



Destructor Game

Economics Department

Esther Kessler
Maria Ruiz-Martos
David Skuse

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Esther Kessler

University College London
Behavioural & Brain Sciences Unit

Maria Ruiz-Martos

Department of Economics
Universitat Jaume I

David Skuse

University College London
Behavioural & Brain Sciences Unit

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Abstract

Destructive behavior has mostly been investigated by games in which *all* players have the option to simultaneously destroy (burn) their partners' money. In the destructor game, players are randomly paired and assigned the roles of destructor versus passive player. The destructor player chooses to destroy or not to destroy a share of his passive partner's earnings. The passive partner cannot retaliate. In addition, a random event (nature) destroys a percentage of some passive subject's earnings. From the destructor player's view, destruction is benefit-less, costless, hidden and unilateral. Unilateral destruction diminishes with respect to bilateral destruction studies, but it does not vanish: 15% of the subjects choose to destroy. This result suggests that, at least for some, destruction is intrinsically pleasurable.

Keywords: anti-social behaviour, nastiness, money-burning

JEL Classification: C72, C90, D82

Destructor Game

Esther Kessler

University College London, Behavioural & Brain Sciences Unit, 30 Guilford Street, London WC1N 1EH, United Kingdom

Phone: 0044 (0)20 7905 2841

Fax: 0044 (0)20 7831 7050

E-mail: e.kessler@ucl.ac.uk.

Maria Ruiz-Martos

Universitat Jaume I, LEE & Departament d'Economia, Edificio de Investigación II, Avda. Sos Baynat s/n, 1207- Castellón, Spain.

David Skuse

University College London, Behavioural & Brain Sciences Unit, 30 Guilford Street, London WC1N 1EH, United Kingdom

Abstract Destructive behavior has mostly been investigated by games in which *all* players have the option to simultaneously destroy (burn) their partners' money. In the destructor game, players are randomly paired and assigned the roles of destructor versus passive player. The destructor player chooses to destroy or not to destroy a share of his passive partner's earnings. The passive partner cannot retaliate. In addition, a random event (nature) destroys a percentage of some passive subject's earnings. From the destructor player's view, destruction is benefit-less, costless, hidden and unilateral. Unilateral destruction diminishes with respect to bilateral destruction studies, but it does not vanish: 15% of the subjects choose to destroy. This result suggests that, at least for some, destruction is intrinsically pleasurable.

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Introduction

Destructive behaviour does exist. Individuals destroy public and private property (e.g. scratch someone else's car, break a streetlamp, stain a recently painted facade) and this behaviour is, mostly and from the perpetrator's view, benefit-less, costless and hidden. Senseless destruction defies standard assumptions in

economics and impels thorough experimental investigation to understand and incorporate it into behavioural economic models.

Zizzo and Oswald (2001), Abbink and Sadrieh (2009) and Abbink and Herrmann (2011) investigate different determinants of destructive behaviour by games in which *all* players have simultaneously the option to destroy the earnings of their partners. These experiments show results consistent with basic ideas of fairness and self-protection. Zizzo and Oswald (2001) find that players are keener to *pay and destroy* (“costly destroy” hereafter) the earnings of players who by chance got additional earnings and were richer than them.

Abbink and Sadrieh’s (2009) multiple stages game reveals that costless and benefit-less destruction sharply increases (reaching a 39.4%) when it is partially hidden by the existence of a chance event of getting destruction (“nature” henceforth). Abbink and Herrmann’s (2011) one-shot design shows that costly destruction increases by 15% when it is fully hidden by nature, and also that players’ expectations of having their own earnings destroyed are positively correlated with the degree of destruction they are willing to inflict on others. Destruction driven by the expectations of suffering destruction is known as *pre-emptive retaliation* (Abbink and Sadrieh 2009).

Retaliation has proved to be an important motivation for economically pointless destruction. In the “power to take” game, which attempts to capture post-war situations, individuals auto-destroy their earnings to prevent the adversary from appropriating them (Bosman and van Winden 2002; Bosman et al. 2005). One might therefore expect destruction to cease entirely when it is unilateral (one player unilaterally inflicts it on his partner) and pre-emptive retaliation is no longer a motive.

Zizzo (2003) extends the experimental design in Zizzo and Oswald (2001) by introducing what we will name *randomly - unilateral destruction*. This term refers to the design feature by which though *all* players in a group make destructive choices, but only the choices of one of the group members are randomly selected to be implemented, and this is known in advance. They find a significantly

smaller proportion of destructive choices than in Zizzo and Oswald (2001). Zizzo (2003) claims that randomly-unilateral destruction avoids pre-emptive retaliation; however, we argue that it might not be the case if players expect that others will choose destruction.

Pre-emptive retaliation is first totally avoided by Abbink et al. (2009) multitask design in a game featuring unilateral, costly and open¹ destruction. This design studies subjects' reaction to endowment manipulation (exploring equity/inequity aversion motives) and to framing (destruction versus creation). When the task is framed as destruction, the player has an option to costly destroy his partner's earnings; when the task is framed as creation; the option is to beneficially increase his partner's earnings. Though framing does not affect the overall 25% (24%) of destructive (creative) choices, it determines what might trigger destruction (creation). Surprisingly, subjects destroy more when their partners have the same and smaller endowments; whereas subjects increase less the earnings of those partners that have distinct and larger endowments. That is, equity aversion and "being ahead" boosts destructive choices while inequity aversion and "being behind" decreases creative choices.

This experiment studies one-shot, costless, hidden and unilateral destruction. We introduce the destructor game (DESG). Participants are randomly paired and assigned the roles of destructor versus passive subject. Each destructor player chooses the percentage of his passive partner's earnings to destroy. In addition, nature destroys a percentage of some passive subject's earnings. In order to minimize any experimenter-demand effect, the destroy choice is the fourth task in a five-task experiment². To exclude inequity and equity aversion as motivation for destruction, only the completion fee (1000 tokens) of task 3, a personality questionnaire, is vulnerable to destruction and the partners' total earnings remain

¹ The victims know that destruction (creation) is inflicted by their decider partners.

² To minimize further the experimenter-demand effect the destructor player has to tick a box, i.e., to do something, in any case.

hidden. Nature grants anonymity to the destructor players and prevents passive player from taking destruction personally.³

After removing all the possible motives, will we observe any destruction in the lab? Several outcomes are possible. With respect to bilateral destruction studies and assuming that pre-emptive retaliation is not a significant driving force, we may observe a percentage of destructive choices in between those observed in the hidden treatments by Abbink and Sadrieh's (2009) multiple stages and costless destruction (39.4%) and by Abbink and Herrmann's (2011) one-shot and costly destruction (25.8%). With respect to the 25% observed by Abbink et al.'s (2009) study of unilateral and costly destruction, and assuming that making destruction costless induces less destruction than equity/inequity aversion motives do, we expect to observe a significantly smaller destruction rate. Or destruction may vanish, indicating that pre-emptive retaliation alone explains this destructive behaviour. However, we hypothesize that, at least for some, destruction is intrinsically pleasurable. We therefore expect that the proportion of destructive choices will decrease below the 25% but remain significant.

The experiment

The DESG experiment is a one-shot experimental design. Participants earned 1000 tokens by completing a personality questionnaire⁴. Subjects were randomly paired and assigned the roles of destructor versus passive player. But the experimental instructions were neutral: destructor players were called Person A and passive subjects were called Person B.

Each destructor player chooses to destroy 0%, 20% or 40% of his passive partner's 1000 tokens. Nature inflicts destruction on 20% of the passive players,

³ The possibility of natural destruction may reduce the moral cost of destruction (Abbink and Herrmann (2011)); but one could just as well argue that, as the destructor knows that his "unlucky" passive partner may suffer some undeserved destruction, any further destruction exacts a higher moral cost.

⁴ To avoid any money-house effect (Clark, 2002). The personality questionnaire is the standard NEO-FFI.

with an equal chance of destroying either 20% or 40% of those 1000 tokens. However, the maximum destruction inflicted on any passive subject is 40%. When both the destructor partner and nature choose to destroy a 40% of a passive player's earnings, nature's destruction is ineffective. Passive players never find out who destroyed their points. The rules of the game were common knowledge.

Results

The experiment was programmed and conducted with the software z-Tree (Fischbacher 2007) in 5 different universities in Hungary. 1212 students participated, mostly first year students, and roughly evenly balanced between male and female. Each subject took part in only one session and we conducted a total of 41 sessions⁵. Each session lasted less than 2 hours and the average payment per subject was £9 (equivalent to 3 times the student salary in Hungary). After awarding the participants 1000 tokens for completing a personality questionnaire, half of them had a one-shot choice between destroying and not destroying a proportion of their partners' earnings. All players knew that they got the same completion fee; that the passive player could not retaliate, and that nature's presence would make it impossible to accurately determine the source of the destruction. 15.5% of the destructors exercised their unilateral right of destruction. More specifically, 8.7% of the destructor players destroyed 20% and 6.8% of the destructor players destroyed 40% of their passive partner's points.

As hypothesized, without pre-emptive retaliation the proportion of destructor players choosing to destroy is substantially smaller than the 39.4% found by Abbink and Sadrieh (2009) and the 25.8% found by Abbink and Herrmann (2011). But destruction did not vanish. Moreover, as expected, the observed 15.5% falls well below the 25% in Abbink et al. (2009), which seems to support that equity/inequity aversion motivates more destruction than making it costless.

⁵ Approximately 30 subjects per session.

Elements of personality measured by the NEO-FFI personality questionnaire⁶ only weakly correlated with the decision to destroy. Results significant at the five percent level showed that subjects who scored high in *neuroticism* and *extraversion* destroyed less often, and those subjects who scored high in *openness to new experiences* destroyed more often. The other two traits, *agreeableness* and *conscientiousness*, had no significant effect on destructive behaviour as measured in this game. In addition, we did not observe any significant gender effect.

After the DESG, participants completed the final task, the Levenson Self-Report Psychopathy (LSRP) questionnaire (Levenson et al. 1995). Designed for non-institutionalized subjects, this 26-item self-report questionnaire is constructed to capture the two factors of the Psychopathy Checklist – Revised (Hare 2003).⁷ Higher scores on the LSRP questionnaire are associated with higher probabilities in severe antisocial behaviour (Lynam et al. 1999). The *Primary Psychopathy Scale* (Primary PS) of the LSRP questionnaire captures elements such as manipulateness, callousness, and selfish use of others (e.g. “In today’s world, I feel justified in doing anything I can get away with to succeed.”). The *Secondary Psychopathy Scale* (Secondary PS) of the LSRP questionnaire measures impulsivity and poor behavioural control (e.g. “I find myself in the same kinds of trouble, time after time.”).⁸ Table 1 presents the results from the logit regression analysis of the two psychopathy scales of the LSRP and the five factors of the NEO-FFI.⁹ Interestingly, we find that subjects who score high in the Primary PS

⁶ The NEO Five Factor Inventory (NEO-FFI) is a shorter version of the NEO-PI (Costa and McCrae, 1992). Both questionnaires are designed to measure the traits defined by the Five Factor Theory of Personality (John et al., 2008).

⁷ The Hare Psychopathy Checklist – Revised (PCL-R) is a reliable and valid instrument to assess psychopathy and is mainly based on a lengthy interview. The majority of studies using the PCL-R have been conducted with institutionalized populations, such as prisoners.

⁸ “The primary psychopathy items were created to assess a selfish, uncaring, and manipulative posture towards others, and the secondary psychopathy items were designed to assess impulsivity and a self-defeating lifestyle.” (Levenson et al., 1995, p.152).

⁹ The LSRP questionnaire was only added to the study after the first two sessions. Therefore only 570 observations are included in the regression presented in Table 1. We don’t know the gender of 36 participants.

are significantly less likely to destroy, which seems to suggest that destruction is not due to any psychopathic traits. The Secondary PS has no significant effect.

Table 1: Personality predictors of destructive behavior

The table displays the results from the logit regression analyses of destructive behavior on the two subscales of the Levenson Self-Report Psychopathy questionnaire and the five factors of the NEO-FFI personality questionnaire.

| | | |
|--------------------------|------------------|-------------------|
| <i>Primary PS</i> | -0.085 (0.020) | -0.072*** (0.014) |
| <i>Secondary PS</i> | 0.041 (0.040) | |
| <i>Neuroticism</i> | -0.027 (0.019) | -0.034** (0.017) |
| <i>Extraversion</i> | -0.034* (0.020) | -0.038** (0.019) |
| <i>Openness</i> | 0.033* (0.019) | 0.034* (0.019) |
| <i>Agreeableness</i> | -0.020 (0.025) | |
| <i>Conscientiousness</i> | -0.017 (0.019) | |
| <i>Gender</i> | -0.404 (0.285) | |
| <i>Constant</i> | 5.032*** (1.788) | 2.658*** (0.991) |
| <i>No. of obs.</i> | 545 | 570 |
| <i>LR chi2</i> | 34.37*** | 33.72*** |
| <i>Pseudo R2</i> | 0.095 | 0.081 |

*Robust standard errors in parentheses; *p<10%; ** p<5%; *** p<1%.*

The absence of strong significant findings with respect to both the NEO-FFI personality questionnaire and the LSRP questionnaire seems to suggest that destructive behaviour as measured in the DESG is not significantly associated to any particular personality or psychopathic type.

The DESG was the fourth task within a five-task experiment. The first task was the dictator game (DG), from which the subjects got feedback before playing the DESG task. We have investigated the possibility of cross task contamination between the DG and the DESG. Out of the 606 destructors in the DESG, 74 of them were receivers in the DG. We might expect that DG receivers who got a poor outcome would be more likely to destroy once they got the chance in the DESG. However, we found no evidence of such behaviour.

Conclusions

Our destructor game has eliminated all of the possible motives –inequity and equity aversion, pecuniary reasons and pre-emptive retaliation- for destructive behaviour and, even so, we observe that 15.5% of the 606 destructor players who had an option to destroy their partner’s earnings did choose to destroy. It seems that destruction is, at least to some, intrinsically pleasurable.

Further research of unilateral, costless and benefit-less destruction could explore the possible role of the reference point, in line with Abbink et al. (2009), together with an exhaustive exclusion of any experimenter demand effect. It could also be enlightening to explicitly ask subjects to state, *a posteriori*, their reasons to senseless (omitting the label) destroy their partners’ earnings.

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References

- Abbink, K., & Herrmann, B. (2011). THE MORAL COSTS OF NASTINESS. *Economic Inquiry*, 49(2), 631-633, doi:10.1111/j.1465-7295.2010.00309.x.
- Abbink, K., Masclet, D., & van Veelen, M. (2009). Reference Point Effects in Antisocial Preferences. *CBESS Discussion Paper 09-03*.
- Abbink, K., & Sadrieh, A. (2009). The pleasure of being nasty. *Economics Letters*, 105(3), 306-308, doi:10.1016/j.econlet.2009.08.024.

- Bosman, R., Sutter, M., & van Winden, F. (2005). The impact of real effort and emotions in the power-to-take game. *Journal of Economic Psychology*, 26(3), 407-429, doi:10.1016/j.joep.2004.12.005.
- Bosman, R., & van Winden, F. (2002). EMOTIONAL HAZARD IN A POWER-TO-TAKE EXPERIMENT. *The Economic Journal*, 112(476), 147-169, doi:10.1111/1468-0297.0j677.
- Clark, J. (2002). House Money Effects in Public Good Experiments. *Experimental Economics*, 5(3), 223-231, doi:10.1023/a:1020832203804.
- Costa, P. T., & McCrae, R. R. (1992). Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual. *Psychological Assessment Resources: Odessa, FL*.
- Fischbacher, U. (2007). z-Tree: Zuerich Toolbox for Ready-made Economic Experiments. *Experimental Economics*, 10(2), 171-178.
- Hare, R. D. (2003). *The Hare Psychopathy Checklist - Revised* (2nd ed.). Toronto: Multi-Health System.
- John, O. P., Robins, R. W., & Pervin, L. A. (2008). *Handbook of Personality: Theory and Research*. New York The Guilford Press.
- Levenson, M. R., Kiehl, K. A., & Fitzpatrick, C. M. (1995). Assessing psychopathic attributes in a noninstitutionalized population. *Journal of Personality and Social Psychology*, 68(1), 151-158, doi:10.1037/0022-3514.68.1.151.
- Lynam, D. R., Whiteside, S., & Jones, S. (1999). Self-Reported Psychopathy: A Validation Study. *Journal of Personality Assessment*, 73(1), 110-132, doi:10.1207/s15327752jpa730108.
- Zizzo, D. J. (2003). Money burning and rank egalitarianism with random dictators. *Economics Letters*, 81(2), 263-266, doi:10.1016/s0165-1765(03)00190-3.
- Zizzo, D. J., & Oswald, A. J. (2001). Are People Willing to Pay to Reduce Others' Incomes? *Annals of Economics and Statistics / Annales d'Économie et de Statistique*(63/64), 39-65.