



Contents lists available at ScienceDirect

Organizational Behavior and Human Decision Processes

journal homepage: www.elsevier.com/locate/obhdp

Work-report formats and overbilling: How unit-reporting vs. cost-reporting increases accountability and decreases overbilling [☆]

Sreedhari D. Desai ^{a,*,1}, Maryam Kouchaki ^{b,1}^a Kenan-Flagler Business School, University of North Carolina, United States^b Kellogg School of Management, Northwestern University, United States

ARTICLE INFO

Article history:

Received 23 August 2014

Revised 10 June 2015

Accepted 19 June 2015

Keywords:

Money

Overbilling

Ethical decision-making

Accountability

Decision frames

ABSTRACT

The current paper examines how asking for a report of units of work completed versus cost of the same work can influence overbilling. We suggest that something as simple as asking for a report of units of work completed (for instance, reporting either the time spent or number of units of work completed) as opposed to the cost of the work completed can drive different unethical behaviors. We argue that unit-reporting makes providers feel accountable for their actions, and this induced accountability, in turn, impacts actual billing behaviors. We present seven studies, including a field experiment in the auto-repair industry that demonstrate the effect of different work-report formats on overbilling and provide evidence for our proposed underlying mechanism.

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1. Introduction

The media is replete with accounts of people behaving in morally reprehensible ways (e.g., [Confessore & Rashbaum, 2011](#)). Instances of accountants embezzling funds, contractors overcharging customers, lawyers overbilling clients, and doctors overprescribing drugs to patients are disturbingly frequent (e.g., [Snyder, 2010](#)). A number of behavioral field studies have shown that employing different monitoring systems can alter dishonest behavior in natural settings ([Nagin, Rebitzer, Sanders, & Taylor, 2002](#); [Pierce, Snow, & McAfee, 2015](#); [Slemrod, Blumenthal, & Christian, 2001](#)). For example, Pierce and colleagues showed that the adoption of technology-based employee monitoring system reduced theft in restaurants. However, monitoring and sanctioning systems are effective only when they are strong (i.e., when the probability of being caught is high or there are severe, negative consequences) ([Tenbrunsel & Messick, 1999](#)), and installing such surveillance systems, on average, can be very costly. Oddly, the

absence of surveillance systems may sometimes result in more compliance than having weak surveillance systems (i.e., low probability of being caught or insignificant consequences) because individuals in such situations might adopt a moral decision frame, rather than a business one ([Tenbrunsel & Messick, 1999](#)).

Here, we suggest that an implicit manipulation of monitoring such as asking for a report of units of work completed (unit-reporting) versus cost of the same work (cost-reporting) can also promote honesty by making people feel more accountable for their actions and guiding them away from self-interested patterns of behavior, such as making money by overbilling. This is in line with recent work demonstrating the subtle effects of monitoring cues on moral hazard in banks. Hertzberg and colleagues showed that a rotation policy that routinely assigns a new loan officer to borrowers every three years improves the previous officers' reporting behavior because they realize that their employer can compare their report with that issued by their successor ([Hertzberg, Liberti, & Paravisini, 2010](#)).

In many economic relationships, agents are responsible for self-reporting their performance. For instance, billing is a ubiquitous part of business; service providers, contractors, and workers routinely bill their employers for their services and as such have opportunities to overbill. Given the importance of the psychology of a situation for individuals' decisions and behaviors, any subtle cue can indeed have an effect on the likelihood to overbill through psychological mechanisms. We suggest that shifting the focus to a provider's accountability as opposed to monetary gains by simply

* The authors gratefully acknowledge comments and helpful suggestions from Max H. Bazerman, Christopher Oveis, James Berry, Isaac Smith, Dolly Chugh, Noah Eisenkraft, Arthur P. Brief, Neeru Paharia and Kristin Smith-Crowe. This research was supported by the *Program on Negotiation Fellowship* at the Harvard Law School, the *Edmond J. Safra Center for Ethics Fellowship* at the Harvard University, and the *Collins Dawson Endowment* at the University of North Carolina.

* Corresponding author.

E-mail address: sreedharidesai@gmail.com (S.D. Desai).

¹ Both authors contributed equally to this project.

asking for a report of units of work completed (for instance, reporting either the time spent or number of units of work completed) instead of the cost of the work completed could be sufficient to drive different ethical behaviors. We argue that while cost-reporting highlights the monetary aspect of a market transaction, unit-reporting makes providers feel psychologically accountable² for their actions. Therefore, overbilling may be lower in unit-reporting contexts in part because such billing format elicits subtle feelings of accountability.

2. Unethical behavior in market transactions

Client-provider billing relations are the most prominent example of interactions governed by market pricing, one of the four elementary forms of relational models – i.e., communal-sharing, authority-ranking, equality-matching and market-pricing (Fiske, 1991, 1992). In market pricing relations, people orient to ratio values in the form of input to output ratios; or said differently, rational calculations of efficiency or expected utility dominate in such relations. As is the case with most market pricing relations, the billing relations examined in this paper involve money. Scholars have suggested that money can crowd out morals and depersonalize relationships (e.g., DeVoe & Pfeffer, 2010; Giddens, 1990; Marx, 1844/1964; Simmel, 1907/1978). Indeed, research on the psychology of money suggests that when the monetary aspect of a situation is salient, individuals often become egocentric (Vohs, Mead, & Goode, 2006) and even unethical (Gino & Mogilner, 2014; Kouchaki, Smith-Crowe, Brief, & Sousa, 2013). Moreover, research has also shown that the practice of accounting for one's time with money (i.e., hourly payment) decreases volunteering (DeVoe & Pfeffer, 2010) and intergenerational resource allocation (Whillans & Dunn, 2015). In sum, research suggests that when monetary considerations dominate, we can expect egocentric or even unethical behaviors aimed at earning more money.

Market pricing relationships typically elicit a business decision frame governed by a cost-benefit analysis in which self-interest is pursued over others' interests, and moral considerations are largely absent (Fiske, 1991; Kouchaki et al., 2013; Tenbrunsel & Messick, 1999). However, it is important to note that in all of the studies cited so far, researchers compared conditions with money to a control condition wherein money was absent. For example, in the set of studies by Kouchaki and colleagues, participants exposed to money-related words or images compared to those exposed to neutral words or images were twice as likely to lie (Kouchaki et al., 2013). Likewise, DeVoe and Pfeffer (2010) found that when participants were randomly assigned to a billing time condition, they were less likely to volunteer subsequently compared to those in a non-billing condition (i.e., not involving money) because they devalued the worth of work lacking monetary compensation (DeVoe & Pfeffer, 2007).

Given that monetary transactions are an indispensable feature of modern life, there is a need for examining the effects of different work-report formats on providers' actions to minimize the undesirable aspects of market pricing relations while still permitting its use. We propose that a focus on the time spent or number of units of work completed on a task (i.e., unit-reporting) as opposed to the total amount of money earned (i.e., cost-reporting) can influence individual providers' decision to overbill or not.

There are mainly two distinct psychological processes that can have an effect on one's likelihood to overbill in unit-reporting versus cost-reporting formats. First, a focus on the time spent or

number of units of work completed on a task (i.e., unit-reporting) as opposed to the total amount of money earned (i.e., cost-reporting) can highlight a provider's accountability for one's actions as opposed to the monetary gains. When a person is being asked to report the work completed, she/he may feel that the requester is paying attention to the details of the job and how it is accomplished and thus may call for justification of one's actions. As such we can expect different levels of unethical behaviors. Second, even though past researchers have explicitly compared conditions with money primes to a control condition where money is absent (DeVoe & Pfeffer, 2010; Gino & Mogilner, 2014; Kouchaki et al., 2013), nonetheless, it is likely that a focus on the time spent or number of units of work completed on a task (i.e., unit-reporting) as opposed to the total amount of money earned (i.e., cost-reporting) can decrease the salience of the monetary aspect of a situation and thus alter overbilling behavior. Specifically, in cost-reporting condition, due to salience of money, individuals may adopt a business frame of mind (Kouchaki et al., 2013), which can increase instances of unethical behaviors, while in the unit-reporting, the connection to money is more distant and indirect, which can result in a lower likelihood to adopt a business decision frame.

Therefore, we present hypotheses regarding whether the effects of billing format on overbilling will be primarily explained by: (1) induced feelings of accountability for one's actions in the unit-reporting versus cost-reporting conditions, or (2) lower likelihood to adopt a business decision frame in the unit-reporting compared to cost-reporting. The effects of the psychology of money and in particular, self-interested and unethical behaviors in the presence of money, are well established (see Kouchaki et al., 2013; Vohs et al., 2006), so we use the subsequent section to hypothesize and elaborate on our novel proposition that unit-reporting may make providers feel psychologically accountable for their actions.

3. Accountability as a result of unit-reporting

Accountability is defined as an expectation that one may be evaluated, may be required to justify one's beliefs, feelings or actions to somebody, or that an individual's actions can be linked back to them personally (Lerner & Tetlock, 1999; Tetlock, 1992). It can range from explicit expectations that individuals need to explain their choices and actions and give reasons, to implicit feelings that one might be judged for the choices one makes or the way one behaves (Lerner & Tetlock, 1999). Importantly, accountability is most often conceptualized and studied as a perceptual state (i.e., felt accountability) rather than an objective condition (Hochwarter et al., 2007; Tetlock, 1985). When people are held accountable, that is, when they expect to have to justify their decisions and actions, motivations aimed at protecting and enhancing one's self-image (Tetlock, 1985) arise and guide people to display behaviors that are socially responsible (De Cremer & van Dijk, 2009; Jerdee & Rosen, 1974; Lerner & Tetlock, 1999). Accountability also facilitates such behavior by creating awareness of responsibilities, making social goals salient (Schlenker & Weigold, 1989).

Past research has also shown that accountability alters cognitive processes such that people engage in preemptive self-criticism (Lerner & Tetlock, 1999; Tetlock, 1983). Other research using a very direct manipulation of accountability for decision-making procedures (Lerner & Tetlock, 1999) has demonstrated that making agents accountable for their decision-making procedure by explicitly informing them that after the decision they would be asked to explain how they made the decision, leads to less self-serving investment decisions under moral hazard (Pitesa & Thau, 2013). Importantly, accountability can be a diffuse, perceptual state such

² Throughout this paper we refer to pre-decisional accountability (Lerner & Tetlock, 1999), i.e., the perception that one may be evaluated for the decisions one is about to make.

that individuals feel generally responsible for their actions without having explicit entities or individuals to whom they feel accountable. For example, researchers have suggested that rather than relying on explicit incentives, organizational design such as rotation policies can be effectively used implicitly to counter agency problems in banking and audit industries (Daniels & Booker, 2011; Hertzberg et al., 2010). Even though the nature of moral hazard (i.e., the non-verifiability of subjective risk assessments) remains unchanged, it is possible that having rotational policies induces felt accountability and alters reporting behavior.

In this paper, we argue that reporting units of work completed in terms of either the time spent or number of units completed as a part of a job, as opposed to reporting the cost in terms of the amount of money to be paid, induces feelings of accountability. When an employee is asked to report the units of work done or the time taken to do a job, the employee may feel that the employer is paying attention to the details of a job and how it is accomplished and may call upon the employee to justify her actions. As noted, accountability is the perceived need to justify one's actions, thoughts, or beliefs to an audience that has the power to grant or withhold a reward or impose sanctions (Frink & Klimoski, 1998). In other words, employees' perception of how accountable they are to the person who has hired them to perform a job and their feelings of accountability for their actions can vary based on whether the work system they are embedded in requires them to report objective details of the job such as units of work performed.

Perceived accountability has powerful effects on behaviors. Earlier, we reviewed the research that demonstrated how explicit accountability makes people behave in keeping with norms, cues, and/or expectations (Tetlock, 1983). But, more importantly, the work by Hertzberg et al. (2010) showed that the mere anticipation of a rotation assignment led loan officers to reveal unfavorable information about borrowers' repayment prospects because the switch to a rotation system made loan officers feel accountable for their actions since rotations would allow performance comparisons between the reports of new and old agents assigned to the same task.

As noted, most of prior research on accountability has used explicit, direct manipulations, for example by informing people that they will be subsequently evaluated by an audience that has the potential to reward or punish them (e.g., Siegel-Jacobs & Yates, 1996; Tetlock, 1983). There is no denying the fact that explicit accountability will increase ethical behavior (Pitesa & Thau, 2013). Importantly, we suggest that asking individuals to report their work in terms of a unit of performance (such as time) can act as a subtle manipulation of accountability to alter behavior. It is important to note that our argument suggests that if we present service providers and workers with nearly identical task and payoff, except asking them to report or provide an estimate of the amount of time taken to complete the job or the amount of work done instead of reporting or estimating the cost of the same exact job, there should be observable differences in reporting behavior.

In sum, there are two distinct psychological mechanisms that predict decreased overbilling as a result of reporting units of work completed relative to reporting cost of work completed. We formally hypothesize that felt accountability and/or adoption of a business decision frame can lower overbilling.

Hypothesis 1. Reporting units of work completed relative to reporting cost of work completed will lead to less overbilling.

Hypothesis 2a. Felt accountability mediates the relationship between work-report formats on overbilling such that unit-reporting increases felt accountability, which decreases overbilling.

Hypothesis 2b. Adoption of a business decision frame mediates the relationship between work-report formats on overbilling such that cost-reporting increases adoption of a business frame, which increases overbilling.

4. Overview of studies

We present seven studies that demonstrate the effect of different work-report formats on overbilling. In Study 1, we asked participants to either first report the number of units of work completed or report the cost of the work completed. In Study 2, we used a different task structure and asked participants to report their work based on the number of minutes spent on the task or the money earned. In Studies 3–4, we added control conditions with different payment structure (payment based on accuracy) or task structure (aggregate vs. individual data) to compare cost-reporting with unit-reporting formats. In Studies 5–6, we examined the role of the proposed mediators (perceived accountability and adoption of a business frame) on the effect of work-report format on overbilling. In Study 7, we report a field experiment conducted in the auto-repair industry. In this study, we investigated the impact of the work-report formats on the price quoted for making repairs on a vehicle. Across studies, we found a robust effect of work-report format on overbilling (see Table 1 for a summary of all studies).

5. Study 1

The purpose of conducting Study 1 was to examine the effect of different work-report formats using a task that paid per unit of work done.

5.1. Methods

5.1.1. Sample and procedure

Seventy six students from several local universities in a city in the northeastern United States (54% female) participated in this

Table 1
Mean values for overbilling in Studies 1–7.

Study and measure	Cost-reporting	Unit-reporting
<i>Study 1</i>		
Overbilling (cents)	138	55
Percentage of overbilling	65.8%	42.1%
<i>Study 2</i>		
Overbilling (cents)	21	7
Percentage of overbilling	37.1%	17.8%
<i>Study 3</i>		
Overbilling (cents)	29	13
Percentage of overbilling	54.3%	26.7%
<i>Study 4</i>		
Overbilling (cents)	32	7
Percentage of overbilling	74.8%	30.9%
<i>Study 5</i>		
Overbilling (cents)	45	18
Percentage of overbilling	76.7%	56.7%
Accountability	4.98	5.83
<i>Study 6</i>		
Overbilling (cents)	37	10
Percentage of overbilling	67.4%	32.9%
Accountability	5.92	5.20
Business-words	.64	.57
<i>Study 7</i>		
Overbilling (dollars)	265.76	229.13
Overbilling	2 h 10 min	1 h 44 min

study for pay, the average age was 23.6 years ($SD = 2.6$). The study employed a between-participants design with two conditions (unit-reporting vs. cost-reporting).

Participants engaged in a problem-solving task (Mazar, Amir, & Ariely, 2008) in which they had the opportunity to falsely report higher performance levels in order to earn more money. Participants received a worksheet with 20 matrices, each containing three rows and four columns of three-digit numbers (e.g., 4.91). Each matrix was the equivalent of one unit of work. Participants had four minutes to find two numbers per matrix that added up to 10 and were told that for each unit of work they would receive 25 cents. To create an environment conducive to cheating, participants were told they would report their performance online, recycle their worksheets and any other scraps of paper on their desks to help the lab manager keep the lab tidy, and receive payment based on their performance. Unbeknownst to the participants, their worksheets were coded such that it was possible for us to compare their actual performance to their reported performance.

At the end of the task, participants randomly assigned to the unit-reporting condition were required to report the number of units of work they had completed (i.e., number of matrices solved) and then on the next page amount of money earned, whereas those in the cost-reporting condition were asked to state the dollar amount earned on the task and then on the next page the number of units of work they had completed.

5.2. Results and discussion

We used two measures of unethical behavior for robustness: (1) percentage of overbilling, that is, the number of participants who overbilled in each condition, and (2) average overbilling, that is, the average difference between self-reported performance and the actual performance. The percentage of participants who cheated differed based on whether they were asked to submit a unit-report or a cost-report, $b = -.97$, odds ratio = .38, Wald $\chi^2 = 4.21$, $p = .04$. The percentage of participants who overbilled was significantly lower in the unit-reporting condition (42.1%) than in the cost-reporting condition (65.8%). Next, we examined whether work-report format influenced the extent of overbilling. Overbilling was significantly less in the unit-reporting condition ($M = \$.55$, $SD = .75$, 95% CI [.22, .88]) than in the cost-reporting condition ($M = \$1.38$, $SD = 1.22$, 95% CI [.97, 1.78]), $F(1, 75) = 12.52$, $p < .001$, $\eta_p^2 = .15$. Thus, reporting units compared to cost discouraged dishonesty among participants.

6. Study 2

The goal of conducting this study was to test the proposed effect of work-report formats albeit with a different work structure, one that paid per unit time. We either asked participants to report the amount of time they had spent on a task, or report the money earned.

6.1. Methods

6.1.1. Sample and procedure

Two hundred individuals were recruited to complete a short, paid online study on Amazon's Mechanical Turk website. Twenty-one individuals who failed to follow instructions, failed attention checks, or did not respond to questions regarding the study variables of interest were excluded from analyses. The final sample consisted of 179 participants (58% male, $M_{\text{age}} = 34.1$, $SD = 11.9$).

In addition to the participation incentive (25 cents), participants had a chance to earn more based on their self-reported performance on a sentence de-scrambling task. In the task they were asked to create a comprehensible sentence using four out of five words presented in a disordered fashion. For this task, participants were told that they would be paid based on work completed, with the rate of payoff set to 10 cents for every 60 s (1 min) spent on the task. Importantly, participants in all conditions had the same opportunity to engage in unethical behavior since in all conditions they would be paid based on their self-report. The study employed a 2 (unit-reporting vs. cost-reporting) by 2 (no timer vs. timer on the page) between-subjects design.

While completing the descramble task, those in the timer condition had access to a timer at the bottom of their sentence de-scrambling page and they would see the time they spent on the page before proceeding to report their performance. In other words, they did not have to click and open any links to view the time spent on the task.

After finishing the de-scrambling task, all participants proceeded to a page wherein they were randomly assigned to one of the two experimental conditions. Those in the unit-reporting condition were required to report the time they had spent on the task whereas those in the cost-reporting were asked to state the dollar amount earned on the task. Note that participants were not aware of the format of their performance report when working on the task and were only informed that they would be paid based on work completed, with the rate of payoff set to 10 cents for every 60 s spent on the task. We decided to do so to rule out the possibility that participants in the unit-reporting condition would be more likely to pay attention to time or check time and thus access additional information during the task. The online survey software we used allowed us to record the precise amount of time every participant spent on the task so we could determine overbilling.

6.2. Results and discussion

Similar to Study 1, we used both the percentage of overbilling (the number of participants who overbilled in each condition) and the average overbilling (the average difference between the time reported and the actual time) for robustness. For percentage of cheaters, given that the dependent variable was a dichotomous variable, we ran a logistic regression model using the number of people who overbilled as the dependent variable, and report format (cost- vs. unit-reporting), presence of timer (absent vs. presents), and their interaction as the predictors. The only significant predictor was report format (37.1% over-billed in cost-reporting compared to unit-reporting 17.8%), $b = -.87$, odds ratio = .42, Wald $\chi^2 = 3.88$, $p = .04$. Presence of timer (Wald $\chi^2 = -.56$, $p = .21$) and the interaction term (Wald $\chi^2 = -.49$, $p = .53$) were not significant predictors of the number of people who overbilled.

Similarly, a 2 (unit-reporting vs. cost-reporting) by 2 (no timer vs. timer on the page) ANOVA using amount of overbilling revealed only a main effect of report format, $F(1, 175) = 7.80$, $p = .006$, $\eta_p^2 = .04$. Presence of timer ($F(1, 175) = 1.05$, $p = .31$) and the interaction term ($F(1, 175) = .16$, $p = .69$) were not significant predictors. Overbilling was significantly less in the unit-reporting condition ($M = 7$ cents, $SD = 23$, 95% CI [0, 14]) than in the cost-reporting condition ($M = 21$ cents, $SD = 41$, 95% CI [14, 28]). Fig. 1 depicts the results.

Importantly, a similar 2 × 2 between-subjects ANOVA using the actual number of seconds spent on task as the dependent measure revealed no significant main or interaction effects, all p 's > .25. Participants with a timer spent an average of 109 s, while with no timer they spent an average of 100 s. A 2 × 2 between-subjects ANOVA using the amount of time they spent to answer the respective question (to either report seconds or cents)

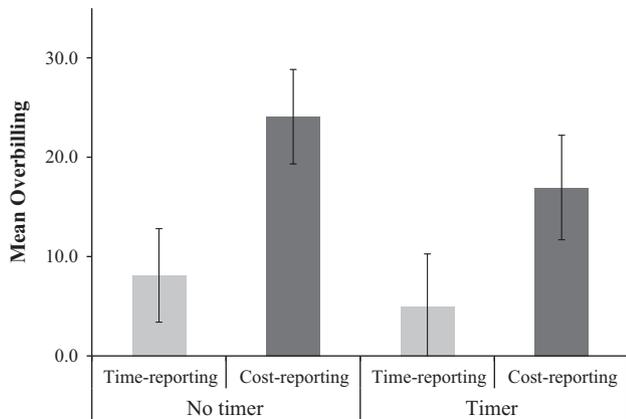


Fig. 1. Nature of two-way interaction between work-report format and timer (Study 2).

as the dependent measure revealed no significant main or interaction effects, all p 's > .43.

In sum, we replicated the effect of Study 1, using a different unit-reporting measure, namely, time. Indeed, reporting time spent on the task compared to reporting the cost discouraged unethical behavior among participants. Importantly, we found that the presence of the timer while participants were completing the task did not influence their report. We thus can conclude that those participants in the unit-reporting condition were not less likely to engage in unethical behavior because they had access to additional information; the presence of timer indicating the exact time they had spent did not influence the results.

7. Study 3

In Studies 1–2, we cannot firmly rule out whether people inflated their reports in the cost-billing condition because of lack of attention to time or of inability to keep track of time even though we gave them a timer on the task page. To further examine the robustness of our findings we add a control condition, in which participants are told they would be paid based on their accuracy in reporting the time or cost, rather than merely their report of amount of time spent or money earned. Such a design would help to clarify how calibrated participants are in terms of their performance assessment abilities if they are given an explicit motivation to be accurate. Therefore, we conducted Study 3 wherein we paid people either based on unverified self-report (similar to Study 2), or informed them that their pay would be contingent on the accuracy of their self-report while at the same time asking participants to report the amount of time they had spent on a task or the money earned.

7.1. Methods

7.1.1. Sample and procedure

Two hundred individuals completed a short, paid online study on Amazon's Mechanical Turk website. Sixteen participants who failed to follow instructions, failed attention checks, or did not respond to questions regarding the study variables of interest were excluded from analyses. The final sample consisted of 184 participants (44.0% male, $M_{\text{age}} = 32.6$, $SD = 11.3$). The study employed a 2 (work-report format: unit-reporting vs. cost-reporting) by 2 (incentive structure: unverified self-report or pay based exclusively on accurate self-report).

The task used in this study was identical to that in Study 2, where participants were asked to complete a de-scrambling task and then report their performance. Importantly, the incentive

structure varied between conditions in the following way. Whereas participants in the unverified self-report condition were told they would be paid 1 cent for every 10 s spent on the task, those in the pay-based-exclusively-on-accuracy condition were informed that they would be paid based on their self-report only if it was accurate. As with prior study, the online survey software we used allowed us to record the precise amount of time they spent on the task enabling us to determine their overbilling. No timer was presented on the page.

7.2. Results and discussion

Once again, we used two measures of unethical behavior for robustness: (1) percentage of overbilling and (2) average overbilling. We ran a logistic regression with the two factors (work-report format and incentive structure) and their two-way interaction term. Consistent with results of previous studies, we found a significant main effect of work-report format such that 54.3% over-billed in cost-reporting compared to unit-reporting 26.7%; $b = -1.97$, odds ratio = .14, Wald $\chi^2 = 15.55$, $p < .001$. The main effect of incentive structure was also significant ($b = -2.66$, ratio = .07, Wald $\chi^2 = 26.84$, $p < .001$) such that those in the accuracy condition overbilled significantly less (62.9% vs. 20.0%). As expected, the 2-way interaction was marginally significant, $b = 1.27$, ratio = 3.57, Wald $\chi^2 = 3.06$, $p = .08$.

Additionally, a 2 (work-report format: unit-reporting vs. cost-reporting) by 2 (incentive structure: unverified self-report or pay based exclusively on accurate self-report) ANOVA using amount of overbilling revealed a main effect of report format, $F(1, 180) = 16.44$, $p < .001$, $\eta_p^2 = .08$. Overbilling was significantly less in the unit-reporting condition ($M = 13$ cents, $SD = 27$, 95% CI [8,19]) than in the cost-reporting condition ($M = 29$ cents, $SD = 35$, 95% CI [24, 34]). We found a main effect of incentive structure ($F(1, 180) = 81.94$, $p < .001$, $\eta_p^2 = .31$). Moreover, the 2-way interaction was significant ($F(1, 180) = 10.06$, $p = .002$, $\eta_p^2 = .05$). Participants were calibrated in terms of their performance assessment abilities when accuracy was beneficial and explicitly requested. Fig. 2 depicts the results. Overall, these findings are consistent with the results from Studies 1 to 2 and suggest that unit-reporting significantly reduces overbilling in situations that require self-reports.

8. Study 4

Data aggregates are high-level data that are composed of a combination of other individual data, such as units. Generally,

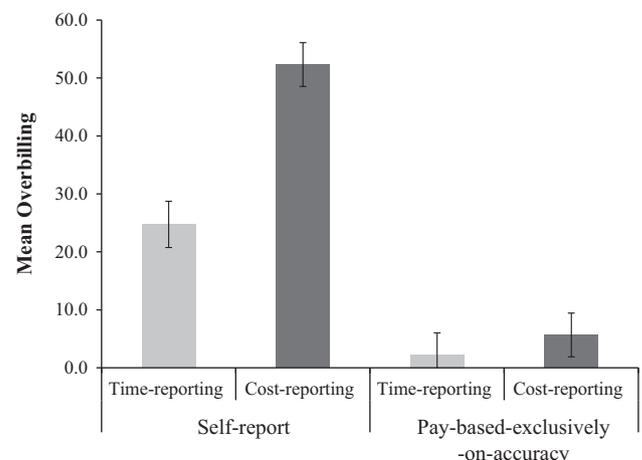


Fig. 2. Nature of two-way interaction between work-report format and incentive structure (Study 3).

individuals might feel less accountable or accurate when reporting aggregate data because such reporting involves less specific numbers and less scrutiny as compared to reporting individual units. It is possible that our results are driven by the fact that the cost-reporting format may be viewed as a form of aggregate data compared to unit-reporting being viewed as individual data points. To examine the potential role of aggregate versus individual data in explaining our findings, in Study 4, we gave participants the same task in either one (individual) or multiple (aggregate) rounds and then asked them to report the work in either cost-reporting format or unit-reporting format.

8.1. Methods

8.1.1. Sample and procedure

Two hundred-twenty individuals were recruited to complete a short, paid online study on Amazon's Mechanical Turk website. Seven participants who failed to follow instructions, failed attention checks, or did not respond to questions regarding the study variables of interest were excluded from analyses. The final sample consisted of 213 participants (56% male, $M_{age} = 32.0$, $SD = 10.6$). The study employed a 2 (work-report format: unit-reporting vs. cost-reporting) by 2 (task structure: aggregate vs. individual).

The experimental procedure was identical to that in Study 3, where participants were asked to complete a de-scrambling task and then report their performance. At the end of the de-scrambling task, participants randomly assigned to the unit-reporting condition were required to report the time they had spent on the task whereas those in the cost-reporting condition were asked to state the dollar amount earned on the task.

All participants were asked to descramble twelve sentences. However, different from previous studies, participants in the aggregate task structure completed the task in three separate rounds, while those in individual task structure completed one round. At the end, participants were asked to report their performance for one round or the aggregate over the three rounds.

8.2. Results and discussion

We first ran a logistic regression with the two factors (work-report format and task structure) and their two-way interaction term. Consistent with results of previous studies, we only found a significant main effect of work-report format such that more people overbilled, 74.8% over-billed in cost-reporting compared to unit-reporting 30.9%; $b = -1.93$, odds ratio = .15, Wald $\chi^2 = 19.42$, $p < .001$. The main effect of task structure ($b = .28$, $p = .53$) and the 2-way interaction ($b = .06$, $p = .93$) were not significant.

Additionally, a 2 (work-report format: unit-reporting vs. cost-reporting) by 2 (task structure: aggregate, individual) ANOVA using amount of overbilling revealed only a main effect of report format, $F(1, 209) = 54.85$, $p < .001$, $\eta_p^2 = .21$. Overbilling was significantly less in the unit-reporting condition ($M = 7$ cents, $SD = 16$, 95% CI [3, 12]) than in the cost-reporting condition ($M = 32$ cents, $SD = 30$, 95% CI [27, 37]). We found no main effect of task structure ($F(1, 209) = .12$, $p = .73$) and the 2-way interaction ($F(1, 209) = .57$, $p = .45$). Fig. 3 depicts the results.

Overall, these findings are consistent with the results from previous studies and suggest that unit-reporting significantly reduces overbilling.

9. Study 5

The goal of conducting this study was to test the role of felt accountability (Hypothesis 2a) in reducing overbilling.

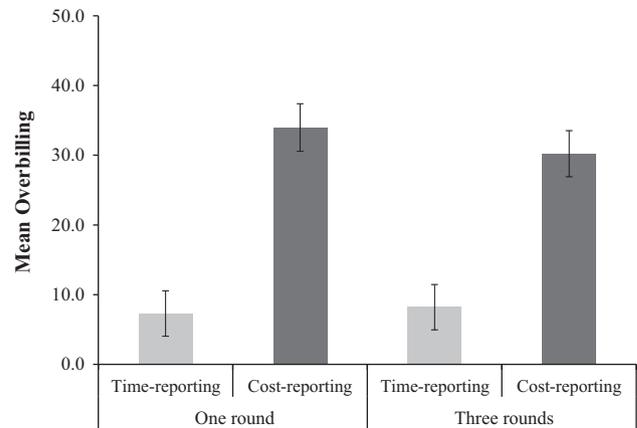


Fig. 3. Nature of two-way interaction between work-report format and task structure (Study 4).

9.1. Methods

9.1.1. Sample and procedure

Sixty-eight individuals were recruited to complete a short, paid online study on Amazon's Mechanical Turk website. Eight participants who failed to follow instructions, failed attention checks, or did not respond to questions regarding the study variables of interest were excluded from analyses. The final sample consisted of 60 participants (43% male, $M_{age} = 34.4$, $SD = 12.7$).

The experimental procedure was identical to that in previous studies, where participants were asked to complete a de-scrambling task and then asked to report their performance. The pay was set to 10 cents for every 60 s spent on the task. At the end of the de-scrambling task, participants randomly assigned to the unit-reporting were required to report the time they had spent on the task whereas those in the cost-reporting were asked to state the dollar amount earned on the task.

Next, we measured experienced accountability in reference to the task they just completed for the mTurk Requester with two items asking participants to rate the extent to which they felt accountable for their actions on the task and the degree to which they felt accountable for their performance on the task (1 = not at all, 7 = very much). We averaged the two-items ($\alpha = .83$) to compute a felt accountability score.

9.2. Results and discussion

Consistent with results of previous studies, we found a marginal significant difference in the number of people who overbilled, 76.7% over-billed in cost-reporting compared to unit-reporting 56.7%; $b = -.92$, odds ratio = .40, Wald $\chi^2 = 2.64$, $p = .10$. Additionally, we found a significant difference in magnitude of overbilling, $F(1, 58) = 6.54$, $p = .013$, $\eta_p^2 = .10$. Overbilling was significantly less in the unit-reporting condition ($M = 18$ cents, $SD = 33$, 95% CI [2, 33]) than in the cost-reporting condition ($M = 45$ cents, $SD = 49$, 95% CI [30, 61]).

We found that the effect of report format on felt accountability was significant such that those in the unit-reporting (i.e., seconds) condition ($M = 5.83$, $SD = 1.13$, 95% CI [5.32, 6.35]) felt more accountable than those in the cost-reporting (i.e., cents) condition ($M = 4.98$, $SD = 1.65$, 95% CI [4.47, 5.50]), $F(1, 58) = 5.40$, $p = .02$, $\eta_p^2 = .09$.

9.2.1. Mediation analysis

We conducted mediation analysis based on bootstrapping techniques using a macro provided by Preacher and Hayes (2004). The bootstrapping procedure (with 5000 iterations) revealed that the

work-report format had a statistically significant effect on experienced accountability ($b = .85$, $SE = .37$, $p = .024$), which in turn significantly affected amount of overbilling ($b = -15.20$, $SE = 3.36$, $p < .001$). The effect of the report format was reduced (from $b = -.27.67$, $SE = 10.82$, $p = .013$, to $b = -14.75$, $SE = 9.79$, $p = .114$) when felt accountability was included. The bootstrap analysis showed that the 95% bias-corrected confidence interval for the size of the indirect effect of felt accountability excluded zero (-29.886 , -2.538). Running the mediation analysis with the percentage of people who overbilled as the dependent variables yielded consistent findings.

10. Study 6

In Study 6, we examine the role of both proposed underlying mechanisms: felt accountability and adoption of a business decision frame. Additionally, in Study 6 we measure the potential mediators after we informed participants of the format of their report and before their performance reporting (the dependent variable).

10.1. Methods

10.1.1. Sample and procedure

One hundred individuals were invited to participate in a paid online study on Amazon's Mechanical Turk website. Four participants who failed to follow instructions, failed attention checks, or did not respond to questions regarding the study variables of interest were excluded from analyses. The final sample consisted of 96 participants (60.2% male, $M_{age} = 34.3$, $SD = 12.1$).

The experimental procedure in Study 6 was identical to that in previous studies, where participants were asked to complete a de-scrambling task and then report their performance either to report the number of seconds they had spent on the task or the number of cents earned on the task. They would have earned 1 cent for every 10 s. Before reporting their performance they were asked to complete a questionnaire containing a measure of felt accountability and business decision frame in random order.

Participants completed an abbreviated felt accountability scale (adapted from Hochwarter et al., 2007). They responded to three items ($\alpha = .74$) on a 7-point scale (1 = strongly disagree, 7 = strongly agree). The items included: "I am held accountable for my actions on this job," "The mTurk requester holds me accountable for all of my decisions," "If things don't go the way they should, I will hear about it from the mTurk Requester."

We measured adoption of a business decision frame through an implicit measure (adapted from Kouchaki & Desai, 2015). Participants were asked to complete a subliminal language perception task in which they would be presented with words on the computer screen for a fraction of a second, and then are instructed to select the word that was flashed from a list of four words. We presented participants with six trials. Three trials presented one business-related words (market, deal, and trade; adapted Kouchaki et al., 2013) among the four response options. Three other trials served as control trials with non-business words. Scores on the implicit measure were computed by summing the number of business-related words selected (a number between 0 and 3).

Afterwards, participants reported their performance based on their condition by either stating the number of seconds they had spent on the task or stating the number of cents earned on the task.

10.2. Results and discussion

We found a significant difference in the number of people who overbilled, 67.4% over-billed in cost-reporting compared to

unit-reporting 32.9%; $b = -1.48$, odds ratio = .23, Wald $\chi^2 = 11.51$, $p < .001$. Similar to previous studies, we found a significant difference in the magnitude of overbilling, $F(1, 94) = 20.12$, $p < .001$, $\eta_p^2 = .18$. Overbilling was significantly less in the unit-reporting condition ($M = 10$ cents, $SD = 21$, 95% CI [2, 19]) than in the cost-reporting condition ($M = 37$ cents, $SD = 36$, 95% CI [29, 46]).

Also, we found that the effect of work-report format on felt accountability was significant such that those in the unit-reporting (i.e., seconds) condition ($M = 5.92$, $SD = .87$, 95% CI [5.59, 6.26]) were more likely to feel accountable than those in the cost-reporting (i.e., cents) condition ($M = 5.20$, $SD = 1.38$, 95% CI [4.88, 5.53]), $F(1, 94) = 9.18$, $p = .003$, $\eta_p^2 = .09$. The type of the report did not significantly influence adoption of a business frame ($M_{cost} = .57$ vs. $M_{time} = .64$, $p = .60$).

10.2.1. Mediation analysis

We ran a multiple mediation model using multiple regression analyses (Preacher & Hayes, 2008) to test for the indirect effect of each measured variable, on our dependent variable. Using a multiple mediation model, the bootstrapping procedure (with 5000 iterations) revealed that the type of report had a statistically significant effect on felt accountability ($b = .72$, $SE = .24$, $p = .003$), which in turn significantly affected overbilling ($b = -5.27$, $SE = 2.54$, $p = .040$). The effect of the type of billing was reduced (from $b = -27.05$, $SE = 6.03$, $p < .001$, to $b = -22.60$, $SE = 6.07$, $p = .003$) when all the measured variables were included. The bootstrap analysis showed that the 95% bias-corrected confidence interval for the size of the indirect effect of felt accountability excluded zero (-9.212 , $-.064$), suggesting that accountability mediated the relationship between billing style and unethical behavior. The mediational effect of business frame (95% CI = -4.691 , 1.468) was not significant. Running the mediation analysis with the percentage of people who overbilled as the dependent variables yielded consistent findings (accountability: 95% CI = -1.262 , $-.091$; business frame: 95% CI = $-.067$, $.353$).

As we speculated, it is possible that given the explicit involvement of money in both work report formats, the degree to which a business decision frame was adopted did not differ between the two work report formats. Rather, the difference in experienced accountability for one's actions across the two conditions (that are identical from a monetary perspective) was more likely to alter behavior.

11. Study 7

So far we demonstrated that in a controlled setting, the format of work-report matters; now we turn to test our prediction in an actual real life client-provider billing relationship. The auto-repair industry is notorious for the prevalence of unethical practices (Dishneau, 1992). According to the Better Business Bureau report, in 2010, the auto-repair & service industry was among the top 10 industries based on the volume of consumer complaints filed across North America. As a report published by Edmunds – a provider of automotive information via web sites, books, and other media – points out, there is a wide disparity in price quotes offered by different repair facilities, and this signals that some facilities are less ethical than others (Reed, 2011). Thus, we found it suitable for investigating the impact of unit-reporting versus cost-reporting on reducing inflated estimates.

When a garage mechanic is asked to provide an estimate of the labor and parts to complete a specific job rather than the cost of the job, the request may make the mechanic pay attention to more objective information against which their work can be checked and thus feel accountable. As a result they would become less

likely to inflate an estimate and overbill. We certainly acknowledge that there are judgment calls in auto-repair work that can lead to differences in price quotes, but we argue that if there is a significant difference in price quotes in a random sample of garages in the same area, we can attribute the difference to the effect of the type of request.

11.1. Methods

11.1.1. Sample and procedure

We employed a single factor between subjects design with one manipulated variable, format of work-report: unit vs. cost. For the purposes of our study, 94 garages near the Boston area were randomly selected to receive a call for obtaining an estimate for changing the brake pads of a car. The calls were made by a research assistant who was blind to the hypotheses. During the call, the garages were informed about the model and year of manufacture of the car and told that the brake pads needed to be replaced and the rotors resurfaced. The script was identical across both conditions except that in the unit-reporting condition, they were asked for an estimate of labor and parts to complete the job and then a good faith estimate of the total cost of the job, while in the cost-reporting condition they were asked to provide a good faith estimate of the total cost of the job and then the estimate of labor and parts to finish the job. AutoMD suggests that the total cost for completing our specific job would be \$200.

11.2. Results and discussion

We conducted an Analysis of Variance with the quoted total price as the dependent variable and the form of report as the independent variable. Type of report had an effect on the quoted price, $F(1, 93) = 4.36, p = .04, \eta_p^2 = .05$. Garages in the unit-reporting condition quoted significantly less money ($M = \$229.13, SD = 70.05, 95\% \text{ CI } [208.33, 249.93]$) than those in the cost-reporting condition ($M = \$265.76, SD = 97.14, 95\% \text{ CI } [237.55, 293.97]$). Similarly, being asked to provide an estimate of labor and parts had an effect on the quoted time, $F(1, 93) = 5.33, p = .02, \eta_p^2 = .06$, such that garages in the unit-reporting condition quoted significantly less time ($M = 1 \text{ h } 44 \text{ min}, SD = 43 \text{ min}$) compared to those in the bulk billing condition ($M = 2 \text{ h } 10 \text{ min}, SD = 62 \text{ min}$). This means that being asked to state the total price made mechanics to engage in post-hoc justification and suggests that the job was more time consuming, and thus justified the cost. This pattern of results suggests that garages engaged in defensive bolstering (e.g., Tetlock, Skitka, & Boettger, 1989) when asked to state the hours the job would take after they had already quoted a price. It is important to note that in our data collection, even after providing an initial dollar amount estimate, upon following up with the labor and parts question, garages had the opportunity to revise their estimate to a more accurate (i.e., honest) number. However, none of the garages in either of the conditions changed their initial estimates subsequently.

The results of Study 7 provide additional support for the hypothesized effect of unit versus cost-reporting format. Because our data were collected in a naturally occurring field setting, we were unable to control for additional factors that might have influenced our results. One potential factor is the public nature of the estimate. In all the previous studies, participants made their decision in relative anonymity and privacy, but in the field setting the mechanics responded to a potential client in a conversation. Since we have focused on the impact of felt accountability, the social costs of overbilling in the eyes of a client may serve as another source of cost that leads to less overbilling. However, we argue that given the consistency of our findings across studies using different operationalizations, the results of this field experiment further provide support for our account that a request for a report of units

of work completed versus a report of cost for work completed can decrease questionable behavior.

12. General discussion

The current investigation focused on the effects of unit-reporting versus cost-reporting. Specifically, we examined the role of these work-report formats in the domain of ethical behavior. We proposed that unit-reporting decreases overbilling. More importantly, we tested the underlying psychological mechanisms and examined the role of felt accountability brought about by the work-report format and adoption of a business decision frame in reducing overbilling. Thus, we suggest that to the extent that work-report formats make people experience accountability, they will be less likely to engage in unethical behavior such as overbilling.

12.1. Theoretical and practical implications

Our work makes several important contributions. Our work extends the behavioral ethics and money literatures by explaining how two different work-report formats—cost versus unit-reporting, may lead to differences in unethical behavior. Of importance, both work-report formats are geared toward claiming money, yet, we argue there are differences such that unit-reporting induces accountability.

Our findings also speak to the literature on the psychology of money which, by and far, claims that the mere mention of money causes people to behave unethically (Kouchaki et al., 2013; Vohs et al., 2006). Our work makes several important contributions to this body of work. First, we found conditions under which the money—unethical behavior link is weakened. Specifically, we identified unit-reporting conditions to be motivators of felt accountability, which in turn, reduce unethical behavior. Second, we demonstrated that examining the effects of unit- versus cost-reporting is important. Because these practices have become routinized in organizations, it is easy to think of them as ordinary, mundane, and acceptable, and ignore the ethical consequences of such practices. Our work is among the first to suggest that focusing the spotlight on such billing practices is helpful in revealing whether people are more likely to choose to engage in unethical behavior.

Our work also contributes more broadly to the literature on ethical decision making. Whereas extant research has tried to identify interventions (e.g., Shu, Mazar, Gino, Ariely, & Bazerman, 2012) that bring about desired behavior by making people look inward and find moral constructs more accessible, we examine one way that can nudge people to look outward and experience accountability to some other. Our results extend past work examining factors influencing people's likelihood to engage in unethical behavior. Traditionally, research in this area has focused on the rational and deliberate aspects of ethical decision-making (e.g., Rest, 1986), but recently the literature on behavioral ethics has suggested that environmental cues may play a role in ethical decision-making (e.g., Gino & Pierce, 2009; Reynolds, Leavitt, & DeCelles, 2010), and our work adds to this body of literature. Our research also contributes to the literature on moral hazard. Whereas prior research has focused on the effect of monitoring systems and other forms of formal structures on unethical behavior (e.g., Tenbrunsel & Messick, 1999), we investigated the importance of a small manipulation, in the form of type of work-report format, in discouraging unethical behavior.

Although intuitively it seems natural that there are implicit ways that accountability can be induced to increase ethical behavior, most prior research has used direct manipulation of

accountability such as informing people that after making their decision they would be asked to explain how they arrived at their decision (Lerner & Tetlock, 1999; Pitesa & Thau, 2013). Here, we examined an indirect way and demonstrated how felt accountability can improve ethical decision-making.

Moreover, not only did we examine closely the effect of the two work-report formats in our laboratory studies but also in the larger, more realistic context of overbilling customers in the auto-repair industry. Additionally, the medium of interaction between the person doing the billing and the client getting billed varied across different studies and included telephone exchange (Study 7), face to face interaction (Study 1), and virtual communication (Studies 2–6). Our results were consistent across these diverse media, lending credibility to the robustness of our findings. Furthermore, we explored felt accountability and adoption of a business decision frame as the mediators explaining the effect of billing style on ethical behavior. Also, we demonstrated the effect of our manipulation in the laboratory and on mTurk—situations in which participants generally engage in only a brief encounter with the experimenter or other fellow participants, and have no prior relationship history with anybody in the lab nor anticipate to chance upon them in the future—and as such, this setting provides a conservative test of accountability as a mediator. However, future work may want to manipulate the mediator as opposed to measuring it. As we showed in our field experiment, it is reasonable to expect much more substantial effects for the consequences of different work-report formats in everyday life.

12.2. Limitations and future directions

We paired a field experiment with six experimental studies for more empirical rigor, and to be able to shed light on the psychological mechanisms underlying the effect of work-report formats. Therefore, the conclusions that are drawn from these results should take into account the limitations of the different methodologies. For instance, we recognize that the use of laboratory studies potentially limits the generalizability of our findings related to felt accountability as the psychological mechanism, but nonetheless, the control provided by this method was critical. Future research should investigate this effect using different methodological approaches and samples.

Our work also raises other interesting questions that may be addressed in future research. First, it is important to understand the situational factors that are likely to moderate the relationship between work-report formats and ethical behavior. For instance, in our lab studies, participants were anonymous, with no shared past or possible future interactions with the experimenter. It is plausible that in instances where people have long standing relationships with others, they may be even more accountable. Also, in many organizational settings such as that of an employee reporting the number of hours they have worked or the amount of money they have earned, the individual's productivity may be more transparent and it is possible that work-report formats work differently in such situations. Furthermore, in our studies, felt accountability was toward others. Our experimental studies were lacking in that participants did not have any competing sense of accountability. More research should be done to examine the effectiveness of work-report formats when decision makers have competing sense of accountability to their organizations, to themselves or their family, as well as society.

Although we demonstrated that felt accountability is one of the mechanisms behind our results and not adoption of a business decision frame, other underlying mechanisms also may play a role. For example, it may be worthwhile to investigate if the relationship between work-report formats and ethical behavior is also partially mediated by personal reflection, by invoking a sense of

integrity, or by self-consistency mechanisms. Moreover, it is possible that felt accountability sometimes may act as a motivator of unethical behavior. For example, felt accountability toward an unethical superior may increase the instances of unethical behavior within an organization. Future work should identify the various manifestations of felt accountability and examine their interactive effects.

In studying unethical behavior, one important issue that needs to be disentangled is regarding whether the observed behavior was a consequence of conscious and deliberate or unconscious processes. Our measures of accountability were based on explicit self-reports. But it is possible that people were conscious of feeling accountable but without any awareness as to the source creating the feeling of accountability, i.e., the kind of work-report formats. An important agenda for future research would be to study when and how work-report formats influence conscious and nonconscious cognitive processes. Additionally, future work can enrich our understanding via an examination of individual difference variables that may play a role. For example, self-monitoring (Snyder, 1974) might moderate the work-report format and ethical behavior relationship such that unit-reporting might have a stronger influence on those who score higher on self-monitoring scales because high self-monitors tend to closely monitor themselves in order to ensure appropriate or desired public appearances.

13. Conclusion

The findings in this paper tell us something new and fundamental about how people respond to different work-report formats, namely cost- and unit-reporting formats. Our findings indicate that unit-reporting strategies may be helpful in suppressing unethical behavior in the form of overbilling. We identified felt accountability as one of the mechanisms that drives the work-report format–ethical behavior effect.

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