0.102)	-0.592*** (0.133)
Familiar peers present	-0.168 (0.122)	-0.162 (0.122)	-0.226 (0.144)	-0.222 (0.145)
Public decision * Female		0.158 (0.203)		0.161 (0.202)
Public decision * Familiar peers present			0.129 (0.244)	0.134 (0.241)
Constant	2.895*** (0.374)	2.94*** (0.380)	2.926*** (0.374)	2.972*** (0.380)
n	374	374	374	374

Note: All regressions are ordinary least square. The dependent variable is the number of total characteristically utilitarian decisions in the dilemmas (0 to 4). “Public decision” is a dummy for the experimental condition, with public decision (coded as 1) and private decision (coded as 0). “Age” is the participant age in years. “Female” is a dummy for genders female (1) and male (0). “Familiar peers present” is a dummy for having familiar peers present in the room during the experiment (coded as 1), or not having any (coded as 0). “Public decision * Female” is the interaction of the respective variables. “Public decision * Familiar peers present” is the interaction of the respective variables. Standard errors clustered on session in parentheses. Total n was distributed between condition Public decision (n = 183, group size M = 6.65) and Private decision (n = 191, group size M = 6.62).

* $p < .10$, ** $p < .05$, *** $p < 0.01$

with previous findings (e.g., [Tinghög et al 2016](#)), females (Mean rate = 1.61, SD = 1.04) were less likely to make utilitarian choices compared to men (Mean rate = 2.12, SD = 1.17). However, there was no significant interaction between gender and condition. Further, we detected no significant interaction between public reveal of decisions and familiar peers present.

3.5. Social norms

Table 4 show the results from the norm elicitation about the descriptive norm (i.e. predicting the most common decision) for each decision across conditions. For altruistic giving participants believed that the most common decision (i.e. the predicted modal response) would be to give 50 SEK. On average, however, the predicted donation average was around half the amount of the modal response. The predicted mean in the public condition was 27.66 SEK and in the private condition the equivalent mean was 25.18 SEK ($t(193) = 1.524$, $p = 0.129$). Thus, elicited beliefs were close to the donations in the original experiment, where mean contribution in the public condition was

Table 4
Beliefs regarding the most common choice for each decision per condition.

Predicted altruistic behavior			
Decision	Private decision Percentages	Public decision Percentages	
Give 0	20.2%	12.5%	
Give 10	15.2%	4.2%	
Give 20	25.3%	29.2%	
Give 30	6.1%	18.8%	
Give 40	1.0%	2.1%	
Give 50	32.2%	33.3%	
Predicted altruistic behavior average			
	Private decision Mean (SD)	Public decision Mean (SD)	T-test (t)
Donation average	25.18 (12.45)	27.66 (10.21)	1.52
Predicted cooperation			
	Private decision Percentages	Public decision Percentages	Chi ²
Choose to Cooperate	60.6%	75.0%	4.62**
Predicted utilitarian decisions			
	Private decision Percentages	Public decision Percentages	Chi ²
Switch dilemma	81.8%	83.3%	0.78
Crying Baby dilemma	38.4%	42.7%	0.38

Note: Percentages refer to the percentage of participants stating they believe the decision to be the most common one. Beliefs regarding donation decisions was a single-answer 6-option question (donating from 0 to 50), donation average was entered as a sum between 0-50, cooperation decision was a binary option (1 = cooperate, 0 = defect), both utilitarian decisions were a binary option describing the decisions (1 = utilitarian decision, 0 = deontological decision).

* $p < .10$, ** $p < .05$, *** $p < .01$

28.36 SEK and 30.05 SEK in the private condition. In regards to cooperation in the Public Goods Game, participants predicted a significantly higher cooperation rate in the public condition (75.0 %) than in the private condition (60.6 %; $\chi^2 = 4.617$, $p = .032$). This discrepancy in predicted cooperation between conditions was in line with behavior in the original experiment where 84.3 % cooperated in the public condition and 72.0 % private condition. For moral judgements, participants correctly believed that utilitarian judgments would be the most common response in the switch dilemma, while deontological judgements would be the most common response in the crying baby dilemma. There was no significant difference in how participants predicted that people would make judgments in private as compared to the public experimental condition.

Table 5 show the results from the elicitation of injunctive norms where we asked about social appropriateness for each decision. For altruistic behavior giving the maximum amount (50 SEK) was seen as the most socially appropriate decision while giving nothing (0 SEK) was considered as the most inappropriate behavior. Appropriateness ratings were similar for behavior in the private and public conditions. For behavior in the Public Goods game participants non-surprisingly considered cooperation to be the most socially appropriate decision. The results also show that it was considered less inappropriate to defect in the private condition compared to the public condition. This result could be interpreted as being in line with the norm of reciprocity since people should feel less obliged to not defect in the private condition since they predicted less cooperation in the private treatment. For the utilitarian decisions, the socially appropriate decision were dependent on the dilemma, with the utilitarian response being the most appropriate decision in the switch dilemma, while the deontological response being considered as the socially most appropriate decision in the crying baby dilemma. Interestingly both the utilitarian and the deontological response were considered socially inappropriate in the crying baby dilemma, implying that none of the possible actions were considered appropriate in this dilemma.

4. Discussion and conclusion

Do people change their moral and prosocial behavior when their decisions are publicly revealed? We employed a novel experimental design to explore the effect of explicit reputation concerns on moral and other-regarding behavior. Our experiment suggests that explicit reputation concerns increase cooperation and make people less utilitarian in moral sacrificial dilemmas. Given that our experimental design kept implicit reputation concerns constant across conditions, our results show that decision reveal affects cooperation and moral judgment above and beyond the effect of just making decisions surrounded by others. Interestingly, we find no effect of public reveal on individuals' willingness to donate to a charitable cause, indicating heterogeneity in the effect of public reveal for different types of prosocial behavior.

The fact that decision reveal influenced cooperation and moral judgment but not altruistic giving might seem surprising, in the light of some previous studies showing that observability increases altruistic giving. However, most of these studies have been field experiments in which subjects respond to donation requests in person (Alpizar & Martinsson, 2013; Ariely et al. 2009; Harris et al. 1975; Karlan & McConnell 2014). As argued by Cain et al., 2014, there is an important distinction between "giving" and "giving in", where the latter refers to altruistic behavior in which one reluctantly engages, often in response to social pressure or obligation. It is possible that public reveal does little to affect the benefit a person gets from voluntary giving, but instead increases the emotional burden associated with saying no to explicit requests. Furthermore, our results corroborate the findings by Jones and Linardi (2014), who found that people tend to converge around the average of donations rather than increase altruistic giving when making decisions in public. Such an aversion to standing out means that participants in our study, not knowing how others would act, could choose to give moderate amounts rather than giving "too much" and risk being viewed as "holier than thou". Parks and Stone (2010) showed that those who give a lot toward the provision of a public good but then use little of it are equally disliked as highly selfish individuals, and are often excluded when forming groups. Arguably it seems less likely that people should be viewed negatively because they cooperate too much since this behavior is beneficial for the whole group. Future work should investigate and compare signaling value for different types of prosocial behavior.

Future studies should also explore the role of both injunctive and descriptive norms for different types of prosocial and moral behavior. Previous studies on the influence of social norms and prosocial behavior have demonstrated that the elicited social appropriateness ratings accurately predict behavioral changes across several variants of the dictator game (Krupka & Weber 2013). Overall, the results from our norm elicitation showed a general overlap with the decisions in the original experiment decisions. For example, it predicted higher cooperation in the PGG between the public and private conditions. Although, it remains unclear whether participants were avoiding social disapproval from defecting, or conforming to the most common decision in cooperating.

Besides adding to the literature on how prosocial behavior is affected by observability, an important contribution of the current study is that we investigate the effect of public reveal on moral judgment. Given that deontological decisions signal warmth and empathy and that people who display characteristically utilitarian judgments are less preferred as partners (Bartels & Pizarro, 2011; Everett et al., 2016; Rom & Conway, 2018), there is arguably a strong strategic motive to not display utilitarian moral preferences in public. This is also what we found. Although people typically view morality as rigid, previous research has shown that people lack both the ability and the desire to achieve logical consistency across their moral beliefs (see e.g. Converse, 1964; Chugh, Banaji, & Bazerman, 2005). We add to this literature by showing that variations in observability across situations can tip the balance between competing moral principles and that it

Table 5
Social appropriateness ratings for each decision across treatments.

Altruistic behavior appropriateness ratings											
Decision	Private decision					Public decision					T-test (t)
	Mean	-	-	+	++	Mean	-	-	+	++	
Give 0	-0.96	34.3%	49.5%	10.1%	6.1%	-1.00	39.6%	44.8%	7.3%	8.3%	0.24
Give 10	0.02	12.1%	36.4%	40.4%	11.1%	-0.15	9.4%	49.0%	30.2%	11.5%	0.90
Give 20	0.75	4.0%	17.2%	57.6%	21.2%	0.60	3.1%	26.0%	49.0%	21.9%	0.88
Give 30	1.16	4.0%	8.1%	43.4%	44.4%	1.13	2.1%	10.4%	47.9%	39.6%	0.25
Give 40	1.41	4.0%	4.0%	30.3%	61.6%	1.27	3.1%	9.4%	32.3%	55.2%	0.97
Give 50	1.74	2.0%	2.0%	12.1%	83.8%	1.79	0.0%	1.0%	17.7%	81.3%	0.6
Cooperation appropriateness ratings											
Decision	Private decision					Public decision					T-test (t)
	Mean	-	-	+	++	Mean	-	-	+	++	
Cooperate	1.55	5.1%	3.0%	16.2%	75.8%	1.70	0.0%	3.1%	20.8%	76.0%	1.26
Defect	-0.67	22.2%	51.5%	23.2%	3.0%	-1.01	36.5%	47.9%	11.5%	4.2%	2.13**
Utilitarian decisions appropriateness ratings											
Decision	Private decision					Public decision					T-test (t)
	Mean	-	-	+	++	Mean	-	-	+	++	
Utilitarian response (Switch dilemma)	0.59	13.1%	15.2%	43.4%	28.3%	0.73	8.3%	17.7%	40.6%	33.3%	0.74
Deontological response (Switch dilemma)	-0.62	26.3%	45.5%	20.2%	8.1%	-0.85	29.2%	51.0%	15.6%	4.2%	1.37
Utilitarian response (Crying baby dilemma)	-1.21	56.6%	27.3%	13.1%	3.0%	-1.02	47.9%	31.1%	16.7%	4.2%	1.12
Deontological response (Crying baby dilemma)	-0.45	29.3%	33.3%	28.3%	9.1%	-0.32	22.9%	34.4%	37.5%	5.2%	0.67

Note: Responses for all the possible decisions were rated as “very socially inappropriate” (-), “somewhat socially inappropriate” (-), “somewhat socially appropriate” (+), “very socially appropriate” (++). Means display these values converted to a -2 to 2 scale. Comparisons between the two treatment conditions to the far right. * $p < .10$, ** $p < .05$, *** $p < 0.01$

makes individuals less consequentialistic. Despite Bentham's (1843, p. 501) famous claim that “Natural rights is simple nonsense: natural and imprescriptible rights, rhetorical nonsense—nonsense upon stilts”, our results might help to explain why it traditionally has been more beneficial for politicians to publicly emphasize fundamental values and rights rather than overall consequences on welfare.

Some limitations of this study should be acknowledged. First, we did not randomize the order of the tasks in the experiment. Altruistic behavior was always elicited before cooperation and moral judgements, which could have generated an order effect. However, since the public goods game was included only in the second data collection, we tested whether the treatment effect on utilitarian decisions was still significant when controlling for data being collected separately in Data collection 1 and Data collection 2. The treatment effect on utilitarian decisions remained similar in this complimentary analysis⁶. Second, it should be noted that the public goods game is interactive in the sense that the audience also constitutes the group with which the decision maker will share the public good. In contrast, the other tasks do not involve direct consequences for fellow group members. So, as well as the pure effect on the decision-maker of knowing that his/her decision will be revealed to the audience, in the public goods game there is a possible effect of the decision-maker knowing that his/her fellow group members decisions will be revealed to him/her and the consequent effect that this might have on his/her beliefs about those fellow group members decisions. This is a key difference between the tasks used to measure altruistic giving and cooperation in this experiment. Thus the strategic motivation to act prosocial in public were arguably stronger in the public goods game compared to the charitable giving task, which might explain why we found a positive effect of public reveal on cooperation but not on altruistic giving. In future studies it would therefore be interesting to explore the influence of public reveal in public goods games where the audience does not constitute the decision maker's public good group.

Turning to the practical applications of this work it is clear that observability may not be the best way motivate prosocial behavior, at least not when it comes to altruistic giving. Our findings suggest that

while solicitors for charitable organizations may benefit from working in public environments, there is no added benefit in revealing donation decisions to bystanders. In contrast, cooperation in groups may be enhanced by decision reveal, beyond the effect of merely being present in a public environment.

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Supplementary materials

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⁶ See Table S3 in Supplementary Materials

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