# No effect of time of day on dishonest behavior: Evidence from correlational analyses, experiments, and meta-analysis





Qianyu Jiang<sup>1</sup>, Pingyuan Gong<sup>2</sup>, Zibin Zhu<sup>1</sup>, Yuyang Zhang<sup>1</sup>, Ke Ding<sup>1</sup>, Jinting Liu<sup>1</sup> <sup>1</sup> School of Psychology, Shenzhen University, Shenzhen 518060, China.

2 Institute of Population and Health, College of Life Science, Northwest University, Shanxi 710069, China

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#### **INTRODUCTION**

Kouchaki and Smith (2014) found that people engage in less unethical behaviors in the morning than in the afternoon. Following studies tried to replicate the morning morality effect but found mixed results (e.g., Arechar, 2017; Gunia, 2014; Ingram, 2016; Mozgai, 2017; Roeser, 2016; Vranka, 2019). To quantify the effect of time of day on dishonesty, we conducted three studies.

 Study 1: correlational analyses in four samples (N = 2025) with four behavioral tasks, to examine the association between time of day and dishonesty.

 Study 2: randomized experiments among students (N = 315) and criminals (N = 559), to verify the causal relationship between time of day and dishonesty.

• Study 3: meta-analysis (k = 32, N = 6792), to further quantify the effect size of time of day on dishonest behavior.

### **STUDY 1**

Correlational analyses in 4 samples with 4 tasks.

Table 1

The detailed information and statistical results of samples in Study 1.

## **STUDY 2**

Sample 5: College students 315 (70.1% females; age =  $24.1 \pm 1.4$  years) Mesurement: Die-roll Task. Sample 6: Male Criminals 559 (age =  $32.1 \pm 9.1$  years) Mesurement: Difference Spotting Task. Group: Morning (8 a.m. - 11 a.m.) vs. Afternoon (3 p.m. - 6 p.m.) <u>Results:</u> Β

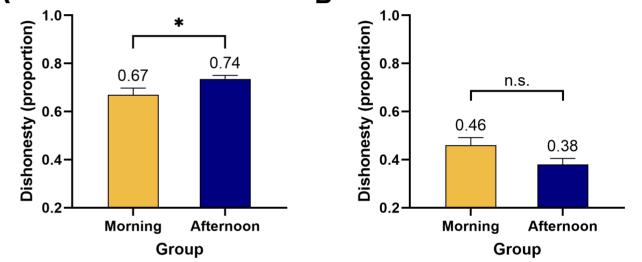


Fig. 3 Morning morality effect was found in Student Sample (A), p = .046. A reverse ffect was found in Criminal Sample (**B**), p = .052.

**STUDY 3** 

l	Sample	N	Age (M ± SD)	% females	Dishonesty paradigm	Correlation (r)
i					Visual-perception Task	0.108
	Sample 1: College students	72	20.8 <b>±</b> 1.7	40.3	Die Guessing Task	0.146
I I					Difference Spotting Task	0.274*
I	Sample 2: College students	131	21.1 ± 1.8	51.1	Difference Spotting Task	0.079
i	Sample 3: Communities	1720	26.9 <b>±</b> 6.1	49.6	Difference Spotting Task	-0.035
I I	Sample 4: College students	102	20.7 ± 1.9	65.7	Sender-receiver Game	0.010

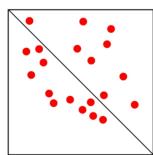


Fig. 1 Example of ambiguous-left-more trial in Visual-perception task. The proportion of identifications of more dots on the right side in ambiguous-left-more trials was used as an index of dishonesty.



Fig. 2 Example of the unsolvable trial (A and B) in Difference Spotting Task. The proportion of self-reported successes in the unsolvable trials was used as an index of dishonesty.

## Results:

(1) Correlations between dishonesty and time of day (Table 1). 2) Dishonesty: morning vs. afternoon (all  $ps \ge .061$ ).

# 32 samples (N = 6792) were included in the meta-analysis.

Sample	Measurement				Hedges' g [95% Cl]	Weight (
Previous studies			-		0.05 [-0.05, 0.14]	76.56
Kouchaki & Smith, 2014, Study2	Visual-perception Task		— —		0.79 [0.27, 1.32]	1.87
Kouchaki & Smith, 2014, Study4	Matrix Task				0.67 [0.09, 1.25]	1.61
Kouchaki & Smith, 2014, Study1	Visual-perception Task			•	0.52 [0.02, 1.02]	2.03
Kouchaki & Smith, 2014, Study3	Sender-receiver Game			<b></b>	0.49 [0.06, 0.93]	2.50
Mozgai, Lucas,& Gratch, 2017	Multi-issue bargaining task			<u> </u>	0.47 [-0.06, 0.99]	1.86
Ingram et al., 2016	Matrix Task				0.43 [-0.05, 0.90]	2.18
Gächter & Schulz, 2016, Czech R.	Die-roll Task				0.21 [-0.30, 0.71]	2.00
Gächter & Schulz, 2016, Guatemala	Die-roll Task			-	0.20 [-0.13, 0.53]	3.70
Gächter & Schulz, 2016, Morocco	Die-roll Task				0.19 [-0.34, 0.73]	1.83
Gunia, Barnes, & Sah, 2014, Study2	Die-roll Task				0.08 [-0.25, 0.41]	3.68
Gächter & Schulz, 2016, Turkey	Die-roll Task				0.07 [-0.31, 0.45]	3.01
Gächter & Schulz, 2016, Austria	Die-roll Task			-	0.05 [-0.44, 0.53]	2.15
Gächter & Schulz, 2016, Spain	Die-roll Task				0.02 [-0.72, 0.76]	1.05
Arechar et al., 2017	Guess random number		+		0.00 [-0.08, 0.08]	8.57
Gächter & Schulz, 2016, China	Die-roll Task		<b>_</b> _		0.00 [-0.27, 0.27]	4.56
Gächter & Schulz, 2016, Georgia	Die-roll Task				-0.01 [-0.41, 0.39]	2.82
Roeser et al., 2016	Matrix task, Sender-receiver Game				-0.05 [-0.33, 0.24]	4.35
Gächter & Schulz, 2016, Viet Nam	Die-roll Task				-0.06 [-0.46, 0.35]	2.76
Gächter & Schulz, 2016, Slovakia	Die-roll Task				-0.07 [-0.48, 0.35]	2.67
Vranka et al., 2019	Probabilty of overcharging				-0.13 [-0.37, 0.12]	5.02
Gächter & Schulz, 2016, UK	Die-roll Task				-0.16 [-0.44, 0.12]	4.33
Gächter & Schulz, 2016, Netherlands	Die-roll Task				-0.20 [-0.63, 0.23]	2.56
Gächter & Schulz, 2016, Kenya	Die-roll Task				-0.23 [-0.72, 0.27]	2.08
Gächter & Schulz, 2016, Germany	Die-roll Task	-			-0.25 [-0.74, 0.25]	2.05
Gächter & Schulz, 2016, Sweden	Die-roll Task				-0.26 [-0.70, 0.18]	2.46
Cornwell et al., 2021	General knowledge quiz	_	<b></b>		-0.43 [-0.83, -0.03]	2.83
Dur studies					0.01 [-0.09, 0.29]	23.44
Sample 1 Visual-percepti	on Task, Die Guessing Task, Difference Spotting Task		L	•	0.61 [-0.02, 1.24]	1.39
Sample 2	Difference Spotting Task				0.42 [-0.08, 0.91]	2.08
Sample 5	Die-roll				0.25 [0.01, 0.49]	5.14
Sample 3	Difference Spotting Task				0.01 [-0.14, 0.15]	7.15
Sample 6	Difference Spotting Task		<b></b>		-0.16 [-0.36, 0.05]	5.85
Sample 4	Sender-receiver Game				-0.03 [-0.56, 0.50]	1.86
Overall effect			•		0.06 [-0.03, 0.14]	100
		.50 -0.7	75 0.00	0.75 1.50	· · · ·	

Fig. 4 Forest plot of the effect sizes (Hedges' g) along with their 95% CI between time of day and dishonest outcomes.

<u>*Results:*</u> Morning morality effect — tiny, non-significant. (Hedges' g = 0.056, 95% CI = [-0.025, 0.136], p = 0.175)

#### CONCLUSION

We performed three studies and provided comprehensive evidence for a small and unstable effect of time of day on dishonesty.

#### REFERENCE

Kouchaki, M., & Smith, I. H. (2014). The Morning Morality Effect: The Influence of Time of Day on Unethical Behavior. Psychological Science, 25(1), 95-102. <u>https://do</u>i.org/10.1177/0956797613498099