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Laboratory Measure of Cheating Predicts Misbehavior at School

Alain Cohn and Michel André Maréchal

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Abstract

We study the external validity of a standard laboratory measure of cheating. The results show that cheating in the lab significantly predicts classroom misbehavior in middle and high school students.

JEL classification: C93, K42
Keywords: Cheating, Honesty, Experiment, External Validity, Misbehavior.

* Cohn: Booth School of Business, University of Chicago, 5807 S Woodlawn Ave, Chicago, IL 60637, U.S., email: alain.cohn(at)chicagobooth.edu. Maréchal: University of Zurich, Department of Economics, Bluemlisalpstrasse 10, CH-8006 Zurich, Switzerland, email: michel.marechal(at)econ.uzh.ch. We thank Jonas Addor and Joël Farronato for excellent research assistance. Financial support from the Gottlieb Duttweiler Institute is gratefully acknowledged. Correspondence to: Cohn and Maréchal.

1 Introduction

Honesty is central to economic and social exchange. A rapidly growing literature in economics emerged aiming to provide a better understanding of the determinants and consequences of dishonest behavior. Due to its hidden nature, dishonest behavior is typically difficult to measure reliably using observational field data. As a result, the majority of the empirical findings originates from laboratory experiments. A widely used experimental paradigm to measure dishonesty is to give subjects a random device (e.g., a die or a coin) that rewards them for particular outcomes, and to ask them to report the actual results (Shalvi et al. 2011; Bucciol and Piovesan 2011; Fischbacher and Föllmi-Heusi 2013; Cohn et al. 2014; Abeler et al. 2014).[1] Because subjects are typically unobserved during the task, they face the temptation to increase their earnings by misreporting the actual outcomes without any risk of being caught. Although cheating cannot be detected at the individual level, it is possible to measure cheating at the group level because the true distribution of the random process is known. While substantial progress has been made with this paradigm, it is unclear to what extent laboratory measures of cheating reveal something about dishonest behavior in the real world (Falk and Heckman 2009). To the best of our knowledge, only two studies have touched on that issue, and both used rather unusual subject pools. Cohn et al. (forthcoming) conducted a coin tossing experiment with inmates from a maximum-security prison. They found a positive correlation between claimed earnings from coin tosses and misconduct in prison (e.g., illegal drug possession or aggression against guards and other inmates). Another recent working paper by Hanna and Wang (2014) studies cheating in a sample of government nurses in India. They found that nurses who cheated more in a dice task also tended to show up at work less often.

In this paper we investigate whether cheating in the lab predicts misbehavior at

[1] Another common approach are interactive sender-receiver games where senders can increase their earnings by sending deceptive messages to the receiver (Gneezy 2005).

school. For this purpose we matched a standard laboratory measure of cheating with teachers' evaluations of their students' classroom misbehavior. School misbehavior is an important form of rule violating behavior as it has been shown to be a key determinant of educational achievement and future labor market outcomes (Segal 2013). We find that the experimental measure of cheating and school misbehavior are significantly correlated, which suggests that the cheating paradigm provides an externally valid measure of rule violating behavior.

2 Design

We conducted the experiment with 162 students from eight classes in two Swiss public schools — one middle and one high school. Students were between 12 and 20 years old, and 43 percent of them were female. They were informed that the data will be treated confidentially. All of them gave their consent to participate in the study. We conducted the experiment in the classroom (in absence of teachers) where subjects were shielded from sight by mobile partition walls. The experiment took place simultaneously in all four classes at each school to avoid cross-talk between subjects. Subjects first filled out a short survey about their subjective well-being and socioeconomic background. They then proceeded to a coin tossing task. In this task, subjects were instructed to open an envelope with ten coins, each worth 0.5 Swiss francs (or 0.55 US dollars). Then, they had to flip each coin in private and report the outcome on a sheet of paper. Every coin for which they reported the outcome "heads" they were allowed to keep and every coin they reported "tails" they had to put back into the envelope. Participants thus faced a financial incentive to cheat by misreporting the outcomes of their coin flips without any risk of getting caught. At the end of the experiment subjects were instructed to throw their envelope with the remaining coins into a container.

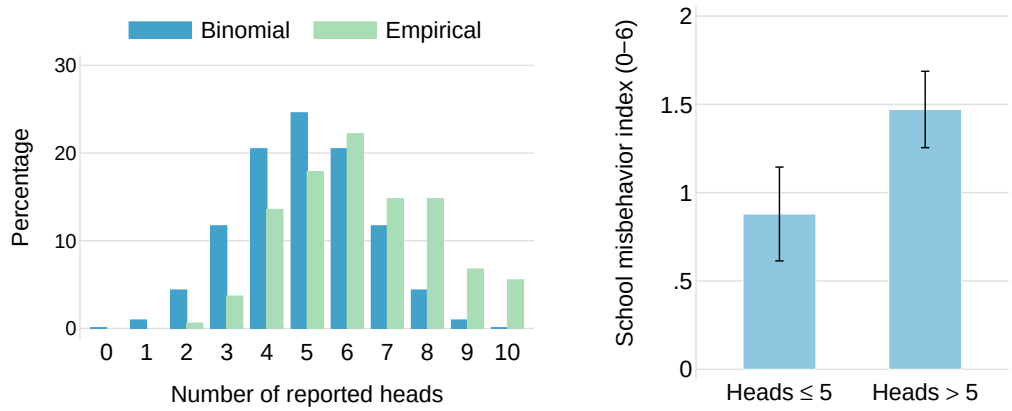
To measure school misbehavior, we asked the teachers to evaluate their students

along three dimensions: absenteeism, disruptiveness in class, and non-completion of homework. These measures were inspired by the school misbehavior questionnaire of the US National Educational Longitudinal Survey. For each item the teachers evaluated the students on a scale from "never misbehaves" (= 0) to "always misbehaves" (= 6). Because the three items are strongly correlated (Cronbach's $\alpha = 0.718$) we created an index of school misbehavior using the unweighted average of each dimension. We then matched the teachers' evaluations with the experimental data using anonymous identification numbers to preserve privacy.

3 Results

The left panel of Figure 1 shows that the empirical distribution of reported heads is shifted towards a higher number of heads relative to the binomial distribution implied by honest reporting. The outcomes ten, nine, and eight times heads are significantly over-represented ($p < 0.001$ for all three outcomes, binomial tests), whereas the outcomes two, three, four, and five are significantly underreported ($p = 0.011$, $p < 0.001$, $p = 0.032$, and $p = 0.055$, binomial tests). On average, the students reported heads for 62.8% of the coin flips (95% confidence interval: 60.0%, 65.7%). Assuming that none of the participants cheated to his or her disadvantage we estimate that 25.7% of the coin flips were misreported (see Cohn et al. forthcoming for a derivation). We also analyzed individual determinants of cheating using Ordinary Least Squares (OLS) regressions. The results reported in column (1) and (2) of Table 1 indicate that female students were more honest as they reported heads significantly less often, which is in line with previous studies documenting gender differences in dishonest behavior (e.g, Dreber and Johannesson 2008). Moreover, we find that high school students cheated significantly less than those from middle school, which could be explained by less deviant students selecting into higher education.

Figure 1: Cheating and School Misbehavior



The left panel shows the empirical distribution of reported heads and the binomial distribution implied by fully honest reporting. The right panel illustrates the average school misbehavior index for subjects who reported five times heads or less and those who reported more than five times heads. Error bars indicate the standard error of the mean (adjusted for clustering at the class level).

The right panel of Figure 1 shows that misreporting in the coin tossing task is positively associated with school misbehavior. Subjects who reported more than five times heads score roughly 0.6 points (or 67 percent) higher on the school misbehavior index relative to the others. A Spearman's test confirms that the number of heads and school misbehavior are significantly correlated ($p = 0.003$). We observe a similar pattern for the individual items of school misbehavior: Subjects who reported a higher number of heads are more frequently absent from school, disrupt the class to a larger degree, and fail to do their homework more often. The correlations are statistically significant for disruptiveness and homework non-completion ($p = 0.003$, and $p = 0.020$), but not for absenteeism ($p = 0.136$, Spearman's test).

We additionally estimated regression models to control for factors that might jointly influence cheating and school misbehavior. Column (3) of Table 1 confirms that behavior in the coin tossing task is significantly related to the school misbehavior index when including controls for age, gender, nationality, and school level. Interestingly, in addition to being more honest, female and high school students also misbehave less frequently at

school. The model reported in column (4) additionally includes the students' standardized grade point average (GPA) from the previous semester as a control variable. While GPA and misbehavior are significantly negatively associated, the predictive power of the coin tossing task for school misbehavior remains stable. The difference in classroom misbehavior between a student who reports 10 times heads and a student who reports 5 times heads is about the same as between two students with a GPA gap of 1.4 standard deviations.

Table 1: Determinants of Cheating and School Misbehavior

	(1)	(2)	(3)	(4)
Dependent variable	# of heads		School Misbehavior Index	
Number of reported heads			0.144**	0.125**
			(0.023)	(0.037)
Age	-0.022	-0.060	0.458***	0.380**
	(0.835)	(0.601)	(0.004)	(0.029)
Female	-1.062***	-1.028***	-0.615**	-0.502
	(0.000)	(0.000)	(0.021)	(0.130)
Swiss nationality	-0.426	-0.366	0.170	0.151
	(0.125)	(0.198)	(0.141)	(0.198)
High school	-1.201***	-1.304***	-1.212***	-1.366**
	(0.007)	(0.006)	(0.004)	(0.016)
GPA (standaridzed)		-0.166		-0.444***
		(0.295)		(0.007)
Constant	7.963***	8.557***	-5.742***	-4.412**
	(0.000)	(0.000)	(0.006)	(0.017)
Observations	161	154	161	154
R^2	0.222	0.241	0.285	0.355

This table reports OLS coefficient estimates. P-values are reported in parenthesis. In column 3 and 4 we computed p-values that are robust to clustering at the class level. To account for the low number of clusters we use the wild cluster bootstrap procedure (Cameron et al. 2008) using the 6-point distribution of weights proposed by Webb (2013). Significance levels: ** $p < 0.05$, *** $p < 0.01$.

4 Conclusion

Overall, our results suggest that simple lab measures of cheating are reliable indicators of rule violating behavior in the field. This finding contributes to the current debate

about the generalizability of lab experiments (Falk and Heckman 2009), in particular with regard to a growing literature linking lab and field measures of prosocial behavior (e.g., Karlan 2005; or Fehr and Leibbrandt 2011). Furthermore, our study also adds to a nascent literature on the relationship between economic preferences and non-cognitive skills (Becker et al. 2012). Our results suggest that people's tendencies to cheat and broader forms of misbehavior and rule non-compliance share a common underlying mechanism.

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