License to Cheat: Voluntary Regulation and Ethical Behavior

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Although monitoring and regulation can be used to combat socially costly unethical conduct, their intended targets can often avoid regulation or hide their behavior. This surrenders at least part of the effectiveness of regulatory policies to firms' and individuals' decisions to voluntarily submit to regulation. We study individuals' decisions to avoid monitoring or regulation and thus enhance their ability to engage in unethical conduct. We conduct a laboratory experiment in which participants engage in a competitive task and can decide between having the opportunity to misreport their performance or having their performance verified by an external monitor. To study the effect of social factors on the willingness to be subject to monitoring, we vary whether participants make this decision simultaneously with others or sequentially, as well as whether the decision is private or public. Our results show that the opportunity to avoid being submitted to regulation produces more unethical conduct than situations in which regulation is either exogenously imposed or entirely absent.

1. Introduction

The popular and business press regularly reports instances of unethical conduct by firms and individuals. Recent examples from the business world include fraudulent and deceptive banking, marketing, and securities trading practices, such as those involving Barclays, Capital One, GlaxoSmithKline, and Bernard Madoff. These instances received considerable attention both for the seriousness of the ethical lapses involved and for their impact on economic and societal welfare. Tax fraud and avoidance by firms and individuals, believed to be commonplace, imply large revenue losses for governments and shift the fiscal burden elsewhere in society. In athletics, stunning individual achievements across many sports (e.g., cycling, baseball, and swimming) are often met with skepticism regarding the extent to which they resulted from the use of illicit performance-enhancing drugs. In academia, fraudulent research and student cheating pose serious challenges for the credibility of scientific inquiry and higher education.

Given the breadth of decision domains in which actors face the temptation to act unethically and the far-reaching consequences of such behavior, it is important to examine how such acts can best be discouraged. One powerful tool on which policy makers can rely is regulation in the form of monitoring and sanctions. For example, the desire to limit predatory behavior and deceptive marketing practices on behalf of firms led to the creation of the Consumer Financial Protection Bureau, a product of the 2010 Dodd–Frank financial reform bill, which has the power to monitor firm practices and impose fines. Tax collection agencies are given considerable power to investigate financial information and impose sanctions for underreported income. In athletics, regulatory entities, such as the World Anti-Doping Agency, have considerable power to test for banned substances and impose or recommend serious penalties. Prior research demonstrates that stronger monitoring and sanctions can discourage unethical conduct, though sometimes with limited effectiveness (e.g., Andreoni et al. 1998, Nagin et al. 2002, Olken 2007).

One potential limitation of the effectiveness of regulation occurs when firms and individuals can influence the extent to which they are subject to rules and monitoring. For example, manufacturing firms confronted with varying state or national labor and environmental regulations may choose which set of regulations to follow by deciding where to locate

(Levinson and Taylor 2008, Hanna 2010). Similarly, credit card companies have historically incorporated in Delaware, which affords them the opportunity to avoid more stringent regulation elsewhere (see, e.g., Ausubel 1991). Firms can also give themselves the flexibility to behave unethically, as when deciding whether to voluntarily agree to be bound by a particular set of standards, such as the requirements of Fair-Trade or EPEAT green production. Along the same lines, Enron's well-known switch from historical cost (book value) to mark-to-market (fair value) valuation and its decision to suspend its code of ethics gave the firm added flexibility to engage in financial malfeasance.

Opportunities to influence the degree of regulation by which one is bound also exist at the individual level. An academic researcher may choose to submit research to journals with varying data availability and replication policies. A student may select universities or courses with varying oversight and policies to combat cheating. A wealthy individual may choose to hide wealth from tax authorities by relying on bank accounts in countries with high degrees of banking secrecy. Similarly, during the 2012 U.S. presidential election, Republican candidate Mitt Romney chose not to publicly release more than a year's worth of tax returns, a decision that prevented greater public monitoring of his financial activities and potential conflicts of interest.

Even when they make no explicit choice among regulatory regimes, individuals and firms may have other avenues through which they can avoid monitoring and regulation. For example, antidoping efforts in athletics are regularly hampered by medical advances that make detection difficult or impossible, thereby giving athletes or teams who engage in doping the ability to avoid regulation and monitoring altogether. Lobbying efforts and regulatory capture by firms can allow them to create loopholes or entirely avoid the enforcement of regulation.

As these examples illustrate, regulation is often of limited effectiveness, not solely due to exogenous factors that make detection or enforcement difficult, but also because those who are supposed to be regulated may have the ability to determine how much regulation they face or even whether they face it at all. Thus, at least two types of choices may be critical in determining the degree to which unethical behavior occurs in contexts where it is possible. First, an individual or firm can choose to behave unethically, if given the opportunity. This kind of decision has been studied extensively, as we review below. Second, an individual or firm may be able to choose whether to have the opportunity to behave unethically, as in the cases discussed above. Despite the potential importance of these kinds of "voluntary-regulation" choices, they

have received relatively little research attention. Similarly, the factors that influence voluntary-regulation choices, and their ultimate consequences on unethical conduct, are not well researched.

In this paper, we explicitly study the decision of whether to voluntarily submit to stricter regulation and the extent to which this decision affects subsequent unethical behavior. Mirroring many of the situations described above, in which firms or individuals can obtain a financial or competitive advantage by behaving unethically, we study behavior in a zero-sum competitive setting in which unethical conduct (e.g., misreporting one's performance) benefits one party at the expense of another. To obtain high levels of control over the presence and nature of regulation and the underlying behavior, we use a laboratory experiment in which we can carefully vary features of the environment while keeping all else constant.

Throughout the paper, we use the term "regulation" broadly to refer to an effective form of monitoring and sanctions that prevents unethical conduct. For simplicity, we consider two extremes in terms of regulation: Individuals' behavior is either entirely unregulated, such that they have the freedom to act as unethically as they would like, or entirely regulated, in which case they have no opportunity to behave unethically. We distinguish between exogenous regulation, which is imposed on individuals by an outside entity (i.e., the experimenter) without opportunities for avoidance, and endogenous voluntary regulation, under which the same regulatory regime is present, but each individual can decide whether his or her own behavior is subject to regulation.

We focus on two major decisions that participants in our experiment make. First, we study their choice of regulation (when regulation is voluntary) and the factors that affect their willingness to be subject to regulation. Second, we study the ultimate unethical behavior following this initial choice, that is, the extent to which they overreport their performance to obtain greater financial gains.

In the experiment, participants perform a simple task and receive a payoff based on whether their resulting score is higher than that of another participant. In two baseline conditions, participants cannot choose whether an experimenter verifies the accuracy of their performance: In a *mandatory-regulation* condition, the performance of all participants is verified; in a *no-regulation* condition, all participants are free to report any score, and none of the reported scores are verified. We compare the scores obtained in these two conditions with *voluntary-regulation* conditions in which we allow participants to choose, before they engage in the task, whether to have their scores verified. Thus, we observe participants' decisions of whether to be regulated as well as the resulting scores they obtain.

To understand how psychological and social factors may influence regulation choice in the voluntary-regulation conditions, we also introduce treatments that vary two factors: (1) whether the decision is made privately (choices of whether to be regulated are not observed by other participants) or publicly (regulation choices are observed by the other participants), and (2) whether the decision is made simultaneously or sequentially. These treatments also allow us to examine how information about others' regulation choices influences individuals' decisions regarding whether to be regulated, as well as their resulting reported scores in the competitive task.

Our results show that there is significantly more misreporting under voluntary regulation (where participants have a choice of whether to be regulated) than under either no regulation or mandatory regulation. This is despite the fact that a significant proportion of participants opt to be regulated in the voluntary-regulation conditions. Thus, allowing individuals to voluntarily choose whether to be subject to regulation might lead to greater unethical behavior than when behavior is completely unregulated. We found that selection based on relative skill plays a role in determining who opts for regulation (such that those likely to perform worse on the competitive task opt to not be regulated) and that the choice not to be regulated appears to give participants greater "license to cheat," relative to when regulation is entirely absent.

We also examine whether the presence or absence of regulation in one context influences behavior in other domains. Keizer et al. (2008) found that disorderly and petty criminal behavior in one setting has a spillover effect that triggers more disorderly and petty criminal behavior in a second setting. Similar spillover effects may occur in the case of ethical behavior. To explore such potential "ethical spillovers," we use a second non-skill-based competitive task in which no regulation exists and participants can therefore report any score they wish. We find that misreporting of scores in this second task is affected by the presence or absence of regulation in the first task; specifically, our results show that any possibility of misreporting scores in the first task yields greater unethical conduct in the second task. That is, in terms of ethical spillovers to other contexts, having regulation that is avoidable (voluntary) yields similar outcomes as when regulation is entirely absent, and both conditions are worse than mandatory and inescapable regulation.

In addition to contributing to the understudied behavior of regulation decisions, our findings have important practical implications. For example, our results suggest that policies that impose *either* no regulation or total regulation may be preferable to

policies that allow for regulation that can be easily circumvented. Moreover, unethical conduct itself is often difficult to observe or verify, but, in many situations, the initial choice regarding whether to have the flexibility to behave unethically is much easier to observe. We find that increasing the visibility of the choice to be regulated can be used as a tool to enhance the voluntary adoption of regulation and decrease subsequent unethical behavior. Finally, we show that a policy-maker's choices concerning the presence of regulation in one domain can affect behavior in other, unregulated contexts.

The rest of this paper is structured as follows. In §2, we review the relevant literature and develop hypotheses that we test in our experiment. In §3, we describe the experimental design. In §4, we present our results. In §5, we discuss the main findings and conclude.

2. Relevant Literature and Hypotheses

Partly because of its pervasiveness in organizations and society more broadly, unethical behavior has attracted the attention of scholars from various disciplines. Much of the research examines the causes and consequences of unethical behavior in economic, organizational, and political contexts (Gneezy 2005, Fisman and Gatti 2002, Gino et al. 2009a, Burks and Krupka 2012).

Using evidence from both field and laboratory studies, this research generally explores the extent to which people behave unethically and the factors that influence such behavior. For example, Carpenter et al. (2010) found that sabotage among coworkers is higher in tournaments than it is under piece-rate compensation. Pierce and Snyder (2008) showed that unethical conduct by automobile inspectors is influenced by the presence of unethical conduct in the organization where those inspectors work. Related research conducted in laboratory settings examines how individuals' unethical behavior often arises through vertical specialization, which diffuses the responsibility for behaving unethically (Ellman and Pezanis-Christou 2010, Hamman et al. 2010). A growing body of research also notes the ways in which people are self-serving in their interpretation of what constitutes ethical behavior (for reviews, see Ayal and Gino 2011, Dana et al. 2011). Finally, a substantial literature examines the effects of ethical norms on behavior among management and employees in firms, often relying on survey or field data (Jones and Kavanagh 1996, Schminke et al. 2005, Trevino et al. 2008).

One focus of research on unethical behavior has been to explore the conditions under which individuals behave dishonestly for (monetary) personal gain. For instance, Gneezy (2005) studied the

extent to which a laboratory participant with private information will lie to an uninformed participant about which of two possible actions is more profitable. Gneezy found that people are sensitive to both their potential gains from a lie and to their counterparts' potential losses (see also Croson 2005, Hurkens and Kartik 2009, Sutter 2009, Erat and Gneezy 2012, Gibson et al. 2013). Recent research also explores the conditions under which individuals lie about the outcome of a random process, such as a die roll, to gain more money from an experimenter (Gino and Ariely 2012, Shalvi et al. 2011, Fiscbacher and Heusi 2008). Other recent work examines how misreporting a score on an individual piece-rate task is affected by social and organizational factors. For example, Gino and colleagues found that exposure to other people's unethical behavior increases an individual's dishonesty when the wrongdoer is an in-group member (Gino et al. 2009a, b) or when the individual feels similar to the wrongdoer (Gino and Galinsky 2012).[1]

Similar to the above research, our study explores unethical behavior in situations where lying can yield better financial outcomes. Our specific focus is on the effectiveness of regulation and monitoring, particularly when these can be easily circumvented. That is, we study what happens when individuals have the opportunity to decide whether to voluntarily subject themselves to regulation that prevents misreporting. The predicted consequences of such voluntary regulation are unclear. Since our work is exploratory, we develop plausible hypotheses as a way of understanding alternative results that we might obtain.

To generate our first hypothesis, we begin by noting that individuals who are given the choice to opt for "no regulation" have the same opportunity to behave unethically as those in situations where there is no possibility of regulation. This holds in our voluntary-regulation conditions, where any participant who wishes to misreport her score can forego regulation and do so. Therefore, if there are some individuals who are always willing to lie for money and others who are not, it follows that unethical behavior in a treatment where individuals are free to privately choose whether to be regulated will not differ from unethical behavior when the behavior of all individuals is unregulated.[2] Under voluntary regulation, those individuals who prefer to behave unethically will

choose to be unregulated when offered the choice, and individuals who prefer to behave ethically will do so regardless of whether they are regulated. This yields our null hypothesis:

H_0 (Null). *Under voluntary regulation, misreporting will be similar to that under no regulation.*

The above null hypothesis simply states that voluntary regulation affords equal opportunity for unethical behavior as does the absence of regulation. This hypothesis serves as a benchmark against which to compare what actually happens when regulation is present, but avoidable. However, if voluntary regulation leads to different outcomes than the mere absence of regulation, why might that be? We explore possible explanations for how the act of choosing regulation might give rise to different subsequent cheating behaviors.

The decision of whether to avoid regulation may be more readily observable to outsiders than cheating itself. For example, a student's decision to cheat on an exam, when given the opportunity to do so, is typically unobservable. Yet the decision to select a university or courses with more lax misconduct enforcement is potentially observable by others and therefore more likely to be subject to social pressures. Similarly, a private firm that closes its books to external parties gains considerable flexibility for its behavior, but the decision to close the books can be publicly observed. Prior research finds that being observed by another person affects ethical conduct (Akerlof and Kranton 2010; Jones and Kavanagh 1996; Gino et al. 2009a, b; Goldstein et al. 2011; Ariely et al. 2009), as well as behavior in other contexts outside of ethical decision making, as shown both in psychology (e.g., Asch 1956, Kallgren et al. 2000, Haley and Fessler 2005, Bateson et al. 2006, Burnham and Hare 2007) and in economics (Charness et al. 2007, Rigdon et al. 2009).

In our context, when the decision to be regulated is publicly observable, we predict this will increase the number of individuals opting to be regulated because of social pressure to opt for regulation. If fewer people choose to circumvent regulation (through a choice made publicly), the result is likely to be reduced unethical behavior relative to conditions where voluntary-regulation choices are private.

H_1 (Social Pressure). *If voluntary-regulation choices are made publicly, more individuals will opt to be regulated, and this increased regulation will result in less misreporting.*

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[1] Burks and Krupka (2012) found that alignment between one's own views regarding ethical practices and those of one's peers (in-group members) is correlated with ethical behavior.

[2] An implicit assumption is that regulation choices themselves are not subject to social pressure or consequences, which is true when they are made privately (as when a taxpayer secretly opens a bank account in a tax haven or an athlete privately obtains the ability to circumvent testing). In cases where the regulation choice is made

publicly—as when a firm chooses to locate in a country with lax labor regulations or when a researcher opts to publish in journals with lax data-availability policies—social costs associated with the regulation choice may influence behavior. We address this possibility later and in our experiment.

Thus, for example, although U.S. presidential candidates are not required to publicly release tax returns, the fact that their decision to do so is public has generally led to greater openness to public monitoring and presumably less unethical behavior.

Similarly, considerable research demonstrates that people are influenced by what they observe others doing (Deutsch and Gerard 1955, Zey-Ferrell et al. 1979, Zey-Ferrell and Ferrell 1982, Jones and Kavanagh 1996, Brass et al. 1998, Schultz et al. 2007, Krupka and Weber 2009, Bicchieri and Xiao 2009, Gino and Galinsky 2012). A person's decision to be regulated may also be influenced by observing the frequency with which others opt for regulation. Drawing on the distinctions Deutsch and Gerard (1955) outline in their seminal paper on social influences, we describe this as a *social information* influence, whereby people learn something about the frequency with which an action is taken from observing others. When others take a particular action, an individual becomes more likely to make the same choice. Therefore, we predict that individuals' voluntary-regulation choices will be influenced by the publicly observable regulation choices of earlier movers. Observing another person choose regulation will increase a participant's likelihood of choosing regulation and reduce unethical behavior relative to when earlier movers choose to be unregulated.

H_2 (Social Information). *If voluntary-regulation choices are public and sequential, individuals' regulation choices will be influenced by early movers. These regulation choices will also determine the amount of misreporting.*

The above two hypotheses focus on social influences, whereby information—either about one's own choice that is provided to others or about others' choices that one receives before opting for or against regulation—affects the voluntary-regulation choice and subsequent unethical behavior. Yet the voluntary-regulation decision may also interact with the subsequent decision to behave unethically in a manner that is not influenced by public information about behavior.

For example, an individual's initial decision regarding whether to abide by regulation might take place in a "cooler" emotional state, when the person does not feel the temptation or competitive pressure to behave unethically, or when this feeling of temptation is psychologically more "distant" and thus also less salient (Trope and Lieberman 2010, Tenbrunsel et al. 2010). In fact, as demonstrated by Mead et al. (2009), cheating is more likely to occur when people are in a "hot" state, that is, when they are cognitively depleted or have little self-control. Thus, an individual in a cool state may choose regulation simply because the possibility to behave unethically is not tempting. This means that some people, who would ultimately

behave unethically if the temptation to cheat were psychologically "closer," may initially opt to be regulated and thereby, intentionally or unintentionally, constrain their subsequent conduct. Consistent with this argument, psychological research has robustly demonstrated that individuals poorly anticipate what subsequent choices they will make (Diekmann et al. 2003, Woodzicka and LaFrance 2001). Thus, committing in advance not to cheat, when it is easier to do so, may lead to less unethical conduct.[3]

Alternatively, it is also possible for the initial private decision on whether to be regulated to offer a psychological path to *increased*, rather than reduced, unethical behavior. If people view the initial voluntary-regulation decision as one with only minor ethical implications—since, after all, they can always report truthfully later—then they might find it easy to forgo regulation. However, having gone down the path of avoiding regulation, people may then find it psychologically easier to behave unethically. That is, people may view their initial decision regarding regulation as not very ethically important ("I'm not doing anything wrong by giving myself an option to cheat"), but may then subsequently rely on that decision as a way to guide their subsequent ethical choices ("Since I gave myself the option, I may as well use it"). Similarly, psychological research has shown that an initial small act showing commitment to a course of action can facilitate subsequent larger acts (Freedman and Fraser 1966).

The two possibilities discussed above suggest how voluntary regulation may affect subsequent unethical behavior even when an individual is unconcerned about others' behavior or what others think of her own behavior. We test these possibilities in our private conditions, where participants do not observe others' regulation choices. Since the above discussion yields two different directional predictions, our hypothesis posits an effect, but leaves open the direction.

H_3 (Behavior Facilitation). *Private voluntary regulation will either increase or decrease unethical conduct relative to when regulation is absent.*

We now turn to describing the experimental design used to test our hypotheses.

3. Experimental Design

Our experiment compares two conditions, one in which there is no regulation and one in which everyone is regulated (i.e., mandatory regulation), to conditions in which individuals can choose to avoid being

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[3] Consistent with this prediction, Sherman (1980) found that study participants overpredicted their own tendency to behave in a socially desirable manner (e.g., refusing to write an essay that advocated an opinion counter to their own). Yet these overpredictions were self-erasing in that participants subsequently tended to behave consistently with their own predictions.

Table 1   Experimental Design Overview

	Voluntary regulation		Mandatory	
	Sequential choice	Simultaneous choice	Regulation	No regulation
Public choice	$N = 54$ (9 sessions)	$N = 54$ (9 sessions)	$N = 30$ (5 sessions)	$N = 30$ (5 sessions)
Private choice	$N = 54$ (9 sessions)	$N = 54$ (9 sessions)		

regulated (i.e., voluntary regulation). To explore the influence of timing and social pressure on individuals' regulation decisions, we conduct four variants of voluntary regulation. Specifically, we vary, in a 2×2 design, whether participants make regulation choices privately versus publicly and simultaneously versus sequentially. Therefore, the experiment employed six conditions in total, as summarized in Table 1.

Participants were recruited to the laboratory in groups of six. In all conditions, they completed a problem-solving task and self-scored their performance. In the no-regulation condition, participants self-reported their scores on the problem-solving task, and the experimenter explained that there would be no verification of the scores and that participants could take their worksheets with them when they departed. In the mandatory-regulation condition, participants reported their scores, and the experimenter verified their performance (as described in detail below).

In four voluntary-regulation conditions, participants chose whether their self-reported scores would be verified by the experimenter. All choices regarding whether to be regulated in the voluntary-regulation conditions were made prior to the competitive problem-solving task, but after the experimenter explained this task in detail. An important aspect of our study design is that, in the case of voluntary regulation, all participants had the opportunity to behave unethically. That is, any participants who chose not to be regulated had the same opportunity for unethical behavior as did participants in the conditions where there was (exogenously) no regulation.

We recruited volunteer participants for a paid one-hour experiment from the participants' pool of the Center for Behavioral Decision Research at Carnegie Mellon University. On average, participants received $14.56 as payment for their participation. A total of 276 individuals participated in 46 sessions consisting of six participants each.

Upon arriving at the laboratory, participants were seated at one of six tables, which were distant enough from one another so that participants could not see each other's choices during the study. Tables were numbered from 1 to 6. The study included two competitive constant-sum tasks, a risk task and a

questionnaire. These tasks were completed one after another, and payments were not revealed until all tasks were completed.

3.1.   Task 1: Matrix Task

As their first task, and the main task in our study, participants completed a competitive problem-solving task, which has been used to measure unethical behavior in prior work (Mazar et al. 2008, Gino et al. 2009a). Each participant received two sheets of paper: The first was a *worksheet* with 20 matrices, each containing a set of 12 three-digit numbers (e.g., 5.78). In this task, participants had four minutes to find two numbers in each matrix that summed to 10. Participants then reported how many matrices they solved. The time constraint is generally insufficient for participants to solve all 20 matrices. Our primary interest is in the extent of misreporting in this task.

The second sheet was a *reporting slip* on which participants reported their performance. After the four minutes had passed, participants folded their worksheet, placed it on their desk, and then wrote their performance score (i.e., the number of matrices they correctly solved) on their reporting slip.

Participants were paid for this task based on their own score and the score of one other, anonymous, participant. The experimenter randomly selected this participant from among the other participants in the same session. The experimenter compared pairs' scores privately, so participants did not learn the identity of the other participant with whom they were paired. If the score of one participant in the randomly chosen pair was higher than the other person's score, the high scorer received $6, and the low scorer received $3. In the case of a tie, the experimenter flipped a coin to determine who in the pair received $6 and who received $3.

We used this procedure so that cheating on the matrix task by overreporting performance would be costly to another participant in the same session. This assures that the costs of cheating are salient, well understood, and meaningful to participants who are deciding whether to cheat. By contrast, in much related prior work (e.g., Fischbacher and Heusi 2008, Gino et al. 2009a), the costs of cheating were often unclear, because participants would simply receive a higher payment from the experimenter when they lied about their performance on a problem-solving task, thus making unclear who would be affected by their cheating, for at least two reasons. First, the additional money that participants obtained was not clearly taken from an identifiable other; the money presumably was not the researcher's own, and it is unclear how else the money might be used if not to compensate the participant. Second, participants might have interpreted the research context as one

in which the researcher wanted some participants to misreport, thus providing the plausible impression that the researcher's purpose might have benefitted from misreporting. Therefore, we believe that our design, in which misreporting clearly creates an unfair advantage relative to another participant, represents an improvement in making misreporting more likely to be interpreted as unethical.

In the mandatory-regulation condition, the experimenter verified participants' score on the matrix task. The instructions informed participants that, later in the experiment, they would hand both the reporting slip and the worksheet to the experimenter and that the experimenter would verify that the score was correct (and correct it if it was not) before determining the payment for each pair of participants. In the no-regulation condition, there was no such verification of performance by the experimenter. In this condition, the instructions informed participants that, later in the experiment, they would hand only the reporting slip to the experimenter and that the experimenter would use only the score on this slip to determine payment. Participants in the no-regulation condition could take their worksheet with them at the end of the experiment.

In the voluntary-regulation conditions, participants could choose whether they wanted the experimenter to verify their score. Participants were told the following:

> You may choose one of two options for reporting your score:
>
> 1. *Green Reporting Option*: You will report your own score at the end of the experiment *and the experimenter will verify that your score is correct.* You will hand in both your sheet with the 20 matrices and your Score Reporting Slip to the experimenter. The experimenter will verify the number of matrices that you have correctly solved. Your verified score will be compared to another participant's score to determine your payment.
>
> 2. *Blue Reporting Option*: You will report your own score at the end of the experiment *but the experimenter will not verify that your score is correct.* You will hand in only your Score Reporting Slip to the experimenter. You will not hand in the sheet with the 20 matrices. You are free to take it home with you. Your self-reported score will be compared to another participant's score to determine your payment.

The way in which participants chose between the above reporting options varied across conditions. In particular, we manipulated choice visibility (public versus private) and choice timing (simultaneous versus sequential), leading to the following four voluntary-regulation conditions:

• *Private-simultaneous*: Participants chose this reporting option by privately choosing one of two boxes on their instruction sheet. Participants were instructed to do so at the same time. Following these choices, the experimenter went around the room and privately recorded each individual's reporting option.

• *Private-sequential*: Participants again made their reporting decisions privately by selecting a box on their instruction sheet. In this treatment, however, the experimenter instructed participants to do so by turn (by having participants wait until the person ahead of them had recorded his or her choice). After all participants selected a reporting option, the experimenter went around the room and privately recorded their choices.

• *Public-simultaneous*: Participants all made their reporting decisions at the same time but were able to observe the reporting choices made by all other participants in their session after doing so. Before the session, we placed one blue and one green index card on each participant's desk so that they could use them to indicate their choices in the public conditions by raising one of the two cards. When it was time to select a reporting option, participants privately chose one of the two cards, and then, publicly, each person simultaneously raised either the blue or green card so that everyone could see the frequency of each choice.

• *Public-sequential*: Participants also indicated a reporting option by raising a card publicly. Rather than choosing simultaneously, however, they proceeded one at a time, prompted by the experimenter, so that all participants could see the choices of others before them in the session.

We note that, given our design and procedure, we were able to record participants' true task performance only for those in the mandatory-regulation condition and for regulated participants in the voluntary-regulation conditions. We were unable to directly observe true task performance for unregulated participants in the voluntary-regulation conditions, since these participants had the opportunity to lie about their performance without leaving evidence of their actions.

3.2. Task 2: Die Roll

Upon completion of the first task, but before the experimenter determined the results of this task, participants completed a second competitive task in which *all participants*, regardless of what condition of the matrix task they were previously in, had the opportunity to misreport their score. We included this task to measure how the experience from the different treatments in the first task may spill over and affect unethical behavior in a second task, in which everyone has the opportunity to behave unethically due to the absence of regulation.

Each subject received a die in a plastic cup and was asked to privately roll the die inside the cup (this task is based on Fischbacher and Heusi 2008; see also Shalvi et al. 2011, Gino and Ariely 2012). Next, participants privately wrote down the number produced

by the die roll. This number determined their score for this task. After recording their score, participants were asked to shake the cup again to change the position of the die. Thus, participants had the opportunity to misreport the outcome of the die roll.

In the die-roll task, each participant was again randomly and anonymously matched with another participant in the room. It was made clear that this was a different participant than the one with whom the participant had been matched in the first task. Participants' payment in this task again depended on their score and the other person's score. As before, if the participant's score was greater than the other person's score, the participant received $6. If it was lower, the participant received $3. In the case of a tie, the experimenter flipped a coin to determine who in the pair received $6 and who received $3.

3.3. Risk Task and Final Questionnaire
As their third task, participants made choices that we used to assess their risk preferences, as a possible control for individual differences. Any payment they accumulated from this task was added to their other payoffs from the other parts of the experiment. We assessed individual risk preferences using Binswanger's (1980) procedure. Participants were presented with eight options specified in different rows of a table printed for them on a piece of paper. Each option provided them with a payoff if the outcome of a coin flip was "heads" and another payoff if it was "tails." Participants were asked to choose one of these options. The experimenter then went around the room and tossed a coin to decide which payment each participant received based on that participant's decision. The row chosen by a participant provides an estimate of his or her risk preferences.

As their last task in the study, participants answered a questionnaire asking about their gender, age, occupational status, and personality.[4] While they worked on the questionnaire, one of the two experimenters left the room to calculate participants' payoffs. To compute payoffs, this experimenter used the reporting slips from tasks 1 and 2, together with the matrix worksheet if the participant was to be regulated. Next, after participants completed the questionnaire, they each left the room one at a time to receive payment privately.

4. Results
Table 2 presents a summary of the main outcome variables from the matrix task across conditions, namely, participants' reported matrix scores and their voluntary-regulation choices. Recall that in the

[4] We included common measures, some of which have been connected in prior research with ethical behavior.

Table 2 Outcomes from the Matrix Task by Condition

Treatment	Mean score	Frequency of regulation
No regulation	9.07 (3.78)	0
Mandatory regulation	5.40 (4.00)	1
Voluntary regulation (pooled—all conditions)	12.20 (5.67)	0.421
Voluntary regulation (private-simultaneous)	13.48 (5.55)	0.296
Voluntary regulation (private-sequential)	13.67 (5.65)	0.333
Voluntary regulation (public-simultaneous)	10.26 (5.51)	0.537
Voluntary regulation (public-sequential)	11.39 (5.37)	0.519

Note. Standard deviations are in parentheses.

no-regulation condition, the mean matrix score is *self-reported*, i.e., not verified by the experimenter; in the mandatory-regulation condition, the mean matrix score is the *verified* score; and in the voluntary-regulation condition, the mean matrix score includes both verified and unverified scores. Under mandatory regulation, participants correctly completed, on average, 5.40 matrices (out of 20). However, when the experimenter did not verify the scores (no regulation), participants reported completing 9.07 matrices on average. These means differ significantly in a t-test ($t_{58} = 3.65$, $p < 0.001$), and the distributions of scores differ significantly in a nonparametric Wilcoxon rank-sum test ($z = 3.49$, $p < 0.001$). Therefore, giving everyone the opportunity to misreport resulted in higher reported scores. This result is consistent with prior research showing that when given the opportunity to cheat, people do cheat, even if only by a little bit and not to the maximum extent possible (Mazar et al. 2008, Gino et al. 2009a).

The remaining five rows of Table 2 report outcomes from the voluntary-regulation conditions, where participants could each choose whether they wanted to be regulated. We first pool all conditions with voluntary regulation and then report the results separately for each of the subtreatments.

4.1. Does Voluntary Regulation Look Like No Regulation?
Our null hypothesis predicted that, in the voluntary-regulation environment, scores on the matrix task would be similar to those when there is no regulation. This hypothesis is rejected in the data. The mean reported score pooled over all the voluntary-regulation conditions was 12.20 (row 3 in Table 2), which is significantly higher than under no regulation ($t_{244} = 2.94$, $p < 0.005$). Again, the distributions also differ significantly ($z = 2.74$, $p < 0.01$). Thus, on aggregate, when participants can decide whether to be regulated, we observe more misreporting than when everyone is unregulated and has the opportunity to misreport. This is perhaps most surprising

when one considers that 42% of the participants in the voluntary-regulation conditions opted for regulation.

When we compare the separate subtreatments with voluntary regulation to the no-regulation condition, we similarly observe higher reported scores in all of the four conditions in which participants could avoid regulation. In three of these cases, the mean reported scores are significantly higher than under no regulation (private-simultaneous: $t_{82} = 3.88$, $p < 0.001$; private-sequential: $t_{82} = 3.99$, $p < 0.001$; public-sequential: $t_{82} = 2.10$, $p < 0.04$), whereas in the public-simultaneous case, the mean reported scores are also higher, but the difference is not statistically significant ($t_{82} = 1.05$).

4.2. Do Public Regulation Choices Lead to Greater Regulation?

We hypothesized that more participants would opt to be regulated when voluntary-regulation choices are public rather than private and that this would result in less unethical conduct (H_1). When participants make voluntary-regulation decisions publicly, they are indeed more likely to opt to be regulated (on average, 52.7% of the time) than when they make these decisions privately (on average, 31.5%), with the two frequencies differing significantly ($\chi^2(1) = 10.04$, $p < 0.005$). Therefore, even though the decision to avoid regulation does not necessarily imply unethical conduct, participants appear concerned with the social image produced by having others know that they are forgoing opportunities to cheat. Turning to the reported scores, mean reported scores are lower when voluntary-regulation decisions are public than when they are private. In the two public conditions, the mean score is 10.82, which is lower than in the two private conditions (13.57). This difference in means is statistically significant ($t_{214} = 3.67$, $p < 0.001$), as is the difference in distributions of scores ($z = 3.57$, $p < 0.001$). Therefore, consistent with H_1, we observe that public voluntary-regulation decisions yield both greater regulation and less misreporting than when decisions are made privately.

In addition to increasing the percentage of participants who choose to be regulated, the public condition also yields lower reported scores among those who choose to be unregulated. In Figure 1, we present reported scores in the voluntary-regulation conditions by whether a subject chose to be regulated or unregulated and by whether the regulation decision was made privately or publicly. For those participants who opted for no regulation, mean reported scores are significantly higher for those in private conditions than for those in public conditions (16.13 versus 13.21, $t_{123} = 3.35$, $p < 0.005$). In contrast, there is no significant difference in mean reported scores for those participants opting for regulation in the private versus public conditions (8.00 versus 8.68, $t_{89} = 0.75$).

Figure 1 Reported Matrix Score for Those Choosing to Be Unregulated or Regulated by Private and Public Conditions
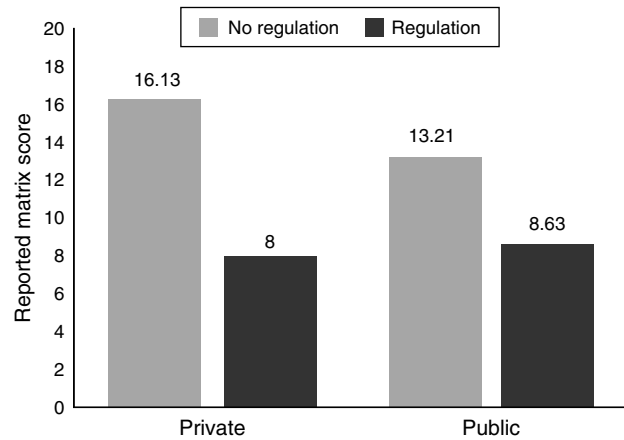
This indicates that the decline in misreporting that we observe in the public conditions, relative to when regulation choices are private, is driven both by an increase in the percent of participants choosing to be regulated and by a decrease in misreporting even among those participants who are unregulated. This is also our first piece of evidence that the effects of voluntary regulation may go beyond simply affecting the frequency of misreporting, but may also affect the magnitude of misreporting by those who are unregulated.

4.3. Are Participants Influenced by Others' Regulation Choices?

We also hypothesized that, in the public-sequential condition, participants' regulation choices and misreporting would be influenced by others' earlier choices (H_2). Comparing the frequency with which regulation was chosen in the public-sequential and public-simultaneous conditions in Table 2 reveals no statistically significant differences in the frequency with which participants opt for regulation (51.9% versus 53.7%, $\chi^2(1) = 0.037$) or the resulting mean reported scores (11.39 versus 10.26, $t_{106} = 1.08$). Thus, there appears to be no change in aggregate behavior when public decisions are made simultaneously or sequentially.

However, an influence of sequential decisions emerges when we explore the behavior of participants across positions in the experiment. Recall that the subject with ID1 acted first, ID2 second, and so forth. Therefore, we can consider the behavior of participants in a session by ID number as a way of discerning the hypothesized dynamic effects in the sequential-public treatment. Table 3 presents the voluntary-regulation choices by subject ID (position) for all sessions in this treatment. We order the sessions by the regulation choice of the participant who moved first in each session.

Table 3 Endogenous Regulation Choices by Position (ID) in Sequential-Public Condition

	Session								
ID	S2	S9	S10	S31	S7	S19	S22	S26	S43
1	1	1	1	1	0	0	0	0	0
2	1	1	1	1	0	0	0	0	0
3	1	1	1	1	0	0	1	1	0
4	1	1	1	1	0	0	0	1	0
5	0	1	1	0	0	1	1	1	0
6	0	1	1	0	1	0	0	1	0
Frequency of regulation	0.67	1.00	1.00	0.67	0.17	0.17	0.33	0.67	0.00
Average reported score	10.2	8.0	9.5	11.0	14.3	14.8	8.5	9.8	16.3
Average score (excluding ID1)	11.0	8.6	10.2	11.8	13.2	13.8	8.6	8.2	16.2

Notes. Decisions to be regulated are marked 1 and decisions to be unregulated are marked 0. Columns that are shaded are those where the first subject (ID = 1) chose to be regulated.

Table 3 reveals a considerable influence of earlier movers on subsequent regulation choices, consistent with our hypothesis. Given the overall frequency of 51.9% with which participants chose regulation in these treatments, we would expect two participants, selected at random and deciding independently, to make the same choice 50.1% of the time. Yet we find that in 77.8% of choices, a participant repeated the choice made by the previous participant, which differs significantly from the above expected proportion under independence ($z = 3.71$, $p < 0.001$). In fact, the influence of early movers is so strong that, in the four groups in which the first mover chose regulation (the shaded columns in Table 3), 80% of the subsequent participant choices were for regulation. On the other hand, in the five groups in which the first mover opted not to be regulated (the unshaded columns in Table 3), only 32% of subsequent participants opted for regulation.

The difference in the adoption of regulation by early movers also affects the scores subsequently reported in each session. In the four sessions in which the first mover opted to be regulated, the mean reported score was 9.7 (10.4 if we omit the first mover), whereas in the five sessions in which the first mover chose no regulation, it was 12.8 (12.0 if we omit the first mover). However, the difference, when we omit the first mover, is not statistically significant.

4.4. Does Private Voluntary Regulation Affect Unethical Conduct?

The results presented above demonstrate that public voluntary-regulation decisions can affect unethical behavior, both through individuals' concern about others knowing whether they opted for regulation and through individuals following the regulation

choices made by earlier movers. We next study how unethical conduct is influenced by the possibility of forgoing regulation, even when voluntary-regulation choices are made privately. In such cases, the social influences of being observed and of observing others discussed earlier are unlikely to play a role. Because all participants can give themselves the option to misreport, one might expect outcomes to be very similar to the no-regulation condition. However, as we hypothesized earlier (H₃), the act of first deciding whether one wants to have the opportunity to behave unethically may be psychologically distinct from simply having the opportunity to misreport.

From Table 2, we see that across both conditions with private voluntary regulation, 31.5% of participants opt to be regulated. This could either represent only those participants who would not misreport under no regulation (as in our null hypothesis) or some participants who would misreport under no regulation, but decide to constrain themselves under voluntary regulation. In either case, however, we might expect the resulting scores to be bounded above by those under no regulation (9.07). Instead, the mean score reported in the private conditions is 13.57 (private-simultaneous: 13.48, private-sequential: 13.67), which is significantly higher ($t_{136} = 4.17$, $p < 0.001$). The distributions also differ between no regulation and private voluntary regulation ($z = 3.99$, $p < 0.001$). Therefore, we again find evidence contrary to the null hypothesis that voluntary regulation will yield similar outcomes to no regulation: In our data, allowing participants to choose to be regulated yields significantly higher misreporting, even though roughly one-third of participants choose to be regulated.

4.5. Why Is There Greater Unethical Behavior Under Voluntary Regulation?

The preceding result is somewhat surprising: If one-third of participants opt for regulation when doing so is a private decision, then why are mean reported scores *higher* than when no one is regulated? This suggests that, among those choosing to remain unregulated under voluntary regulation, misreporting is significantly higher. In this section, we attempt to shed light on what may be driving this result.

Table 4 presents the mean reported score by condition, broken down by whether a subject was regulated or unregulated. In the two baseline conditions (no regulation and mandatory regulation), participants were either all regulated or unregulated, whereas in the voluntary-regulation conditions, each participant chose this for themselves. Interestingly, the mean reported scores are higher for participants under voluntary regulation, both in a comparison between those who chose not to be regulated and those who

Table 4   Mean Reported Matrix Score Broken Down by Regulation Condition

Treatment	Mean reported score	
	Unregulated participants	Regulated participants
No regulation	9.07 (3.78)	
Mandatory regulation		5.40 (4.00)
Voluntary regulation (pooled—all conditions)	14.94 (4.98)	8.43 (4.20)
Voluntary regulation (private-simultaneous)	16.00 (4.13)	7.50 (3.56)
Voluntary regulation (private-sequential)	16.28 (4.03)	8.44 (4.76)
Voluntary regulation (public-simultaneous)	11.92 (5.95)	8.83 (4.75)
Voluntary regulation (public-sequential)	14.46 (5.25)	8.54 (3.68)

Note. Standard deviations are in parentheses.

were in the mandatory no-regulation condition (14.94 versus 9.07, $t_{153} = 6.05$, $p < 0.001$) and in a similar comparison between those who chose regulation and those subject to mandatory regulation (8.43 versus 5.40, $t_{119} = 3.46$, $p < 0.001$).

This pattern of scores may have at least two explanations. First, as to the change in scores of those who were regulated, whether voluntarily or mandatorily, those participants who opt for regulation when doing so is voluntary may tend to have higher-than-average ability on the task. Lower-ability participants may opt out of regulation at higher rates, which explains the increase in scores (from 5.40 to 8.43) among those who are regulated voluntarily. In short, it is likely that a different group of participants is being regulated in the voluntary-regulation condition than in the mandatory-regulation condition.[5] Below we explore the evidence for such selection based on differences in individuals' ability.

The above phenomenon alone does not explain why average scores also increase for voluntarily unregulated participants. A second phenomenon appears to be that those participants choosing to be unregulated subsequently misreport to a higher degree than they would if they were forced to be unregulated. This pattern is consistent with a "license to cheat effect," whereby choosing not to be regulated leads to greater misreporting than when no such choice is offered. We now turn to evidence for both of the above effects.

4.5.1. Selection Effect. To identify selection effects in determining whether participants opt for

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[5] Dohmen and Falk (2011) nicely demonstrated the impact of sorting, by productivity, in the context of varying output contracts. See also Schwieren and Weichselbaumer (2010), who found a tendency for those with lower ability to cheat more in competitive tasks.

Table 5   Marginal Effects from Probit Regression of Decision to Be Regulated

Variables	1.	2.
Female	−0.172**	−0.192***
	(0.067)	(0.064)
Age	0.011	0.010
	(0.009)	(0.009)
Parent graduated college	0.076	0.075
	(0.066)	(0.069)
Religious	−0.098	−0.067
	(0.111)	(0.138)
Public treatment	0.242***	0.249***
	(0.079)	(0.076)
Major (Arts and humanities)		0.125
		(0.180)
Major (Business administration)		0.001
		(0.148)
Major (Economics)		0.015
		(0.206)
Major (Engineering)		−0.026
		(0.116)
Major (Sciences)		−0.048
		(0.113)
Major (Social sciences)		0.039
		(0.164)
Observations	212	211
Pseudo R^2	0.069	0.072

Note. Standard errors are clustered by session and are in parentheses.
  **$p < 0.05$; ***$p < 0.01$.

regulation, we first identify whether any observable participant characteristics predict the decision to be regulated. Table 5 reports the marginal effects from two probit regressions of the decision to be regulated, in the voluntary-regulation conditions, on demographic characteristics obtained at the end of the experiment, as well as on a binary variable indicating whether the regulation decision was public.

The four demographic variables in the first model are (i) whether a participant is female, (ii) a participant's age, (iii) whether a participant reports having at least one parent who graduated from college, and (iv) whether a participant reports being religious. We also include, as a control, a variable for whether the regulation decision was made publicly (versus privately). The second regression model also introduces binary variables to identify the most frequent college majors reported in our sample. Confirming our earlier analysis, if a participant's regulation decision is public, then that participant is 24% more likely to opt for regulation. The only other variable that significantly predicts regulation is gender; females are roughly 18% less likely to opt for regulation than males. This suggests that some of the potential selection observed in Table 4 might be accounted for by the differential regulation behavior of females.

Table 6   Mean Matrix Score by Gender and Treatment

Treatment	Mean score (males)	Mean score (females)	Difference (male − female)	
No regulation	8.57 (3.29)	9.90 (4.70)	−1.33	$t_{22} = 0.82$ $p = 0.42$
Mandatory regulation	6.94 (4.20)	3.64 (3.00)	3.30	$t_{28} = 2.44$ $p = 0.02$
Voluntary regulation (pooled—private treatments)	13.90 (5.41)	13.05 (5.87)	0.85	$t_{106} = 0.76$ $p = 0.45$
Voluntary regulation (pooled—public treatments)	12.19 (5.45)	9.18 (5.02)	3.00	$t_{106} = 2.95$ $p = 0.004$
Voluntary regulation (private-simultaneous)	13.30 (5.14)	13.88 (6.51)	−0.58	$t_{52} = 0.36$ $t = 0.72$
Voluntary regulation (private-sequential)	14.63 (5.71)	12.46 (5.44)	2.17	$t_{52} = 1.42$ $p = 0.16$
Voluntary regulation (public-simultaneous)	11.76 (5.96)	7.90 (3.77)	3.86	$t_{52} = 2.64$ $p = 0.01$
Voluntary regulation (public-sequential)	12.73 (4.79)	10.14 (5.65)	2.59	$t_{52} = 1.81$ $p = 0.08$

Note. Standard deviations are in parentheses.

To explore whether selective adoption of regulation by gender might be at least partly responsible for the pattern of matrix scores we observe in Table 4, we consider the relative (reported) performance of males and females. Table 6 presents, by treatment, mean reported scores separately for males and females. Under mandatory regulation, we observe that females perform worse than males: The mean score is 6.94 for males and 3.64 for females, a difference that is statistically significant ($t_{28} = 2.44$, $p = 0.02$). The difference in performance under regulation might explain why women are less likely than men to opt for regulation (as we observed in Table 5).[6]

Consistent with the idea that females are using the opportunity to misreport scores as a means of "catching up" with male scores, we see that in the no-regulation condition, the difference between male and female scores is, reversed, and statistically insignificant. Thus, when females have the opportunity to misreport, the gender gap in scores disappears. Moreover, when we consider the treatments with voluntary regulation, we see that the difference between male and female scores varies and that it tends to be smaller and less statistically significant in the private conditions, where there is less social pressure to adopt the regulation. Thus, consistent with the idea that disadvantaged individuals disproportionately opt to forgo regulation, we observe that females tend to be disadvantaged in the task, that they tend to forgo regulation in greater proportions, and that

a lack of regulation allows them to overcome their disadvantage.

4.5.2.   License to Cheat Effect. In addition to the effect of selection on reported matrix scores, we consider the possibility that the degree of misreporting is higher when participants opt for voluntary regulation. To do so, we attempt to identify the degree of additional misreporting when participants are unregulated voluntarily.

We first construct a rough measure of the predicted score a participant would obtain if regulated. We do this by considering all of the collected demographic variables and the extent to which they predict scores in the condition in which regulation is mandatory, that is, when we know that scores are reported truthfully. We find one variable that reliably predicts scores: whether a participant is male or female (see Table 6). Using the gender variable, we construct a predicted score for each participant: 3.64 for females and 6.94 for males, a classification that accounts for 18% of the variance in actual scores.[7]

Next, we compare the predicted "true" scores obtained above with the actual reported scores obtained in each treatment. Table 7 presents the mean difference between participants' predicted and actual scores, by treatment and by whether or not the participant was regulated. The predicted scores represent the mean scores one would expect to observe in each case, under the assumption of no misreporting, after controlling for the gender composition of the sample producing those scores. The numbers in the table are the actual departure from this prediction.[8]

The first row of the table corresponds to the no-regulation condition and reveals that, on average, participants reported solving 3.56 more matrices than their predicted scores. This indicates that there was some misreporting relative to the case in which all participants were regulated. Across all voluntary-regulation conditions, those participants who chose to be regulated reported solving 2.61 matrices more, on average, than their predicted scores. This increase is consistent with selection on (unobserved, i.e., non-gender related) ability, as discussed above.

However, the most striking aspect of Table 7 is the average reported score of participants who were voluntarily unregulated: These participants reported

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[6] This gender difference is consistent with prior findings showing that women perform worse than men at math, and that there is widespread belief in such a gender gap (Brown and Josephs 1999, Fryer and Levitt 2010).

[7] The nature and significance of these results do not change if we use less reliable variables to generate predicted scores. For instance, including variables such as major and whether a subject's parents attended college increases the variance explained in the initial model up to 50%, but it does not change the conclusion of our analysis in this section.

[8] Because the predicted scores were obtained from the condition with exogenous regulation, the difference for that condition is by definition zero, and we exclude it from the table.

Table 7   Mean Difference Between Reported and Predicted Matrix Scores in Competitive Task by Condition

Treatment	Unregulated participants	Regulated participants
No regulation	3.56 (4.50)	
Voluntary regulation (pooled—all conditions)	9.56 (4.81)	2.61 (3.84)
Voluntary regulation (private-simultaneous)	10.19 (4.58)	1.39 (3.23)
Voluntary regulation (private-sequential)	10.99 (3.71)	2.61 (4.33)
Voluntary regulation (public-simultaneous)	6.56 (5.32)	2.91 (4.49)
Voluntary regulation (public-sequential)	9.55 (4.93)	3.01 (3.09)

Note. Standard deviations are in parentheses.

Figure 2   Reported Die-Roll Score (Task 2) by Regulation Condition (in Task 1)

solving 9.56 more matrices, on average, than their predicted scores. This is over 2.5 times higher than when all participants are unregulated. The difference in means between voluntary regulation and no regulation, for those who are not regulated, is statistically significant ($t_{147} = 5.66$, $p < 0.001$). The distributions also differ significantly in a nonparametric rank-sum test ($z = 4.88$, $p < 0.001$). This finding is consistent with our interpretation that choosing to be unregulated, in contrast with regulation being entirely absent, gives participants who opt for no regulation a license to cheat and leads to higher misreporting than when all participants are unregulated.

4.6.   The Presence of Ethical Spillovers

Finally, we can explore whether our treatments in the first (matrix) task, which differed in the extent to which participants were regulated, led to any differences in reported die-roll scores in the second task, when all participants were unregulated. That is, does the presence, absence, or voluntary nature of regulation in the first task create spillovers to the second task, when regulation does not exist?

Figure 2 reports the distributions of reported die rolls, in task 2, by the preceding regulation condition in task 1. Following the mandatory-regulation condition, the mean reported die roll is 3.93, which is only slightly higher than the expected mean roll of 3.5, and the difference is not statistically significant ($t_{29} = 1.38$, $p = 0.18$). Thus, when everyone in the first task is regulated, behavior is generally ethical in the second task, in the sense that there appears to be little misreporting. However, when the first task is conducted either under no regulation or under voluntary regulation, mean die rolls are higher: 4.60 and 4.69, respectively, and these both differ significantly from 3.5 ($t_{29} = 3.65$, $p = 0.001$; $t_{215} = 11.66$, $p < 0.001$, respectively).

Table 8 presents ordered probit regressions of the reported task 2 die-roll score on task 1 treatment
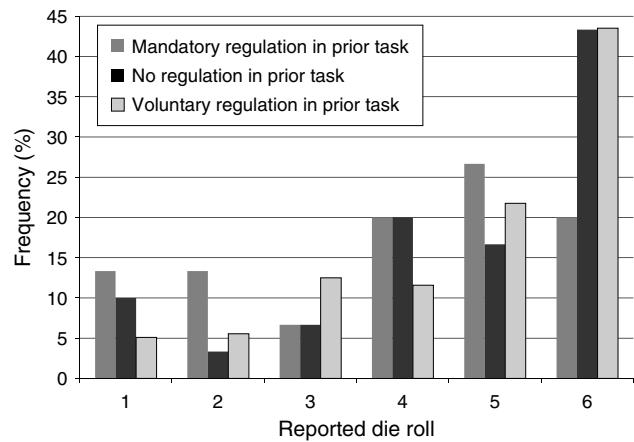
and demographic variables; the omitted category is mandatory regulation, meaning that the reported coefficients measure differences with this treatment. In the first column, we find that task 2 misreporting is significantly higher following the no-regulation and voluntary-regulation conditions. The magnitude of misreporting is similar in both conditions; we fail to reject the restriction that the two coefficients in the first regression are equal ($\chi^2(1) = 0.13$, $p = 0.72$). The second model estimates the differences separately for each voluntary-regulation condition. We find similar degrees of misreporting following all of the voluntary-regulation conditions; we fail to reject the restriction that all of the coefficients in the second

Table 8   Ordered Probit Regressions of Reported Score in Die-Roll, Task

Variables	1.	2.	3.	4.
No regulation in task 1	0.47* (0.24)	0.47* (0.24)	0.47* (0.24)	0.45 (0.27)
Voluntary regulation in task 1 (*all conditions*)	0.53*** (0.19)		0.28 (0.20)	0.24 (0.19)
Voluntary regulation in task 1 (*chose no regulation*)			0.48*** (0.15)	0.52*** (0.14)
Voluntary regulation in task 1 (*private-simultaneous*)		0.51** (0.26)		
Voluntary regulation in task 1 (*private-sequential*)		0.61*** (0.21)		
Voluntary regulation in task 1 (*public-simultaneous*)		0.45* (0.25)		
Voluntary regulation in task 1 (*public-sequential*)		0.56*** (0.22)		
Female				−0.28** (0.14)
Observations	276	276	276	270

Note. Standard errors (clustered by session) are reported in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

context-specific and limited to environments in which women are competitively disadvantaged. In this vein, our results share features with recent findings by Schwieren and Weichselbaumer (2010), who found that women engaged in cheating behavior more often than men, but that this was less related to a gender difference than to differences in ability.

Our results yield important policy implications. First, we demonstrate that regulation that can be avoided produces more unethical conduct than does simply an absence of regulation. This counterintuitive finding results from greater misreporting when individuals opt for the ability to misreport than when it is simply given to them. Thus, giving individuals or firms the ability to influence the degree of regulation or monitoring to which they are subject may perversely encourage those who choose lax regulations to behave more unethically than if no regulation were present. The fact that some individuals choose to open offshore bank accounts that allow them to hide earnings from tax authorities may lead them to subsequently hide earnings to a greater extent than they would if they could do so by law with all bank accounts. Similarly, giving employees or students the discretion of whether to have their behavior monitored or verified may yield more unethical conduct. Broadly, our results suggest the need to think carefully about the possibility that easily avoidable regulation may yield outcomes that are worse than simply having no regulation.

Our results also suggest that, in competitive situations, those who seek to avoid regulation may be those who are competitively disadvantaged in the underlying domain. Conversely, those who feel more confident in their ability to win without misreporting may opt to be regulated, perhaps out of a willingness to signal to outsiders that they do not need to cheat. Thus, voluntary regulation has the interesting property of allowing those who are disadvantaged a greater opportunity to catch up to those with greater skill. This is particularly true in contexts where there is no outside pressure to adopt regulation (as in our private treatments).

We also find some interventions that can be used to influence the willingness to abide by regulation. Making regulation choices public increases the adoption of voluntary regulation. Having early movers opt for regulation also influences those who make choices subsequently. Thus, a policy maker interested in obtaining compliance with regulation may be able to rely on social influences to achieve this result.

Finally, an important open question deals with how our results translate to other settings. For example, we use a competitive task, for reasons we describe earlier in the paper. But it is not transparent that our results would be the same in contexts in which individuals

are not competing, as is the case, for example, under piece-rate compensation. In such contexts, the importance of relative skill is likely to be weaker, diminishing the need for the disadvantaged group to opt for less regulation and engage in more misreporting. Nevertheless, our context is similar to that in many economics and organizational settings, where success is based on relative performance and where individuals or firms can select among varying degrees of transparency. Our findings suggest that, at least in some such contexts, the possibility of voluntary or avoidable regulation can yield perverse outcomes.

References

Akerlof G, Kranton R (2010) *Identity Economics* (Princeton University Press, Princeton, NJ).

Andreoni J, Erard B, Feinstein J (1998) Tax compliance. *J. Econom. Literature* 36(2):818–860.

Ariely D, Bracha A, Meier S (2009) Doing good or doingwell? Image motivation and monetary incentives in behaving prosocially. *Amer. Econom. Rev.* 99(1):544–555.

Asch S (1956) Studies of independence and conformity: A minority of one against a unanimous majority. *Psych. Monographs* 70(9):1–70.

Ausubel L (1991) The failure of competition in the credit card market. *Amer. Econom. Rev.* 81(1):50–81.

Ayal S, Gino F (2011) Honest rationales for dishonest behavior. Mikulincer M, Shaver PR, eds. *Social Psychology of Morality: Exploring the Causes of Good and Evil* (American Psychological Association, Washington, DC), 149–166.

Bateson M, Nettle D, Roberts G (2006) Cues of being watched enhance cooperation in a real-world setting. *Biol. Lett.* 2(3): 412–414.

Bicchieri C, Xiao E (2009) Do the right thing: But only if others do so. *J. Behavioral Decision Making* 22(2):191–208.

Binswanger HP (1980) Attitudes toward risk: Experimental measurement in rural India. *Amer. J. Agricultural Econom.* 62(3): 395–407.

Brass D, Butterfield K, Skaggs B (1998) Relationships and unethical behavior: A social network perspective. *Acad. Management Rev.* 23(1):14–32.

Brown RP, Josephs RA (1999) A burden of proof: Stereotype relevance and gender differences in math performance. *J. Personality Soc. Psych.* 76(2):246–257.

Burks SV, Krupka EL (2012) A Multimethod approach to identifying norms and normative expectations within a corporate hierarchy: Evidence from the financial services industry. *Management Sci.* 58(1):203–217.

Burnham T, Hare B (2007) Engineering human cooperation: Does involuntary neural activation increase public goods contributions? *Human Nature* 18:88–108.

Carpenter J, Matthews P, Schirm J (2010) Tournaments and office politics: Evidence from a real effort experiment. *Amer. Econom. Rev.* 100(1):504–517.

Charness G, Rigotti L, Rustichini A (2007) Individual behavior and group membership. *Amer. Econom. Rev.* 97(4):1340–1352.

Croson RTA (2005) Deception in economic experiments. Gerschlager C, ed. *Deception in Markets: An Economic Analysis* (Palgrave Macmillan, New York), 113–130.

Dana J, Loewenstein G, Weber R (2011) Ethical immunity: How people violate their own moral standards without feeling they are doing so. De Cremer D, Tenbrunsel AE, eds. *Behavioral Business Ethics: Shaping an Emerging Field* (Taylor & Francis, New York), 201–220.

Deutsch M, Gerard H (1955) A study of normative and informational social influences upon individual judgment. *J. Abnormal Soc. Psych.* 51(3):629–636.

Diekmann KA, Tenbrunsel AE, Galinsky AD (2003) From self-prediction to self-defeat: Behavioral forecasting, self-fulfilling prophecies, and the effect of competitive expectations. *J. Personality Soc. Psych.* 85(4):672–683.

Dohmen T, Falk A (2011) Performance pay and multidimensional sorting: Productivity, preferences, and gender. *Amer. Econom. Rev.* 101(2):556–590.

Dreber A, von Essen EA, Ranehill E (2011) Outrunning the gender gap. *Experiment. Econom.* 14(4):567–582.

Ellman M, Pezanis-Christou P (2010) Organizational structure, communication, and group ethics. *Amer. Econom. Rev.* 100(5): 2478–2491.

Erat S, Gneezy U (2012) White lies. *Management Sci.* 58(4):723–733.

Fischbacher U, Heusi F (2008) Lies in disguise. An experimental study on cheating. TWI Research Paper Series 40, Thurgau Institute of Economics, Kreuzlingen, Switzerland.

Fisman R, Gatti R (2002) Decentralization and corruption: Evidence across countries. *J. Public Econom.* 83(3):325–345.

Freedman J, Fraser SS (1966) Compliance without pressure: The foot-in-the-door technique. *J. Personality Soc. Psych.* 4(2):196–202.

Fryer RG, Levitt SD (2010) An empirical analysis of the gender gap in mathematics. *Amer. Econom. J.: Appl. Econom. Amer. Econom. Assoc.* 2(2):210–240.

Gibson R, Tanner C, Wagner A (2013) Preferences for truthfulness: Heterogeneity among and within individuals. *Amer. Econom. Rev.* 103(1):532–548.

Gino F, Ariely D (2012) The dark side of creativity: Original thinkers can be more dishonest. *J. Personality Soc. Psych.* 102(3):445–459.

Gino F, Galinsky A (2012) Vicarious dishonesty: When psychological closeness creates distance from one's own moral compass. *Organ. Behav. Human Decision Processes* 119(1):15–26.

Gino F, Ayal S, Ariely D (2009a) Contagion and differentiation in unethical behavior: The effect of one bad apple on the barrel. *Psych. Sci.* 20(3):393–398.

Gino F, Gu J, Zhong C (2009b) Contagion or restitution? When bad apples can motivate ethical behavior. *J. Experiment. Soc. Psych.* 45(6):1299–1302.

Gneezy U (2005) Deception: The role of consequences. *Amer. Econom. Rev.* 95(1):384–394.

Gneezy U, Rustichini A (2004) Gender and competition at a young age. *Amer. Econom. Rev.* 94(2):377–381.

Gneezy U, Niederle M, Rustichini A (2003) Performance in competitive environments: Gender differences. *Quart. J. Econom.* 118(3):1049–1074.

Goldstein NJ, Cialdini R, Griskevicius V (2011) A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *J. Consumer Res.* 35(3):472–482.

Haley K, Fessler D (2005) Nobody's watching? Subtle cues affect generosity in an anonymous economic game. *Evolutionary Human Behav.* 26(3):245–256.

Hamman J, Weber R, Loewenstein G (2010) Self-interest through delegation: An additional rationale for the principal-agent relationship. *Amer. Econom. Rev.* 100(4):1826–1846.

Hanna R (2010) US environmental regulation and FDI: Evidence from a panel of US-Based multinational firms. *Amer. Econom. J.: Appl. Econom.* 2(3):158–189.

Hurkens S, Kartik N (2009) Would I lie to you? On social preferences and lying aversion. *Experiment. Econom.* 12(2):180–192.

Jones G, Kavanagh M (1996) An experimental examination of the effects of individual and situational factors on unethical behavioral intentions in the workplace. *J. Bus. Ethics* 15(5):511–523.

Kallgren C, Reno R, Cialdini R (2000) A focus theory of normative conduct: When norms do and do not affect behavior. *Personality Soc. Psych. Bull.* 26(8):1002–1012.

Keizer K, Lindenberg S, Steg L (2008) The spreading of disorder. *Science* 322(5908):1681–1685.

Krupka E, Weber R (2009) The focusing and informational effects of norms on pro-social behavior. *J. Econom. Psych.* 30(3):307–320.

Levinson A, Taylor M (2008) Unmasking the pollution haven effect. *Internat. Econom. Rev.* 49(1):223–254.

Mazar N, Amir O, Ariely D (2008) The dishonesty of honest people: A theory of self-concept maintenance. *J. Marketing Res.* 45(6):633–644.

Mead N, Baumeister R, Gino F, Schweitzer M, Ariely D (2009) Too tired to tell the truth: Self-control resource depletion and dishonesty. *J. Experiment. Soc. Psych.* 45(3):594–597.

Monin B, Miller DT (2001) Moral credentials and the expression of prejudice. *J. Personality Soc. Psych.* 81(1):33–43.

Nagin DS, Rebitzer JB, Sanders S, Taylor LJ (2002) Monitoring, motivation, and management: The determinants of opportunistic behavior in a field experiment. *Amer. Econom. Rev.* 92(4):850–873.

Niederle M, Vesterlund L (2007) Do women shy away from competition? Do men compete too much? *Quart. J. Econom.* 122(3):1067–1101.

Olken BA (2007) Monitoring corruption: Evidence from a field experiment in Indonesia. *J. Political Econom.* 115(2):200–249.

Pierce L, Snyder J (2008) Ethical spillovers in firms: Evidence from vehicle emissions testing. *Management Sci.* 54(11):1891–1903.

Rigdon M, Ishii K, Watabe M, Kitayama S (2009) Minimal social cues in the dictator game. *J. Econom. Psych.* 30(3):358–367.

Schminke M, Ambrose M, Neubaum D (2005) The effect of leader moral development on ethical climate and employee attitudes. *Organ. Behav. Human Decision Processes* 97(2):135–151.

Schultz PW, Nolan J, Cialdini R, Goldstein N, Griskevicius V (2007) The constructive, destructive, and reconstructive power of social norms. *Psych. Sci.* 18(5):429–434.

Schwieren C, Weichselbaumer D (2010) Does competition enhance performance or cheating? A laboratory experiment. *J. Econom. Psych.* 31(3):241–253.

Shalvi S, Dana J, Handgraaf MJJ, De Dreu CKW (2011) Justified ethicality: Observing desired counterfactuals modifies ethical perceptions and behavior. *Organ. Behav. Human Decision Processes* 115(2):181–190.

Sherman S (1980) On the self-erasing nature of errors of prediction. *J. Personality Soc. Psych.* 39(2):211–221.

Sutter M (2009) Deception through telling the truth?! Experimental evidence from individuals and teams. *Econom. J.* 119(534):47–60.

Tenbrunsel A, Diekmann K, Wade-Benzoni K, Bazerman M (2010) The ethical mirage: A temporal explanation as to why we are not as ethical as we think we are. *Res. Organ. Behav.* 30: 153–173.

Trevino L, Weaver G, Brown M (2008) It's lovely at the top: Hierarchical levels, identities, and perceptions of organizational ethics. *Bus. Ethics Quart.* 18(2):233–252.

Trope, Y, Liberman N (2010) Construal-level theory of psychological distance. *Psych. Rev.* 117(2):440–463.

Zey-Ferrell M, Ferrell O (1982) Role-set configuration and opportunity as predictors of unethical behavior in organizations. *Human Relations* 35(7):587–604.

Zey-Ferrell M, Weaver K, Ferrell O (1979) Predicting unethical behavior among marketing practitioners. *Human Relations* 32(7):557–561.

Woodzicka JA, LaFrance M (2001) Real versus imagined gender harassment. *J. Soc. Issues* 57(1):15–30.