Universität Zürich[UZH]

ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Beliefs about lying and spreading of dishonesty

Further experimental evidence on the preventive effect of ignorance on normative compliance

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* Heiko Rauhut, PLoS One, Nov. 2013, Vol. 8(11), p. 1-8.

The preventive effect of ignorance

- Heinrich Popitz (1968): “Über die Präventivwirkung des Nichtwissens”
- Counter-intuitive collective phenomenon

  If all norm violations were detected (tax evation, fare-dogding, corruption, moonlighting, adultery, plagiarism etc.), norm violations would spread, norms erode and normative systems collapse
- Ignorance hypothesis

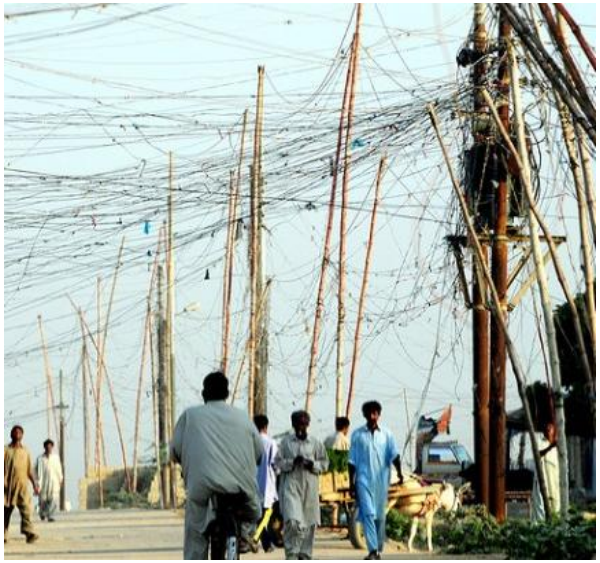
  “Veil of ignorance" about norm violations prevents their spread
- Main scope condition

  People underestimate extent of norm violations

The preventive effect of ignorance

Example 1: Visible power theft triggers its spread in Pakistan and India

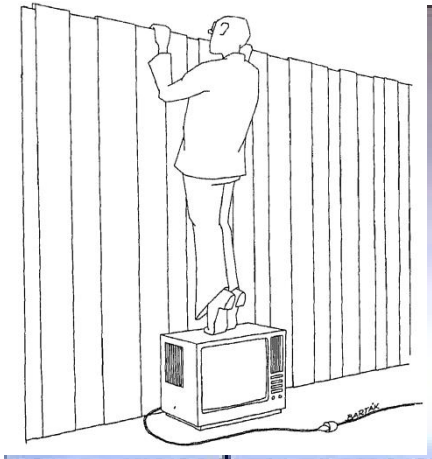
Maze of illegal connecti-ons in Pakistan. *(Business recorder)*



Electrical linesman repairs cables of illegal subsidiary wires in India. (Daily reporter)

The preventive effect of ignorance

Example 2: Western orientation of TV antennas in GDR and erosion of prohibition norm of Western TV (example by A. Diekmann)



Abteilung VIII

Dresden, 5. November 1984
Jecz-schl AI/ 3620 /1984

MfS/Dr 43 | 46
Eing. am 7.11.84
Tgb. Nr. 667
Weiter an:

AG XXII

BStU
000033

Information zu "Turm"

Vor ca. 14 Tagen stellte ein konspirativer Mitarbeiter unserer Diensteinheit fest, daß auf dem Haus

8312 Heidenau,
Beethovenstr. [redacted]

eine Antennenanlage an einem Stahlmast installiert wurde. Diese Anlage besteht aus 2 gekoppelten Antennen, die in Richtung Bayern ausgerichtet sind.

Es wurde festgestellt, daß das Antennenkabel in der Wohnung einer Familie

[redacted]
8312 Heidenau,
Beethovenstr. [redacted]

endet.

Das Haus Beethovenstr. Nr. [redacted] und [redacted] gehören zu einer Wohnzeile (Neubaublock). Auf dem Dach dieser Wohnzeile befindet sich eine Gemeinschaftsantenne für das 1. und 2. DDR-Programm.

Leiter der Abteilung
Glöckner
Oberst

KOPIE BStU

The preventive effect of ignorance

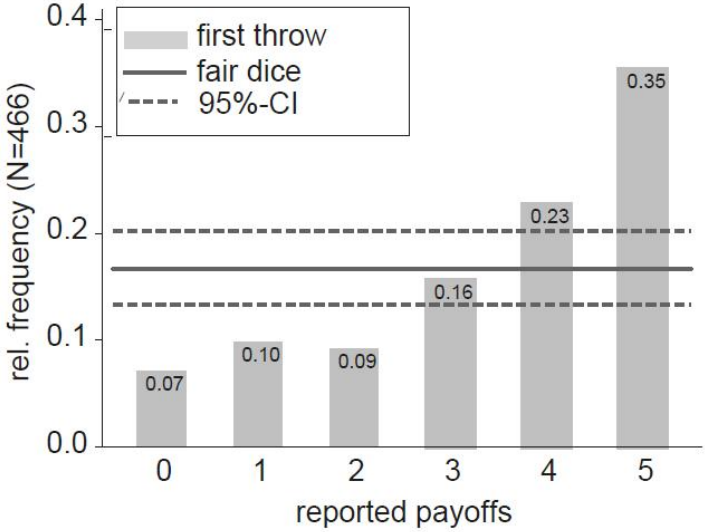
Example 3: "Broken windows" and "cross norm effects" in field experiments

Keizer, Lindenberg, Steg, Science, 2008

A «Venetian» paradigm

Venice 2010: Diekmann, Przepiorka, Rauhut: The “first” experimental test

- “Dice” experiments and erosion of the honesty norm



– One die cast before and one after information feedback

– Comparison of information treatments about others’ lying in large «stranger» group (n > 350) and small own group (n ≥ 14) with control condition without information feedback

– (Modest) confirmation of ignorance hypothesis: More lying after information about others’ lies compared to control (ignorance) condition

A «Venetian» paradigm

Venice 2011: K.-D. Opp: When there is a preventive effect of ignorance?

- **Scope condition I: only beneficial norms**
  - Lifting veil of ignorance can also have positive societal consequences
  - E.g. Kinsey report: Removal of unpopular prohibitions of widely practiced sex techniques
- **Scope condition II: only «mild» norms**
  - Lifting veil of ignorance can also strengthen norms
  - E.g. revelation of child abuse of catholic priests strengthed norms agains child abuse
- **Scope condition III: only if most people underestimate norm violations**
  - «It would be interesting … if there is not an overestimation but an underestimation of compliance. … We will leave this to further research.»

(see also Schultz et al. 2007, Rauhut & Groeber, 2010, Diekmann et al. 2011)

A «Venetian» paradigm

Venice 2012: Kroher, Wolbring: Replication and extension of dice studies

- (Modest) confirmation of ignorance hypothesis
  - Information of others' lies triggers more lies (not significant)

- More social control, less lying
  - Dice casts in pairs caused less lies in 1st and «correlated honesty» in 2nd throw

- Less social control, more lying
  - More lying in online experiment compared to laboratory

Research question, Venice 2013: scope condition beliefs

- What about those overestimating from the start? Is the dynamics inverted (less transgressions instead of more) if informed about true rate?

  - "Underestimators" (standard assumption)

    perceive public occurrences of others' norm violations as relatively frequent or strong, increase their subjective estimates about the complete extent of norm violations and perform subsequently more own norm violations

  - «Overestimators» (extended assumption)

    perceive public occurrences of others' norm violations as relatively rare or mild, decrease their subjective estimates about the complete extent of norm violations and perform subsequently less own norm violations

- Interaction effect between beliefs and direction of normative dynamics

– information about norm violations trigger increasing norm violations for underestimators, and decreasing norm violations for overestimators

Experimental design

Casted number	6	1	2	3	4	5
Payment in CHF	0.00	1.00	2.00	3.00	4.00	5.00

This is the start of the main study. From now on, your entries are payment relevant. One of your die casts will be randomly selected for payments in cash.

Please cast 12 times your die and fill in your scored points into the following table.

casted number →	Augenzahl	6	1	2	3	4	5
payment →	Auszahlung	0 CHF	1 CHF	2 CHF	3 CHF	4 CHF	5 CHF
cast 1 →	Wurf 1	◉	○	○	○	○	○
cast 2 →	Wurf 2	◉	○	○	○	○	○
cast 3 →	Wurf 3	○	○	○	○	◉	○
cast 4 →	Wurf 4	○	○	○	◉	○	○
cast 5 →	Wurf 5	○	○	○	○	○	◉
cast 6 →	Wurf 6	○	◉	○	○	○	○
cast 7 →	Wurf 7	○	○	◉	○	○	○
cast 8 →	Wurf 8	◉	○	○	○	○	○
cast 9 →	Wurf 9	○	○	○	◉	○	○
cast 10 →	Wurf 10	○	○	○	○	○	◉
cast 11 →	Wurf 11	○	○	○	○	○	◉
cast 12 →	Wurf 12	○	○	○	○	○	○

continue → Weiter

Payments

- 1 cast randomly paid out per round
- 4 payment rounds with 12 casts each

Sample

- 24 groups, each of which 10 subjects (N=240)
- Students, ETH & University of Zurich

Treatments

- control base
- control belief
- info

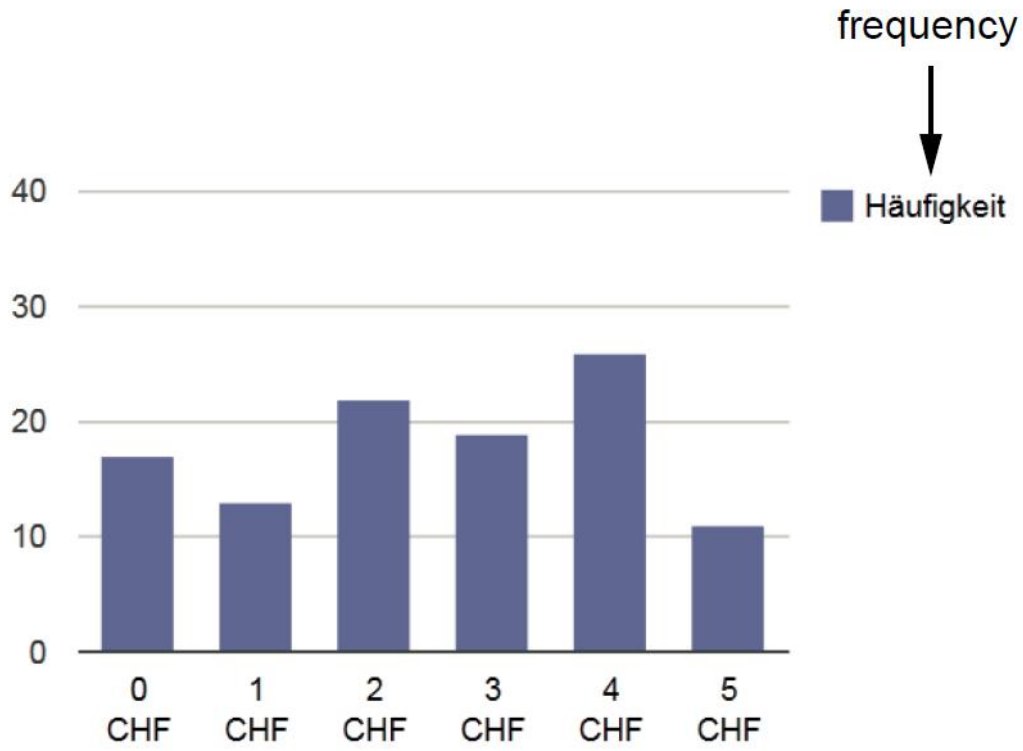
Why multiple dice casts?

- elicitation of beliefs in each round of each session
- dice reports of only 9 other group members should be robust for eliciting meaningful beliefs; hence 12x9 = 108 dice casts each session

Belief elicitation

reported cast → | frequency →

Auszahlung	Häufigkeit
0 CHF	17
1 CHF	13
2 CHF	22
3 CHF	19
4 CHF	26
5 CHF	11
total number →	Gesamtzahl: 108

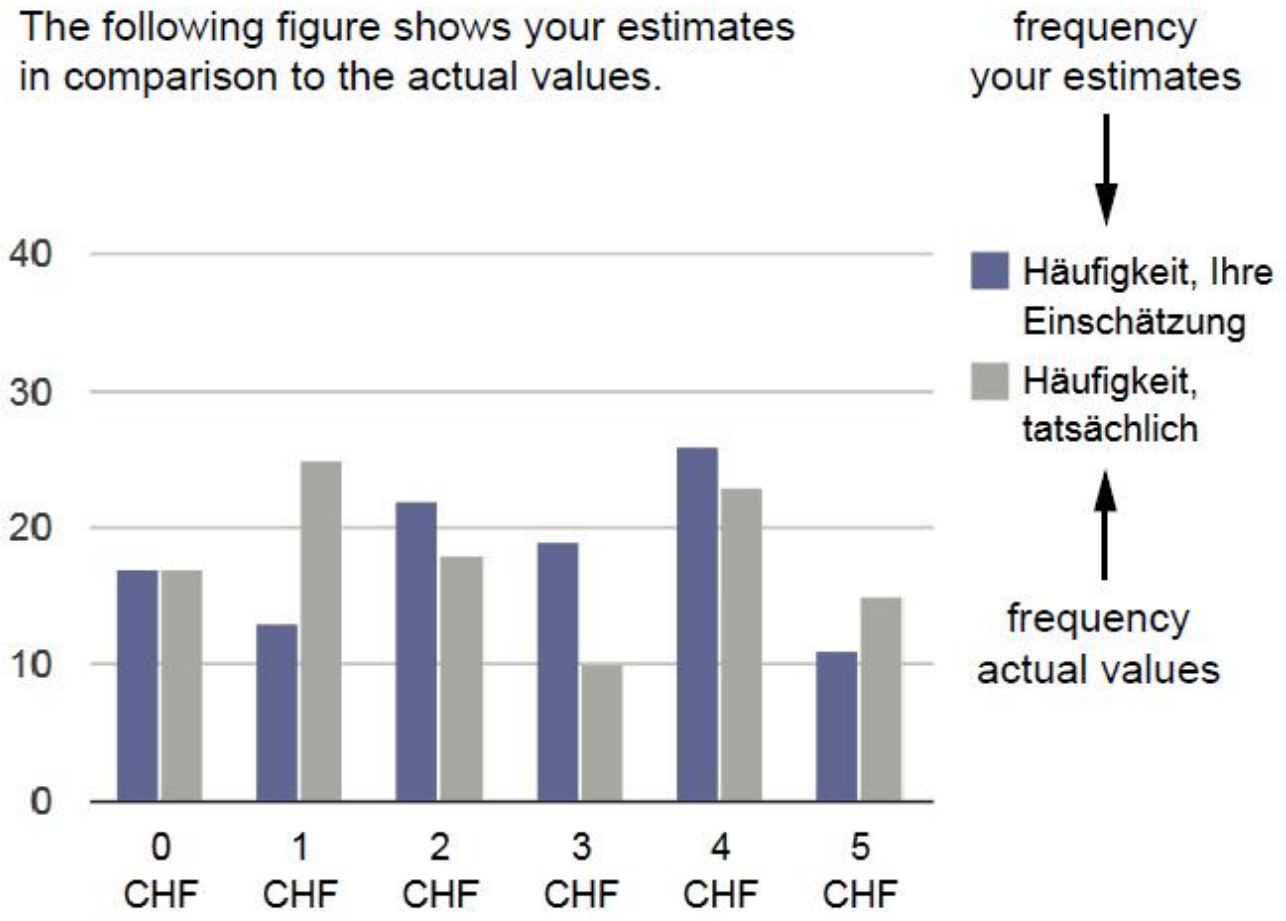


Weiter ← continue

Difference belief and real frequency of reported payoff	0	1	2	3	≥ 4
CHF	0.80	0.75	0.60	0.35	0

Information feedback

The following figure shows your estimates in comparison to the actual values.



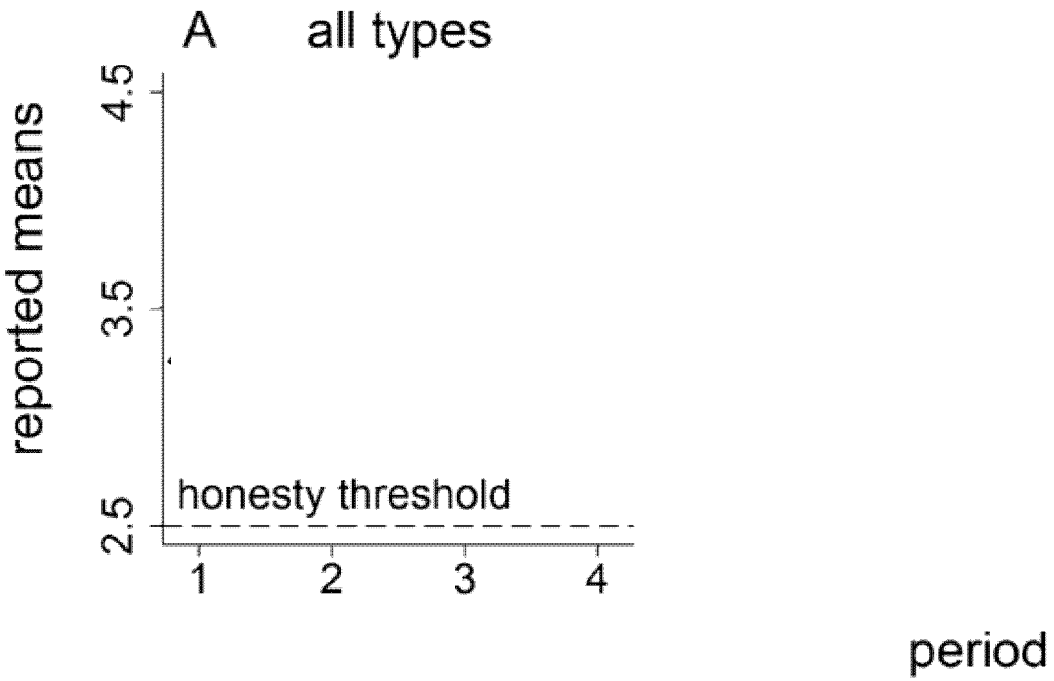
Für Ihre Einschätzung erhalten Sie 1.15 CHF. ← Your receive 1.15 CHF for your estimates.

Weiter ← continue

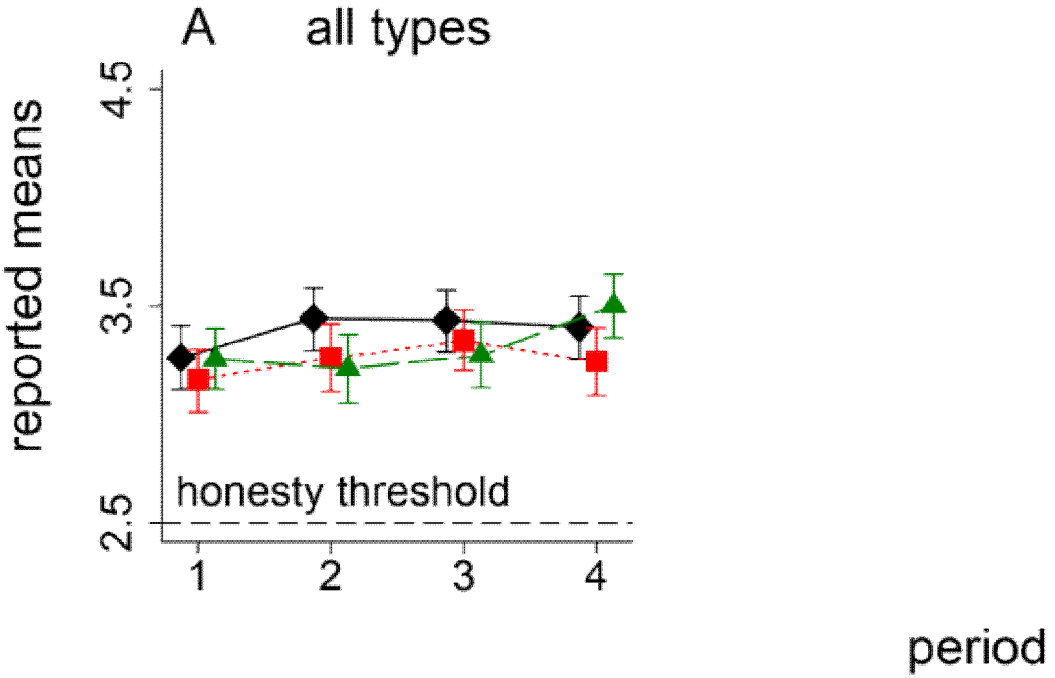
Random assignment to 3 treatments
(within each session)

treatment	belief elicitation	information feedback
info	☒	☒
control belief	☒	
control base		

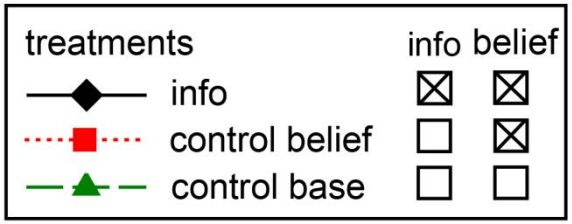
Trend of reported payment claims in means



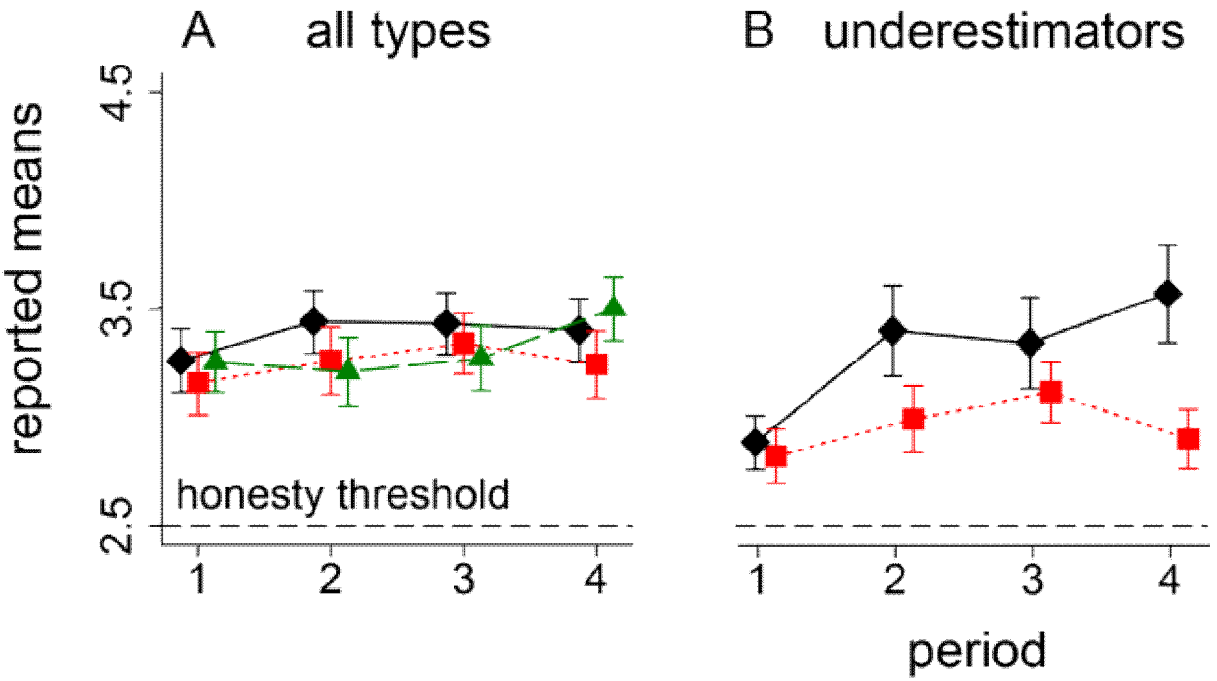
Trend of reported payment claims in means



Error bars: adjusted 95% confidence intervals
(non-overlap referring to treatment differences with p ≤ 5%)



Trend of reported payment claims in means

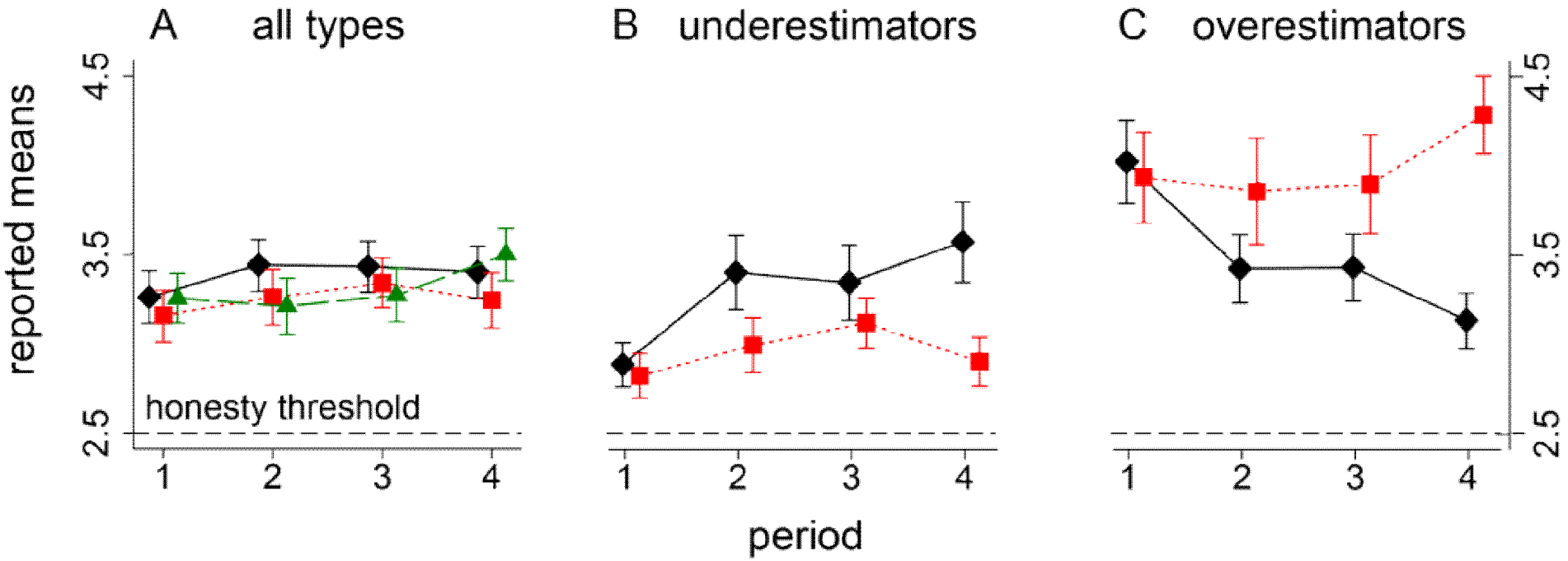


Error bars: adjusted 95% confidence intervals
(non-overlap referring to treatment differences with p ≤ 5%)

Underestimators: beliefs below reported payment claims in group at period

treatments	info	belief
info	☒	☒
control belief	☐	☒
control base	☐	☐

Trend of reported payment claims in means



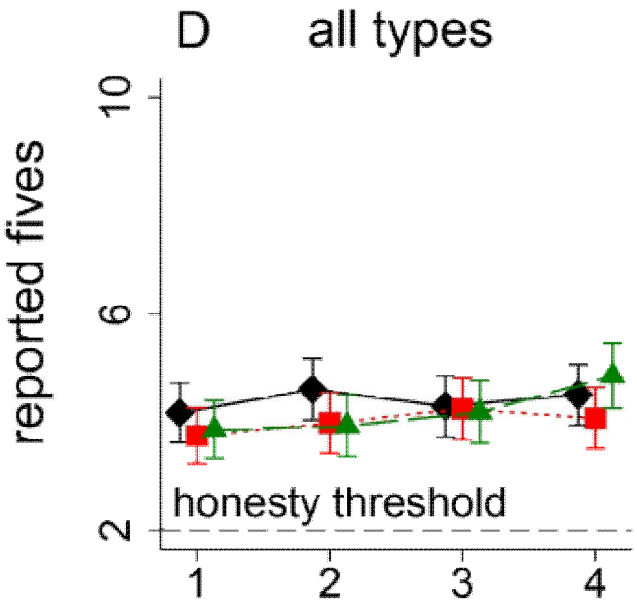
Error bars: adjusted 95% confidence intervals
(non-overlap referring to treatment differences with p ≤ 5%)

Underestimators: beliefs below reported payment claims in group at period

Overestimators: beliefs above reported payment claims in group at period

treatments	info	belief
info	☒	☒
control belief	☐	☒
control base	☐	☐

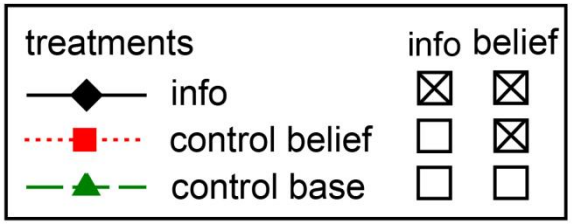
Robustness check: Trend of reported payment claims in fives



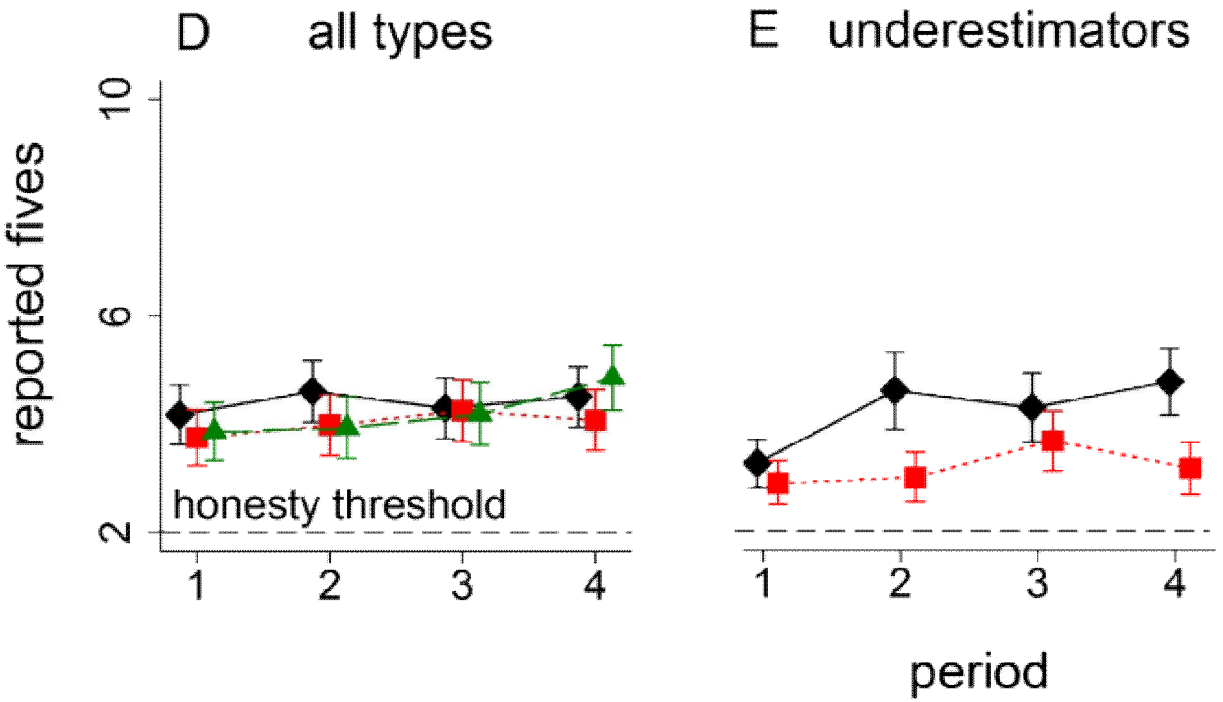
Error bars: adjusted 95% confidence intervals
(non-overlap referring to treatment differences with p ≤ 5%)

Underestimators: beliefs below reported payment claims in group at period

Overestimators: beliefs above reported payment claims in group at period



Robustness check: Trend of reported payment claims in fives



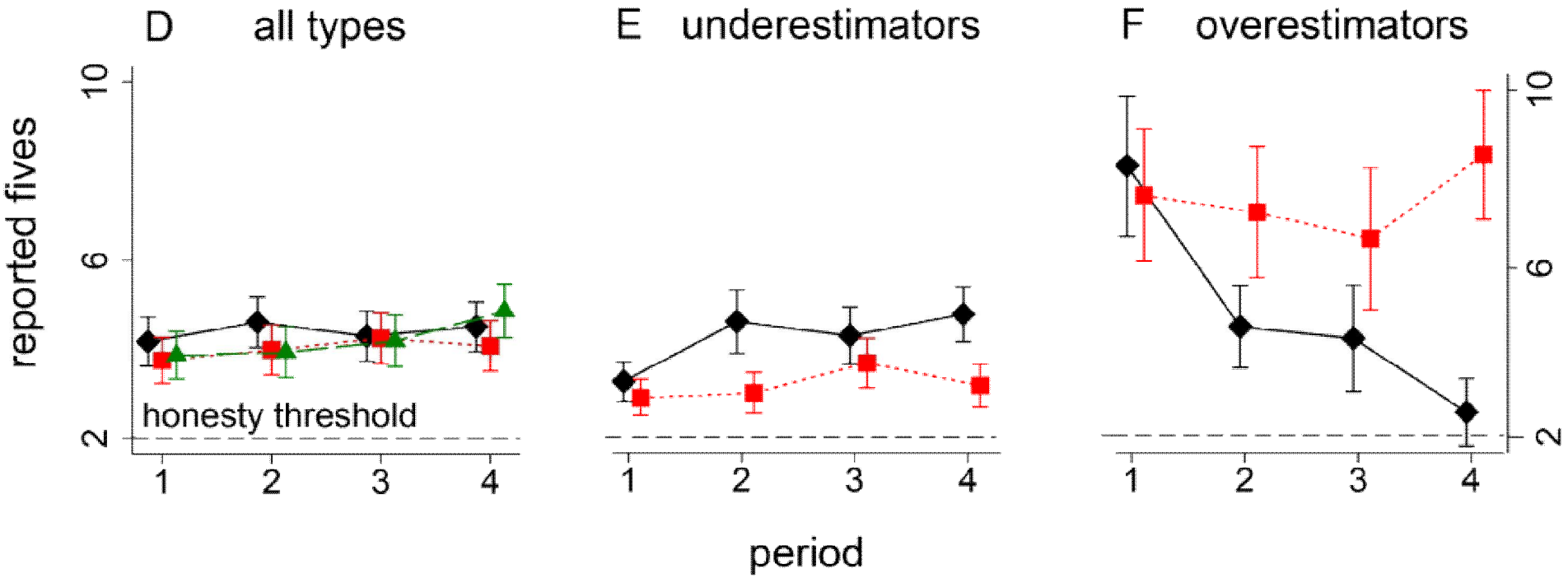
Error bars: adjusted 95% confidence intervals
(non-overlap referring to treatment differences with p ≤ 5%)

Underestimators: beliefs below reported payment claims in group at period

Overestimators: beliefs above reported payment claims in group at period

treatments	info	belief
info	☒	☒
control belief	☐	☒
control base	☐	☐

Robustness check: Trend of reported payment claims in fives



Error bars: adjusted 95% confidence intervals
(non-overlap referring to treatment differences with p ≤ 5%)

Underestimators: beliefs below reported payment claims in group at period

Overestimators: beliefs above reported payment claims in group at period

Interpretation

- **Beliefs important scope condition**

  strong effects on direction of dynamics

- **Ignorance hypothesis holds for "underestimators"**

  normatively oriented people project this onto others, stick to it without information and adjust upward if informed, resulting in spreading lies and normative decay

- **Reversed dynamics for "overestimators"**

  likely to project dishonesty onto others, stick to it without information and adjust downwards if informed, resulting in more honesty and restoring of order

Discussion of causality

- **Internal validity**
  - groups of under- and overestimators not randomly assigned
  - third, unmeasured variables may mediate dynamics
  - assignment of beliefs hardly feasible and implausible that strong interactions spurious
- **Construct validity**
  - Design removes alternative explanation by sanctions: anonymity in dice reports

Discussion of further contributions

self-serving bias in peer effects on cooperation

- Most studies show self-serving bias in peer-effects *(e.g. Thöni & Gächter, 2012)*
- Mostly downward adjustments of cooperativeness when informed about others' uncooperativeness, but no upward adjustments if peers more cooperative
- This study shows both directions peer effects of honesty adjustments

Discussion of further contributions

reaction vs. projection theory *(Croson & Miller, 2013)*

- **reaction theory**
  - beliefs determine behavior (i.e. economics, conditional cooperation)
  - cooperation is reaction on actor's belief that certain fraction will cooperate *(Fischbacher et al., 2001)*
- **projection theory**
  - behavior determines beliefs (i.e. psychology)
  - own cooperative intentions projected onto others expect them to behave similar
- **Data supports both**
  - projection theory in control treatments (constant lying level)
  - reaction theory in info treatments (adjusted lying as reaction on belief updates)

Appendix

Linear regression models of treatment differences

	(A) means	(B) fives
info	-0.715 ***	-3.454 **
	(-3.72)	(-3.30)
underestimator types	-1.114 ***	-4.362 ***
	(-6.39)	(-4.51)
info × underestimator types	1.156 ***	4.741 ***
	(5.19)	(4.31)
intercept	4.118 ***	7.630 ***
	(25.47)	(8.18)
N	480	480

Model A shows differences in claimed mean payments and model B differences in claimed number of fives with respect to under- and overestimators and their treatment interactions. One case refers to the reported mean (model A) or reported number of fives (model B) over the sequence of twelve dice casts per period per subject (yielding a total of N=480 cases for each model). Only periods 2, 3 and 4 are used, because these are the periods after information feedback in the info treatment. Robust standard errors are used, which were clustered for subjects. T statistics are reported in parenthesis, stars denote statistical significance with $*$ $p < 0.05$, $**$ $p < 0.01$, $***$ $p < 0.001$.

Interpretation of size of interaction (extent of lying)

- Estimation of percentage of liars:
  - expected proportion of the highest payoff five of a fair die (1/6)
  - compare it to the empirically reported proportion of fives π
  - adjust for liars who actually threw a five, but would have lied in case of lower casted numbers (i.e. multiply by 6/5).
  - proportion of liars $\lambda = (\pi - 1/6) \cdot 6/5$
  - Proportion of liars can be calculated from previous regression table

Lying can be more than halved or more than doubled depending on subjective beliefs and whether information feedback is provided

- More than twice as much liars in population of underestimators in info (25.6 %) than in control belief treatment (12.7%)[1]
- Less than half liars in population of overestimators in info (21.8%) than in control belief treatment (56.3%)[1]

[1] *percentages refer to periods 2-4 after information feedback*

Fig S5. Trend of reported payment claims in means (panel A) and fives (panel B) with 99.9% error bars. All error bars do not overlap with respective honesty thresholds, showing highly significant lying in all treatments at all periods.

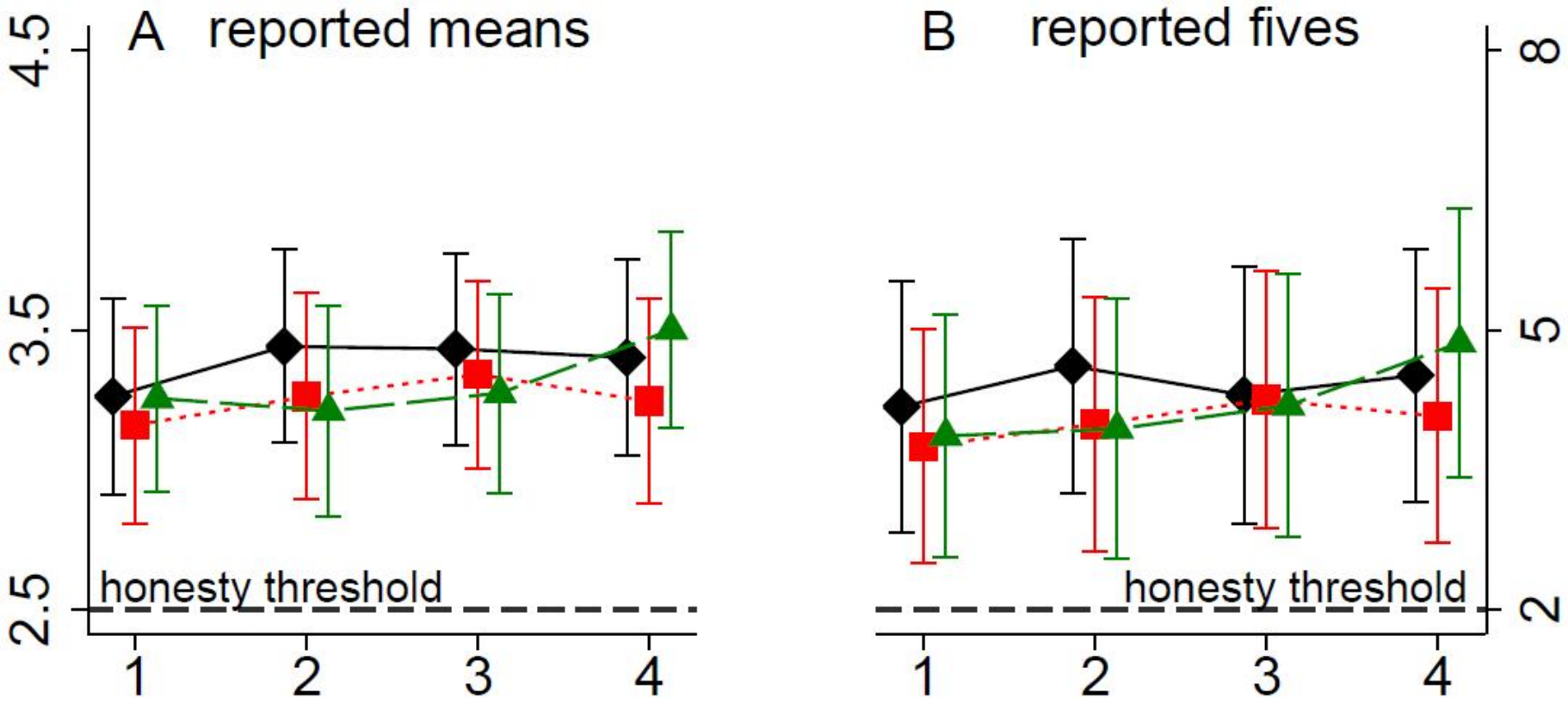


Fig S6. Group sizes of under- and overestimators over periods. Panel A displays the fraction of underestimators of reported means and panel B, of reported fives. Error bars show adjusted 95% confidence intervals such that non–overlapping intervals refer to treatment differences with $p \leq 5\%$ (see SM for calculations of adjustments). Underestimators hold beliefs below reported payment claims in their group at respective periods.

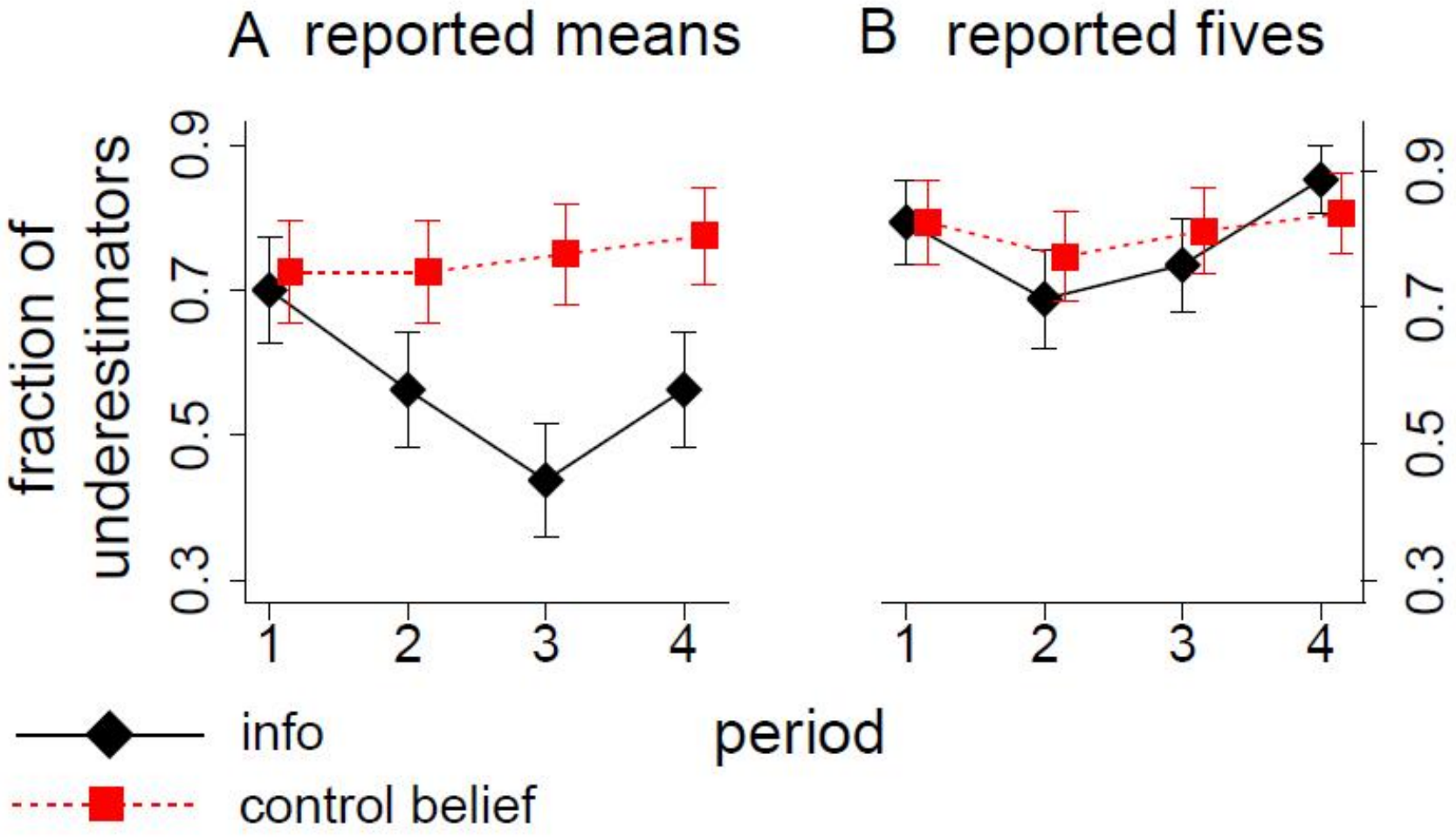


Table S2. Linear regression models of treatment differences in reported means (models 1–2) and fives (models 3–4), referring to average effects for all types. Models 1 and 3 show differences between info and control belief treatments and models 2 and 4 between info and control base treatments. Only periods 2, 3 and 4 are used, because these are the periods after information feedback in the info treatment.

	(1) mean (control belief)	(2) mean (control base)	(3) fives (control belief)	(4) fives (control base)
info	0.142	0.0965	0.371	0.146
	(1.06)	(0.71)	(0.69)	(0.27)
intercept	3.282***	3.328***	4.104***	4.329***
	(34.08)	(33.79)	(10.85)	(11.33)
N	480	480	480	480

t statistics in parentheses, robust s.e. clustered for subjects, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Diekmann, Przepiorka, Rauhut, 2013

Fig 6. Proportions of different types in second throws by experimental conditions

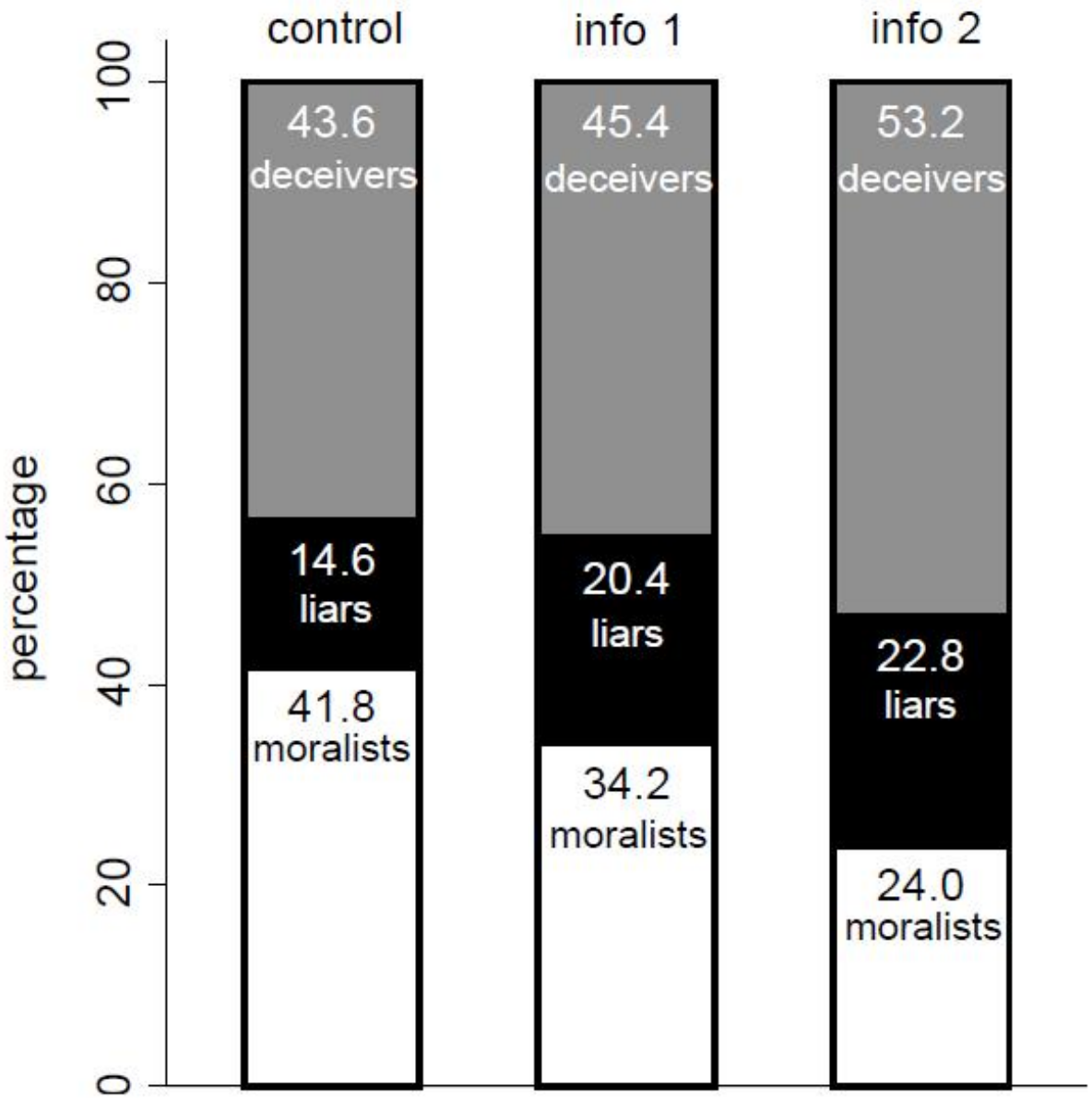


Fig 1. Distribution of reported payoffs from the first and second throw (averaged over all treatments)

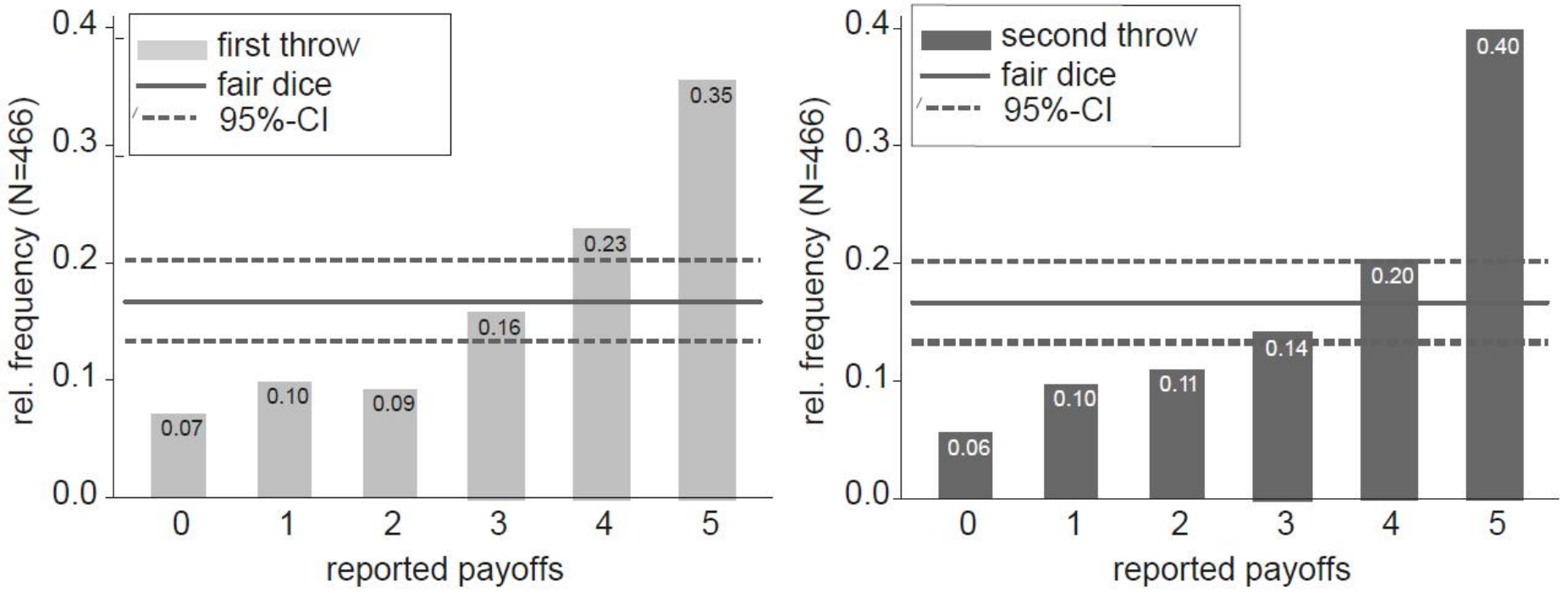


Fig 2. Distribution of reported cumulated payoffs from both throws (averaged over all treatments)

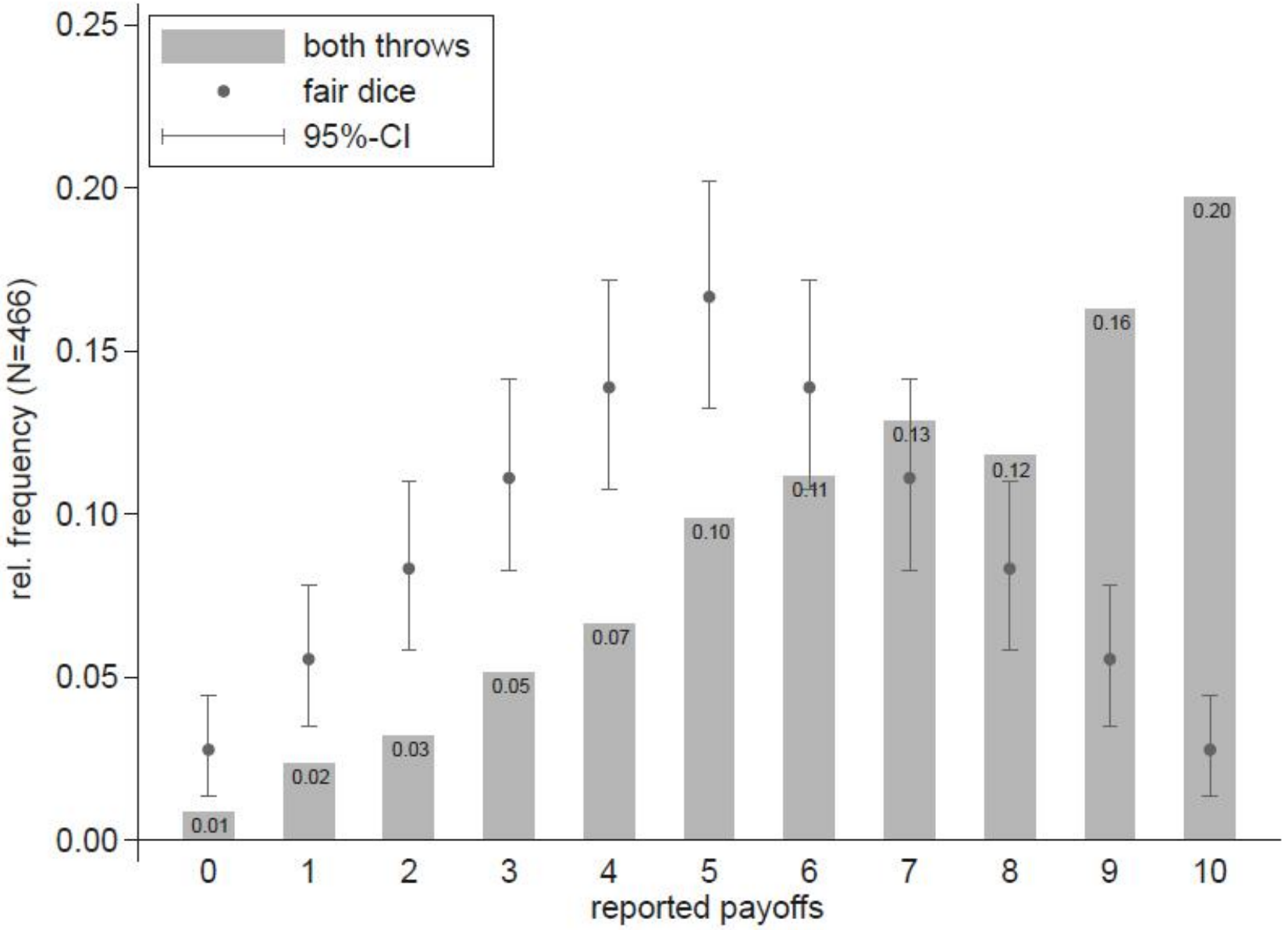


Fig 3. Difference between first and second reported payoffs by experimental condition

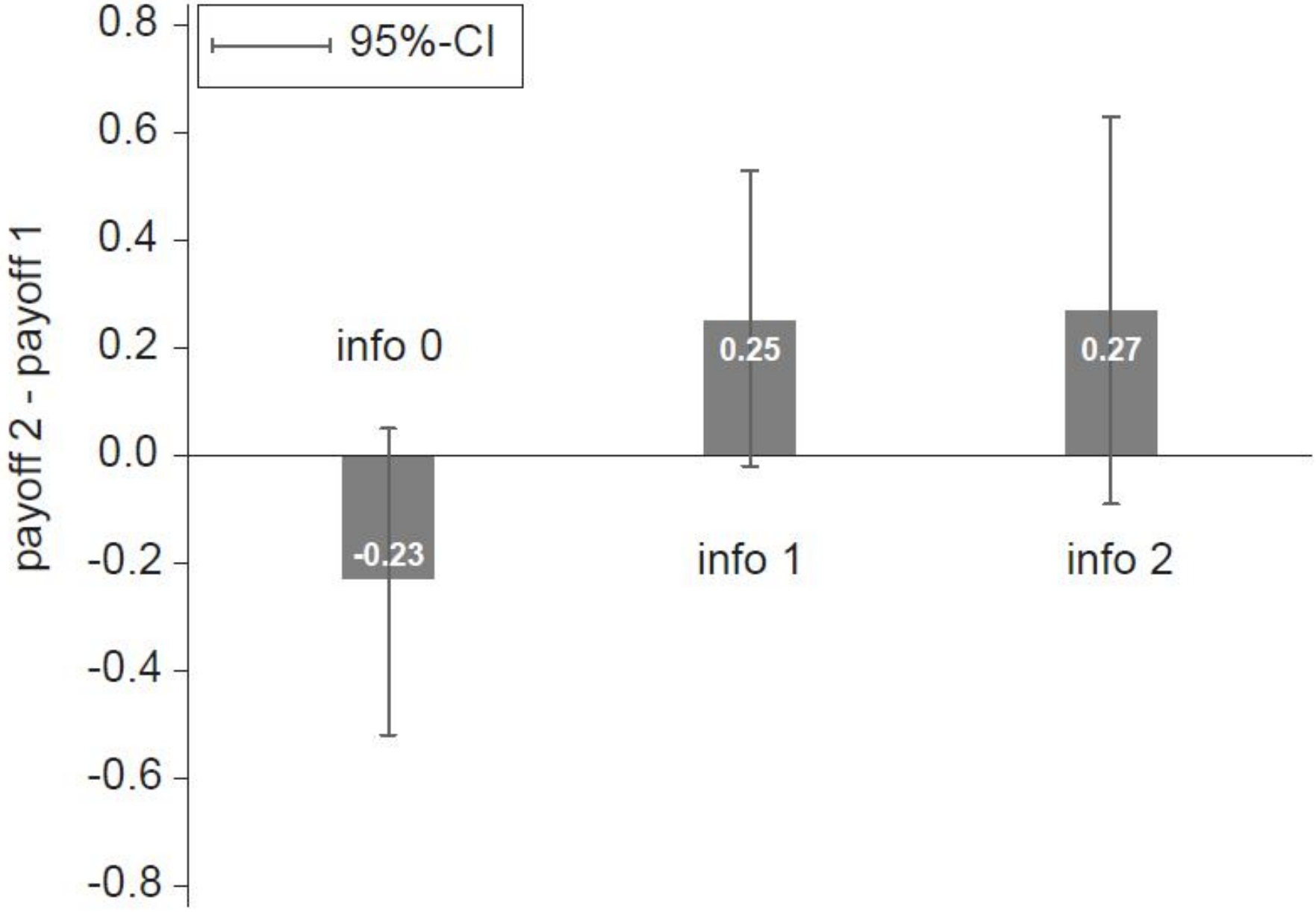


Fig 4. Fraction of reported maximum payoff (throwing a "five") by experimental condition