**DEPARTMENT OF ECONOMICS AND FINANCE
COLLEGE OF BUSINESS AND ECONOMICS
UNIVERSITY OF CANTERBURY
CHRISTCHURCH, NEW ZEALAND**

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**Daniel Woods
Maroš Servátka**

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Department of Economics and Finance
College of Business and Economics
University of Canterbury
Private Bag 4800, Christchurch
New Zealand**

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Daniel Woods¹
Maroš Servátka^{2*}

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Abstract: This paper tests Psychological Forward Induction in the Lost Wallet Game, in an attempt to explain an empirical puzzle observed by Dufwenberg & Gneezy (2000) that the size of the outside option forgone by the first mover does not affect the behavior of the second mover. This is puzzling as Psychological Forward Induction and other theories predict that raising the outside option will increase the reward provided by the second mover to the first mover for foregoing the outside option. Our experiment tests whether the second movers update their beliefs after observing their paired first movers' decision by eliciting beliefs with different second mover knowledge of first mover decision, depending on treatment. We find that second movers do update their beliefs conditional on receiving information on the first mover's action, supporting Psychological Forward Induction.

Keywords: beliefs; experiment; guilt aversion; lost wallet game; psychological forward induction

JEL Classifications: C70; C91

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¹ New Zealand Experimental Economics Laboratory, Department of Economics and Finance, University of Canterbury, NEW ZEALAND

² New Zealand Experimental Economics Laboratory, Department of Economics and Finance, University of Canterbury, NEW ZEALAND

*Corresponding Author: Maroš Servátka, maros.servatka@canterbury.ac.nz

1. Introduction

Consider the following decision-making scenario described by Dufwenberg and Gneezy (2000; henceforth DG). You find a wallet on the footpath. There is cash in the wallet, which is of value to you, but there are other things in the wallet, like bankcards, licences and photos, which are of no use to you but have value to the wallet's owner through replacement costs or sentimental value. You have two options, you can take the cash and put the wallet back on the footpath, or you can take the wallet back to the owner who then decides how to reward your good deed. DG model this scenario in the following Lost Wallet Game played by two movers. The first mover (FM) has two options: he can choose IN, which means that he forgoes the outside option (x), or he can choose OUT, and keep the outside option. If the FM chooses IN, then the second mover (SM) gets to split an amount of twenty between the FM (y), and herself ($20 - y$). If the FM chooses OUT, then the SM does not make a decision and receives nothing. By backwards induction, the Subgame Perfect Nash Equilibrium for self-regarding preferences is (OUT, $y=0$).

Psychological Forward Induction (PFI) derives a different prediction (Battigalli & Dufwenberg, 2009). Consider the FM's decision, who can either choose OUT, which makes him better off by x , or choose IN, which makes him better off by the amount of money the SM decides to reward him, y . If the self-interested FM chooses IN, it must be that he expects to receive at least x .¹ Now consider the SM's decision; which is how much to reward the FM for choosing IN. Let us assume that the SM exhibits 'guilt aversion' (Battigalli & Dufwenberg, 2009), which is an aversion to letting the FM down or not living up to his expectations. If the SM is sufficiently guilt averse, then she will want to reward the FM the amount that the FM expects. However, the SM does not know what the FM expects to receive, so therefore she must form expectations about this amount. Denoting the FM's belief of y as τ' , the SM's belief of τ' as τ'' , and an individual's sensitivity to guilt aversion as γ , the SM's utility function is now of the form: $20 - y - \gamma(\max\{\tau'' - y, 0\})$.² PFI predicts that if the FM chooses IN, then τ' must be at least x , and the SM, knowing this, updates her belief τ'' to be at least x as well. If the SM is sufficiently guilt averse, then she would send back τ'' .³

¹ While our main focus is on PFI, the FM could also have different motivations. FMs could be motivated by other-regarding preferences, such as altruism or inequality aversion. For two surveys on other-regarding preferences, see Camerer (2003) or Cooper & Kagel (2009). Alternatively, the FM could trust that the SM will reciprocate and send back at least x . For separation of various FM motives, see Cox (2004).

² Note that the SM still prefers more money to less, but her utility function now includes a negative psychological payoff of feeling guilty from letting the FM down.

³ In this case, sufficient guilt aversion would be $\gamma \geq 1$.

DG's experimental results show that τ'' and y are positively correlated, which is consistent with guilt aversion, but that x and y are uncorrelated, which is puzzling. Intuitively, using the guilt aversion framework described above, an exogenous increase in x (DG's treatment variation to test the guilt aversion predictions) means that the SM's τ'' conditional on the FM choosing IN should increase, which should in turn lead to a higher y . Given that data from DG shows that τ'' is not correlated with x , it is possible that their subjects fail to psychologically induct forward.⁴ They may fail PFI by not updating τ'' to reflect that a FM choosing IN expects to receive x . The current paper provides a further test of PFI by verifying whether SMs update their beliefs conditional on knowing the action of the FM. In other words, after observing the FM choosing IN, does the SM update her beliefs that the FM expects at least x and behave accordingly? Such a test involves comparing τ'' between SMs who have information on the FM's decisions, and those who do not.

2. Literature Review

DG were the first to experimentally study the Lost Wallet Game. Their SMs made their decisions using the strategy method (Selten, 1967). All subjects had their beliefs elicited after making their decisions. DG asked SMs to state their belief about FM's expectation of y , but only considering FMs who chose IN. DG found that; (i) subjects did not act in a way consistent with self-regarding preferences, (ii) as x increases, more FMs choose OUT, (iii) generally, subjects chose IN when they expected to receive at least x back, and (iv), τ'' and y are positively correlated, supporting guilt aversion. However, the surprising result of their experiment was that x and y were uncorrelated. As discussed previously, this is inconsistent with PFI, and also with some theories of reciprocity (Dufwenberg & Kirchsteiger 2004; Falk & Fischbacher, 2006).

One hypothesised reason as to why x and y were not correlated was put forward by Cox, Servátka, & Vadovič (2010) who conjectured that the reason that x and y were found to be uncorrelated was because the outside option x was not salient to the SMs. To increase the saliency, they moved to sequential play as opposed to the strategy method to make the SM's decision 'warmer' (Brandts & Charness, 2000 and 2011). The idea is that it is easier for the SM to consider the FM's monetary consequences of a decision when she observes the FM's decision, before making her own. In addition, instead of using decision forms, paired subjects

⁴ A Spearman's rank correlation test reports $p=.805$, meaning the null hypothesis of zero correlation cannot be rejected in DG data.

passed paper dollar certificates between the pair, to ensure that SMs always knew how much the FM had given up in order to choose IN, again in an attempt to increase saliency. Beliefs were not elicited as they were not required to investigate the correlation between x and y . Despite the saliency measures, Cox et al. (2010) still found that x and y were uncorrelated. Servátka & Vadovič (2009) tested an alternative explanation of why x might be ignored, by exploring changing the relative payoffs of the outside option. In particular, SMs might ignore the forgone outside option when making their decision if they perceive the outside option to be unfair or unequal. The implemented two treatments had either an unequal outside option (10, 0), or an equal one (5, 5). However, Servátka & Vadovič found no significant difference in SM's behavior between the two treatments.

Charness, Haruvy & Sonsino (2007) ran the Lost Wallet Game varying the social distance between the subjects. They implemented three social distance protocols: a classroom lab experiment, a paired computer lab experiment with the two labs being in different states in the US, and a worldwide internet experiment. In all three treatments the interaction between subjects was anonymous. Relevant to the current paper, they found some evidence for y being correlated with x , but as the strategy method was used in conjunction with a within-subjects design, it is not clear whether this is an actual correlation, or an artifact of the experimental design.

Finally, Charness & Dufwenberg (2006) provide evidence for guilt aversion in favor of other belief dependent explanations, by running a hidden action trust game. A principal could choose whether to employ a worker, the worker then decides on either a high or low level of costly effort. If the worker chooses high effort, a dice roll determines the state, with the bad state having the same payout for the principal as low effort would; hence, the principal cannot observe the worker's choice. They elicited beliefs after subjects made their decisions. The more likely the worker believed that the principal expected high effort, the more likely the worker would put in high effort, which is consistent with guilt aversion.

The literature has established that DG's finding of x and y being uncorrelated in the LWG is not due to saliency considerations, the strategy method, or unawareness of x (through practical or equality considerations). The reason DG's findings are considered puzzling is due to the predictions of PFI. Guilt aversion, along with other elements of PFI, has empirical evidence within the literature. The final element that remains untested is whether SMs update τ'' in a manner consistent with PFI, which is what we seek to address.

3. Experimental Design

Our experiment consists of two treatments, the information treatment (INFO) and the no information treatment (NO INFO), implemented in a between-subjects design. In both treatments, subjects play the Lost Wallet Game as presented in Figure 1. In this experiment subjects play the game sequentially, rather than using the strategy method as in DG, to allow for the observability of moves prior to belief elicitation.

The two treatments differ in when we elicit the SM's belief. In both treatments, we ask FMs to state their belief on the average of y before they make their decision. In the INFO treatment, we inform SMs about whether their paired FM chosen IN or OUT, and we ask the SM, considering only FMs that made the same decision, to state their belief of the FMs' belief of the average y that was elicited previously. In other words, if a SM's paired FM chooses IN, we ask the SM to guess the average FM expectation of y , considering only FMs that chose IN, and vice versa for OUT. In the NO INFO treatment, the SMs are not informed of their paired FM's decision, and are asked to state their belief on the average belief of y of *all* FMs, not a subset of FMs as in the INFO treatment. The outside option of $x=7$ was chosen for this experiment to ensure a sufficient number of IN and OUT decisions as the design is not using the strategy method.⁵

Figure 1. The Lost Wallet Game

PFI predicts that if the FM chooses IN, then τ' must be at least x , and the SM, knowing this, updates her belief τ' to be at least x as well. The current experiment tests whether the

⁵ DG also used outside options of $x=4$, $x=10$, $x=13$ and $x=16$, which are not implemented in the current experiment as varying the size of the outside option is not required to test PFI.

thought process of the SM is consistent with what PFI predicts by comparing the beliefs of SMs elicited from the INFO treatment to beliefs of SMs from the NO INFO treatment. If SMs act consistently with PFI, then SMs who are informed that the FM chose IN should believe the FM expects $y \geq x$. Similarly, SMs who are informed that the FM chose OUT should believe the FM expects $y \leq x$. SMs who are not informed of the FM's decision should report their initial beliefs, which will serve as a baseline to observe if and how SMs update their beliefs.

As the test of PFI relies crucially on beliefs, the choice of belief elicitation method is important. One way of eliciting beliefs is by asking subjects about their expectations in a non-salient way as has been done in many gift-exchange experiments (e.g., Brown, Falk & Fehr, 2004). However, non-incentivized elicitation might yield imprecise measures of subjects' beliefs in an experiment. Gächter & Renner (2010) explore the effectiveness of the linear scoring rule in a public good experiment, and find that beliefs are more accurate when a linear scoring rule incentivizes the elicitation process, as opposed to an unincentivised elicitation process.⁶ Eliciting beliefs prior to decisions has the potential to change the way subjects behave, as they may place higher cognitive attention on their own and others strategies. The current experiment requires belief elicitation prior to subjects making their decisions, as opposed to after as in DG. Belief elicitation prior to decisions might affect behavior in the Lost Wallet Game as well, however, in this design it cannot be avoided. In a survey of the literature, Schlag, Tremewan & van der Weele (forthcoming) report mixed empirical evidence on preferred scoring rules and on beliefs affecting behavior, and also discuss the practicality of implementing complex scoring rules. It is with this in mind that we follow the protocol of DG and employ the linear scoring rule, which is arguably more practical to implement in an experimental environment than quadratic or logarithmic scoring rules due to ease of explanation to subjects. Finally, it is important to note that significantly different behavior from that observed in DG's results would prevent us from being able to provide a meaningful scientific insight into the empirical puzzle observed in their paper.

The belief elicitation process is as follows. We ask FMs what they believe the average of what SMs will return (y) is. We also ask SMs what they believe the average of the FM's response to the previous belief elicitation, i.e., to guess the average expectation of y of the FMs. The SM's belief elicitation is a 'second order belief', as it is a belief about a belief. Second order beliefs are difficult to explain to subjects, which gives further justification of the use of the simpler linear scoring rule.

⁶ An example of a linear scoring rule is that for every cent a subject's guess is away from the actual value he was trying to guess, the subject loses a cent.

Effectively, we are eliciting the second order belief at a different time between the treatments; before and after we reveal the paired FM's decision. The type of second order belief we elicit also differs slightly. The difference in when we reveal the FM's decision is what we are testing; do SMs actually update their second order beliefs conditional on receiving information on the FM's decision? It is not possible to test this without withholding information in one of the treatments. Recall that the INFO treatment asks SMs to state their belief on the average of FMs' beliefs on average amounts returned (y), but only considering FMs who chose the same action as the SM's paired FM, and that the NO INFO treatment asks SMs to state their belief on the same average, but this time considering all FMs' decisions. We designed this experiment in this way in an attempt to elicit a SM's initial beliefs without other potential influences. An alternative would be asking the SMs in the NO INFO treatment to state their belief only considering FMs that chose either IN or OUT. However, this could cause confusion with SM thinking that their paired person had performed the presented action, despite instructions to the contrary. If SMs were behaving in such a way, then there would be no difference between our treatments. Alternatively, we could ask SMs to state their belief on both types of averages; however, the presence of both elicitations (a within-subject design) could influence their responses. We believe our approach gives us the most appropriate measure of a SM's initial beliefs, given our available options.

4. Experimental Procedures

The experiment was conducted in the New Zealand Experimental Economics Laboratory at the University of Canterbury. Subjects were University of Canterbury students recruited through posters and in classes, who then signed up for individual sessions using the online database system ORSEE (Greiner, 2003). The experiment was computerized using the software z-Tree (Fischbacher, 2007). Five sessions were conducted, with two sessions done with the NO INFO treatment and three sessions done with the INFO treatment. More sessions were required for the INFO treatment to ensure a sufficient number of observations.⁷ 106 subjects participated overall, with 72 subjects participating in the INFO treatment, and 34 subjects participating in the NO INFO treatment. The number of subjects in a session varied

⁷ This is because observations of τ'' for those going IN and OUT in the INFO treatment are considered separately in the analysis, whereas in the NO INFO treatment observations were pooled.

from fourteen to twenty-four. The sessions were approximately 45 minutes long, and on average subjects earned \$15.60 NZD per session.⁸

In each session, we handed out neutrally framed instructions (attached in Appendix A), and projected them onto a screen. Subjects had some time to read the instructions themselves, and then the experimenter read the instructions aloud. The same set of instructions were handed out and read to both types of subjects before they were made aware of their type (FM or SM), to ensure common knowledge which is especially important in this experiment as SMs are requested to state a second order belief. By not knowing their type while reading the instructions, subjects should pay equal attention to the instructions for both types, and understand the complex second order belief better. The experimenter answered any arising questions in private. Subjects entered their decisions electronically, and upon the completion of the experiment, we asked them to fill out a questionnaire. The experimenter then called subjects one by one to receive their payment in private.

5. Results

We begin by comparing the behavior of our subjects against DG, in order to establish if the change in timing of the belief elicitation affected decisions. Table 1 reports summary statistics and two sided p-values from the Mann-Whitney test for differences in distributions of subject's decisions.⁹

As the statistical tests presented in Table 1 indicate, we cannot reject that the distributions of decisions in this experiment are the same as the distributions in DG. That is, the distributions of behavior between the two experiments are likely to be the same. Hence, it is not likely that the different procedures have significantly changed subject's behavior in this experiment.

⁸ The minimum wage at the time of running the experiment was 12.75 NZD per hour.

⁹ Raw data is reported in Appendix B.

Table 1: Behavior of Subjects in Our Experiment and the DG Experiment

Panel A: First Mover Behavior			
Data	Fraction of FMs who chose IN	Fisher's Exact Test	
Our data	32/53 (60%)	-	
DG x = 7 data	6/12 (50%)	-	
Our data vs DG x = 7 data	-	$p = .534$	
Panel B: Second Mover Behavior			
	Mean Amount Given to the FM (average y)	Median Amount Given to the FM (median y)	Mann-Whitney Test
Our data (n = 32)	6.03 [4.00]	8	-
DG x = 7 data (n = 12)	4.83 [4.49]	4.5	-
Our data vs. DG x = 7 data	-	-	$p = .493$

Standard deviations in brackets.

We now seek to replicate some findings from DG. The first hypothesis is that subjects act consistently with what the prediction for self-regarding preferences, for FMs the hypothesis is that they all choose OUT.

H1: All FMs choose OUT.

We reject H1 by inspection, with 32/53, or 60% of FMs choosing IN. This is consistent with DG.

The second hypothesis is that FMs choose IN if they expect to receive at least x . This is one of the steps posited in the process of PFI, and it is therefore important to check.

H2: The FM chooses IN only if his expectation of y is at least x .

We find strong evidence for this hypothesis in our data, with only 2/32 (6%) violations. We also investigate the inverse of this hypothesis, which is that FMs choose OUT if they expect to receive less than x .

H2': The FM chooses OUT only if his expectation of y is less than x .

We find that 14/21 (67%) observations violate H2'. It is not clear whether there is support for this hypothesis, as the observed violations could be due to hedging.¹⁰

Now we focus on SMs. We test the hypothesis predicted by self-interested preferences, which for SMs is that $y = 0$.

H3: All SMs choose $y = 0$.

In our experiment 25/32 (78%) of SMs that got to make a split, chose a y that was different than zero. Consequently, H3 is rejected by inspection.

We now explore the hypothesis that there is correlation between a SM's second order beliefs and the amount she gives to the FM. This hypothesis is related to guilt aversion, if the SM expects that the FM expects to receive more, then the SM will return more to avoid feeling guilty.

H4: y is correlated with τ' .

The Spearman's rank correlation test reports a 2-sided p-value of $p=.00007$, providing strong statistical evidence that these variables are correlated. Our finding is consistent with the result found in DG. The correlation coefficient between y and x in our data is .643, compared to .4 in DG data, which included observations over many values of x .

As our findings have replicated the applicable conclusions in DG, and because we are unable to reject that the distributions of subject's behavior were the same between the two experiments, we posit that the belief elicitation before the decision has not affected subject behavior significantly in this game.

We briefly examine FMs beliefs, as presented in Panel A of Table 2. Our hypothesis is that FMs who choose IN expect on average to receive more from SMs compared to FMs who chose OUT.

H5: τ' of FMs who choose IN is greater than τ' of FMs who choose OUT.

H5 is strongly supported by the results of Mann Whitney tests on our pooled data and the NO INFO subset reporting 2-sided p-values of $p=.001$ in both cases. The Mann Whitney test on our INFO subset is marginally insignificant with a 2-sided p-value of .109, however, the averages are in the direction predicted by H5.

Next, we explore the main hypotheses of our experiment. Do SMs update their second order beliefs after receiving information on their paired FM's decision? PFI predicts that SMs will believe that FMs who choose IN expect to receive a higher y back than FMs who choose OUT.

¹⁰ If SMs are more generous than choosing OUT implies, the FM gets the outside option and a belief accuracy payment; if SMs are not generous, the FM still gets the outside option.

H6: τ'' of SMs that are informed their FM chose IN exceeds the τ'' of SMs that are informed their FM chose OUT.

SMs beliefs are summarized in Panel B of Table 2. The Mann-Whitney test comparing the beliefs of SMs whose paired FMs chose IN with the beliefs of SMs whose paired FMs chose OUT reports a 2-sided p-value of .0004, providing strong evidence for H6. SMs have identified that FMs who choose IN expect to receive a higher y than those who choose OUT, and have updated their beliefs accordingly.

Table 2: Subject's Beliefs in Our Experiment

Panel A: First Mover's Beliefs				
Treatment and Decision	Mean Belief of y (average τ')	Median Belief of y (median τ')	Mann Whitney Test	
NO INFO IN (n=11)	9.50 (0.97)	10.00	p=.001	
NO INFO OUT (n=6)	5.92 (0.92)	5.75		
INFO IN (n=21)	8.24 (2.35)	9.00	p=.109	
INFO OUT (n=15)	7.67 (4.12)	7.00		
NO INFO ALL (n=17)	8.24 (1.99)	9.00	p=.703	
INFO ALL (n=36)	8.00 (3.17)	8.00		
ALL IN (n=32)	8.67 (2.03)	9.50	p=.001	
ALL OUT (n=21)	7.17 (3.57)	7.00		
Panel B: Second Mover's Beliefs				
Treatment and Decision	Mean belief of τ' (average τ'')	Median belief of τ' (median τ'')	Mann Whitney Test	Mann Whitney Test
NO INFO (n=17)	6.06 (3.59)	7.00	p=.211 ^a	p=.011
INFO IN (n=21)	8.50 (2.55)	9.00	p=.0004	
INFO OUT (n=15)	4.19 (3.56)	5.00		p=.211 ^a

^a denotes the same statistical test comparing NO INFO vs. INFO OUT. Standard deviation in brackets.

We now explore how SMs update their initial beliefs conditional on observing their paired FM's decision. We do this by comparing beliefs in NO INFO treatment (our proxy for initial beliefs) to the relevant subset of our INFO treatment. PFI predicts that SMs will update their initial beliefs upward upon learning their paired FM has chosen IN.

H7: τ'' of SMs that are informed their FM chose IN exceeds the τ'' of SMs that are not informed of their FM's decision.

From Table 2, Mann-Whitney test comparing the relevant distributions reports a 2-sided p-value of $p=.011$, providing strong evidence for H7. SMs are updating their initial beliefs upwards when presented with information about their paired FM choosing IN.

Similarly, PFI predicts that SMs will update their initial beliefs downwards upon learning their paired FM has chosen OUT.

H8: τ'' of SMs that are not informed of their FM's decision exceeds the τ'' of SMs that are informed their FM chose OUT.

From Table 2, there is no strong evidence in support of H8, as the Mann-Whitney test is insignificant reporting a 2-sided p-value of $p=.211$. However, the averages are in the hypothesized direction. We cannot say whether SMs are revising their initial beliefs downwards when presented with the information that their paired FM has chosen OUT. However, with strong evidence for H6 and H7, we conclude that SMs do generally update their beliefs in accordance with the predictions proposed by PFI.

6. Discussion

The results from our experiment suggest that SMs do update their beliefs when they learn about the FM's decision. This means that SMs realize that if FMs choose IN, then such FMs expect to receive more than if they chose OUT. As a consequence, SMs update their second order beliefs accordingly. Our results thus suggest that the 'puzzling' finding of the literature, that x and y are not correlated, is not due to SMs' failure to update beliefs. The missing link in the PFI chain that has not been tested is the assumption that SMs are guilt averse. It is true that the SM's second order beliefs are correlated with the amount returned, which would initially suggest that guilt aversion drives SMs behavior, i.e., as their belief of the FMs' expectation of the amount returned is increasing, the SMs return more to avoid guilt. However, this is not the only reason that could explain this correlation.

Ellingsen, Johannesson, Tjøtta & Torvick (2010) propose that what is actually occurring in games that appear to be demonstrating guilt aversion is the consensus effect. SMs might believe that their own actions are representative of the rest of the population. If the SMs believe that everyone else would split the money the same as they would, then their stated belief and the amount returned would be similar, hence the correlation between beliefs and amounts returned. Ellingsen et al. (2010) run the Lost Wallet Game (along with other games in which subjects might exhibit guilt aversion), with the main difference in procedure being that instead of asking the SM for her belief of the FM's expectation, she is given the FM's belief. The FM did not know that the SM would receive this belief, removing any strategic biases. Under this treatment, the correlation between the second order belief and the amount returned disappears, except when the analysis is limited to modal beliefs, suggesting that guilt aversion might not be what is influencing SM's behavior in the Lost Wallet Game.

A feature of the Lost Wallet Game is that the surplus created by investment is always constant at 20, regardless of the outside option forgone. This is different from the well-known investment game (Berg, Dickhaut, & McCabe, 1995), in which the amount invested is multiplied by some factor, usually three. Cox, Friedman & Gjerstad (2007), who examine reciprocity in investment games (among other games), find a correlation between variables analogous to the outside option forgone and the amount returned. This suggests that SMs may only be focusing on the amount of surplus generated, and rewarding the FM based on how much the FM's action increases their opportunity set (Cox, Friedman & Sadiraj, 2008). As the surplus in the Lost Wallet Game is fixed, this could explain why correlation between the outside option and the amount returned is not observed. Therefore, based on the results from the current experiment, and in light of the previous literature, we conclude that the puzzling result from DG of no correlation between x and y in the Lost Wallet Game is not due to a failure of SMs to update their beliefs. It is likely an artifact of the game itself, with the surplus fixed at twenty. Alternatively, SMs could be insufficiently guilt averse, meaning PFI would no longer predict a correlation between x and y .

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APPENDIX A – Subject Instructions

INSTRUCTIONS

(Instructions specific to the INFO treatment are contained in [square brackets], while instructions specific to the NO INFO treatment are contained in {curly brackets})

No Talking Allowed

Now that the experiment has begun, we ask that you do not talk. If you have a question after we finish reading the instructions, please raise your hand and the experimenter will approach you and answer your question in private.

Show up Fee

Every participant will get \$5 as a show up fee, and in addition you may earn money in the experiment. All the money will be paid to you in cash at the end of the experiment.

Anonymity

You will be divided randomly into two groups, called Group 1 and Group 2. Each person in Group 1 will be anonymously paired with a person in Group 2. No one will learn the identity of the person he/she is paired with.

The structure of the experiment

Each person will participate in two tasks. We first describe the DECISIONS task (referred to as TASK 2 in the software) and then the GUESSING task (TASK 1) that precedes it.

DECISIONS

Each person in Group 1 will start with \$7 and will have two options:

- To keep all of the \$7. In this case the paired Group 2 person with whom he/she is paired makes no decision.
- To send all of the \$7 to the paired person in Group 2. In that case the paired person in Group 2 will get to split \$20 between the pair. That is, the person in Group 2 will decide how much of the \$20, between \$0 and \$20, to give to the person in Group 1, and how much to keep.

Group 1 GUESS

Each Group 1 person is asked to guess the average amount, between \$0 and \$20, that people in Group 2 decide to give to the people in Group 1. You will be rewarded based on the accuracy of your answer. How you are rewarded for this guess is outlined in the next paragraph.

In order to check whether your guess is accurate, the average from the Group 2 people's decisions will be calculated. Note that if a Group 2 person's paired Group 1 person keeps the \$7, he/she does not get to make a split, so you should not be considering those people when you make your guess. You will be rewarded in the following way: You will start with \$5, and for every 1 cent of mistake, 1 cent will be deducted from this \$5. The mistake is the absolute value of your guess minus the actual average. For example, if you will guess accurately, you will get \$5. If you miss by, say \$2, i.e., your guess is either two dollars too high or two dollars too low, you will be paid \$3. If your mistake will be larger than or equal to \$5, then you will not be paid at all for this part.

Group 2 GUESS

[Each Group 2 person will first be informed whether his/her paired Group 1 person has sent or kept the \$7. Each Group 2 person is then asked to guess what was the average guess of the people in Group 1, **but only considering the Group 1 persons that also chose the same decision as your paired Group 1 person**. That is, if your paired Group 1 person sent the \$7, you should only consider the guesses of the Group 1 people that also sent the \$7. If your paired Group 1 person kept the \$7, you should only consider the guesses of the Group 1 people that also kept the \$7. Group 1 persons that did not make the same decision will not be included when calculating the average you are guessing. You will be rewarded based on the accuracy of your answer. How you are rewarded for this guess is outlined in the next paragraph.]

{ Each Group 2 person is asked to guess what was the average guess of all the people in Group 1. You will be rewarded based on the accuracy of your answer. How you are rewarded for this guess is outlined in the next paragraph. }

In order to check whether your guess is accurate, the average from the Group 1 person's guesses on how much Group 2 persons will give will be calculated. You will be rewarded in the following way: You will start with \$5, and for every 1 cent of mistake, 1 cent will be deducted from this \$5. The mistake is the absolute value of your guess minus the actual average. For example, if you will guess accurately, you will get \$5. If you miss by, say \$2, i.e., your guess is either two dollars too high or two dollars too low, you will be paid \$3. If your mistake will be larger than or equal to \$5, then you will not be paid at all for this part.

Payment of Show up Fees and Experiment Earnings

All participants are asked to sit patiently until the end of the experiment. Once all Group 2 persons have made their decisions, you will be presented with a summary screen of your earnings, including the averages you were guessing. Click OK after you have seen this screen, so other participants cannot see your decisions. You will then be prompted to complete a Questionnaire. After the Questionnaire, you will be asked one by one to approach the payment room at the back of the lab for the payment of your earnings. Because your decision is private, we ask that you do not tell anyone your decision or your earnings either during or after the experiment. We also ask you to leave using the stairs and not gather in front of the elevators after you receive your payment.

Are there any questions?

APPENDIX B – Raw Data

FM INFO		FM NO INFO		SM INFO			SM NO INFO		
IN	τ'	IN	τ'	IN	y	τ''	IN	y	τ''
0	0	0	5	0	-	0	0	-	0
0	2.5	0	5	0	-	0	0	-	0
0	5	0	5.5	0	-	0	0	-	6.5
0	7	0	6	0	-	0	0	-	7
0	7	0	7	0	-	1	0	-	8.5
0	7	0	7	0	-	1.8	0	-	12
0	7	1	7	0	-	3	1	0	3
0	7	1	8.5	0	-	5	1	0	5
0	7	1	9	0	-	5	1	0	6
0	7.5	1	10	0	-	7	1	0	7
0	8	1	10	0	-	7	1	1	0
0	9	1	10	0	-	7	1	5	5
0	10	1	10	0	-	7	1	5	7
0	13	1	10	0	-	9	1	6	7
0	18	1	10	0	-	10	1	8	9
1	0	1	10	1	0	7	1	8	10
1	5	1	10	1	0	7.5	1	10	10
1	7			1	0	10			
1	7			1	2	0			
1	7			1	4	8			
1	7.5			1	5	9			
1	8			1	7	7			
1	8			1	8	9			
1	8			1	8	10			
1	8.5			1	9	8			
1	9			1	9	9			
1	9			1	9	9			
1	9			1	9	10			
1	10			1	10	4			
1	10			1	10	9			
1	10			1	10	10			
1	10			1	10	10			
1	10			1	10	10			
1	10			1	10	10			
1	10			1	10	10			
1	10			1	10	10			
1	10			1	10	12			