

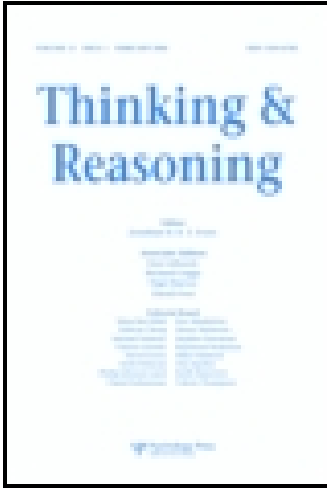
This article was downloaded by: [Albert Barque-Duran]

On: 18 August 2015, At: 00:46

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954

Registered office: 5 Howick Place, London, SW1P 1WG



## Thinking & Reasoning

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/ptar20>

### Patterns and evolution of moral behaviour: moral dynamics in everyday life

Albert Barque-Duran<sup>a</sup>, Emmanuel M. Pothos<sup>a</sup>, James M. Yearsley<sup>a</sup> & James A. Hampton<sup>a</sup>

<sup>a</sup> Department of Psychology, City University London, London EC1V 0HB, UK

Published online: 17 Aug 2015.



CrossMark

[Click for updates](#)

To cite this article: Albert Barque-Duran, Emmanuel M. Pothos, James M. Yearsley & James A. Hampton (2015): Patterns and evolution of moral behaviour: moral dynamics in everyday life, *Thinking & Reasoning*, DOI: [10.1080/13546783.2015.1051585](https://doi.org/10.1080/13546783.2015.1051585)

To link to this article: <http://dx.doi.org/10.1080/13546783.2015.1051585>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

## Patterns and evolution of moral behaviour: moral dynamics in everyday life

Albert Barque-Duran, Emmanuel M. Pothos, James M. Yearsley and James A. Hampton

Department of Psychology, City University London, London EC1V 0HB, UK

### ABSTRACT

Recent research on moral dynamics (the processes and phenomena – collective or individual – by which moral behaviour and moral attitudes emerge, evolve, spread, erode or disappear) shows that an individual's ethical mind-set (i.e. outcome-based vs. rule-based) moderates the impact of an initial ethical or unethical act on the likelihood of behaving ethically on a subsequent occasion. More specifically, an outcome-based mind-set facilitates Moral Balancing (behaving ethically or unethically decreases the likelihood of engaging in the same type of behaviour again later), whereas a rule-based mind-set facilitates Moral Consistency (engaging in an ethical or unethical behaviour increases the likelihood of engaging in the same type of behaviour later on). The objective was to look at the evolution of moral choice across a series of scenarios, that is, to explore if these moral patterns (Balancing vs. Consistency) are maintained over time. The results of three studies showed that Moral Balancing is not maintained over time. On the other hand, Moral Consistency could be maintained over time, if the mind-set was reinforced before making a new moral judgment (but not otherwise).

**ARTICLE HISTORY** Received 6 December 2014; accepted 10 May 2015

**KEYWORDS** Prosocial choices; moral behaviour; ethical mind-sets; ethical behaviour; decision making

### Introduction

#### *Moral balancing vs. moral consistency*

How do individuals deal with the ethical uncertainty in their lives? People are confronted with a vast amount of moral scenarios to resolve, such as donating to charities, volunteering, recycling, buying fair trade products, or donating blood. People have to regulate their moral self-image while pursuing self-interest. Studies on moral self-regulation have convincingly demonstrated that one's recent behavioural history is an important factor in shaping one's current moral conduct (e.g. Monin & Jordan, 2009; Zhong, Liljenquist, &

**CONTACT** Albert Barque-Duran  Albert.Barque-Duran@city.ac.uk

© 2015 Taylor & Francis

Cain, 2009) and two different effects have been reported: Moral Balancing and Moral Consistency.

Moral Balancing (Nisan, 1991) suggests that engaging in an ethical or unethical behaviour at one point in time reduces the likelihood of engaging in that form of behaviour again in a subsequent situation (Merritt, Effron, & Monin, 2010; Sachdeva, Ilic, & Medin, 2009). To explain this type of behaviour, it has been argued that individuals tune their actions in such a way that their moral self-image (which represents individuals' moment-to-moment perception of their degree of morality) fluctuates around a moral-aspiration level or equilibrium (Jordan, Mullen, & Murnighan, 2011; Merritt et al., 2010). It is said that an individual's moral-aspiration level does not equate to moral perfection but rather to a reasonable level of moral behaviour for that individual (Nisan, 1991). Ethical and unethical acts, respectively, elevate and depress the moral self-image. Moral balancing researchers argue that when the moral self-image exceeds the moral-aspiration level, the individual feels 'licensed' to engage in more self-interested, immoral, or antisocial behaviour (i.e. moral licensing). When the moral self-image is below the moral-aspiration level, people tend to experience emotional distress (Higgins, 1987; Klass, 1978) and become motivated to enact some corrective behaviour (i.e. moral compensation). In contrast to Moral Balancing, Moral Consistency (Foss & Dempsey, 1979; Thomas & Batson, 1981) suggests that after engaging in an ethical or unethical act, individuals are more likely to behave in the same fashion later on. This pattern is explained in terms of a psychological need to maintain one's self-concept (Aronson & Carlsmith, 1962), self-perception effects (Bem, 1972), or the use of behavioural consistency as a decision heuristic (Albarracín & Wyer, 2000; Cialdini, Trost, & Newsom, 1995).

### *Outcome-based mind-sets vs. rule-based mind-sets*

Recent research on moral dynamics addressed an unresolved question, that is, under which conditions each pattern of moral behaviour can occur. Cornelissen et al. (2013) showed that an individual's ethical mind-set (outcome-based vs. rule-based) moderates the impact of an initial ethical or unethical act on the likelihood of behaving ethically on a subsequent occasion and, thus, affects the pattern of moral behaviour seen. The idea of ethical mind-sets comes from two frameworks on moral philosophy: consequentialism and deontology (Singer, 1991). Past work has demonstrated that this distinction is not exclusively philosophical, but that individuals consider it meaningful when reflecting on their behaviour and are flexible in the use of either type of moral pattern (Uhlmann, Pizarro, Tannenbaum, & Ditto, 2009).

A consequentialist perspective considers whether an act is or is not morally right, depending on the consequences of that act (Sinnott-Armstrong, 2008). An individual understands an ethical behaviour 'because it benefitted other

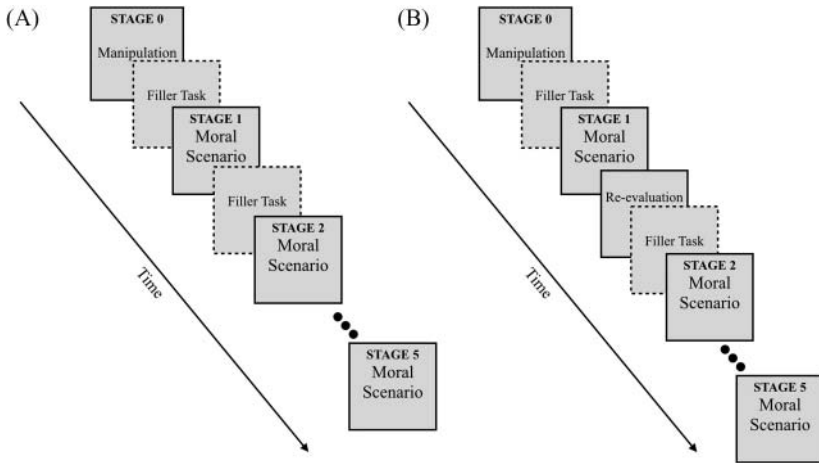
people' and an unethical behaviour 'because it hurt other people'. In other words, when taking a consequentialist perspective, one behaves according to an *outcome-based* mind-set. By contrast, a deontological perspective implies that what makes an act right is its conformity to a moral norm (Alexander & Moore, 2008), i.e. principles that impose duties and obligations, such as not to break promises or not to lie. In this vein, an individual understands a behaviour as ethical 'because she followed an ethical norm or principle' or a behaviour as unethical 'because she did not follow an ethical norm or principle'. In other words, when taking a deontological perspective, an individual adopts a *rule-based* mind-set. An outcome-based mind-set is thought to facilitate Moral Balancing; on the contrary, a rule-based mind-set facilitates Moral Consistency (Cornelissen et al., 2013).

Other studies in the literature support this idea of ethical mind-sets and how they affect moral behaviour or under which conditions the mentioned patterns of moral behaviour can occur. For example, Conway and Peetz (2012) previously showed that recalling moral behaviour in a particular manner moderates, in a similar way as individual's ethical mind-sets, the impact of an initial ethical or unethical act on the likelihood of behaving ethically on a subsequent occasion. They showed that recalling prosocial behaviour in a concrete fashion (focusing people on the specifics of the action itself, i.e. the way in which they have helped and supported another person) reminded people that they have already fulfilled moral obligations and allowed them to relax subsequent efforts. In other words, recalling past good deeds in a concrete fashion (like in a consequentialism framework, outcome-based mind-set) might license more selfish, compensatory behaviour, and likewise recalling past selfish behaviour in a concrete fashion might motivate people to compensate through more prosocial behaviours (Moral Balancing).

In contrast, abstract recollections of past moral behaviour (activating moral identity concerns, motivating people to uphold their sense of self by acting in identity-consistent ways, Blasi, 1980, Reed, Aquino, & Levy, 2007) induced people to act prosocially, whereas abstractly recalling previous selfish behaviour induced people to act selfishly. In other words, recalling past selfish behaviour in an abstract fashion (like in a deontological framework, rule-based mind-set) might encourage people to maintain one's self-concept or self-perception through their moral behaviours (Moral Consistency).

### **Evolution of moral dynamics**

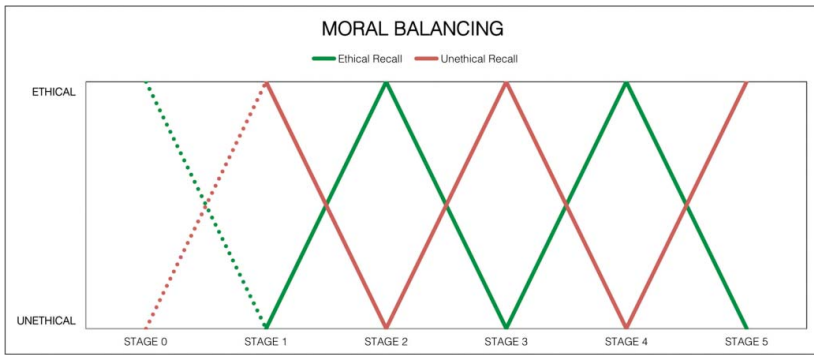
One consequence of considering the role of moral self-image in moral behaviour is that it forces one to think of moral choices as a sequence, rather than in temporal isolation. Moral and immoral actions occur in the context of prior moral and immoral actions and the idea of moral self-image provides a connecting thread across these instances. All the relevant findings so far have



**Figure 1.** Experimental paradigm using five-stages for Experiments 1, 2 and 3. (A) The manipulation given to participants at the beginning of Experiment 2. (B) The two manipulations employed in Experiment 3: one at the beginning of the experiment (same as in Experiment 2) and the other presented before confronting a new moral scenario, at each stage.

been produced using an experimental paradigm based on a two-stage scenario: a manipulation part and a response part. As our aim was to understand how the Moral Balancing and Moral Consistency behaviours evolve in time (we call this evolution moral dynamics), we used a novel experimental paradigm, involving five stages (see Figure 1). The importance of studying the evolution of moral dynamics is of clear significance. We designed a novel empirical paradigm, based on the previous successful techniques: participants received two manipulations at the beginning of the experiment: (1) one to induce them to adopt a specific mind-set (outcome-based vs. rule-based) and (2) another to recall an action of a particular morality (ethical vs. unethical). Then, they were presented with a series of moral scenarios (five stages) that were used to measure the likelihood of engaging in a prosocial behaviour. This is the first study to look at the evolution of moral choice across a series of scenarios.

Our objective was to explore the hypothesis that mind-set, Moral Balancing and Moral Consistency are maintained over time (indeed, otherwise, it would be hard to appreciate their psychological significance). We know from previous research that mind-set can influence relatively immediate moral behaviour (Cornelissen et al., 2013), but it remains unknown whether mind-sets can be sustained over time and so have a persistent influence on moral behaviour. This experimental design assumes that participants are in a specific mind-set. That is, it is meaningful to ask about the sustainability of patterns in moral dynamics, only for those participants who can be said to be clearly in a



**Figure 2.** Zig-Zag pattern. Idealised pattern of behaviour according to the balancing view of moral dynamics. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given recall of an ethical or unethical action.

particular mind-set at the outset. Without this assumption, the contrast between the hypotheses of interest cannot be made (i.e. if a participant cannot be said to be in an outcome-based mind-set, it is meaningless to ask whether there is moral balancing which lasts over time). Therefore, this consideration will need to be taken into account for the statistical analysis.

The conflicting hypotheses regarding how moral behaviour evolves in time are illustrated in Figures 2 and 3. Both putative patterns of moral behaviour are illustrated over a sequence of moral scenarios or stages. We called the 'Zig-Zag pattern' the idealised pattern for a Moral Balancing behaviour. By analogy, we called 'Flat pattern' the idealised pattern for a Moral Consistency behaviour. We then used these idealised patterns to motivate the analyses



**Figure 3.** Flat pattern. Idealised pattern of behaviour according to the consistency view of moral dynamics. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given recall of an ethical or unethical action.

for the results obtained in Experiments 1, 2 and 3. For Moral Balancing, an initial ethical manipulation (such as recall of an ethical action) at STAGE 0 should be followed at the next stage by an unethical choice. However at the subsequent stage, the previous unethical choice should now promote a more ethical one. The result is a predicted oscillation between ethical and unethical choices, as the participant tries to maintain a balance (Figure 2). Alternatively, Moral Consistency should lead to the persistence of an initial choice, as with each stage the participant becomes more and more confirmed in the belief of their consistent moral position, be it either ethical or unethical (Figure 3).

In order to study the evolution of moral tendencies and the perseverance of mind-sets we ran three experiments plus a pilot study. In the pilot study we identified the most suitable moral scenarios to use in the main experiments. Experiment 1 allowed us to collect baseline data, as a control group, for comparisons with the results of the subsequent experiments. Experiment 2 was used to replicate the results in the moral dynamics literature (Cornelissen et al., 2013; Jordan et al., 2011) and to pursue the novel question of how the tendency to behave morally evolves over time. Finally, in Experiment 3, we aimed to explore again how the two possible patterns of moral dynamics evolve over time, but in this case, we added a manipulation before each new moral scenario, to test if ethical mind-sets are maintained if reinforced.

### Pilot study

The objective of the pilot study was to identify suitable moral scenarios for the main experiments. We were looking for five moral scenarios such that they would (1) be perceived to have high levels of morality, (2) have a similar frequency of engagement (prosocial behaviour) and (3) be perceived similarly in terms of emotionality, that is, they would produce a similar affective reaction. Measuring the affective reaction is important, as Szekely and Miu (2014) showed the existence of an influence of emotional experience on moral choice scenarios.

### Participants

Twenty experimentally naïve students at City University London received course credit for participating in the study.

### Materials and procedure

The experiment, designed in Qualtrics, lasted approximately 15 minutes. Eleven novel moral scenarios were initially created. For each scenario we tested the perceived morality of the choice of actions using a 7-point scale: -3 = very immoral, 3 = very moral (How moral do you think this behaviour is?),



and the prosocial behaviour measured as the likelihood of engaging in an (un)ethical behaviour on a 7-point scale: 1 = very unlikely, 7 = very likely; (Jordan et al., 2011). Participant responses on perceived morality and likelihood of engagement were the main dependent variables in our pilot. Also, we tested the perceived emotionality of the scenarios presented, measured with the (SAM) Self-Assessment Manikin (Bradley & Lang 1994). We used the SAM method as it is a non-verbal pictorial assessment technique that directly measures the pleasure, arousal, and dominance associated with a person's affective reaction to stimuli presented, in this case moral scenarios. From the results of this pilot, we then chose five situations for the main Experiments 1, 2 and 3 (one for each of the five stages in the experiments). To do so, we computed the average and the variance of our 3 measures: perceived morality, likelihood of engagement and emotionality, for each of the scenarios. Then we chose the five scenarios with the highest scores in perceived morality and with similar (intermediate) scores in likelihood of engagement and perceived emotionality measures (see the Supplemental Material available online for details).

## Experiment 1

The aims of the first study were to test the novel experimental paradigm and collect baseline data. As this was a control condition, there was no manipulation of the participants' mind-set (outcome-based vs. rule-based) nor the recall of a moral deed. We used prosocial behaviour, that is, the likelihood of engaging in an (un)ethical behaviour, as the dependent measure, using an experimental paradigm involving five stages. The experiment lasted approximately 30 minutes. In the absence of any manipulation, we expected intended behaviour not to be biased towards ethical or unethical choices.

## Participants

A total of 104 participants, all of them US residents, were recruited online and received \$0.90 for doing the task.

## Materials and procedure

The study was designed in Qualtrics and run on Amazon Mechanical Turk. There is some evidence that data obtained via Mechanical Turk demonstrate psychometric properties similar to laboratory samples (Buhrmester, Kwang, & Gosling, 2011). First, participants completed a filler task (10 trivia questions  $\approx$  1.6min per filler task) before responding to two items, one about their likelihood of engaging in a prosocial behaviour (STAGE 1) and another about their likelihood of engaging in a leisure activity that simply acted as a distractor.

Then, participants completed another filler task, like the first one, before responding to 2 more items, again, one about their likelihood of engaging in another prosocial behaviour (STAGE 2) and in another leisure activity. Subsequently, participants completed the same procedure three more times, until STAGE 5. The order of presentation of the moral scenarios on each stage, as well as the filler tasks, was randomised across participants.

## **Results and discussion**

A one-sample *t*-test was run to determine whether the likelihood of engaging in a prosocial behaviour was biased towards a more ethical or unethical tendency. We defined a score of 4.0 (the midpoint of the 1-7 scale we used) as neither moral nor immoral behaviour. We accepted the null hypothesis that the population mean was not different from 4.0; ( $M = 4$ ,  $SD = 1.96$ );  $t(103) = 0.00$ ,  $p = 1.0$ . The range of means across scenarios was from 3.5 to 5. That is, in the absence of any manipulation, prosocial choices were not biased towards ethical or unethical behaviour, as intended.

## **Experiment 2**

The objectives here were twofold. First, we wanted to replicate the results in the moral dynamics literature, that an outcome-based mind-set leads to Moral Balancing, whereas a rule-based mind-set leads to Moral Consistency. The motivation to do so was to validate the experimental approach. Second, Experiment 2 employed a multi-stage procedure, so allowing us to pursue the novel question of how the tendency to behave morally evolves over time. In contrast to Experiment 1, we manipulated the participants mind-set (outcome-based vs. rule-based) and the morality of an action that they were asked to recall, at the beginning of the experiment. The experiment lasted approximately 35 minutes.

## **Participants**

A total of 200 participants, all of them US residents, were recruited online and received \$0.90 for doing the task.

## **Design and procedure**

The experiment was designed in Qualtrics and run on Amazon Mechanical Turk. Ethical mind-set (outcome-based vs. rule-based) and the ethicality of an initial recalled act (ethical vs. unethical) were both manipulated between participants. The induction of ethical mind-sets was the same as used in Cornelissen et al. (2013), so we only briefly summarise it here (see the Supplemental

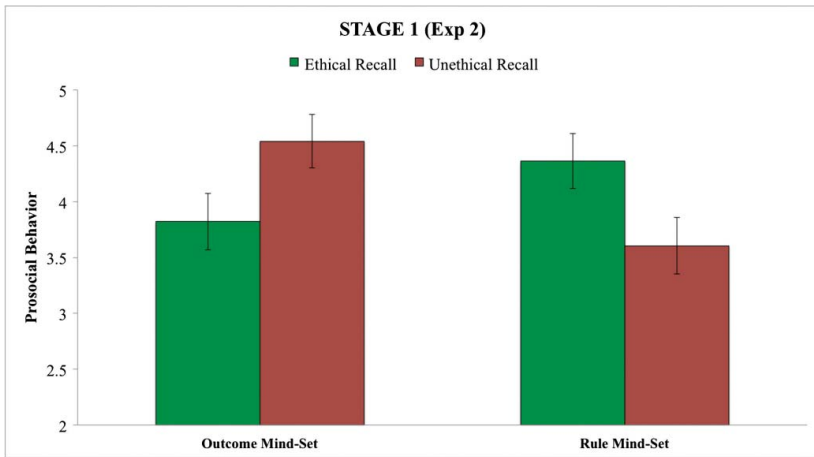
Material available online for details). To induce the appropriate mind-set, we provided instructions that defined ethicality as either a function of consequences or in terms of rule compliance, and then provided three prototypical examples. Subsequently, we asked participants to provide an example of a behaviour – not necessarily their own – that was ethical or unethical, because of either its consequences or its rule compatibility (depending on condition). This procedure aimed to induce the intended mind-set in participants, before they finally reflected on their memory of the last action with moral valence.

There were therefore four conditions: (1) outcome-based/ethical recall, (2) outcome-based/unethical recall, (3) rule-based/ethical recall and (4) rule-based/unethical recall. In the first one, our participants were instructed to think about a behaviour that was ethical ('because it benefitted other people'). In the second group, participants were instructed to think about a behaviour that was unethical ('because it hurt other people'). In the third group, participants thought about a behaviour that was ethical ('because you followed an ethical norm or principle') and in the fourth group, participants were instructed to think about a behaviour that was unethical ('because you did not follow an ethical norm or principle').

We used prosocial behaviour, as in all the other experiments, as the dependent measure. After the manipulation (STAGE 0), participants followed the same experimental paradigm as in Experiment 1: they completed a filler task before rating their likelihood of engaging in a prosocial behaviour (STAGE 1) and then repeated the same procedure until STAGE 5. The order of presentation of the moral scenarios on each stage, as well as the filler tasks, was randomised for each participant.

## Results and discussion

*Replication of previous studies.* Mean intention to perform the prosocial action at the first stage of the procedure is shown in [Figure 4](#). As predicted, when given an outcome-based mind-set, the recall of an unethical act led to Moral Balancing and an increased intention to perform the moral action. When given a rule-based mind-set, the reverse pattern was observed. This result was confirmed with an analysis of variance (ANOVA), which showed a significant interaction between Type of Mind-set and Type of Ethical Recall,  $F(1,44) = 7.12$ ,  $p < 0.01$ , but no main effect of Type of Mind-set, nor of Recall (both  $F < 1$ ). Independent samples  $t$ -tests were employed to explore the interaction. In the outcome-based mind-set condition, participants who recalled an unethical act were more likely to engage in a prosocial behaviour ( $M = 4.54$ ,  $SD = 1.66$ ), than those who recalled an ethical act ( $M = 3.82$ ,  $SD = 1.69$ ),  $t(91) = -2.06$ ,  $p = .04$ . In other words, participants with an outcome-based mind-set showed a Moral Balancing effect. By contrast, in the rule-based mind-set



**Figure 4.** Prosocial behaviours [STAGE 1] in Experiment 2; mean likelihood of engaging in a prosocial behaviour, as a function of a participants' ethical mind-set and the ethicality of the act they recalled. This pattern replicates the results of Cornelissen et al. (2013). Error bars represent standard errors.

condition, participants who recalled an ethical act were more likely to engage in a prosocial behaviour ( $M = 4.36$ ,  $SD = 1.68$ ) than those who recalled an unethical act ( $M = 3.6$ ,  $SD = 1.74$ ),  $t(93) = 2.14$ ,  $p = .03$ . In other words, these participants showed a Moral Consistency effect.

*Evolution of moral dynamics.* We first applied some selection criteria to the data in order to properly examine the hypotheses of interest. A restriction of the sample was needed since, as we previously mentioned, the mind-set procedure would not be expected to work equally well for every participant, and our research hypothesis is only meaningful for participants assumed to be in specific mind-sets. The experimental design proposed in this paper assumes that participants behave in a certain way. That is, it is meaningful to ask about the sustainability of patterns in moral dynamics only for those participants who can be said to be clearly in a particular mind-set at the outset. Without this assumption, the contrast between the hypotheses of interest cannot be tested. The issue of the effectiveness of the mind-set procedure is separate from that of whether, given that the induction of mind-set was effective, the mind-set's influence on moral decisions perseveres across stages. So we eliminated the cases that were considered far from the intended behaviour in STAGE 1, i.e. the participants whose behaviour did not conform to the expectations associated with the mind-set manipulation (Cornelissen et al., 2013).

As the scale of our dependent variable was 1–7, we eliminated participants with a prosocial behaviour rating after the mind-set manipulation that was in the wrong direction relative to the neutral midpoint of 4 and the mean of their group. Specifically, for the two conditions which we intended to use

to test the persistence of a prosocial attitude (those with means over 4 in [Figure 4](#)), all participants with a rating of less than 4 were excluded. Thus in these two conditions all remaining participants had responded as predicted to the combination of mind-set and recall manipulations. Similarly for the two conditions which were to test the persistence of non-prosocial attitudes (those where the group mean was below 4 in [Figure 4](#)), all participants with a rating greater than 4 were excluded. As a consequence, 19 out of 45 cases were excluded from condition 1, and 15 out of 48, 16 out of 47, 19 out of 48 cases were rejected from conditions 2, 3 and 4, respectively.

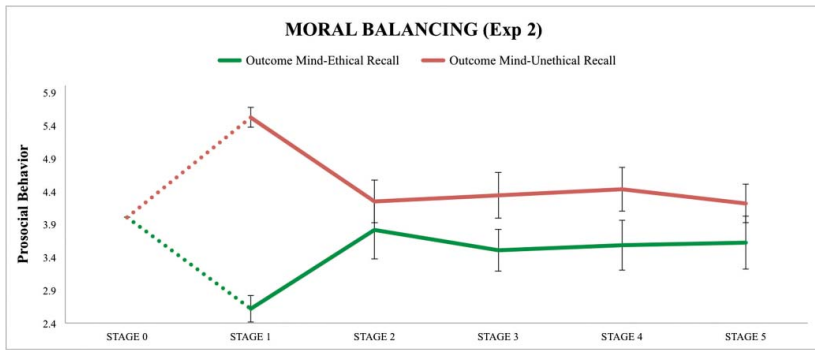
While we believe the preselection manipulation to be an essential condition for a meaningful test of our hypotheses, for completeness we also present an analysis for the whole sample in Appendix 1. In fact, no conclusions are altered by considering the entire sample.

We examined the levels of prosocial behaviour throughout all stages, first comparing the two mind-set conditions within the same analysis and then analysing the outcome-based and the rule-based conditions separately, in order to study the evolution of moral tendencies across STAGES [1–5]. We assessed the results against the idealised predictions in [Figures 2 and 3](#).

First, we ran a three-way ANOVA, with Type of Ethical Recall (2 levels: ethical recall and unethical recall, between participants), Type of Mind-set (two levels: outcome-based and rule-based, between participants) and stage (five levels: five stages, within participants), on the dependent variable (likelihood of engaging in a prosocial behaviour). There was no main effect of type of Type of Ethical Recall, no significant effect of Type of Mind-set, and no main effect of Stage, (all  $F < 1$ ). There was a significant interaction between Recall and Type of Mind-set,  $F(1,25) = 20.786$ ,  $p < .01$ , but not between Recall and Stage nor between Type of Mind-set and Stage, (both  $F < 1$ ). Finally, there was a significant interaction between the three factors,  $F(4,100) = 13.9$ ,  $p < .01$ .

*Evidence for Moral Balancing.* In [Figure 5](#), we can see how for the outcome-based mind-set group, the ‘Zig-Zag pattern’ is broadly evident across STAGES 0 and 1, as we have seen in the previous section (this finding replicates previous research, Cornelissen et al., 2013; Jordan et al., 2011). (For STAGE 0 we have inserted imaginary data points to represent the ethical or unethical recall manipulation). The pattern across STAGES [0–1] concerns the initial mind-set manipulation with an ethical recall (with an assumed initial value of 3 from the 1–7 prosocial behaviours scale) or an unethical recall (with an assumed initial state of the subject with value 5) and the first moral scenario. What happened across the rest of stages?

We ran a mixed two-way ANOVA with Type of Ethical Recall and STAGES [1–5], on the dependent variable (likelihood of engaging in a prosocial behaviour). Minimally, Moral Balancing would be evidenced by no main effect of Recall, but a significant interaction between Recall and Stage. There was a main effect of Type of Ethical Recall,  $F(1,25) = 13.1$ ,  $p < .001$ , no significant



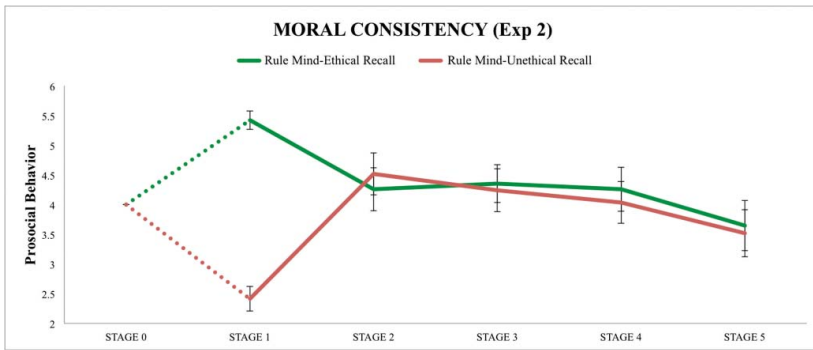
**Figure 5.** Evolution of the prosocial behaviours of the outcome-based mind-set group (ethical + unethical recalls) in Experiment 2. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given an (un)ethical recall. Error bars represent standard errors.

effect of stage,  $F < 1$ , and a significant interaction between the two factors,  $F(4,100) = 5.57, p < .01$ . Inspection of [Figure 5](#) makes it clear that the interaction is just a result of prosocial choice converging towards an average level by STAGE 2, after which it flattens out across the two conditions of ethical recall.

We then analysed the evolution of prosocial behaviour between STAGES [1–2] to see if, at least, the Moral Balancing pattern was maintained for just one more stage. A two-way ANOVA with Type of Ethical Recall and Stage as independent variables indicated a main effect of Recall,  $F(1,25) = 23.2, p < .01$ , and no main effect of Stage,  $F(1,25) < 1$ . The results also revealed a significant interaction between Type of Ethical Recall and Stage,  $F(1,25) = 12.0, p = .002$ . So, as above, there was little evidence for Moral Balancing.

Finally, we wanted to know whether the data at each stage showed any evidence of a residual effect of Type of Ethical Recall factor after STAGE 1. We ran an ANOVA with STAGES [2–5] and Recall. The effect of Recall approached significance,  $F(1,25) = 3.41, p = .077$ , but there was no main effect of Stage,  $F < 1$ , and no significant interaction between the two factors,  $F(3,75) < 1$ . Therefore, the interaction seen in the previous analysis, STAGES [1–5], is explained by the change from STAGE 1 to STAGE 2 and disappears after that.

Overall, the results show that Moral Balancing was not observed in this experiment, beyond the initial manipulation. The conclusion is that the ‘Zig-Zag pattern’ was only observed throughout STAGES [0–1], but not further maintained over time, in contrast to the idealised prediction of [Figure 2](#). Instead, it appears that the evolution of prosocial behaviour converged to a neutral level of morality ([Figure 5](#)). The marginal effect of Recall in STAGES [2–5] suggests in fact that after the initial Moral Balancing at STAGE 1,



**Figure 6.** Evolution of the prosocial behaviours of the rule-based mind-set group (ethical + unethical recalls) in Experiment 2. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given an (un)ethical recall. Error bars represent standard errors.

participants settle into an approximate state of Moral Consistency for subsequent decisions.

*Evidence for Moral Consistency.* We examined the results for Moral Consistency with the rule-based mind-set conditions. In Figure 6, we can see how the ‘Flat pattern’ was broadly evident between STAGES [0–1]; recall, this was also demonstrated in the previous section (where we aimed to replicate previous research). The pattern across STAGES [0–1] concerns the initial mind-set manipulation with an ethical or an unethical recall and the first moral scenario. What happened across the rest of stages?

Regarding the evolution between STAGES [1–5], we ran a two-way ANOVA with Type of Ethical Recall and Stage on likelihood of prosocial behaviour. Minimally, Moral Consistency would be evidenced by a main effect of Recall, no main effect of Stage, and no interaction between Recall and Stage. There was indeed a main effect of Recall in prosocial behaviour,  $F(1,28) = 7.02$ ,  $p = .013$ , but also a significant interaction between Recall and Stage,  $F(4,112) = 8.07$ ,  $p < .01$ . Note, there was no main effect of Stage,  $F(4,112) = 1.64$ ,  $p = .170$ .

Inspection of Figure 6 makes it clear that it was not necessary, as in the previous analysis, to analyse the evolution of prosocial choice between STAGES [1–2] to see if, at least, the Moral Consistency pattern was maintained for just one more stage. The pattern converged to a neutral point and did not remain attached to the low or high levels of (un)ethicality.

Finally, we wanted to know whether the data across stages showed any evidence of a residual effect of the Type of Ethical Recall factor, after STAGE 1. We ran an ANOVA with STAGES [2–5] and Recall. There was no main effect of Recall, no significant effect of Stage, and no interaction between the two factors, (all  $F < 1$ ). Therefore, the main effect seen in the previous analysis,

STAGES [1–5], is explained by the change from STAGE 1 to STAGE 2 and disappears after that.

The conclusion is that the ‘Flat pattern’ only remained attached to the low or high levels of (un)ethicality, as in the idealised pattern (Figure 3), for STAGES [0–1]. The rest of stages converged to a neutral level of morality; thus, Moral Consistency was not maintained over time (Figure 6).

### Experiment 3

In Experiment 2, after an initial mind-set induction and ethical recall, we found that the anticipated patterns of moral dynamics were not maintained. There are two possible explanations. First, the theory linking mind-set, (un)ethical recall, and ethical choice is simply incorrect (or, at any rate, incomplete). Second, the mind-set induction attenuates rapidly with time, so that, after the initial stages, participants can no longer be assumed to be in a specific mind-set. Do ethical mind-sets decay if not manipulated or re-evaluated continuously? Experiment 3 examines this second possibility. As with Experiment 2, we aimed to explore how the two possible patterns of moral dynamics evolve over time, but in this case, we added a re-evaluation process (manipulation of the mind-set + un(ethical) recall), before presenting a new moral scenario at each of the five stages. In this way, having manipulated the type of mind-set and type of recall at the beginning of the task, we reinforced the manipulation at each subsequent stage of the task. The experiment lasted approximately 40 minutes.

### Participants

A total of 206 participants, all of them US residents, were recruited and received \$1 for doing the task.

### Design and procedure

The experiment was designed in Qualtrics and run on Amazon Mechanical Turk. The same procedure was followed as in Experiment 2, with 4 conditions (outcome-based/ethical recall, outcome-based/unethical recall, rule-based/ethical recall and rule-based/unethical recall). We manipulated (between participants) the ethical mind-set (outcome-based vs. rule-based) and the ethicality of an initial act (ethical vs. unethical). We used prosocial behaviour, as in all the other experiments, as a dependent measure. After the manipulation, participants followed the same experimental paradigm as in Experiment 1 and 2: they completed a filler task before responding to the likelihood of engaging in a prosocial behaviour (STAGE 1). Then, we introduced a new manipulation (the re-evaluation process), in which participants were asked to reflect on

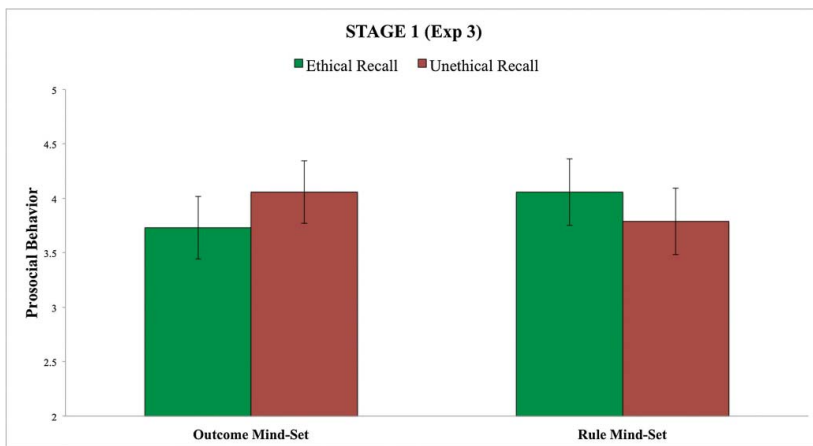


their last moral choice, in order to reinforce their mind-set, in a similar way as in the manipulation at the beginning of the experiment (manipulation of the mind-set + un(ethical) recall; see the Supplemental Material available online for details). Afterwards, they completed another filler task, like the first one, before responding to the likelihood of engaging in a prosocial behaviour (STAGE 2). Participants followed the same steps until STAGE 5, as in Experiment 2, but justifying their choices, after their response, at each stage (Figure 1). The order of presentation of the moral scenarios on each stage, as well as the filler tasks, were randomised for each participant.

## Results and discussion

*Replication of previous studies.* Mean intention to perform a prosocial action at the first stage of the procedure is shown in Figure 7. As predicted, when given an outcome-based mind-set, the recall of an unethical act led to Moral Balancing and an increased intention to perform the moral action. When given a rule-based mind-set, the reverse pattern was observed. These results were in the right direction, but were not confirmed in the ANOVA, which showed no significant interaction between Type of Mind-set and Type of Recall,  $F(1,49) = 1.167$ ,  $p = .285$ , and no main effect of Type of Mind-set, nor of Recall (both  $F < 1$ ).

*Evolution of moral dynamics.* We first applied the same selection criteria to our results, as for Experiment 2. Specifically, 23 out of 52 cases were rejected from condition 1, and 19 out of 50, 20 out of 52, 22 out of 52 cases were rejected from conditions 2, 3 and 4, respectively. An analysis for the whole



**Figure 7.** Prosocial behaviours [STAGE 1] in Experiment 3; mean likelihood of engaging in a prosocial behaviour, as a function of participants' ethical mind-set and the ethicality of the act they recalled. Error bars represent standard errors.

sample is presented in Appendix 2; the conclusions derived by focusing on the restricted sample are equivalent to those in the entire sample for the Moral Balancing case and different for the Moral Consistency case (but, as argued in Experiment 2, we think that the analyses in the restricted sample are more valid, since one cannot test the persistence of a state in participants who are not initially placed into that state).

As in Experiment 2, we examined the levels of prosocial behaviour throughout all stages, first examining the two mind-set conditions within the same analysis and then the outcome-based and the rule-based conditions separately, in order to study the evolution of moral tendencies across STAGES [1–5]. We then compared the results to the idealised predictions (Figures 2 and 3).

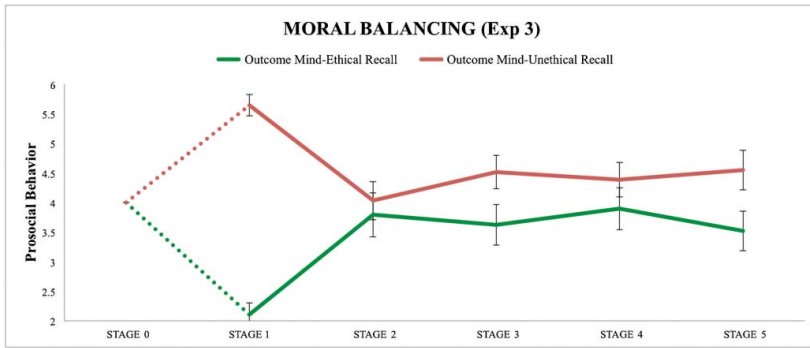
First, we ran a three-way ANOVA with Type of Ethical Recall, Type of Mind-set and Stage, on the dependent variable (likelihood of engaging in a prosocial behaviour). There was no main effect of type of Recall, no significant effect of Type of Mind-set, and no main effect of Stage, (all  $F < 1$ ). There was a significant interaction between Recall and Type of Mind-set,  $F(1,28) = 94.3$ ,  $p < .01$ , but not between Recall and Stage and between Type of Mind-set and Stage, (all  $F < 1$ ). Finally there was a significant interaction between the three factors,  $F(4,112) = 13.9$ ,  $p < .01$ .

*Evidence for Moral Balancing.* First, we considered the evidence for Moral Balancing. We ran a two-way ANOVA, as in Experiment 2, with Type of Ethical Recall and Stage on the dependent variable. As before, Moral Balancing would be minimally evidenced by no main effect of Recall, but a significant interaction. Instead, there was a main effect of Recall,  $F(1,28) = 40.4$ ,  $p < .01$ , and no effect of Stage,  $F < 1$ . The results also indicated a significant interaction between Recall and Stage,  $F(4,112) = 7.54$ ,  $p < .01$ .

We then analysed the evolution between STAGES [1–2] to see if, at least, the Moral Balancing pattern was maintained for just one more stage. A two-way ANOVA with two within participant factors, Type of Ethical Recall and Stage, revealed a similar pattern of results: a main effect of Recall,  $F(1,28) = 44.5$ ,  $p < .01$ , no effect of Stage,  $F < 1$ , and a significant interaction between Recall and Stage,  $F(1,28) = 30.9$ ,  $p < .01$ .

Finally, we wanted to know whether the data at each stage showed any evidence of a residual effect of Type of Ethical Recall factor after STAGE 1. We ran an ANOVA with STAGES [2–5] and Recall. There was a main effect of Recall,  $F(1,28) = 9.37$ ,  $p < .01$ , no significant effect of Stage,  $F < 1$ , and a non-significant interaction between the two factors,  $F < 1$ . Therefore, the interaction seen in the previous analysis, STAGES [1–5], is explained by the change from STAGE 1 to STAGE 2 and disappears after that.

The conclusion is that the 'Zig-Zag pattern' was only approximately observed across STAGES [0–1]. Thus, compared with the idealised pattern (Figure 2), Moral Balancing was not a behaviour maintained over time.



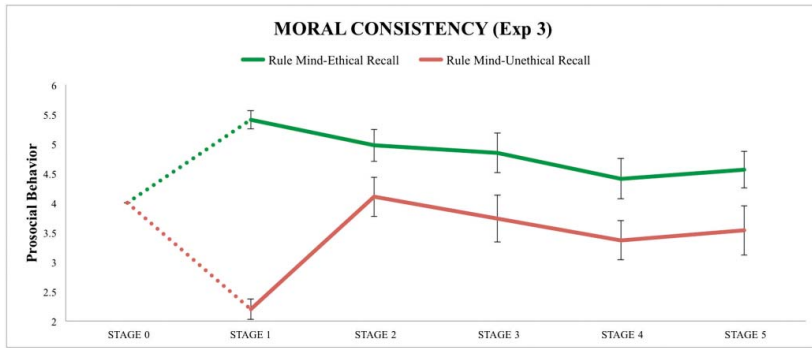
**Figure 8.** Evolution of the prosocial behaviours of the outcome-based mind-set group (ethical + unethical recalls) in Experiment 3. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given an (un)ethical recall. Error bars represent standard errors.

Instead, as in Experiment 2, the evolution of the behaviour converged to a neutral level of morality (Figure 8). In fact, as in Experiment 2 there was a tendency (this time statistically significant) for participants to settle into a Moral Consistency pattern from STAGE 1 onwards, regardless of the reminders that had been introduced in the present experiment.

*Evidence for Moral Consistency.* Regarding the evolution between STAGES [1–5] in the Moral Consistency case, we ran a two-way ANOVA with two within participant factors, Type of Ethical Recall and Stage on the dependent variable (likelihood of engaging in a prosocial behaviour). Moral Consistency would be minimally evidenced by a main effect of Recall, but not a significant interaction. There was a main effect of Recall on prosocial behaviour,  $F(1,29) = 53.2, p < .01$ , but not on Stage,  $F(4,116) = 2.02, p = .096$ . Also, the interaction between Recall and Stage was significant,  $F(4,116) = 5.68, p < .01$ , which is not consistent with a ‘pure’ form of Moral Consistency.

Then, we ran an ANOVA with STAGES [2–5] and Type of Ethical Recall to see if the Moral Consistency pattern was maintained over time, as it can be seen that Figure 9 was the one most similar to the idealised ‘Flat pattern’ (Figure 3), across all experiments. There was a main effect of Recall,  $F(1,29) = 18.88, p < .01$ , no significant effect of Stage,  $F < 1$ , and a non-significant interaction between the two factors,  $F < 1$ .

Finally, we used Bonferroni corrected  $t$ -tests to examine the main effect of Type of Ethical Recall, to show that prosocial behaviour elicited by each Type of Ethical Recall differed at each Stage. In all cases, there was a trend in the expected direction (ethical recall led to more ethical behaviour and unethical recall led to more unethical behaviour). For STAGE 1:  $t(60) = 13.749, p < .0005$ ; for STAGE 2:  $t(60) = 2.057, p = .044$ ; for STAGE 3:  $t(60) = 2.606, p = .012$ ; for STAGE 4:  $t(60) = 2.193, p = .032$ ; for STAGE 5:  $t(60) = 1.995, p = .051$ . Note, the



**Figure 9.** Evolution of the prosocial behaviours of the rule-based mind-set group (ethical + unethical recalls) in Experiment 3. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given an (un)ethical recall. Error bars represent standard errors.

Bonferroni corrected  $p$ -value for rejecting the null hypothesis in this family of  $t$ -tests is  $.05/4 = .0125$ , so, we can confidently conclude that significant differences exist only for STAGES 1 and 3. Nevertheless, we think that the overall pattern is indicative enough and supports the view that the Moral Consistency pattern is broadly evident across the different stages (noting also that the Bonferroni adjustment for multiple  $t$ -tests is considered to be conservative; e.g. Nakagawa, 2004).

The conclusion is that the 'Flat pattern' was sustained to the low or high levels of (un)ethicality throughout STAGES [0–5], but not as much as predicted in the idealised pattern (Figure 3). Moral Consistency was a behaviour broadly maintained over time (with a tendency to converge to a neutral level of morality), if a re-evaluation process (manipulation of the mind-set plus un (ethical) recall) was carried out before confronting each new moral scenario (Figure 9).

## General discussion

This is the first study to look at the evolution of moral choice across a series of scenarios. Five scenarios were tested, embedded in a task with many fillers, to mask the design of the experiment. In three experiments, we provided new empirical support for the hypothesis that ethical mind-sets moderate how an individual's behavioural history shapes his or her ethical behaviour. An outcome-based mind-set is meant to lead to moral-balancing effects, whereas a rule-based mind-set to moral consistency. Furthermore, the three experiments shed some light on the persistence of these ethical mind-sets and on the evolution of moral dynamics, exploring whether moral patterns, such as Moral Balancing and Moral Consistency, can be maintained over time. When

the manipulation of Mind-set and Recall was just made at the start, there was a quick regression to neutral performance. When the manipulation was reinforced before each moral choice, then one pattern of behaviour was sustained, while the other was not.

Moral Balancing, or as we call it, the 'Zig-Zag pattern', was only observed in the first stage of the experiments. This type of behaviour converged to a neutral level of morality over time, even when the mind-set was reinforced at every stage, before making a new moral judgment (Experiment 3). We conclude that Moral Balancing is not a behaviour maintained over time. However, some would argue that moral licensing effects should not persist in an oscillating pattern over time. Imagine a less ethical behaviour at  $t_0$  that is compensated by a more ethical one at  $t_1$ , and vice versa, an ethical behaviour at  $t_0$  that gives the license to an individual to behave less ethically at  $t_1$ . At that point, balance is 'restored', and it is difficult to make predictions regarding further effects on behaviour at  $t_2$  and beyond, or so some might argue.

On the other hand, participants in the rule-based condition, approximated the idealised pattern of Moral Consistency behaviour (Figure 3), when a re-evaluation process (manipulation of the mind-set plus (un)ethical recall) was included, before confronting each new moral scenario. In other words, there was some evidence that Moral Consistency could be maintained over time, if the mind-set was reinforced before each moral judgment. Either way, we overall conclude that ethical mind-sets (and their influence on prosocial choice) decay, unless reinforced continuously.

Moral Consistency is perhaps a more stable pattern of mind-set, since if a person is led into seeing himself/ herself as consistent, it is perhaps more natural to remain consistent—that is the very nature of consistency. On the other hand, Moral Balancing would seem to require the keeping of a running total of one's positive and negative acts, and once the initial stages are past, this tally-keeping may prove complex to maintain. It is easier to recall that one has consistently chosen the prosocial or anti-moral path and so keep that on, than it is to recall that one's last choice was pro, so the next one should be anti. This difference in stability might also account for the tendency in both Experiments 2 and 3 for the Moral Balancing group to show a continuing Moral Consistency after their initial response at STAGE 1. Although all the data trended towards the middle of the scale, there was a residual difference between the Ethical Recall and Unethical Recall groups that persisted to the end.

Overall, some would argue that this tendency to converge to a neutral level of morality might be due to the low personal costs of the scenarios presented. Gneezy et al. (2012) showed that when recent prosocial behaviour is personally costly, people interpret that behaviour as a signal of their prosocial identity and that they are more likely to subsequently behave prosocially. Prosocial behaviour involving lower cost, in contrast, offers a more ambiguous

signal: prosocial behaviour is clearly positive, yet because it came at no cost, it is less likely to be judged as diagnostic of one's prosocial disposition. Under these circumstances the positive act does not affect individuals' self-perceptions, presumably resulting in a reduction in subsequent prosocial behaviour.

Our results question the importance of the concept of mind-sets in understanding prosocial choice, since, if such mind-sets cannot be maintained across more than a few choices, what value could they have in understanding the relevant behaviours? We see three directions for future research in addressing this important question. First, it is possible that an alternative mind-set induction procedure will reveal more lasting influences of mind-sets on prosocial choice.

Second, a related possibility is that the measurement of prosocial choice in the present experiments was inadequate. Perhaps people's prosocial choices do reflect patterns of consistency or balancing, across time, but such patterns can be revealed in realistic time scales of days or weeks, not within the limited duration of a psychology experiment. Also, there are merits and demerits of the different approaches regarding how we ask participants to respond to scenarios. We used a 7-point scale because it let us explore our hypotheses. Some would say that individuals who want to establish a balance between moral motives and selfish motives might achieve that by staying safely in the mid-range of the scale. So balance can easily be achieved within each moral scenario, removing the necessity to balance over time. It may be the case that more interesting results would emerge with binary answering options (an ethical vs. an unethical alternative). However, the scale we opted to use did lead us to a particular interesting conclusion, namely that participants do neither Moral Balancing nor Moral Consistency, but rather want to achieve a middle ground.

Third, it is possible that the idea of manipulating mind-sets directly is flawed. In other words, perhaps there is a reality to the proposal that there are different mind-sets and these mind-sets can impact on prosocial choice, but perhaps these are stable individual characteristics. That is, people can have a particular mind-set, but the mind-set cannot be easily altered experimentally (at least in an effective way). All these issues reveal considerable challenges (and corresponding exciting directions) for future work, regarding our current understanding of moral judgments.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Funding

EMP was supported by Leverhulme Trust [grant number RPG-2013-004]; and Air Force Office of Scientific Research (AFOSR), Air Force Material Command, USAF [grant

number FA 8655-13-1-3044]. The US Government is authorised to reproduce and distribute reprints for Governmental purpose notwithstanding any copyright notation thereon.

## Supplementary Data

Supplemental data for this article can be accessed at <http://dx.doi.org/10.1080/13546783.2015.1051585>

## References

- Albarracín, D., & Wyer, R. S. (2000). The cognitive impact of past behavior: Influences on beliefs, attitudes, and future behavioral decisions. *Journal of Personality and Social Psychology, 79*, 5–22.
- Alexander, L., & Moore, M. (2008). Deontological ethics. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy*. Stanford, CA: Metaphysics Research Lab, Center for the Study of Language and Information, Stanford University. Retrieved from <http://plato.stanford.edu/entries/ethics-deontological/>
- Aronson, E., & Carlsmith, J. M. (1962). Performance expectancy as a determinant of actual performance. *The Journal of Abnormal and Social Psychology, 65*, 178–182.
- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1–62). New York, NY: Academic Press.
- Blasi, A. (1980). Bridging moral cognition and moral action: A critical review of the literature. *Psychological Bulletin, 88*, 1–45.
- Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: The self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry, 25*, 49–59.
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science, 6*, 3–5.
- Cialdini, R. B., Trost, M. R., & Newsom, J. T. (1995). Preference for consistency: The development of a valid measure and the discovery of surprising behavioral implications. *Journal of Personality and Social Psychology, 69*, 318–328.
- Conway & Peetz (2012). When does feeling moral actually make you a better person? Conceptual abstraction moderates whether past moral deeds motivate consistency or compensatory behavior. *Personality and Social Psychology Bulletin, 38*, 907–919.
- Cornelissen, G., Bashshur, R. M., Rode, J., & Le Menestrel, M. (2013). Rules or Consequences? The role of ethical mind-sets in moral dynamics. *Psychological Science, 24*, 482–488.
- Foss, R. D., & Dempsey, C. B. (1979). Blood donation and the foot-in-the-door technique: A limiting case. *Journal of Personality and Social Psychology, 37*, 580–590.
- Gneezy, A., Imas, A., Brown, A., Nelson, L. D., & Norton, M. I. (2012). Paying to be nice: Consistency and costly prosocial behavior. *Management Science, 58*, 179–187.
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94*, 319–340.
- Jordan, J., Mullen, E., & Murningham, J. K. (2011). Striving for the moral self: The effects of recalling past moral actions on future moral behavior. *Personality and Social Psychology Bulletin, 37*, 701–713.

- Klass, E. T. (1978). Psychological effects of immoral actions: The experimental evidence. *Psychological Bulletin*, *85*, 756–771.
- Merritt, A., Effron, D., & Monin, B. (2010). Moral self-licensing: When being good frees us to be bad. *Social and Personality Psychology Compass*, *4*, 344–357.
- Monin, B., & Jordan, A. H. (2009). The dynamic moral self: A social psychological perspective. In D. Narvaez & D. K. Lapsley (Eds.), *Personality, identity, and character: Explorations in moral psychology* (pp. 341–354). New York, NY: Cambridge University Press.
- Nakagawa, S. (2004). A farewell to Bonferroni: The problems of low statistical power and publication bias. *Behavioral Ecology*, *15*, 1044–1045.
- Nisan, M. (1991). The moral balance model: Theory and research extending our understanding of moral choice and deviation. In W. M. Kurtines & J. L. Gewirtz (Eds.), *Handbook of moral behavior and development* (Vol. 3, 213–250). Hillsdale, NJ: Erlbaum.
- Reed, A., II, Aquino, K., & Levy, E. (2007). Moral identity and judgments of charitable behaviors. *Journal of Marketing*, *71*, 178–193.
- Sachdeva, S., Ilic, R., & Medin, D. L. (2009). Sinning saints and saintly sinners. *Psychological Science*, *20*, 523–528.
- Singer, P. (1991). *A companion to ethics*. Oxford: Blackwell Reference.
- Sinnott-Armstrong, W. (2008). Consequentialism. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy*. Stanford, CA: Metaphysics Research Lab, Center for the Study of Language and Information, Stanford University. Retrieved from <http://plato.stanford.edu/entries/consequentialism/>
- Szekely, R. D., & Miu, A. C. (2014). Incidental emotions in moral dilemmas: The influence of emotion regulation. *Cognition & Emotion*, *29*, 64–75.
- Thomas, G., & Batson, C. D. (1981). Effect of helping under normative pressure on self-perceived altruism. *Social Psychology Quarterly*, *44*, 127–131.
- Uhlmann, E. L., Pizarro, D. A., Tannenbaum, D., & Ditto, P. H. (2009). The motivated use of moral principles. *Judgment and Decision Making*, *4*, 476–491.
- Zhong, C.-B., Liljenquist, K., & Cain, D. M. (2009). Moral self-regulation: Licensing and compensation. In D. De Cremer (Ed.), *Psychological perspectives on ethical behavior and decision making* (pp. 75–89). Charlotte, NC: Information Age Publishing.

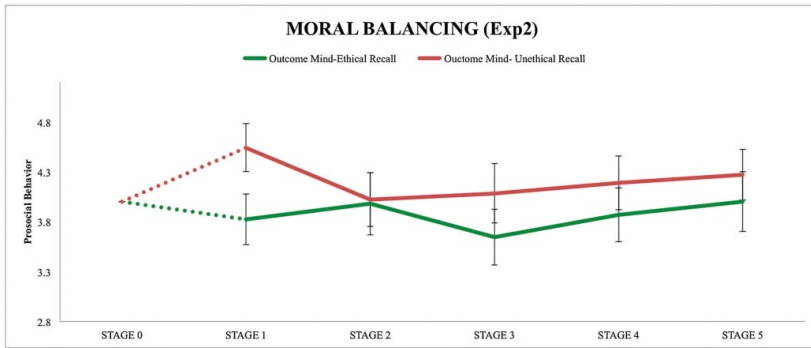
## Appendix 1

Statistical analysis for Experiment 2 without the selection criteria applied.

### Evidence for moral balancing

First, we considered the evidence for Moral Balancing. No conclusions derived by focusing on the restricted sample are altered to those in the entire sample. We ran a mixed two-way ANOVA with Type of Ethical Recall and Stage, on the dependent variable (likelihood of engaging in a prosocial behaviour). There was no significant interaction between Recall and Stage,  $F < 1$ . The results also indicated that there was no main effect of Recall in prosocial behaviour,  $F(1,44) = 2.03, p = .161$  nor a significant main effect of Stage,  $F < 1$ .





**Figure 10.** Evolution of the prosocial behaviours of the outcome-based mind-set group (ethical + unethical recalls) in Experiment 2. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given an (un)ethical recall.

We then analysed the evolution of prosocial behaviour between STAGES [1–2] to see if, at least, the Moral Balancing pattern was maintained for just one more stage. A two-way analysis of variance (ANOVA) with Type of Ethical Recall and Stage as independent variables indicated that there was no significant interaction between Recall and Stage,  $F(1,44) = 1.38$ ,  $p = .246$ . The results also indicated that there was no main effect of Recall in prosocial behaviour,  $F(1,44) = 2.03$ ,  $p = .161$  nor a significant main effect of Stage,  $F < 1$ .

Overall, the results showed that Moral Balancing was not observed in this experiment, beyond the initial manipulation. The conclusion is that the ‘Zig-Zag pattern’ was only observed throughout STAGES [0–1], but not further maintained over time, in contrast to the idealised prediction of Figure 2. Instead, it appears that the evolution of prosocial behaviour converged to a neutral level of morality (Figure 10).

### Evidence for moral consistency

Again, no conclusions derived by focusing on the restricted sample are altered to those in the entire sample. Regarding the evolution between STAGES [1–5], we ran a two-way ANOVA with Type of Ethical Recall and Stage on likelihood of prosocial behaviour. Minimally, Moral Consistency would be evidenced by a main effect of Recall, no main effect of Stage, and no interaction between Recall and Stage. It indicated that there was not a significant interaction between Recall and Stage,  $F < 1$ . The results also indicated that there was no main effect of Recall in prosocial behaviour,  $F(1,46) = 1.63$ ,  $p = .208$  nor a significant main effect of Stage,  $F(4,184) = 1.37$ ,  $p = .248$ .



**Figure 11.** Evolution of the prosocial behaviours of the rule-based mind-set group (ethical + unethical recalls) in Experiment 2. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given an (un)ethical recall.

Inspection of [Figure 11](#) makes it clear that it was not necessary, as in the previous exploration, to analyse the evolution of prosocial choice between STAGES [1–2] to see if, at least, the Moral Consistency pattern was maintained for just one more stage. The pattern converged to a neutral point and did not remain attached to the low or high levels of (un)ethicity.

The conclusion is that the ‘Flat pattern’ only remained attached to the low or high levels of (un)ethicity, as in the idealised pattern ([Figure 3](#)), for STAGES [0–1]. The rest of stages converged to a neutral level of morality; thus, Moral Consistency was not maintained over time ([Figure 11](#)).

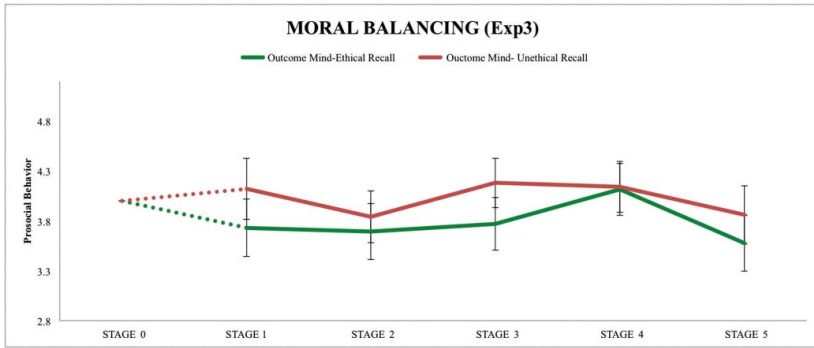
## Appendix 2

Statistical analysis for Experiment 3 without the selection criteria applied.

### Evidence for moral balancing

First, we considered the evidence for Moral Balancing. No conclusions derived by focusing on the restricted sample are altered to those in the entire sample. We ran a two-way ANOVA, as in Experiment 2, with Type of Ethical Recall and Stage on the dependent variable. It indicated that there was no significant interaction between Recall and Stage,  $F < 1$ . The results also indicated that there was no main effect of Recall in prosocial behaviour and no significant main effect of Stage, both  $F < 1$ .

We then analysed the evolution between STAGES [1–2] to see if, at least, the Moral Balancing pattern was maintained for just one more stage. A two-way ANOVA with two within participant factors, Type of Ethical Recall and Stage, revealed no main effect of Recall, no effect of Stage, and a no significant interaction between type of Recall and Stage, all  $F < 1$ .



**Figure 12.** Evolution of the prosocial behaviours of the outcome-based mind-set group (ethical + unethical recalls) in Experiment 3. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given an (un)ethical recall.

The conclusion is that the ‘Zig-Zag pattern’ was only approximately observed across STAGES [0–1]. Thus, compared with the idealised pattern (Figure 2), Moral Balancing was not a behaviour maintained over time. Instead, as in Experiment 2, the evolution of the behaviour converged to a neutral level of morality (Figure 12).

### Evidence for moral consistency

The conclusions derived by focusing on the restricted sample are different to those in the entire sample (but, as argued previously, we think that the analyses in the restricted sample are more valid). Regarding the evolution between STAGES [1–5] in the Moral Consistency case, we ran a two-way ANOVA with two within participant factors, Type of Ethical Recall and Stage on the dependent variable (likelihood of engaging in a prosocial behaviour). Recall, Moral Consistency would be minimally evidenced by a main effect of Recall, but not a significant interaction. There was no main effect of Recall on prosocial behaviour,  $F(1,51) = 1.73$ ,  $p = .194$ , and not of Stage,  $F(4,204) = 2.15$ ,  $p = .076$ . Also, the interaction between Recall and Stage was not significant,  $F < 1$ .

Then, we ran an ANOVA with STAGES [2–5] and Type of Ethical Recall to see if the Moral Consistency pattern was maintained over time. There was no main effect of Recall,  $F(1,51) = 1.71$ ,  $p = .197$ , no significant effect of Stage,  $F(3,153) = 1.980$ ,  $p = .119$ , and a non-significant interaction between the two factors,  $F < 1$ .

The conclusion is that the ‘Flat pattern’ was sustained to the low or high levels of (un)ethicality throughout STAGES [0–5], but not in a statistically significant way or as much as predicted in the idealised pattern (Figure 3). That is, in this case, and contrary to the results when the selection criteria were



**Figure 13.** Evolution of the prosocial behaviours of the rule-based mind-set group (ethical + unethical recalls) in Experiment 3. The dashed lines represent the transition from the manipulation phase [STAGE 0] to the first moral scenario [STAGE 1], given an (un)ethical recall.

applied, we cannot say that Moral Consistency was a behaviour broadly maintained over time (with a tendency to converge to a neutral level of morality), if a re-evaluation process (manipulation of the mind-set + (un)ethical recall) was carried out before confronting each new moral scenario (Figure 13).