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Exceptionality Effect in Agency Attributions: Exceptional Behaviors are Perceived as Higher Free will than Routine Behaviors

RESEARCH ARTICLE

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ABSTRACT

People experience stronger regret regarding negative outcomes resulting from more exceptional circumstances compared to routine. We hypothesized that the exceptionality-routine attribution asymmetry would extend to attributions of agency and moral responsibility. In Experiment 1 (N = 337), we found that people attributed more free will to exceptional behavior compared to routine when the exception was due to self-choice rather than external circumstances. In Experiment 2 (N = 561), we replicated and generalized this effect to other scenarios, with support for the classic exceptionality effect regarding regret, and an extension to moral responsibility. In Experiment 3 (N = 128), we replicated these effects in a within-subject design. When using a classic experimental philosophy paradigm contrasting a deterministic and an indeterministic universe, we found that the results were robust across both contexts. We conclude that there is consistent support for a link between exceptionality and free will attributions. All materials, data, and code are available here: *https://osf.io/f2pck/*

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Humans are creatures of habit, tending to stick to their formed routines. Imagine Paul, who eats the same sandwich every lunchtime. Then, one day, he eats a different sandwich for lunch, an exceptional behavior that deviates from his normal routine. If later that day he experiences severe indigestion, would this deviation from normality impact the way his work colleagues perceive his behavior that day? All other things being equal, we hypothesized and found support for the idea that exceptional behavior resulting in negative outcomes is perceived as involving more agency than routine behavior resulting in the same unfortunate outcomes.

FREE WILL AND AGENCY ATTRIBUTIONS

Most people in modern societies tend to believe in free will (Alquist et al., 2015; Monroe & Malle, 2010; Nahmias et al., 2005; Nichols, 2004; Sarkissian et al., 2010; Stillman, Baumeister & Mele, 2011). People generally think of free will as the capacity to choose freely, often associated with perceived responsibility for one's actions and choices (Monroe, Dillon & Malle, 2014; Nahmias, Coates & Kvaran, 2007; Rigoni, Cleeremans & Brass, 2017). Free will belief also serves an important role in current social systems, since most modern legal systems are based on the premise that individuals are free and therefore accountable for their actions and their misdeeds (Rigoni, Sammicheli & Sartori, 2015). Some researchers view belief in free will as the ability to make choices that are in line with the moral and best long-term interest that does not harm other members of the social group (Alquist et al., 2015; Feldman, Baumeister & Wong, 2014; Monroe & Malle, 2010; Shepherd, 2012; Stillman, Baumeister & Mele, 2011).

Research on free will attributions made the case for 'motivated free will', showing that morally bad and good actions are considered as more freely performed than morally neutral actions (Clark et al., 2018). Clark and colleagues (2018) argued that the higher free will attributions for morally bad actions may be a sign of a strong affective punitive motive (e.g., Clark, Baumeister & Ditto, 2017; Martin, Rigoni & Vohs, 2017; Shariff et al., 2014). This may also be driven by pragmatic reasons, based on the expectation that rewards will encourage future good behaviors (Clark et al., 2018).

However, free will attributions may not necessarily relate to moral considerations. For example, regardless of morality, actions and outcomes of negative valence trigger higher attributions of free will comparatively to actions and outcomes of positive valence (Feldman, Wong & Baumeister 2016). A way of interpreting these results is that the perceived negativity of an action or an outcome increases responsibility attributions, regardless of morality. The mere processing of negative circumstances may suffice in triggering stronger free will attributions. If this is indeed the case, then that very processing may serve as an adaptive mechanism to enable accountability, learning, and prospective behavioral change when people are faced with negative events (Feldman, Wong & Baumeister, 2016).

An assessment of normality, namely what is normal, is complex and may refer to perceptions of what is normal for others in society, the normative expectations in a given situation, or past behavior of a person (Feldman, 2020; Feldman, Kutscher & Yay, 2020; Kutscher & Feldman, 2019). In the case of past-behavior exceptionality, we focus on the comparison between the current and past behavior of the same person—the more the present action differs from past behavior, the more it will generate regret. This last effect, sometimes be referred to as 'exceptionality effect', is the 'phenomenon that people associate stronger negative affect with a negative outcome when it is a result of an exception (abnormal behavior) compared to when it is a result of routine (normal behavior)' (Fillon, Kutscher & Feldman, 2021: 129). This has important consequences for morality as a meta-analysis conducted by Fillon, Kutscher, and Feldman (2021) showed that exceptionality increases victim compensation, offender punishment, and self-blame compared to normality. One possible explanation for an exceptionality effect in moral judgments could be the discrepancy in free will attributions between exceptional and normal circumstances. We seek to test this hypothesis in the present study.

Furthermore, when exceptional behavior results in a negative outcome, it is easier to think of instances of how someone could have acted otherwise and made different choices, since the reference point of what is normal is salient. When considering two people, one that behaves in a usual way and another that behaves unusually, the behavior of the latter may seem as if she or he exercised more free will, behaving inconsistently with her or his habits. When behavior is aligned with what is normal, it is not clear whether the behavior is a result of a deliberate, freely chosen decision to follow what is normal; being coerced into that behavior; or simply not making a decision at all and following the default or in automated mode. Our central hypothesis is that perceptions of exceptionality are associated with perceptions of free will. Accordingly, we predict that the exceptional behavior eliciting a negative outcome will lead to stronger attributions of free will to the enacting agent than routine behavior.

Finally, to enrich our investigation, we also measured moral responsibility and regret. Free will and moral responsibility are traditionally viewed as being intrinsically related (Caruso, 2018), although there are long-lasting and ongoing debates about specific cases in which they can be separated (Vierkant et al., 2019). Beyond moral responsibility, the measurement of regret not only allows

us to attempt to replicate the effect of exceptionality on attributions of regret (Kahneman & Miller, 1986) but also works as an indicator of the validity of our recruited sample and methods. It also allows us to examine the links between regret, responsibility, and agency. Overall, our secondary hypotheses were that agents behaving exceptionally and facing negative outcomes are ascribed greater regret and moral responsibility than agents behaving according to routine and facing the same outcomes.

OVERVIEW

We conducted three experiments to test our predictions. In Experiment 1, we tested whether under negative outcomes people attributed more free will to an agent with exceptional behavior than someone who behaved routinely. We manipulated exceptionality in a between-subject design, and we dissociated self- from other-constrained deviations from routine action. In Experiment 2, we also added a measure of regret and moral responsibility in addition to the measure of attributions of free will. In Experiment 3, we tested a within-subject design with a manipulation of a new between-subject variable contrasting a deterministic and an indeterministic universe, related to classic experimental philosophy paradigms examining folk psychology regarding the abstract notion of free will. In all three experiments, 'We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study' (Simmons, Nelson & Simonsohn, 2012: 4).

EXPERIMENT 1

We intended to show that exceptionality increases attributions of free will. We subdivided the construct of exceptionality into two types of exceptionality: the self-produced exceptionality (a chosen deviation from routine) and the others-produced exceptionality (an external-constrained deviation from routine). We implemented this subdivision to be able to know whether the exceptional dimension in itself is a sufficient condition to produce the effect on attributions of free will. Because free will is traditionally viewed as something that has its source in people's own decisions, self-initiated deviation from routine could be the necessary active ingredient required to observe the effect of exceptionality on attributions of free will compared to the routine condition (H1). We also hypothesized that free will attributed to the protagonist of the scenario would be higher in the self-produced exception condition than in the other-produced exception condition (H2). We did not have any specific predictions about the difference between the routine and the other-produced exception conditions, thus, their potentially different effects on attributions of free will were intended to be the object of an exploratory investigation.

Method

Preregistration

We preregistered the hypotheses, desired sample size, exclusion rules, and general analytic strategy on Open Science Framework (OSF: *https://osf.io/f2pck/* for the anonymized raw data, analysis codes, and materials of this experiment; see Deviation S.1. in the Supplementary for the preregistration planning and deviation documentation). It is important to specify that our original hypotheses and measures were included as a part of a prior experiment testing another hypothesis (Kutscher & Feldman, 2019). However, in that paper, the key measures of interest were not the same as the one presented here; because the experimental manipulations were identical, the inclusion of our measure of interest (i.e., attributions of free will) was justified. Thus, results presented in this paper are original, going beyond the purpose of Kutscher and Feldman (2019), and transparently reported in the supplementary materials of the original article as extensions meant for a different investigation.

As mentioned in the preregistration, the planned sample size (total N = 336) was determined through a power analysis based on another effect size found in the literature. As this effect size was lower in size than our effect size of interest (i.e., the effect of exceptionality on attributions of free will, $\eta^2 = 0.16$), we had sufficient statistical power to detect this effect.[1] In this experiment, in accordance with the preregistration, we planned to run one-tailed t-tests.

Participants and Procedure

We recruited 342 participants (M_{age} = 39.93, SD_{age} = 12.88; 215 females) from American Amazon Mechanical Turk (MTurk) by using *https://www.cloudresearch.com/* (Litman, Robinson & Abberbock, 2017). We disallowed 5% of the top active workers and set a maximum for number of tasks performed on the platform to address MTurker's possible nonnaïveté (Chandler, Mueller & Paolacci, 2014). As specified in the a priori exclusion criteria, we excluded from the final sample participants who self-reported a low level (self-report < 5, on a 1–7 scale) in English (n = 1) and those who self-reported not being serious (self-report < 4, on a 1–5 scale) when filling in the experiment (n = 5, including one participant already detected on the previous criterion). Our final sample included a total of 337 participants (M_{age} = 40.04, SD_{age} = 12.94; 212 females, 125 males).

Participants were randomly assigned to one of the three experimental conditions: namely self-produced exception, other-produced exception, and routine. Participants read a scenario describing a robbery at a grocery store with an identified (target) victim named

Mr. Paul (Miller & McFarland, 1986). The three scenarios only differed in the exceptionality of the circumstances leading up to the incident. In the routine behavior condition, Mr. Paul visits the store he regularly visits. In the self-produced exception condition, Mr. Paul visits another store because he wants a change of pace. In the other-produced exception condition, Mr. Paul visits another store because the first was closed.

> Two convenience stores are located in Mr. Paul's neighborhood. He frequents Store A more regularly than Store B.
> [*Routine behavior condition:* Last night he visited Store A.
> *Self-produced exception condition:* Last night he visited Store B because he wanted a change of pace.
> *Other-produced exception condition:* Last night he visited Store B because Store A was temporarily closed for renovations.]
> He walked in on a robbery occurring in the store. He lost the use of his right arm as a result of a gunshot wound.

Measures

As mentioned earlier, in this section, we only reported the measures meant to test our research question. The other measures are detailed in Kutscher and Feldman (2019). An important point is that the regret measure used in Kutscher and Feldman (2019) was presented to the participants before the measures of free will attributions because it aimed to serve as a direct replication of the Miller and McFarland (1986) exceptionality effect study.

Free Will Attributions

The measure of free will attributions (adapted from Clark et al., 2014) was assessed with three items rated on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*): 'Mr. Paul could have chosen to do otherwise and visit a different store'; 'By visiting that specific store, Mr. Paul was exercising his free will'; and 'Mr. Paul's choice of which store to visit was his own free choice'. We averaged these three items for the routine condition ($\alpha = 0.79$), for the self-produced exceptional condition ($\alpha = 0.86$), and for the other-produced exception ($\alpha = 0.80$).

Demographic Measures

We asked participants about their age and gender, their country of birth, their social class (lower class to upper class on a 6-point scale), and how they rate their understanding of the English used in the study on a 7-point scale (1 = *very bad*, 7 = *very good*).

Results

A one-way independent ANOVA revealed that experimental conditions (routine, self-produced exception, and other-produced exception) affected attributions of free will, $F(2, 334) = 28.01$, $MSE = 1.08$, $p < 0.001$, $\omega = 0.14$ (see ***Figure 1*** for the general pattern of results).

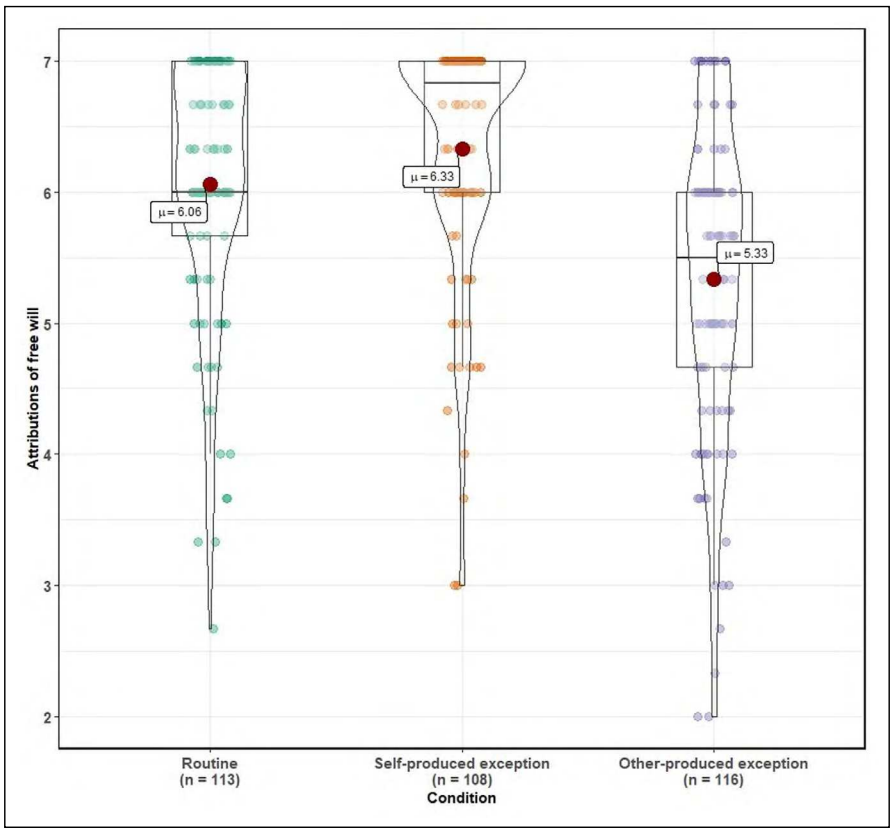

Figure 1 Attributions of free will in the function of the convenience store scenarios.

Then, to test our hypotheses, we ran independent-samples *t*-tests (planned contrasts, using Fisher's least significant difference test), expecting higher free will attributions in the self-produced exception condition than in the routine condition (H1) and in the other-produced exception condition (H2). Corroborating our hypotheses, participants in the self-produced exception condition attributed more free will to the target (M = 6.33, SD = 0.92, n = 108) than participants in the routine behavior condition (M = 6.06, SD = 0.97, n = 113), $t(334)$ = 1.92, p = 0.028 (one-tailed), Cohen's d = 0.29, 95% CI [0.02, 0.55] and participants in other-produced exception condition (M = 5.33, SD = 1.19, n = 116), $t(334)$ = 7.19, p < 0.001 (one-tailed), Cohen's d = 0.94, 95% CI [0.66, 1.22]. Finally, more exploratory, we observed that participants in other-produced exception condition attributed less free will to the target than participants in the routine condition, $t(334)$ = 5.32, p < 0.001 (one-tailed), Cohen's d = 0.67 [0.40, 0.94].

Discussion

In Experiment 1, as predicted by our first hypothesis, participants attributed more free will in the self-produced exception scenario than in the routine scenario. Corroborating our second hypothesis, the free will ascribed to participants was higher when the behavior originated from people's own internal reasons than from external reasons.

We also discovered that in some cases, people producing a routine behavior are seen as possessing higher free will than people producing an exceptional behavior, which is an interesting exception of our general hypothesis. In line with norm theory (Kahneman & Miller, 1986), this result showed that the effect of exceptionality on attributions of free will only appears when the exception is self-produced. In the case of externally induced exception, participants tended to perceive the target as having no choice to do otherwise and consequently rated lower attributions of free will.

In the next experiment, again using a between-subjects design, we wanted to further generalize aiming to obtain a more reliable estimate of the size of the effect of exceptionality on attributions of free will.

EXPERIMENT 2

Experiment 2 was designed to test the effect of exceptionality on free will attributions. We also included a measure of moral responsibility and regret. We argued that measuring these three dependent variables in the same study could help to compare the effect size of exceptionality on regret (a known reliable and easily replicable effect) via previously used scenarios that we can borrow to replicate the effect of exceptionality on regret (Kahneman & Miller, 1986; Miller & McFarland, 1986) and test the effect of exceptionality on moral responsibility. Additionally, we aimed to explore the interrelations between these three variables.

The two following hypotheses were central to this experiment. We predicted that participants would attribute more regret to the character in the exceptional situation than in the routine situation (H1), a replication of the effect of exceptionality on regret (Kahneman & Miller, 1986). Concerning the central claim defended in this paper, we predicted that participants would attribute more free will to the character in the exceptional situation than in the routine situation (H2).

The last two hypotheses were considered secondary hypotheses. We hypothesized that participants would attribute more moral responsibility to the character in the exceptional situation than in the routine situation (H3). Finally, we hypothesized that measures of attributions of regret, free will, and responsibility would be positively correlated with each other (H4).

Method

Preregistration

We preregistered the hypotheses, desired sample size, exclusion rules, and general analytic strategy on Open Science Framework (*https://osf.io/f2pck/* for the anonymized raw data, analysis codes, and materials of this experiment; see Deviation S.2. in the Appendices for the preregistration planning and deviation documentation). We planned to recruit 554 participants, with a statistical power of 0.95, an α set to 0.10, and an effect size of Cohen's d = 0.28. This value was based on the effect size of exceptionality on attributions of free will found in Experiment 1.

Participants and Procedure

We recruited 589 MTurk participants online using *https://www.cloudresearch.com/* (Litman, Robinson & Abberbock, 2017). As specified in the a priori exclusion criteria, after keeping only participants who complete the study until the end (N = 578), we excluded from the final sample participants who self-reported a low level (self-report < 5, on a 1–7 scale) in English (n = 10) and participants who self-report not being serious (self-report < 4, on a 1–5 scale) when filling in the experiment (n = 10, including three participants already detected on the previous criterion). Our final sample included a total of 561 participants (M_{age} = 39.44, SD_{age} = 12.43; 306 females, 253 males, and 2 'others').

Participants were instructed to read three different scenarios presented in a random order (i.e., the car accident; the hitchhiker scenarios from Kahneman & Miller, 1986; and the convenience store scenario we used in Experiment 1 from Miller & McFarland, 1986). The type of event (routine vs. exceptional) was a between-subjects variable manipulated for each scenario: participants could only see one of the two experimental conditions (i.e., routine or exceptional condition) for each scenario. The condition in which the participant is

randomly allocated in one scenario is independent of the conditions in which the participant was randomly allocated in the other scenario.

Hitchhiker Scenario

The scenario for the routine condition was 'Mr. Jones frequently takes hitchhikers in his car. Yesterday he gave a man a ride and was robbed'. The scenario for the exceptional condition was 'Mr. Jones almost never takes hitchhikers in his car. Yesterday he gave a man a ride and was robbed'. Participants then had to answer comprehension questions as follows: 'Does Mr. Jones typically tend to take hitchhikers in his car?' (Yes/No) and 'What happened yesterday?' with four possible answers, one correct, 'Mr. Jones gave a man a ride and was robbed', and three wrong, 'Mr. Jones did not give a ride and was robbed', 'Mr. Jones gave a man a ride but was not robbed', and 'Mr. Jones did not give a ride and was not robbed'. Participants had to answer the comprehension questions correctly before being allowed to proceed to the next page.

Car Accident Scenario

The scenario for the routine condition was 'Mr. Adams was involved in an accident when driving home after work on his regular route', and the scenario for the exceptional condition was 'Mr. Adams was involved in an accident when driving home on a route that he only takes when he wants a change of scenery'. Participants then had to answer the following comprehension questions: 'Was Mr. Adams driving home on his regular or irregular route?' with two possibilities: 'Regular route' and 'Irregular route only taken when Mr. Adams wants a change of scenery', and the question 'What happened?' with a correct answer, 'Mr. Adams was involved in an accident', and a wrong answer, 'Mr. Adams made it home without any incidents'. Participants were not allowed to continue to the next page until they had correctly answered the previous comprehension questions.

Robbery at a Convenience Store Scenario

The scenario for the routine condition was 'Two convenience stores are located in Mr. Paul's neighborhood. He frequents Store A more regularly than Store B. Last night he visited Store A. He walked in on a robbery taking place at the store and was shot. He lost the use of his right arm as a result of the gunshot wound'. The scenario for the exceptional condition was 'Two convenience stores are located in Mr. Paul's neighborhood. He frequents Store A more regularly than Store B. Last night he visited Store B because he wanted a change of pace. He walked in on a robbery taking place at the store and was shot. He lost the use of his right arm as a result of the gunshot wound'. Participants then had to answer these comprehension questions: 'Which convenience store does Mr. Paul visit frequently?' (Store A/Store B); 'Which convenience store did Mr. Paul visit last night?' (Store A/Store B); and 'What happened?' with a correct answer, 'Mr. Paul walked in on a robbery and was shot' and a wrong answer, 'Mr. Paul completed his shopping without any incidents'. Correct answers to these questions had to be given before being allowed to proceed to the next page.

Measures

Measures were the same for all conditions and scenarios. Only the name of the target involved changed, depending on the target's name of the scenario. We randomized the presentation of the measures.

Free Will Attributions

We measured free will attributions with two items from Clark et al. (2014) on a 7-point scale (0 = *strongly disagree*, 6 = *strongly agree*): 'Mr. Jones/Adams/Paul could have chosen to act otherwise' and 'Mr. Jones/Adams/Paul's choice was his own free choice'. For the hitchhiker scenario, the car accident scenario, and the convenience store scenario, the reliability of two items about free will attributions were high enough to be averaged (routine event: Spearman-Brown coefficient = 0.82; exceptional event: Spearman-Brown coefficient = 0.78; routine event: Spearman-Brown coefficient = 0.80; exceptional event: Spearman-Brown coefficient = 0.87; routine event: Spearman-Brown coefficient = 0.85; exceptional event: Spearman-Brown coefficient = 0.86, respectively; see Eisinga, Te Grotenhuis, and Pelzer, 2013, for the reason of privileging Spearman-Brown reliability estimate rather than Cronbach's alpha for two-item scales).

Regret

We measured regret with one item on a 7-point scale (0 = *no regret*, 6 = *very strong regret*). For example, for the hitchhiker scenario, the item was 'How much regret does Mr. Jones feel over giving a ride?'

Moral Responsibility

We measured moral responsibility with one item on a 7-point scale (0 = *no responsible at all*, 6 = *completely responsible*) with the question 'How responsible does Mr. Jones/Adams/Paul feel for the unfortunate outcome?'

Results

The means[2] and standard deviations of all dependent variables by experimental condition and by scenario are detailed in ***Table 1*** and plotted in ***Figures 2–4***. The means and standard deviations of all dependent variables and their bivariate correlations are reported in ***Table 2***. Excluding outliers did not affect the results; therefore, all the subsequent reporting is using the entire sample. Results excluding outliers are available in Table S.1. in the Appendices.

We ran a set of one-sided independent samples Welch *t*-tests for each scenario, summarized in ***Table 3***. As predicted by our hypotheses, participants attributed

SCENARIO	HITCHHIKER				CAR ACCIDENT				CONVENIENCE STORE			
TYPE OF EVENT	ROUTINE (N = 282)		EXCEPTIONAL (N = 279)		ROUTINE (N = 280)		EXCEPTIONAL (N = 281)		ROUTINE (N = 280)		EXCEPTIONAL (N = 281)	
ATTRIBUTIONS	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
1. Free will	6.41	0.83	6.46	0.80	5.56	1.45	6.23	0.98	5.93	1.18	6.25	1.05
2. Moral responsibility	5.23	1.56	5.5	1.51	3.80	1.55	4.65	1.66	2.79	1.81	3.49	1.99
3. Regret	5.80	1.32	6.54	0.91	3.26	1.93	5.54	1.49	5.38	1.75	6.22	1.26

Table 1 Means and standard deviations for all dependent variables for every type of event and scenario.
Note: Scales are between 1 and 7.

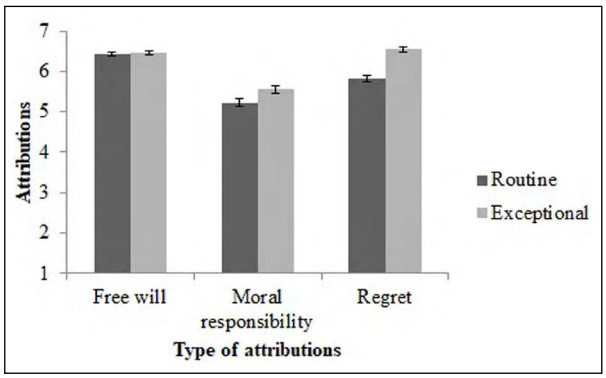

Figure 2 Attributions of free will, moral responsibility, and regret in the function of the type of event (Routine vs. Exceptional) for the hitchhiker scenario. Error bars indicate ± 1 SEM.

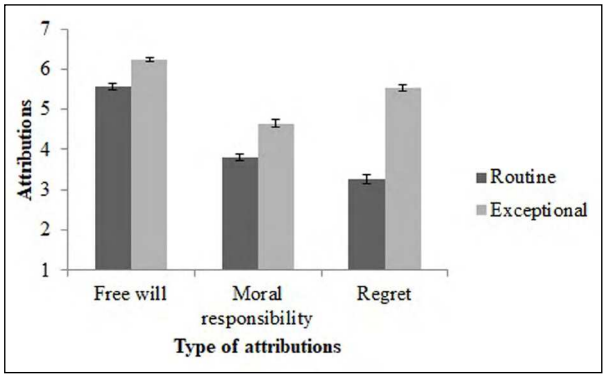

Figure 3 Attributions of free will, moral responsibility, and regret in the function of the type of event (Routine vs. Exceptional) for the car accident scenario. Error bars indicate ± 1 SEM.

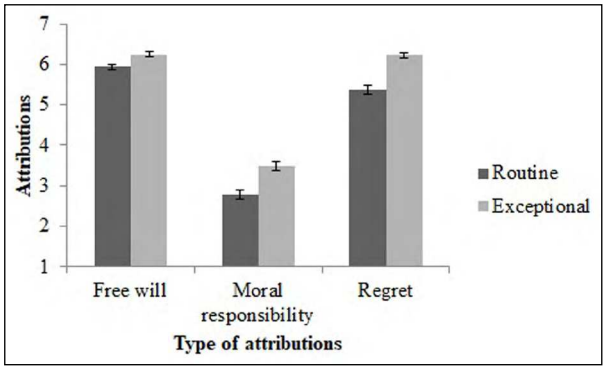

Figure 4 Attributions of free will, moral responsibility, and regret in the function of the type of event (Routine vs. Exceptional) for the convenience store scenario. Error bars indicate ± 1 SEM.

more regret (H1) and moral responsibility (H3) to the person involved in an exceptional event than to the person involved in a routine event for all the scenarios (*ps* < 0.001, from Cohen's *d* = 0.21 to Cohen's *d* = 1.32). Free will (H2) was also attributed more to a person involved in an exceptional event than to a person involved in a routine event for two out of the three scenarios (Cohen's *d* = 0.29 in the convenience store scenario and Cohen's *d* = 0.54 in the car accident scenario). However, we did not find support for an exceptionality effect in free will attributions in the hitchhiker scenario (Cohen's *d* = 0.06). Effect sizes of the impact of exceptionality on attributions of regret were higher than the effect of exceptionality on attributions of free will and moral responsibility (***Table 3***).

Finally, in line with H4, for all scenarios, we found support for a positive bivariate correlation between all measures (***Table 2***). The only exception is the weaker correlation between attributions of moral responsibility and attributions of free will for the convenience store scenario, $r(287) = 0.05$, 95% CI [–0.04, 0.13], $p = 0.274$.

Discussion

In Experiment 2, we reached the same conclusion as in Experiment 1, that participants attributed more free will to a person who acted exceptionally than to a person who acted normally. We also replicated classic effects for regret and moral responsibility, showing that people attributed stronger regret and accountability over negative outcomes resulting from exceptions compared to routine (Kahneman & Miller, 1986; Kutscher & Feldman, 2019; Miller & McFarland, 1986). Attributions of free will were associated with attributions of regret and moral responsibility.

EXPERIMENT 3

Having provided a clear demonstration of the effects of exceptionality on attributions of free will, regret, and moral responsibility via Experiment 2, Experiment 3 tested whether these effects would show in different contexts with varying degrees of the possibility for free will (for more details on the background for this experiment, see the Note S.1. in the Appendices).

We adjusted a classic method used in experimental philosophy (Knobe et al., 2012). This method consists of presenting hypothetical universes and asking people

SCENARIO	HITCHHIKER				
ATTRIBUTIONS	*M*	*SD*	1	2	3
1. Free will	6.44	0.81	–		
2. Moral responsibility	5.39	1.54	0.24*** [0.16, 0.31]	–	
3. Regret	6.17	1.19	0.42*** [0.35, 0.49]	0.36*** [0.28, 0.43]	–
SCENARIO	CAR ACCIDENT				
ATTRIBUTIONS	*M*	*SD*	1	2	3
1. Free will	5.90	1.28	–		
2. Moral responsibility	4.23	1.66	0.24*** [0.16, 0.31]	–	
3. Regret	4.40	2.06	0.20*** [0.12, 0.28]	0.48*** [0.41, 0.54]	–
SCENARIO	CONVENIENCE STORE				
ATTRIBUTIONS	*M*	*SD*	1	2	3
1. Free will	6.09	1.13	–		
2. Moral responsibility	3.14	1.93	0.05 [–0.04, 0.13]	–	
3. Regret	5.80	1.58	0.34*** [0.27, 0.41]	0.21*** [0.12, 0.28]	–

Table 2 Means, standard deviations, and bivariate correlations (with 95% confidence intervals) for all dependent variables in each scenario.
Notes: $N = 561$. Scales are between 1 and 7. *** $p < 0.001$.

DEPENDENT VARIABLE	*t*	*df*	*p*	*d*
HITCHHIKER SCENARIO				
Routine versus exceptional event				
Free will attributions	0.69	558.44	0.245	0.06 [–0.10, 0.23]
Moral responsibility attributions	2.51	558.83	0.006	0.21 [0.04, 0.37]
Regret attributions	7.66	498.66	<0.001	0.65 [0.48, 0.82]
CAR ACCIDENT SCENARIO				
Routine versus exceptional event				
Free will attributions	6.41	488.38	<0.001	0.54 [0.37, 0.71]
Moral responsibility attributions	6.25	557.02	<0.001	0.53 [0.36, 0.70]
Regret attributions	15.68	523.73	<0.001	1.32 [1.14, 1.51]
CONVENIENCE STORE SCENARIO				
Routine versus exceptional event				
Free will attributions	3.32	550.30	<0.001	0.29 [0.12, 0.45]
Moral responsibility attributions	4.42	553.98	<0.001	0.37 [0.20, 0.54]
Regret attributions	6.57	506.06	<0.001	0.55 [0.38, 0.72]

Table 3 Independent samples Welch *t*-tests contrasting the routine versus exceptional type of event for each scenario.
Notes: *d* = Cohen's *d*; Values in brackets are 95% confidence intervals (CIs).

about these scenarios to test their philosophical intuitions about free will (e.g., Nahmias et al., 2005; Nahmias & Murray, 2011; Nichols & Knobe, 2007). In these scenarios, participants are presented with hypothetical universes, with either a deterministic or an indeterministic universe.[3]

We predicted (H1) that people will ascribe more free will (H1a), moral responsibility (H1b), and regret (H1c) to the target who changed his habits (through an exceptional action leading to a negative outcome) than to the target who did not change (through a routine action leading to the same negative outcome) and, more importantly (H2), that within a deterministic universe, the above-mentioned differences will be weakened compared to an indeterministic universe (H2a, H2b, H2c).[4]

Method

Preregistration

We preregistered hypotheses, desired sample size, exclusion rules, and general analytic strategy on the As-predicted website (*https://aspredicted.org/mg4ia.pdf*). We aimed for a sample size of 128 based on 80% power and alpha of 0.05 to detect predicted within–between interaction ($H2_{a,b,c}$) corresponding to a 2 × 2 mixed-design ANOVA (predicted correlation among the repeated measures, $r = 0.00$; with a small-to-medium effect size of the predicted interaction, $\eta^2 = 0.03$). Anonymized raw data, analysis codes, and materials of this experiment can be found here: *https://osf.io/f2pck/*. See Deviation S.3. in the Appendices for the preregistration planning and deviation documentation.

Participants and Procedure

One hundred and twenty-eight French undergraduate students in psychology ($M_{age} = 19.46$, $SD_{age} = 3.40$; 110 females) participated in an experiment with a duration of approximately 15 minutes in exchange of course credits. Participants were run in groups of 20 to 30 and randomly assigned to conditions of the 2 (type of universe: deterministic universe vs. indeterministic universe) × 2 (type of event: exceptional vs. normal) mixed design with the first factor between subjects and the second factor within subjects.

To manipulate the type of universe, participants were invited to read a scenario that describes a deterministic or an indeterministic universe (Nichols & Knobe, 2007; French translation from Cova, 2011), as follows:

> *Deterministic universe:* Imagine a universe in which everything that happens is completely caused by whatever happened before it. This is true from the very beginning of the universe, so what happened in the beginning of the universe caused what happened next and so on right up until the present. For example, one day, John decided to have French fries at lunch. Like everything else, this decision was completely caused by what happened before it. So, if everything in this universe was exactly the same up until John made his decision, then it had to happen that John would decide to have French fries.
> *Indeterministic universe:* Imagine a universe in which almost everything that happens is completely caused by whatever happened before it. The one exception is human decision-making. For example, one day, John decided to have French fries at lunch. Since a person's decision in this universe is not completely caused by what happened before it, even if everything in the universe was exactly the same up until John made his decision, it did not have to happen that John would decide to have French fries. He could have decided to have something different.

Then, participants read two scenarios (the order was randomly assigned) about a car accident (occurring on an exceptional route vs. a routine route). These scenarios were based on a modified version of the car accident scenario from Kahneman and Miller (1986). We insisted on the fact that scenarios were taking place in the previously described universe:

> In this universe, Mr. Smith left the office at the usual hour. Two routes only exist to come home: one route that he takes regularly and one along the shore that he rarely takes.
> *Exceptional event:* It's closing time. Mr. Smith is driving home. He drives on the route that he rarely takes, along the shore, to come home. Then, Mr. Smith car is crashed by a truck. He escaped alive but seriously wounded.
> *Routine event:* It's closing time. Mr. Smith is driving home. He drives on the regular route to come home. Then, Mr. Smith car is crashed by a truck. He escaped alive but seriously wounded.

All measures were on a 7-point Likert scale (1 = *not at all*, 7 = *completely*). Regret attributions were measured first with one item adapted from Towers et al. (2016): 'Indicate to what extent Mr. Smith feels regret for what happened to him'. Second, moral responsibility was measured with one item: 'Indicate to what extent Mr. Smith could be held accountable for what happened to him'. Third, free will attributions were measured with three items from Study 1b of Clark et al. (2018): 'Indicate how much Mr. Smith decision to take this route was freely chosen', 'Indicate how much Mr. Smith could have made other choices', and 'Indicate how much the fact that Mr. Smith took this route was due to his own free choice'. We averaged the three items measuring free will attributions ($\alpha = 0.73$ and 0.83, for the routine and exceptional condition, respectively). Then, as a comprehension check, we again presented the corresponding scenario used as the manipulation of the type of universe followed with a comprehension check item, 'In the universe previously described, individuals have a total free will', measured with a 7-point Likert scale (1 = *completely disagree*, 7 = *completely agree*). Finally, participants informed their gender and age and had the opportunity to leave a comment in a free space before being debriefed.

Results

All relevant descriptive statistics are detailed in ***Table 4*** and plotted in ***Figure 5***. The comprehension check showed that participants agreed more that individuals have a total free will in the indeterministic universe ($M = 5.17$, $SD = 1.50$, $n = 63$) than in the deterministic universe ($M = 3.29$, $SD = 2.08$, $n = 65$), $t(126) = 5.86$, $p < 0.001$, Cohen's $d = 1.03$, 95% CI [0.66, 1.41].

To test our hypotheses ($H1_{a,b,c}$ and $H2_{a,b,c}$), we ran three mixed ANOVA 2 (type of universe: deterministic

vs. indeterministic) × 2 (type of event: exceptional vs. routine) on the three dependent variables (i.e., attributions of free will, moral responsibility, and regret). In accordance with H1, participants attributed more free will (H1a), moral responsibility (H1b), and regret (H1c) to the target in the exceptional situation than in the routine situation. Moreover, participants attributed more free will to the target in the indeterministic scenario than in the deterministic one. Finally, we failed to find support for H2, as we did not find support for any interactions between the type of universe and the type of event. Descriptively, only the results for attributions of free will were in the predicted direction. Results are detailed in ***Table 5***.[5]

Discussion

In this experiment, in line with a part of our predictions, participants attributed more free will, moral responsibility, and regret to the target who took the exceptional route than the routine route. We found that participants attributed more free will in the indeterministic universe than in the deterministic universe, regardless of the exceptionality of the event. However, contrary to our predictions, we did not find evidence to suggest that the type of universe moderated the effect of the type of event on attributions of free will, moral responsibility, and regret. The effect of exceptionality on the three dependent variables could be relatively too strong in comparison with the effect of the type of universe on these same dependent variables, leading to a too great difficulty to detect their interaction effects without a significantly larger sample. This may also indicate that the effect of exceptionality on the attribution of free will is robust, regardless of whether the action takes place in a deterministic universe or not.

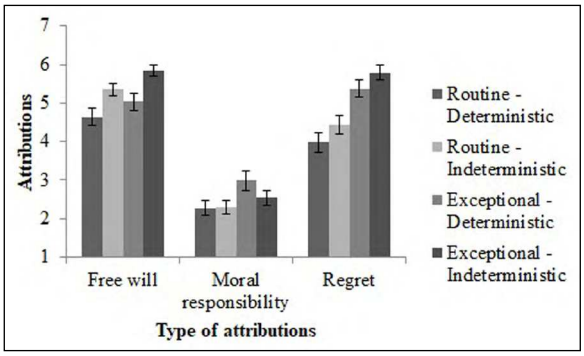

Figure 5 Attributions of free will, moral responsibility, and regret in the function of the type of event and the type of universe. Error bars indicate ± 1 SEM.

GENERAL DISCUSSION

The main contribution of this paper was to establish the effect of exceptionality on free will attributions: the more exceptional a behavior is, the more free will would be attributed to an actor producing this behavior. The three experiments we conducted supported this hypothesis. We also replicated the effect of exceptionality on the attribution of regret and found that exceptionality also affected responsibility attributions. Overall, exceptionality not only increases regret attributions but also increases free will and moral responsibility attributions.

TYPE OF UNIVERSE	DETERMINISTIC (*n* = 65)					INDETERMINISTIC (*n* = 63*)					TOTAL	
TYPE OF EVENT	ROUTINE		EXCEPTIONAL		*r*	ROUTINE		EXCEPTIONAL		*r*		
ATTRIBUTIONS	*M*	*SD*	*M*	*SD*		*M*	*SD*	*M*	*SD*		*M*	*SD*
Free will	4.64	1.74	5.04	1.80	0.78 [0.66, 0.86]	5.33	1.20	5.90	1.11	0.56 [0.36, 0.71]	5.22	1.44
Moral responsibility	2.28	1.65	2.98	1.96	0.37 [0.14, 0.56]	2.30	1.46	2.54	1.55	.48 [0.27, 0.65]	2.53	1.40
Regret	3.98	2.06	5.37	1.84	0.28 [0.04, 0.49]	4.43	1.95	5.79	1.47	0.61 [0.43, 0.75]	4.89	1.56

Table 4 Descriptive statistics for all conditions.
Note: Scales are between 1 and 7. *M* = means, *SD* = standard deviation, and *r* = Pearson correlation coefficient. * For the attributions of free will only, the sample size is reduced from 63 to 62 due to a statistical outlier.

ATTRIBUTIONS FACTOR	FREE WILL					MORAL RESPONSIBILITY					REGRET				
	F	*df*	*MSE*	*p*	η^2_p	*F*	*df*	*MSE*	*p*	η^2_p	*F*	*df*	*MSE*	*p*	η^2_p
Type of event	22.95	(1,125)	0.65	<0.001***	0.16 [0.07, 0.25]	8.69	(1,126)	1.65	0.004**	0.06 [0.01, 0.14]	60.23	(1,126)	2.01	<0.001***	0.32 [0.21, 0.42]
Type of universe	9.80	(1,125)	3.86	0.002**	0.07 [0.02, 0.15]	0.72	(1,126)	3.93	0.398	0.01 [0.00, 0.05]	2.51	(1,126)	4.80	0.115	0.02 [0.00, 0.08]
Type of event × Type of universe	0.70	(1,125)	0.65	0.403	0.01 [0.00, 0.05]	2.14	(1,126)	1.65	0.146	0.02 [0.00, 0.07]	<0.01	(1.126)	2.01	0.956	<0.01 [0.00, 1]

Table 5 Full results of 2 × 2 mixed ANOVA testing the effects of type of event and type of universe on attributions of free will, moral responsibility, and regret.
Notes: df = degree of freedom, *MSE* = mean square error. Values in brackets indicate the confidence interval at 90%. $^{**}p < 0.01$. $^{***}p < 0.001$.

In Experiment 1, we found that the exceptional behavior should be seen as originating from the actor to affect free will attributions, as other-produced exceptionality did not increase free will attributions. In the latter case, people could infer that the target could not have had a choice to do otherwise. In Experiment 2, we strengthened the confidence we have regarding the existence of the effect of exceptionality on free will attributions with more participants and the use of more scenarios, although we found that the effect did not seem to generalize well to one of the added scenarios. We also found that attributions of free will, regret, and moral responsibility were positively related. In Experiment 3, participants ascribed more free will, moral responsibility, and regret in the exceptional condition than in the routine condition, whether within a deterministic world or not, strengthening the results of the two other experiments. These effects were robust and persisted whether the design is between or within subjects.

Our findings could be linked with those by Bear and Knobe (2016), who found that people relied on two cues to determine the active or passive feature of a behavior: mental effort and spontaneity. They found that a behavior that was performed 'actively' rather than 'passively' modifies people's judgment about the compatibility of this behavior with causal determinism thesis. More concretely, people perceived a behavior that was performed actively (such as composing a highly technical legal document) as less possible (i.e., less compatible) in a causally deterministic universe than a behavior performed passively (such as impulsively shoplifting from a convenience store; Bear & Knobe, 2016). By adopting this framework, we may link an exceptional behavior to an active behavior (because its 'breaking off from the flow of things' and requires mental effort and spontaneity) and a routine behavior to a passive effort (because it is 'going with the flow' and does not require a mental effort or spontaneity). In the same vein, an agent acting spontaneously is considered freer than an agent acting deliberately (Vierkant et al., 2019). Although Vierkant et al. (2019) manipulated the agent's choice (spontaneous vs. deliberate) in a within-subject design in their study, it may suggest that when deliberation (or mental effort) and spontaneity are experimentally contrasted, it is spontaneity that seems to be the driving force behind the increase of perceived free will of the agent.

However, unlike Vierkant et al. (2019), we did not observe dissociation between attributions of free will and responsibility. They reported that when an action was based on deliberation (versus spontaneity), it was judged to be less free, but the person who initiated it was considered to be more responsible for it. In our case, the person at the source of the routine behavior (versus exceptional behavior) was judged both less free and less morally responsible. In addition, our results on moral responsibility also contradict what could have been predicted by Miller and McFarland (1986). Indeed, if we consider that victim compensation is partly based on the perceived moral responsibility of the victim herself, then the to-be-compensated victim should be considered less morally responsible in the exceptional condition than in the routine condition. This prediction could be in line with the evidence (Miller & McFarland, 1986) that exceptionality increased victim compensation compared to normality (for instance, operationalized in terms of money allocated to compensate for the lost arm of a victim following a gunshot). This result failed to find support in a replication by Kutscher and Feldman (2019), and we found to the contrary, that exceptionality increased rather than decreased perceived moral responsibility. As a result, our findings suggest new directions and contribute to the understanding of the determinant of attributions of free will and moral responsibility.

In one specific instance, we failed to find support for an exceptionality effect: the hitchhiker scenario in Experiment 2. Although this could be the result of a false negative, and despite the result being in the expected direction of the hypothesis, there is one difference between this scenario and the two others that may potentially explain the differences in effect. In the car accident and convenient store scenarios, the actor does the exceptional action 'because of . . .' something (i.e., 'because he wanted a change of scenery'; 'because he wanted a change of pace'), which is not the case in the hitchhiker scenario. The two scenarios could have been seen as active deliberation scenarios and the hitchhiker scenario as an autopilot scenario, leading to a more pronounced effect in the former because of this confound.

In all of our experiments, the means of attributions of free will were between 4 and 7, upper to the midpoint. This is not the case for the other dependent variables. Although exceptionality increases attributions of free will, it looks like people generally attribute free will to others. This result is in accordance with the compatibilist view of the world, in which people are seen as free, even in a deterministic universe. Furthermore, it may also mean that exceptionality effect for attributions of free will is weaker than for moral responsibility and regret because the range of response is restricted. This lack of sensitivity may be a limit to the use of Likert scale in the study of free will attributions.

LIMITATIONS AND FUTURE DIRECTIONS

Several limitations of the present research should be noted.

Generalizability

We used the original materials from Kahneman and Miller (1986) and Miller and McFarland (1986). Future work may extend to test the generalizability of exceptionality by using new (or other) scenarios and further extend this effect by manipulating other characteristics of normality

(e.g., action effect, the effect of availability, the effect of mutability). Furthermore, because the functional theory of counterfactual thinking (Roese & Epstude, 2017) suggests that regret is mitigated by the justifiability of the action (Inman & Zeelenberg, 2002), one might investigate the extent to which justifiability can change free will attributions in the same way it changes regret attributions. Our design suggests it would also be useful to incorporate measures of moral responsibility because of its conceptual links to the notions of blame and justification.

Self-Attribution vs. Other Attribution

In our three experiments, we used scenarios in which participants had to attribute free will to a target. In doing so, we did not know if the effect of exceptionality on attributions of free will would be found if the target of attributions is oneself (i.e., self-attribution). This question arises because some research suggests that people tend to attribute more free will to themselves than to others (Earp, 2011; Pronin & Kugler, 2010; see also Feldman, Wong & Baumeister, 2016, for exceptions). Hence, the potential presence of a ceiling effect (i.e., a high score on the scale of self-attribution of free will) could potentially weaken the difference of self-attribution of free will between exceptionality and routine conditions. Therefore, future experiments are needed to ensure the generalizability of this finding and explore self-other differences regarding the exceptionality effect in attributions of free will.

Investigations of Causal Links

Although we looked at the relationships between different types of attributions made by participants, the specific design of our experiments prevents any causal interpretations of the results of these analyses. As it was our predictor of interest, we only manipulated exceptionality in our experiments. In the future, researchers may further examine whether attributions of free will play a mediating role between exceptionality and attributions of regret. Further, researchers may also incorporate measures of counterfactuals to assess the way they vary with the attributions of free will and regret. Additionally, future work may investigate how belief in free will moderates the effect of exceptionality on attributions of free will (Monroe, Brady & Malle, 2016).

CONCLUSION

People attribute stronger regret to someone who experienced a bad outcome following an exceptional behavior than a routine behavior. We demonstrated that exceptionality also increases attributions of free will. People attributed more free will to others in exceptional situations, yet only when the exceptional behavior was produced by the target and not produced by others.

OPEN PRACTICES

Our pre-registrations, materials, codes and data are available at *https://osf.io/f2pck/*.

NOTES

1 For more details on the source of this effect size estimate, see the Note S.1. in the Appendices.

2 For convenience and comparability with the two other experiments, we recoded all the dependent variables to modify the ranges from 1 to 7 instead of 0 to 6.

3 These hypothetical scenarios set a Laplacian conception of determinism (Clark, Winegard & Baumeister, 2019; Nahmias et al., 2006). More concretely, it means that theoretically, by knowing all the laws of nature and the location of each particle of the universe at one moment, we would be able to know with certainty the state of the universe at another moment.

4 For reasons of consistency and fluency, we changed the order of presentation of the hypotheses compared with our preregistration document.

5 In line with criteria set in the preregistration, we detected an observation with a too large studentized deleted residual (i.e., a studentized deleted residual strictly greater than 4, see McClelland, 2014) on statistical analyses involving attributions of free will as output. Following our preregistering document, we removed this participant from the sample. Keeping this participant did not change the conclusions.

ADDITIONAL FILE

The additional file for this article can be found as follows:

- **Supplementary file of the exceptionality effect in agency.** The supplementary file has tables of deviation from preregistration, a note about the studies order, the results of experiment 2 without outliers, and a summary table of effect sizes across all experiments. DOI: *https://doi.org/10.5334/irsp.591.s1*

COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR CONTRIBUTION

Part of this work was based on the first author's Master's thesis under the supervision of Anthony Lantian and Ahogni N'gbala at Univ. Paris Nanterre.

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Supplementary materials

SM1

Deviation of Preregistration

Experiment 1

Preregistration Planning and Deviation Documentation (PPDD).

Components in your preregistration (e.g., stopping rule, analyses, hypotheses, exclusion rules)	**Location of preregistered decision/plan** **[Location / link]**	**Were there deviations?** **[no / minor / major]***	**If yes - describe details of deviation(s)** **[brief description / location / link]**	**Rationale for deviation** **[brief description / location / link]**	**How might the results be different if you had not deviated** **[brief description / location / link]**
stopping rule	https://osf.io/9acsf#sampling-plan.stopping-rule	**minor**	We get 342 participants instead of 336 (planned sample size)	On MTurk, it may happen that the number of participants requested does not correspond to the number of participants obtained.	N/A
exclusion rules	https://osf.io/9acsf#analysis-plan.follow-up-analyses	**no**			
hypotheses	https://osf.io/9acsf#study-information.hypotheses	**no**			
analyses	https://osf.io/9acsf#analysis-plan	**no**			

Experiment 2

Preregistration Planning and Deviation Documentation (PPDD).

Components in your preregistration (e.g., stopping rule, analyses, hypotheses, exclusion rules)	Location of preregistered decision/plan [Location / link]	Were there deviations? [no / minor / major]*	If yes - describe details of deviation(s) [brief description / location / link]	Rationale for deviation [brief description / location / link]	How might the results be different if you had not deviated [brief description / location / link]
stopping rule	https://osf.io/h2z7g?view_only=9c163b67e83b47c9b70f6e86e1377316#sampling-plan.stopping-rule	**minor**	We get 589 participants instead of 554 (planned sample size)	On MTurk, it may happen that the number of participants requested does not correspond to the number of participants obtained.	N/A
exclusion rules	https://osf.io/h2z7g?view_only=9c163b67e83b47c9b70f6e86e1377316#analysis-plan.data-exclusion	**no**			
hypotheses	https://osf.io/h2z7g?view_only=9c163b67e83b47c9b70f6e86e1377316#study-information.hypotheses	**no**			
analyses	https://osf.io/h2z7g?view_only=9c163b67e83b47c9b70f6e86e1377316#analysis-plan	**minor**		We wrote the following sentence in the preregistration "Moreover, to be able to give a better estimate of the effect size of our effects of interest, we	Despite this limitation, to allow readers who would be interested to do a meta-analysis, we provided on the next page (Table SM1) the relevant effect sizes (and

				plan to conduct a mini-meta analysis with the relevant data from our other studies." There is, however, an unanticipated difficulty that we later realized. There is no consensus about the relevance/validity to combine effects sizes extracted from within- and between-subjects design in the same meta-analysis (see Feltz & Cova, 2014, page 241 footnote 5 for a discussion about this issue).	associated confidence interval) for each study.

Table SM1

Summary of the effect sizes corresponding to the difference between the routine versus exceptional conditions calculated for all the three experiments.

Experiment	Type of comparison	Attributions of free will	Attributions of moral responsibility	Attributions of regret
Experiment 1	Between	Cohen's d = 0.29 95% CI [0.02, 0.55]	*N/A*	*N/A*
Experiment 2	Between	Cohen's d = 0.06 95% CI [-0.10, 0.23] Cohen's d = 0.54 95% CI [0.37, 0.71] Cohen's d = 0.29 95% CI [0.12, 0.45]	Cohen's d = 0.21 95% CI [0.04, 0.37] Cohen's d = 0.53 95% CI [0.36, 0.70] Cohen's d = 0.37 95% CI [0.20, 0.54]	Cohen's d = 0.65 95% CI [0.48, 0.82] Cohen's d = 1.32 95% CI [1.14, 1.51] Cohen's d = 0.55 95% CI [0.38, 0.72]
Experiment 3	Within	η^2_p = .16 90% CI [.07, .25]	η^2_p = .07 90% CI [.01, .14]	η^2_p = .32 90% CI [.21, .42]

Note. In Experiment 2, the three different values correspond to the three scenarios presented in the following order: hitchhiker, car accident, and convenience store. *N/A* = Not applicable.

Experiment 3

Preregistration Planning and Deviation Documentation (PPDD).

Components in your preregistration (e.g., stopping rule, analyses, hypotheses, exclusion rules)	**Location of preregistered decision/plan** **[Location / link]**	**Were there deviations?** **[no / minor / major]***	**If yes - describe details of deviation(s)** **[brief description / location / link]**	**Rationale for deviation** **[brief description / location / link]**	**How might the results be different if you had not deviated** **[brief description / location / link]**
Sample size	https://aspredicted.org/blind.php?x=uc6wr7 see the answer to question 7	**no**			
exclusion rules	https://aspredicted.org/blind.php?x=uc6wr7 see the answer to question 6	**no**			
hypotheses	https://aspredicted.org/blind.php?x=uc6wr7 see the answer to question 2	**no**			
analyses	https://aspredicted.org/blind.php?x=uc6wr7 see the answer to questions 5 and 8	**minor**		After some thought and in view of the results, we decided not to test the simple effects and mediation or moderation models.	

SM2

At the beginning of this research program, we were especially interested in the link between free will and regret (e.g., the title of the pre-registered project related to Experiment 3). It is therefore necessary to understand that even if Experiment 3 is presented as the last experiment of this paper, it was chronologically conducted before Experiments 1 and 2. For reason of clarity and flow, we chose to present this experiment at the end rather than at the beginning. For this reason, the effect size on which Experiment 1 was based on was extracted from the results of Experiment 3.

SM3

Results of Experiment 2 without outliers

Hitchhiker scenario			
Dependent Variable	*t*	*df*	*p*
Routine versus Exceptional event			
Free will attributions	0.32	556.38	.374
Regret attributions	7.84	493.42	< .001***
Convenience store scenario			
Routine versus Exceptional event			
Free will attributions	3.61	583.93	< .001***