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**A Nudge in the Dark: An artefactual experiment investigating the effects
of priming in the presence of distractions**

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Abstract

"Nudges" - small, usually cheap, interventions to alter the behaviour of individuals to improve their "health, wealth or happiness", are increasingly popular with governments and have thus far played a large role in the coalition government's attempts to encourage pro-social behaviour. The power of many of these nudges, such as the effect of priming in a trust-game type scenario, has been tested widely in the lab, but have proven difficult to replicate in the field. Although the laboratory allows a sterile environment, this is not always desirable - the real world is not sterile, and there are often many different factors competing for an individual's attention. We present the results of an experiment conducted during the course of a busy public engagement event at the University of Bristol, where members of the public, with little or no knowledge of economic theory, were invited to take part in a game during which they received incidental priming. We find that although the effect of a nudge is reduced in such a hectic environment, it remains statistically (and economically) significant.

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Abstract

“Nudges” - small, usually cheap, interventions to alter the behaviour of individuals to improve their “health, wealth or happiness”, are increasingly popular with governments and have thus far played a large role in the coalition government’s attempts to encourage pro-social behaviour. The power of many of these nudges, such as the effect of priming in a trust-game type scenario, has been tested widely in the lab, but have proven difficult to replicate in the field. Although the laboratory allows a sterile environment, this is not always desirable - the real world is not sterile, and there are often many different factors competing for an individual’s attention. We present the results of an experiment conducted during the course of a busy public

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engagement event at the University of Bristol, where members of the public, with little or no knowledge of economic theory, were invited to take part in a game dring which they received incidental priming. We find that although the effect of a nudge is reduced in such a hectic environment, it remains statistically (and economically) significant.

1 Introduction

Traditionally, economics has modelled individuals as being a solid, dependable bunch. Preferences are required to be consistent across states of the world, frames, and time.

Individuals with these traits, whom it has become fashionable to think of as Homo Economicus, are not sensitive to the way in which a question is framed. Putting items higher on a supermarket shelf would not make them more likely to be purchased in a world filled with such individuals. Realising that they will eventually retire, they save appropriately, and do not put off decisions until tomorrow. They do not follow trends or fashions, and would certainly not watch *The X-Factor* in order to conform with their neighbours and colleagues.

From a bleaker perspective, these creatures are also amoral - both confess in the prisoner's dilemma game, and nobody would ever trust in a trust game, knowing that the other players would never share; public goods are unprovided. It is easy to see Homo-Economicus existing in a vacuum, concerned only for him/herself or for their immediate descendants.

Much economic analysis, particularly the field of behavioural economics, has

now moved beyond this narrow concept; additions have been made to change the way in which homo-economicus has been modelled to explain, among other things, why people fail to save (hyperbolic discounting (see Choi et al (2004) and Laibson (1997)), why they pay more attention to some information than others (Gabaix & Laibson (2005)), and to try and understand the heuristics used to make decisions (Kahneman and Tversky (1974)).

Another area where economic theory has been changed or modified is in the addition of pro-social, or “other-regarding” behaviour to individuals’ utility functions. The role of socialisation in behaviour has been explored on a theoretical level by a number of authors, developing models of prestige (Harbaugh (1998)), Warm-Glow (Andreoni (1990)), Conformity (Bernheim (1994)) and Guilt Aversion (Fehr-Schmidt (1999)). Empirically, researchers have looked at mechanisms which can be used to “prime” individuals into giving more or less (see Alpizar et al (2008), Alpizar and Martinson (2010), and Burnham et al (2000)).

Although the results of these and other empirical studies have shown that framing a situation differently can alter behaviour - by portraying a trust game as a betrayal game, for example (Burnham et al (2000)), or by providing information about others’ cheating behaviour (Diekmann et al (2011)) - this has typically been done in an environment subject to the experimenter’s control, and typically a sterile one at that. Although field experiments, such as papers by Alpizar and co-authors (Various), enhance the external validity of an experiment compared with the lab, participants are still, typically,

either selected for their singularity, or separated from other individuals. People choosing to donate money to charity in a Costa Rican national park will quite often be fielding requests from small children for ice-cream or bathroom breaks, but this is not the case for participants in experiments.

This sterility allows the gathering of “clean” data; removed from extraneous factors which may influence people’s decisions, but imposes severe limitations to the generalisability of a finding. As John and co-authors (2009), find, “nudge” type programmes which perform well in rigorous Randomised Control Trials (RCTs), find their effects dramatically reduced when they are rolled out more widely. Similarly, Perfecto et al (2014), find over the course of 11 field experiments that anchoring effects (a form of priming), are much more elusive in the field than in the lab. To paraphrase, it seems that no plan can survive contact with the public.

The fact that a nudge carried out in a sterile environment is more powerful than one carried out in the real world should not be automatically discouraging, however. It is possible that these smaller effects may be statistically and economically significant. What is important is to consider the likely effect of real life factors on nudges.

In this vein, this paper presents the findings of a trust game experiment carried out, in a laboratory-like setting transplanted into the wilds of reality, or at least the best we could manage. This experiment, carried out over the course of the single day, retains some of the advantages of a lab experiment - easily interpretable results, incentive compatibility - while adding some of

the factors which we might expect to warp our results - noise, small children, and a wealth of other (consistent) distractions. The next section describes our experimental framework, while section three briefly discusses our results, and section four concludes.

2 Experimental Design

2.1 Game

Our experiment made use of a simple trust-game. The experiment was programmed and conducted with the software z-Tree (Fischbacher 2007). Participants, in groups of six, would sit in booths isolated from each-other, but not from the world at large, and be randomly assigned both a partner and a role within that partnership - player one or player two.

Player one (trustors) would be given an initial endowment of 10 points, and asked whether they would like to trust player two. If not, they would keep their ten points and player two would get nothing¹. If Player one does trust player two, their 10 points are passed to player two, and become 40 points. Player two must then decide whether or not to share; splitting the amount equally, or to keep all 40 points for themselves. Screenshots of the game can be found in appendix A. At the end of the game, points were converted to money at a rate of £0.01 per point, and players collected their winnings from

¹For convenience, we make use of the strategy method, so that we observe player two's decision even if player one does not trust them

discretely marked envelopes.

2.2 Environment

Care was taken to replicate the lab environment - participants unable to see each other, and are randomly assigned both a partner and role within that partnership - but with considerable changes in the purity of that environment. The experiment was conducted in the Reception Room of Bristol's Wills Memorial Building, during a "Doors Open Day" event in which members of the public were invited to view the University's historic buildings, on Saturday the 10th of September 2011. In addition to our experiment, there were a number of descriptive posters about game theory generally, an vulcanology exhibit with a working model volcano, an exhibit about "The Bristol Dinosaur", in which members of the public could dig in a sandpit for dinosaur bones and then attach them to the correct place on a diagram of the dinosaur, and an interactive exhibit of "paleodetectives". Over the course of 6 hours, over 1400 members of the public came into the room, not including a large number of small children.

2.3 Treatment

Participants were recruited from individuals in the reception room during the course of the day, and varied considerably in ages and demographics (though

specific information is not available). They were recruited by one of the exhibition assistants approaching them and asking them if they would like to take part in the game. If they agreed, they were invited over to a television screen (see appendix B for images), on which were displayed the rules of the game, including the payoffs, and information about other situations where the same game has been played in experiments. In the first treatment, our “good trust” treatment, participants were shown the results from Burnham et al (2000)’s “Trust/Partner” treatment, in which individuals were generally trusting. In the “bad trust” treatment, the information displayed was the results of Burnham et al’s “Betrayal/Opponent” treatment, in which sharing and trusting behaviours were considerably rarer. Attention was not drawn by the research assistant to this information while the rules were being explained. After the rules had been explained, and any questions answered, participants were invited to take a seat at one of the terminals, and to wait until the assistants had rounded up 6 participants - when this had happened, the game began.

After the game ended, participants collected their winnings, and assistants were on hand to answer any questions they had.

3 Results

Over the course of the six hours, we had 180 participants, divided between our two treatments. Of these, 90 received treatment 1, and 90 received treat-

ment 2. Summary statistics for the two treatments are presented in table 1, while figure N presents basic results of the percentage of individuals sharing and trusting in each treatment.

Table 1: Summary Statistics		
	Treatment 1	Treatment 2
Sample Size	90	90
% Trust	78.6	66.6
% Share:	73	62
Average total earnings	33.6	29.8
Average P1 earnings	13.6	12
Average P2 earnings	20	17.7

From this, we can see that our treatment appears to have an impact on individuals behaviour when playing our game, but we cannot be sure that this result is significant. Table 2, below, shows regression analysis on the various actions and payoffs.

Table 2: Regression results		
	Constant	Treatment 2
Trust	0.786*** (0.035)	-0.120** (0.058)
Share	0.733*** (0.037)	-0.111* (0.061)

Standard errors in parentheses; p=0.10 = *, p=0.05=**, p=0.01=***

These results strongly suggest that “nudges” towards a lower level of trusting behaviour continue to have a strong effect on behaviour despite considerable distractions. The levels of trusting observed in our data are perhaps unusually high for a trust game, which may concern some readers. This is most likely a result of the triviality of the payoffs and the focus on “enjoyment” of the event (another nudge, perhaps). There is an effect of similar magnitude among second players, with trust falling by roughly eleven percent. Although this figure is not statistically significant at the 5% level, it remains significant at the 10% level, and considering the relatively small sample size we are happy to conclude that the effect does exist. The difference in sizes of the two effects implies that the prime is leading individuals not to alter their preference set in conformity with a different social norm, but rather to update their *beliefs* about the trustworthiness of other players.

4 Conclusion

This paper has presented the results of a very simple trust game experiment conducted in the wild with participants facing multiple demands for their attention. Although this is not a completely realistic scenario, it bears more similarity to individuals' everyday lives than does the controlled environment of the lab, and our subject pool is considerably more diverse than that typically found among the undergraduate population.

In spite of the distractions, and the use of economic laity as participants, we observe a considerable fall in both trusting and sharing when individuals are presented with different primers about previous trust experiments. In contrast with a conformity story, as painted by Bernheim (1994) and Alpizar and Martinson (2010), we find (weak) evidence that the change in individuals behaviour is not driven by a change in their preferences, but by their updating their beliefs about other players, evidenced by the weaker effect on sharers, whose action is, in any case, conditional on the action of the other. We believe that this constitutes a minor, but significant, contribution to our understanding of the use of structured nudges in the wild.