Research Article

Psychological Science
2015, Vol. 26(6) 794–804

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DOI: 10.1177/0956797615571018
pss.sagepub.com
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Justifications Shape Ethical Blind Spots

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Abstract

To some extent, unethical behavior results from people's limited attention to ethical considerations, which results in an ethical blind spot. Here, we focus on the role of ambiguity in shaping people's ethical blind spots, which in turn lead to their ethical failures. We suggest that in ambiguous settings, individuals' attention shifts toward tempting information, which determines the magnitude of their lies. Employing a novel ambiguous-dice paradigm, we asked participants to report the outcome of the die roll appearing closest to the location of a previously presented fixation cross on a computer screen; this outcome would determine their pay. We varied the value of the die second closest to the fixation cross to be either higher (i.e., tempting) or lower (i.e., not tempting) than the die closest to the fixation cross. Results of two experiments revealed that in ambiguous settings, people's incorrect responses were self-serving. Tracking participants' eye movements demonstrated that people's ethical blind spots are shaped by increased attention toward tempting information.

Keywords

ethical decision making, ambiguity, eye movements, dishonesty, morality, self-deception, attention allocation, open data, open materials, preregistered

Received 11/20/14; Revision accepted 1/12/15

The 1971 Ford Pinto was one of the most dangerous cars ever produced. Because of its design, its gas tank exploded in almost every rear-end collision. Aware of the major flaw, Ford's recall coordinator at the time, Dennis Gioia, decided that the car would stay on American roads. Twenty years later, he wrote: "Why didn't I see the gravity of the problem and its ethical overtones?" (1992, p. 383). Indeed, how could he have failed to notice the magnitude of the problem? Did Ford's managers value their bottom line more than the lives of their costumers? Bazerman and his colleagues recently proposed that behaviors like the one exhibited by Ford's managers can be attributed to ethical blind spots—a lack of awareness that impairs the ability to identify the ethical implications of a situation (Bazerman, 2014; Bazerman & Tenbrunsel, 2011; Chugh, Bazerman, & Banaji, 2005). Ford managers' attention was clearly shifted away from the ethical aspects of the design flaw, but what information was their attention drawn *toward*? That is, how are ethical blind spots shaped? This is the question we address here.

We link the evidence on people's failure to pay sufficient attention to ethics with recent findings suggesting that self-serving justifications shape people's ethical failures. We propose that in tempting situations, in which self-interest is pitted against being honest, ambiguity serves as a justification to do wrong but feel moral. That is, people's attention is more easily shifted toward tempting information in ambiguous settings than in unambiguous settings, and this tempting information then shapes their self-serving lies. Consequently, tempting information should determine the magnitude of people's lies, even when different lies would be more profitable. After all,

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people like to justify their perception of reality (Kunda, 1990; Shafir, Simonson, & Tversky, 1993), so that when they are lying, they can avoid negative guilty feelings (von Hippel, Lakin, & Shakarchi, 2005) and maintain the self-concept that they are honest (Mazar, Amir, & Ariely, 2008).

Self-Serving Justifications: Doing Wrong but Feeling Moral

The decision whether to engage in self-serving dishonesty depends on the trade-off between the potential benefits of lying (e.g., money) and its potential costs (e.g., getting caught and being punished; Becker, 1968). However, psychological factors, such as the psychological cost associated with lying (Fischbacher & Föllmi-Heusi, 2013; Lundquist, Ellingson, Gribbe, & Johannesson, 2009), come into play in this equation. Because people like to feel positive about themselves, they tend to lie only to the extent that it does not require them to negatively update their self-perception that they are honest (Mazar et al., 2008). A growing line of work suggests that self-serving justifications determine the extent to which people stretch the truth (Schweitzer & Hsee, 2002), and do wrong but feel moral (Shalvi, Eldar, & Bereby-Meyer, 2012; Shalvi, Gino, Barkan, & Ayal, 2015).

As a case in point, consider the experiment reported in Shalvi, Dana, Handgraaf, and De Dreu (2011). Participants privately rolled a six-sided die three times and were paid according to the number they reported rolling first. Higher values meant higher pay. Because participants' rolls were truly private, they could lie to secure higher pay. The experimenters were not aware of the actual outcomes of the dice rolls, but found that the distribution of reported outcomes resembled the distribution expected if participants had reported the highest of the three values they observed. Participants were using the extra rolls (which were irrelevant for purposes of pay) to shape the magnitude of their dishonesty. A control condition validated this interpretation, revealing that participants instructed to roll the die only once lied less (for replications, see Gino & Ariely, 2012, Experiments 3 and 4). Questions remain, however: Could it be that participants' attention was attracted toward those attractive yet irrelevant rolls? Did this attention-grabbing information determine the magnitude of participants' dishonesty? Tracking participants' eye movements would make it possible to answer these questions.

Eye tracking has been used as an unobtrusive means of process tracing in decision research (Fiedler, Glöckner, Nicklish, & Dickhert, 2013; Orquin & Mueller-Loose, 2013; Reisen, Hoffrage, & Mast, 2008; Weber & Johnson, 2009). Eye movements and gaze behavior provide information about the stimuli individuals are processing, for how long, and how often within a given time frame. People make more fixations and fixate longer on information they consider relevant (Bee, Prendinger, Nakasone, André, & Ishizuka, 2006; Glöckner, Fiedler, Hochman, Ayal, & Hilbig, 2012), and there are positive correlations among fixation duration, fixation count, and the likelihood of a specific alternative being chosen (Fiedler et al., 2013; Halevy & Chou, 2014). Finally, motivation affects the way people process and interpret information (Balcetis & Dunning, 2006) and shifts their attention toward tempting stimuli (Gable & Harmon-Jones, 2010). For example, dieters look at food (Papies, Stroebe, & Aarts, 2008), smokers at cigarettes (Mogg, Bradley, Field, & De Houwer, 2003), and heavy drinkers at alcohol (Townshend & Duka, 2001). We tested whether people shift their attention toward tempting information, and whether this information, in turn, shapes their lies.

The Current Study

Our experiments used a new paradigm, which we refer to as the *ambiguous-dice paradigm*. In a computerized task, multiple die-roll outcomes were displayed on the screen after a fixation cross, and participants were asked to report the outcome appearing closest to the location of the fixation cross. In the *pay-for-report* condition, participants were paid according to the value they reported, with higher values securing higher payoffs. We varied, within participants, whether the value second closest to the fixation cross was higher or lower than the value closest to the fixation cross. We tested the prediction that the value second closest to the fixation cross would attract more attention when it was tempting (i.e., higher than the value closest to fixation) than when it was not tempting (i.e., lower than the value closest to fixation). We also predicted that this tempting value would, in turn, shape participants' self-serving incorrect responses (henceforth, referred to as *mistakes*). In the *pay-for-accuracy* control condition, participants were paid if the number they reported was indeed the value closest to the fixation cross. Because mistakes were not self-serving in this setting, we expected that there would be fewer of them, and that the value second closest to the fixation cross (henceforth, referred to as the value next to the target) would have no impact on the likelihood of mistakes.

Experiment 1

Method

Forty participants (19 females; mean age = 25.10 years, *SD* = 1.81) participated for a show-up fee of 20 NIS (new Israeli shekels; ~U.S.$6). Sample size was determined by an a priori power analysis using G*Power 3.1 software and a .05 criterion of statistical significance. We estimated

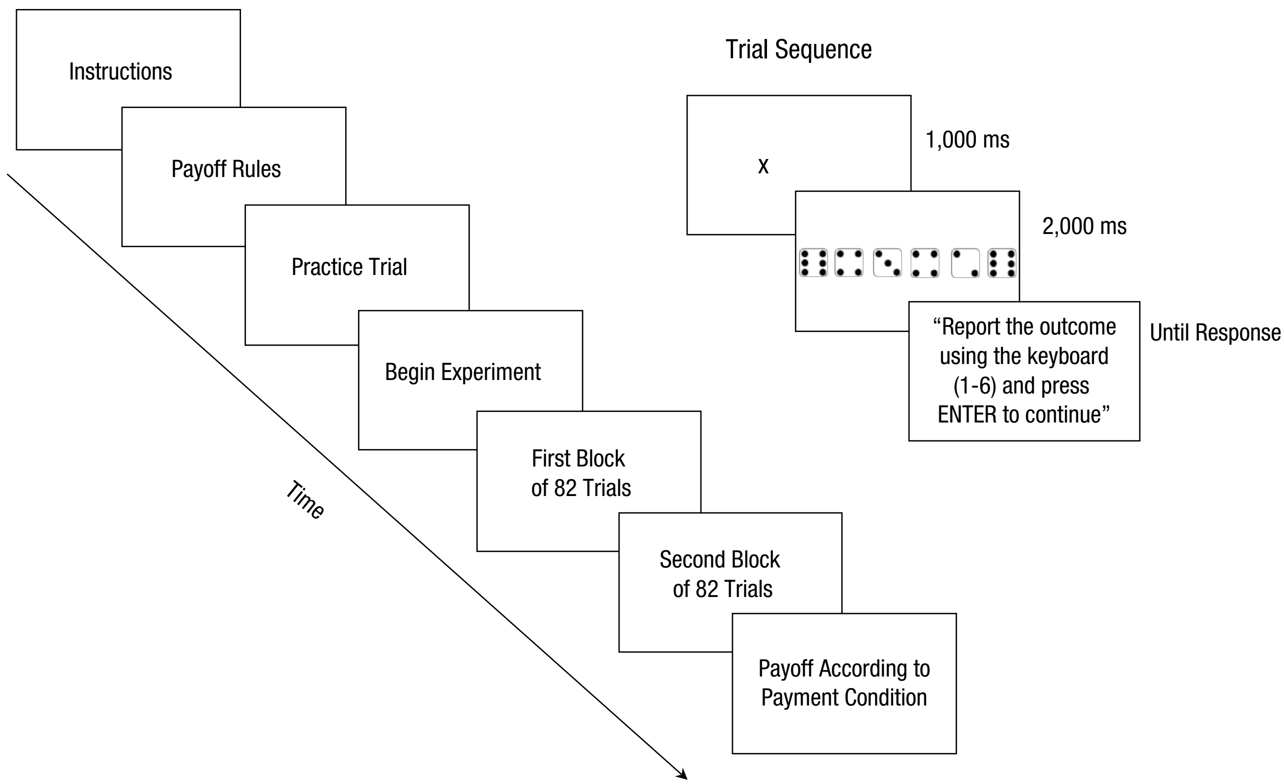

Fig. 1. Illustration of the experimental procedure in Experiment 1. After receiving instructions and learning the payoff rules, participants completed a practice trial. They then completed two 82-trial experimental blocks. On each trial, participants reported the value of the die roll closest to the location of the preceding fixation cross. At the end of the experiment, they received a payoff determined by either the value or the accuracy of one randomly selected response.

the sample size needed for 95% power to detect the medium-sized effect found in a pilot experiment we conducted ($\eta_p^2 = .57$; for information on this pilot experiment, see the Supplemental Material available online and https://osf.io/d2ncs/). The analysis indicated that a sample size of 13 participants per between-subjects cell would be sufficient. To ensure robustness, we decided to sample 20 participants per payment condition.

Participants were seated in a private cubicle, 60 cm from a 24-in. computer monitor (maximum resolution = 1280 × 1024 pixels). Eye movements were recorded using a Tobii T120 eye tracker (Tobii Technology, Danderyd, Sweden; sampling rate = 120 Hz; accuracy = 0.45°), with a standard nine-point eye-tracking calibration. Participants learned that they would earn extra money by reporting the values of die-roll outcomes appearing on the screen and that each time they should report the value appearing closest to the location of a fixation cross. On each trial, a black fixation cross (1,000 ms) was displayed at one of six possible locations on the screen. It was followed by six dice (122 × 122 pixels each). Only one die was closest to the fixation cross. Specifically, the coordinates of the fixation cross corresponded to the midpoint of either the left or the right side of the outline of that die. After 2,000 ms, the dice disappeared, and participants were asked to type in the value that had appeared closest to the fixation cross (i.e., the target outcome).

Participants engaged in one practice trial, intended to ensure that they understood the task, followed by two blocks of 82 trials each, separated by an eye-tracking recalibration (see Fig. 1 for an illustration of the procedure). Of the 164 trials, 64 were experimental trials in which the target outcome (i.e., closest to the fixation cross) was always the number 3. To diversify the values appearing on the screen, we included 100 filler trials with other values as targets (for details about the stimulus combinations presented, see the Supplemental Material). Participants in the pay-for-report condition (n = 20) were paid according to the value they reported observing closest to the fixation cross on one randomly selected trial (i.e., 1 = 5 NIS, 2 = 10 NIS, 3 = 15 NIS, 4 = 20 NIS, 5 = 25 NIS, 6 = 30 NIS). In contrast, participants in the pay-for-accuracy condition (n = 20) were paid according to whether they correctly reported the value appearing closest to the fixation cross on one randomly selected trial (i.e., 10 NIS if accurate, 0 NIS otherwise). We varied the value next to the target to be either higher than the target (4 or 5; i.e., tempting in the pay-for-report condition) or lower than the target (1 or 2; i.e., not tempting in the pay-for-report condition). We further varied whether the target

Table 1. Results From Experiment 1: Reported Outcomes in Each Condition as a Function of Temptation

Payment condition and temptation[a]	Reported outcome (%)		
	Correct value	Incorrect value next to the target	Other incorrect value
Pay for report			
Next < target	92.28%	6.25%	0.95%
Next > target	75.18%	22.24%	2.58%
Pay for accuracy			
Next < target	91.74%	7.14%	1.12%
Next > target	87.72%	11.38%	0.90%

[a]*Temptation* refers to whether the value next to the target (i.e., second closest to the fixation cross) was smaller than the value of the target (next < target) or larger than the value of the target (next > target).

outcome was the second, third, fourth, or fifth die from the left. To control for effects of the horizontal order in the display (e.g., due to reading directionality; Rayner, 2009), we also varied whether the value next to the target appeared to the left or right of the target. Each stimulus combination (location of target, value next to the target, and left/right position of the value next to the target) was presented twice (see Appendix 2 in the Supplemental Material for all stimulus combinations used).

The pay-for-accuracy condition served as a control condition to rule out the possibility that any other factor beyond temptation (e.g., the number of dots, which might increase visual salience) might lead people to misreport high (but not low) numbers. If seeing a high number drew participants' attention and led them to make mistakes for any reason other than temptation, we would find the same distribution of mistakes in the pay-for-accuracy and pay-for-report conditions. If in contrast, temptation was the driving factor, participants' attention would be drawn to the high values more when reporting high numbers was incentivized (i.e., pay-for-report condition) than when accuracy was incentivized (i.e., pay-for-accuracy condition).

In summary, the complete experimental design included the within-subjects factors of target location (second vs. third vs. fourth vs. fifth location from the left), temptation (value next to the target higher vs. lower than the target), stimulus repetition (first vs. second presentation of the stimulus combination), and horizontal position of the value next to the target (to the left vs. right of the target). Payment condition (pay for report vs. pay for accuracy) was manipulated between subjects.

In the pay-for-report condition, participants wishing to maximize their profit could lie about the value they saw closest to the fixation cross and report "6" in every trial. Honest participants could report the value as accurately as they were able. Although they might mistakenly report the value of the outcome second closest to the fixation cross from time to time, the value of that outcome would have no impact on their likelihood of making a mistake. That is, honest participants would be just as likely to mistakenly report that a 2 was the value closest to the fixation cross as to mistakenly report that a 5 was the value closest to the fixation cross. However, if participants engaged in self-serving lies only when they had a justification for such behavior, they would not report a 5 if they had not observed it next to the target outcome, but might report a 5 if this value appeared next to the target outcome. That is, they might make self-serving mistakes. This was the key prediction (Hypothesis 1) we tested. We further tested whether the frequency of such mistakes was modulated by increased attention to tempting outcomes (Hypothesis 2) and whether ambiguity (i.e., uncertainty about the number closest to the fixation cross) would provide a justification to incorrectly report a tempting option as the closest to the target, and thus amplify the effects of temptation (Hypothesis 3).

Results

Participants for whom eye-tracking accuracy was less than 70% (n = 8) were excluded from all analyses, according to our preregistered plan. One additional participant who did not follow the instructions and reported the sum of the six dice presented on the screen was also removed. Therefore, all analyses were conducted on the data from 31 participants (1,984 observations). Including the participant whose exclusion was not based on our preregistered exclusion criterion did not modify any of the results reported here.

Participants reported the correct value in 83.73% of the trials in the pay-for-report condition and in 89.73% of the trials in the pay-for-accuracy condition. Results supported Hypothesis 1: Participants' mistakes reflected the predicted self-serving pattern. A 2 (payment condition) × 2 (temptation) generalized linear mixed model predicting the likelihood of reporting the value next to the target revealed a significant interaction, $F(1, 1980) = 10.77$, p = .001, $b = -1.07$, 95% confidence interval (CI) = [−1.712, −0.431].

Overall, participants' mistakes were systematic. As shown in Table 1, participants reported either the value

Fig. 2. An illustrative heat map of one experimental trial. The different colors indicate the participant's focus on specific areas of the screen; green represents shorter fixation durations, and red indicates longer fixation durations.

closest to the fixation cross (i.e., the correct response) or the value next to the target in almost all cases. Rarely did they report other numbers. As predicted (Hypothesis 1), and as we found in the pilot experiment (see the Supplemental Material), the mistakes of participants in the pay-for-report condition were self-serving (see Table 1). Simple-effects analysis showed that participants were more likely to report the value next to the target when it was tempting (22.24%) than when it was not (6.25%), $F(1, 1980) = 16.24$, $p < .001$, $b = 0.14$, 95% CI = [0.071, 0.204]. The effect was attenuated in the pay-for-accuracy condition, in which participants reported the value next to the target only modestly more often when it was higher than the target (11.38%) compared with when it was lower (7.14%), $F(1, 1980) = 3.82$, $p = .051$, $b = 0.04$, 95% CI = [0.000, 0.072]. Additionally, simple-effects analysis revealed that when the value next to the target was tempting, participant in the pay-for-report condition were somewhat more likely to report it compared with participants in the pay-for-accuracy condition, $F(1, 1980) = 2.99$, $p = .084$, $b = 0.09$, 95% CI = [−0.012, 0.189]. In contrast, when the value next to the target was not tempting, participants in the pay-for-report condition were not more likely to report it compared with participants in the pay-for-accuracy condition, $F < 1$, $p > .25$, $b = -0.01$, 95% CI = [−0.057, 0.031].

Gaze behavior. Figure 2 illustrates the gaze behavior of a participant in one of the experimental trials. We used a 2 (payment condition) × 2 (area of interest, or AOI: target outcome vs. outcome next to target) × 2 (temptation) general linear mixed model to predict fixation durations. Overall, fixations on the target (total duration: $M = 899.86$ ms, $SD = 494.43$ ms) were longer than fixations on the value next to the target (total duration: $M = 369.45$ ms, $SD = 274.91$ ms), $F(1, 2480) = 1{,}275.76$, $p < .001$, $b = 0.34$, 95% CI = [0.283, 0.391]. As predicted (Hypothesis 2), this pattern was qualified by a three-way Payment Condition × AOI × Temptation interaction, $F(1, 2480) = 3.95$, $p = .047$, $b = -0.12$, 95% CI = [−0.238, −0.002].

As shown in Figure 3, and as found in the pilot experiment (see the Supplemental Material), the AOI × Temptation interaction emerged in the pay-for report condition, $F(1, 1377) = 24.08$, $p < .001$, $b = 0.19$, 95% CI = [0.114, 0.267]. Participants fixated longer on the value next to the target when it was tempting ($M = 438.27$ ms, $SD = 313.59$ ms) compared with when it was not ($M = 314.54$ ms, $SD = 246.55$ ms), $F(1, 2480) = 22.51$, $p < .001$, $b = -0.12$, 95% CI = [−0.171, −0.071], and exhibited shorter fixation durations on the target when the outcome next to it was tempting ($M = 789.73$ ms, $SD = 452.97$ ms) compared with when it was not ($M = 858.51$ ms, $SD = 459.73$ ms), $F(1, 2480) = 5.31$, $p = .021$, $b = 0.07$, 95% CI = [0.010, 0.128]. This pattern did not emerge in the pay-for-accuracy condition, in which the interaction between AOI and temptation did not reach a meaningful level, $F(1, 1103) = 2.48$, $p = .116$, $b = 0.07$, 95% CI = [−0.017, 0.159].

Mediation analysis. Finally, we conducted a moderated mediation analysis (Preacher, Rucker, & Hayes, 2007) to test whether the relationship between temptation and the likelihood of a self-serving mistake was mediated by the duration of fixations on the value next to the target, but only in the pay-for-report (i.e., not the pay-for-accuracy) condition (see Fig. 4). Results revealed that the interaction between temptation and payment condition predicted the duration of fixations on the value next to the target, $b = 0.08$, $SE = 0.041$, 95% CI = [−0.0051, 0.1570], $t(744) = 1.838$, $p = .066$. Specifically, the difference between total fixation duration for tempting outcomes and total fixation duration for nontempting outcomes was greater in the pay-for-report condition than in the pay-for-accuracy condition. Next, as suggested by Preacher et al. (2007), we tested the significance of the indirect effects at the two levels of the moderator (i.e., pay-for-accuracy condition vs. pay-for-report condition). As predicted, in the pay-for-report condition, the estimate of the indirect effect was positive and significant, 95% CI = [0.189, 0.563], which suggests that mediation was present (Hayes, 2013; Preacher & Hayes, 2008; Shrout & Bolger, 2002). In contrast, in the pay-for-accuracy condition, the indirect effect was not significant, as the 95% CI contained zero [−0.021, 0.306]; these results suggest that no mediation was present.

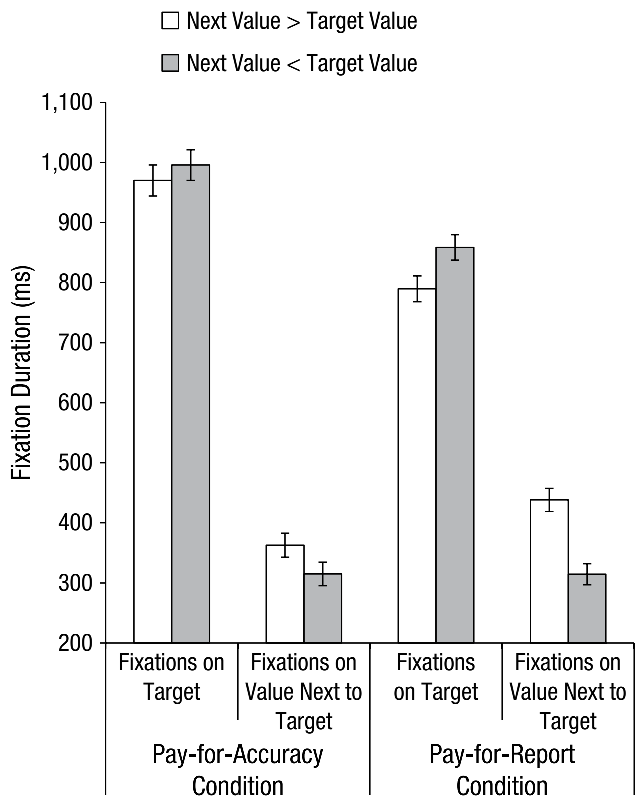

Fig. 3. Results from Experiment 1: total duration of fixations on the target and on the value next to the target in the two payment conditions. Results are shown separately for the two levels of temptation (i.e., when the target value was larger than the value next to the target and when the target value was smaller than the value next to the target). Error bars represent ±1 *SE*.

Experiment 2

Results obtained in Experiment 1 supported our prediction that participants in the pay-for-report condition would overreport tempting (but not nontempting) values, and that this effect would be caused by a shift of attention toward tempting values. Results of the control condition corroborated the idea that temptation, and not other visual aspects of the stimuli, was the factor that attracted participants' attention. The tendency to pay attention to, and subsequently report, the value appearing next to the target when it is higher (but not lower) than the target emerged only when higher numbers were tempting (i.e., pay-for-report condition), not when they were not tempting (i.e., pay-for-accuracy condition).

Experiment 2 was designed to further assess ambiguity as the psychological mechanism underlying participants' ability to justify their self-serving mistakes. Ambiguity was manipulated by varying the distance between the fixation cross and the tempting outcome. We tested the prediction that ambiguous settings (i.e., less distance) would lead to more self-serving mistakes compared with less ambiguous settings (i.e., more distance). Finally, we did not track participants' eye movements in Experiment 2. This allowed us to compare the results of the two experiments and assess whether participants' behavior in Experiment 1 was affected by their knowledge that their eyes were being tracked.

Method

In an a priori power analysis using G*Power 3.1 software and a .05 criterion for significance, we determined the sample size required to have 80% power to detect a medium-sized effect of the magnitude found in Experiment 1 (η_p^2 = .69; see https://osf.io/bh5k4/). Results revealed that a sample of 26 individuals per between-subjects cell would be sufficient. We decided to collect data from 30 participants per condition to ensure robustness.

Sixty participants (32 females; mean age = 24.98 years, *SD* = 2.27) took part in the same task as in Experiment 1 except as noted here. We manipulated, across trials, the

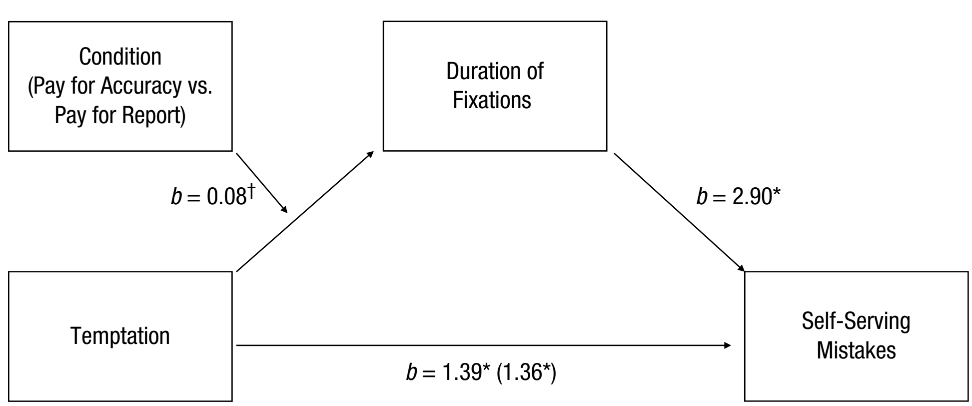

Fig. 4. Results from Experiment 1: moderated mediation analysis testing whether the relationship between temptation and the likelihood of a self-serving mistake was mediated by the duration of fixations on the value next to the target only in the pay-for-accuracy condition. Along the lower path, the value inside parentheses is the coefficient obtained when the model controlled for fixation duration. Statistical significance of the pathways is indicated (†$p < .10$, *$p < .001$).

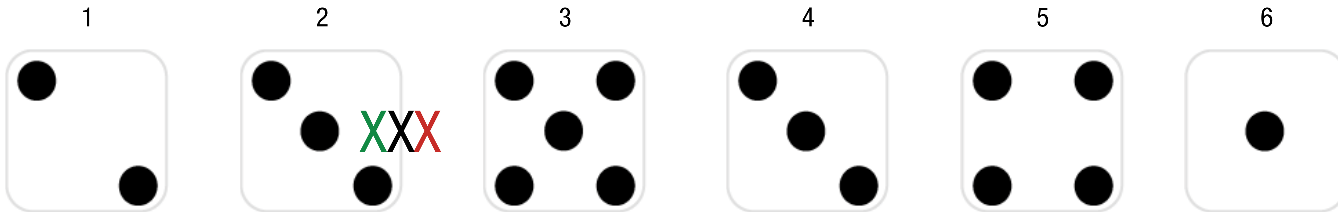

Fig. 5. Illustration of the ambiguity manipulation in Experiment 2. The numbers across the top are the location numbers. In this example, the target outcome, 3, appears at Location 2, and the tempting outcome, 5, appears at Location 3. Ambiguity was manipulated by the placement of the fixation cross (which disappeared from the screen before the dice outcomes were presented in the experiment). In the low-ambiguity condition, the fixation cross (shown in green) was closest to the target outcome; in the high-ambiguity condition, the cross (shown in red) was farthest from the target outcome; and in the medium-ambiguity condition, the cross (shown in black) was at an intermediate position.

location of the fixation cross. In the medium-ambiguity trials, the fixation cross appeared in exactly the same spot as in Experiment 1. In the low-ambiguity trials, the fixation cross appeared 20 pixels closer to the center of the target outcome, whereas in the high-ambiguity trials, it appeared 20 pixels farther away from the target (and closer to the value next to the target; see Fig. 5). In all three locations, the fixation cross was objectively closer to the target than to the value next to the target. We expected (Hypothesis 3) that only in the pay-for-report condition (not the pay-for-accuracy condition), participants would make more self-serving mistakes in the high-ambiguity trials and fewer self-serving mistakes in the low-ambiguity trials, compared with the medium-ambiguity trials.

As in Experiment 1, the target outcome was always 3 and was always at Location 2, 3, 4, or 5. Results from Experiment 1 revealed that the horizontal position of the value next to the target (i.e., to the left vs. right of the target) did not affect the predicted response pattern (see the Supplemental Material, p. 8). Therefore, in Experiment 2, the value next to the target was always displayed to the right of the target. The complete experimental design included the within-subjects factors of target location (second vs. third vs. fourth vs. fifth location from the left), temptation (value next to the target higher vs. lower than the target), stimulus repetition (first vs. second presentation of the stimulus combination), and ambiguity (low vs. medium vs. high). Payment condition (pay for accuracy vs. pay for report) was manipulated between subjects.

Participants in the pay-for-accuracy (n = 30) and pay-for-report (n = 30) conditions received the same instructions as in Experiment 1 and completed 96 experimental trials plus 100 filler trials (for details on the stimulus combinations presented, see the Supplemental Material). At the end of the experiment, we added a manipulation-check question to ensure that participants understood the payoff structure. Specifically, participants were asked, "What was the criterion you were getting paid according to?" Response options were "I was paid 10 NIS if I correctly reported the outcome closest to the fixation cross on a randomly selected trial" and "I was paid according to the outcome I reported on a randomly selected trial (1 = 5 NIS, 2 = 10 NIS, 3 = 15 NIS, 4 = 20 NIS, 5 = 25 NIS, 6 = 30 NIS)."

Results

Participants who answered the manipulation check incorrectly (n = 8) were excluded from the analyses, as specified by our preregistered exclusion criterion. Four additional participants clearly did not follow task instructions, as they reported outcomes higher than 6 in more than 50% of the trials. They, too, were excluded. Thus, all analyses were conducted on the data from 48 participants (4,608 observations). Including the 4 participants whose exclusion was not based on our preregistered exclusion criterion did not change any of the results reported here.

Results supported Hypothesis 1: Participants in the pay-for-report condition correctly reported the target outcome in 68.50% of the trials, whereas those in the pay-for-accuracy condition were correct in 85.50% of the trials. Participants' mistakes reflected the predicted self-serving pattern. A 2 (payment condition) × 2 (temptation) × 3 (ambiguity) generalized linear mixed model predicting the likelihood of reporting the value next to the target revealed a main effect of ambiguity, $F(2, 4596) = 173.26$, $p < .001$. Participants were more likely to report the value next to the target when ambiguity was high (29.75%) than when ambiguity was medium (8.85%), $b = -0.21$, 95% CI = [−0.267, −0.149], $t(4596) = -7.65$, $p < .001$, or low (6.83%), $b = -0.22$, 95% CI = [−0.289, −0.158], $t(4596) = -7.67$, $p < .001$.

We also found a three-way Payment Condition × Temptation × Ambiguity interaction, $F(2, 4596) = 3.48$, $p = .031$. As predicted, and in line with the results of Experiment 1 (and the pilot experiment), the mistakes of participants in the pay-for-report condition were self-serving, especially when ambiguity was high. Specifically, in the pay-for-report condition, the interaction between

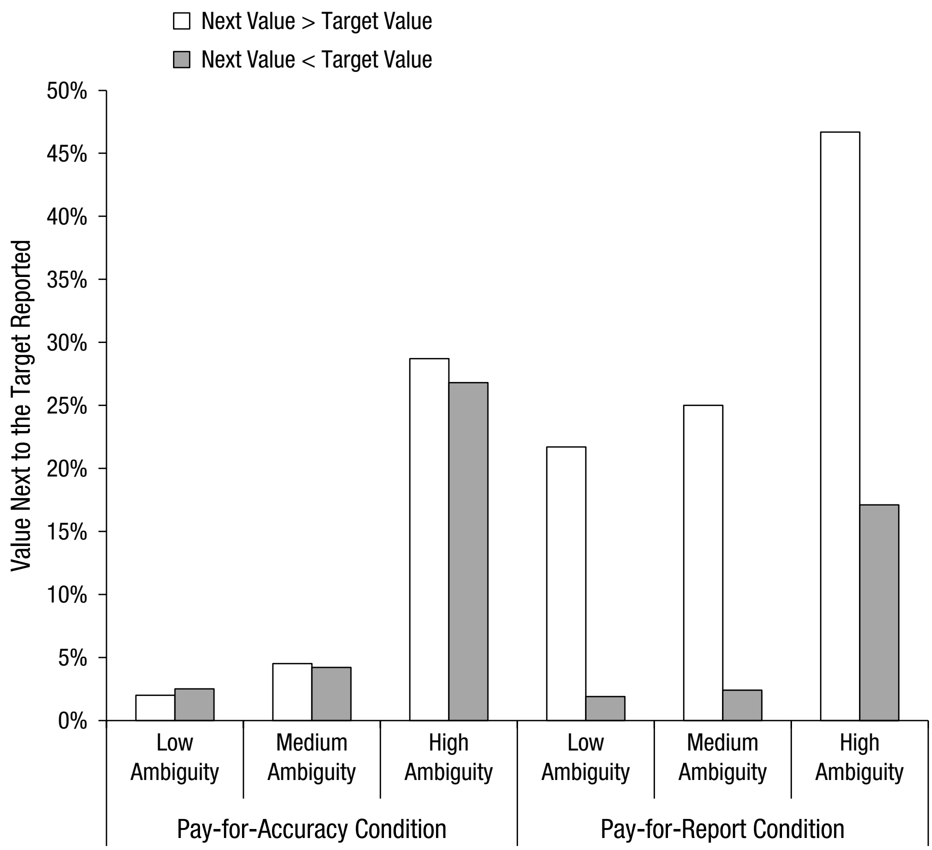

Fig. 6. Results from Experiment 2: percentage of trials in which the value next to the target was reported in each of the two payment conditions. Results are shown separately for the two levels of temptation (i.e., when the target was larger than the value next to the target and when the target was smaller than the value next to the target) and for the three ambiguity levels (low vs. medium vs. high).

temptation and ambiguity was significant, $F(2, 2202) = 5.02$, $p = .007$. Overall, participants in this condition were more likely to report the value next to the target when it was higher than the target (31.20%) than when it was lower (7.20%), $F(2, 2202) = 164.56$, $p < .001$, $b = -1.83$, 95% CI = [−2.223, −1.446]. As shown on the right side of Figure 6, in the pay-for-report condition, the gap was larger in the high-ambiguity condition, $t(2202) = -6.85$, $p < .001$, $b = -0.34$, 95% CI = [−0.440, −0.244], compared with the medium-ambiguity condition, $t(2202) = -4.25$, $p < .001$, $b = -0.18$, 95% CI = [−0.270, −0.099], and the low-ambiguity condition, $t(2202) = -4.02$, $p < .001$, $b = -0.15$, 95% CI = [−0.229, −0.079]. As shown on the left side of Figure 6, in the pay-for-accuracy condition, the interaction between temptation and ambiguity did not emerge, $F < 1$.

Additionally, a simple-effects analysis revealed that when the value next to the target was tempting, participants in the pay-for-report condition were more likely to report it than were participants in the pay-for-accuracy condition. This effect was robust for the low-ambiguity condition, $F(1, 4596) = 15.69$, $p < .001$, $b = -0.15$, 95% CI = [−0.228, −0.077]; the medium-ambiguity condition, $F(1, 4596) = 14.15$, $p < .001$, $b = -0.17$, 95% CI = [−0.255, −0.080]; and the high-ambiguity condition, $F(1, 4596) = 6.75$, $p = .009$, $b = -0.21$, 95% CI = [−0.369, −0.052]. In contrast, when the value next to the target was lower than the target, participants in the pay-for-report condition reported it less often compared with participants in the pay-for-accuracy condition, but only when ambiguity was high, $F(1, 4596) = 4.04$, $p = .044$, $b = 0.11$, 95% CI = [0.003, 0.217], not when it was medium, $F(1, 4596) = 2.02$, $p = .156$, $b = 0.02$, 95% CI = [−0.006, 0.039], or low, $F < 1$. A potential reason for the lack of a difference in the medium- and low-ambiguity settings is the low proportion of mistakes in the pay-for-accuracy condition.

Finally, in order to assess whether participants' behavior was affected by their knowledge that their eyes were being tracked, we compared the proportion of self-serving mistakes in the pay-for-report condition across the pilot experiment, Experiment 1, and Experiment 2 (only in the medium-ambiguity trials, as these were included in all three experiments). We note that the trials used in the different experiments were slightly different (see

Appendices 1–3 in the Supplemental Material), so comparing mistakes across the experiments should be done with caution. A chi-square analysis revealed that the proportion of self-serving mistakes did not differ across the experiments, $\chi^2(2, N = 47) = 2.452$, $p = .293$. Specifically, participants made self-serving mistakes in 19.05% of the trials in the pilot experiment, in 22.24% of the trials in Experiment 1, and in 25.00% of the trials in Experiment 2.

General Discussion

When people face ethically tempting situations, their attention is bounded by ethical blind spots guided by their self-serving motivation (Bazerman, 2014; Bazerman & Tenbrunsel, 2011). Results of Experiments 1 and 2 suggest that self-serving justifications shape people's ethical blind spots, determining how people lie. Using the novel ambiguous-dice paradigm, we asked participants to report the value of the die (in an array of six dice) that was closest to the location of a previously presented fixation cross. We varied whether the value second closest to the fixation cross was higher or lower than the value closest to the fixation cross. When the payoff was based on the reported value, participants were more likely to make self-serving mistakes (i.e., to report the value next to the target when it was larger than the value of the target outcome) than to make non-self-serving mistakes, particularly when ambiguity was high. Eye-tracking results supported the prediction that such mistakes would be driven by a shift in attention toward the tempting (higher-valued) alternatives. Results from the control condition ruled out the possibility that visual stimulus characteristics, not temptation, drove these effects. Together, our results support the idea that justifications determine how ethical blind spots are shaped.

Balancing between testing a theoretical prediction and developing a novel experimental paradigm that required pilot testing, we opted for an exploratory-confirmatory preregistration approach (Wagenmakers, Wetzels, Borsboom, van der Maas, & Kievit, 2012). In the pilot experiment, we tested a theoretical prediction without preregistering how it would be tested. This allowed us to assess the exact parameters of the ambiguous-dice paradigm that would be useful for inclusion in Experiment 1. We preregistered Experiment 1 to test specific contrasts, and in that experiment used a well-powered sample (according to calculations based on the results from the pilot experiment) and a predefined exclusion criterion. This approach was implemented also in Experiment 2, which was preregistered to assess the role of ambiguity in shaping dishonesty. Results of both experiments supported the predicted patterns. The exploratory-confirmatory setup proved useful in balancing the freedom required to explore at early stages and the robustness required at later stages of the research project.

Whereas participants' eye movements and behavior were assessed in both the pilot experiment and Experiment 1, we assessed only participants' behavior in Experiment 2. This allowed us to compare participants' tendency to make self-serving mistakes when their eye movements were and were not tracked. Arguably, people might make fewer self-serving mistakes when their eye movements are tracked because they feel they are being monitored. Our results, however, showed that having one's eyes tracked does not seem to influence the tendency to make self-serving mistakes. In other words, individuals appear to be more influenced by their motivation to earn higher payoffs than by their knowledge that their eye movements are being monitored. This seems to suggest that the process underlying people's self-serving mistakes is not necessarily conscious (Balcetis & Dunning, 2006; Hochman, Glöckner, Fiedler, & Ayal, 2015; Welsh & Ordóñez, 2014). Potentially, people may engage in self-deception and not feel that they are lying when they make self-serving (but not self-hurting) mistakes (von Hippel & Trivers, 2011).

An interesting theoretical point to consider is whether people's fixation duration in the ambiguous-dice paradigm captures the intensity of temptation, the intensity of deliberation (i.e., the conflict between the moral norm of honesty and the economic benefit of misreporting), or the building of a justification for misreporting. Drawing on earlier work showing that peoples' attention is shifted toward tempting information (e.g., Gable & Harmon-Jones, 2010), we suggest that the fixation durations are affected by the presence and intensity of tempting alternatives. Increased attention on tempting alternatives, in turn, boosts self-serving dishonesty. We believe that future work assessing how gaze patterns may be influenced by these three potential aspects of temptation holds great promise. A good starting point for such inquiry might be to vary the exposure duration of the dice appearing on the screen, as this could provide insights into the causal relationship between the presence of tempting information and the shift of attention toward it.

Our work focused on how self-serving justifications promote lies that benefit the liar exclusively. Recent work suggests that people engage in prosocial lies to benefit their group (Cohen, Gunia, Kim-Jun, & Murnighan, 2009; Conrads, Irlenbusch, Rilke, & Walkowitz, 2013; Erat & Gneezy, 2012; Shalvi & De Dreu, 2014), and that this tendency increases as the number of beneficiaries increases (Gino, Ayal, & Ariely, 2013). It is unclear, however, whether ambiguous settings in which people can dishonestly benefit others may be especially likely to shift people's attention toward (socially) tempting alternatives, thus shaping their prosocial lies. If people's attention is indeed influenced by social considerations (e.g., who will benefit from lies), it follows that people who care more about others (i.e., who are more prosocial) will demonstrate higher tendencies to focus their attention on socially tempting information. In turn, focusing on such information, more prosocial people may lie more to benefit their groups, compared with more selfish people (for related work on deception among prosocial and selfish people, see Steinel & De Dreu, 2004). Such behavior may occur even in settings where ambiguity is low, which would suggest that when people who care about others have the opportunity to help their group, they may perceive available information in a group-serving way. These people may maintain their positive self-concept as loyal members of the group even when serving the group forces them to bend ethical rules. Measuring participants' social value orientation (Van Lange, 1999), and assessing their attention to tempting group-serving information, seems a promising avenue for future research.

Conclusion

Unethical behavior poses a major societal challenge. Whether in sensational corporate scandals or more ordinary transgressions, individuals often violate ethical principles to serve their self-interest. Our results suggest that such ethical failures are mostly likely to occur in settings in which ethical boundaries are blurred. In ambiguous settings, people's attention drifts toward tempting information, which shapes their lies. Our results deliver a promising message for increasing ethical behavior in organizations, society, and personal life. Crafting environments in which ambiguity is low and transparency high will tame temptation and help individuals stick to the ethical standards they cherish.

Author Contributions

All authors developed the study concept and contributed to the study design. Testing and data collection were performed by A. Pittarello, M. Leib, and T. Gordon-Hecker, all three of whom also performed the data analysis and interpretation under the supervision of S. Shalvi. A. Pittarello, M. Leib, and T. Gordon-Hecker drafted the manuscript, and S. Shalvi provided critical revisions. All authors approved the final version of the manuscript for submission.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

Funding

This research was supported by the Israel Science Foundation (Grant No. 914/14, awarded to S. Shalvi).

Supplemental Material

Additional supporting information can be found at http://pss.sagepub.com/content/by/supplemental-data

Open Practices

All data and materials have been made publicly available via Open Science Framework and can be accessed at osf.io/d2ncs (pilot experiment and Experiment 1) and at osf.io/473gq (Experiment 2). The plans for the experiments were preregistered at Open Science Framework (pilot experiment and Experiment 1: osf.io/d2ncs; Experiment 2: osf.io/473gq). The complete Open Practices Disclosure for this article can be found at http://pss.sagepub.com/content/by/supplemental-data. This article has received badges for Open Data, Open Materials, and Preregistration. More information about the Open Practices badges can be found at https://osf.io/tvyxz/wiki/view/ and http://pss.sagepub.com/content/25/1/3.full.

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