**Supplementary Materials**

Table of Contents

[Power Analyses 2](#_Toc516929541)

[Open Science 2](#_Toc516929542)

[Procedure and data disclosures 2](#_Toc516929543)

[Data collection 2](#_Toc516929544)

[Conditions reporting 2](#_Toc516929545)

[Data exclusions 2](#_Toc516929546)

[Variables reporting 3](#_Toc516929547)

[Compensation Experiments 1 and 2 3](#_Toc516929548)

[Pre-registration Experiment 1 4](#_Toc516929549)

[Hypotheses 4](#_Toc516929550)

[Methods 5](#_Toc516929551)

[Analysis plan 6](#_Toc516929552)

[Additional hypotheses and analyses beyond replication 6](#_Toc516929553)

[Materials used in Experiment 1 7](#_Toc516929554)

[Scenario #1 7](#_Toc516929555)

[Scenario #2 8](#_Toc516929556)

[Scenario #3 8](#_Toc516929557)

[Pre-registration Experiment 2 11](#_Toc516929558)

[Hypotheses 11](#_Toc516929559)

[Methods 13](#_Toc516929560)

[Analysis plan 14](#_Toc516929561)

[Additional hypotheses and analyses beyond replication 14](#_Toc516929562)

[Materials used in Experiment 2 15](#_Toc516929563)

# Power Analyses

The effect sizes of the three original experiments were determined. In Part 1 (hitchhiker-scenario) a total of 88% of 138 participants regretted a negative outcome more when the behavior of the focal person was exceptional, resulting in a chi-square effect of 78.38 (compared to a 50-50 random distribution). Chi-square was converted into a Cohen’s d of 2.29. In Part 2 (car accident-scenario) a total of 82% of 92 participants regretted a negative outcome more when the antecedent was exceptional resulting in a chi-square effect of 36.57 (compared to a 50-50 random distribution). Chi-square was converted into a Cohen’s d of 1.58.

Part 3 originally used three conditions. The first condition was framed as a normal condition (Condition 1: N=58, M=4.52), the second as self-produced exception condition (Condition 2: N=48, M=5.37), and the third as other-produced exception condition (Condition 3: N=57, M=5.37). A preliminary analysis revealed no significant differences (t < 1) between the two abnormal conditions. Therefore these conditions were collapsed for the analysis in the original article. T-test result of normal vs. abnormal conditions revealed that the compensation assigned to the victim in the abnormal condition was significantly higher than in the normal condition: (162)=2.17, p<.03. The t-test results were calculated into Cohen’s d of 0.36 CIs [0.03; 0.68]

1 - Calculator: <http://www.uv.es/~friasnav/TEdatospublicados.xls>, How to Calculate Effect Sizes from Published Research: A Simplified Spreadsheet By Will Thalheimer and Samantha Cook

2 - MBESS R package. Using t(162)=2.17, p<.03 and n1=58, n2=105:
library(MBESS); ci.smd(ncp=2.17, n.1=58, n.2=105, conf.level=0.95):

$Lower.Conf.Limit.smd [1] 0.03148629 $smd [1] 0.3550135 $Upper.Conf.Limit.smd [1] 0.6774542

Experiment 3 revealed the smallest effect size (d = 0.36) of the three replications and therefore served as the basis for the required sample size. In order to achieve a power of .95 with an alpha of .05 we calculated a minimum need of 336 participants using G\* Power Version 3.1.9.2. Our experiments were finally conducted with a total of 342 participants.

# Open Science

Data and code will be shared using the Open Science Framework. Files are available for review using the following links:

Experiment 1: <https://osf.io/za7t2/?view_only=308c93940f7c47c0b4af941b55d2c442>

Experiment 2: <https://osf.io/p4rgd/?view_only=2bf497a264fd47528df0135cf424f614>

# Procedure and data disclosures

## Data collection

Data collection was completed before conducting an analysis of the data.

## Conditions reporting

All collected conditions are reported.

## Data exclusions

There were no data exclusions. All data is included in the provided data.

## Variables reporting

All variables collected for this study are reported and included in the provided data.

## Compensation Experiments 1 and 2

Participants received 0.35USD (for a ~2-3 minutes survey).

We included a question in the demographics section of the survey regarding satisfaction with pay for the MTurk HIT, and mean satisfaction was 4 and 4.7 (SD = 1.52 and 1.31) on a 0-6 scale (0 = Extremely unsatisfied, 3 = Neutral, 6 = Very satisfied), with 84% and 95% rating 3-6 (Experiment 1 / Experiment 2, respectively).

# Pre-registration Experiment 1

We pre-registered the experiment on May 7th 2017 on the Open Science Framework and data collection was launched later that day. The section pertaining to the current manuscript included the following below:

## Hypotheses

Description of essential elements

Norm theory by Kahneman and Miller (1986) proposed that abnormal behavior makes it relatively easy to think of what might have been. In fact, people will perceive higher regret on an episode with a negative outcome when they derive from an intrapersonal norm. The aim of this study is to replicate the effects of three classic experiments:

* Experiment 1 (hitch-hiker scenario) and Experiment 2 (car accident scenario) is a replication of scenarios and data presented in the Kahneman and Miller (1986) review paper.
* Experiment 3 (supermarket scenario) is a replication of Study 1 in Miller & McFarland (1986).

Main Hypothesis:

We expect an impact of intrapersonal norms on perceived regret over a negative outcome. In specific, it is assumed that people would evaluate a person deviating from his or her own past behavior norm as experiencing higher regret in comparison to a person who acted according to his or her own past behavior norm.

## Methods

Design

* Part 1
	+ Single scenario IV: normal versus abnormal (compared to past behavior). So there's no manipulation, but rather a comparison to a 50-50 split for a random choice.
	+ DV: regret
* Part 2
	+ Single scenario IV: normal versus abnormal (compared to past behavior). So there's no manipulation, but rather a comparison to a 50-50 split for a random choice.
	+ DV: upset
* Part 3
	+ IV: 3 conditions between-subject, normal versus abnormal-intentional versus abnormal-unintentional (compared to past behavior)
	+ DV:
		- Compensation
		- Regret

Planned Sample

* All experiments will be run with 336 participants from the USA recruited online by using Amazon Mechanical Turk. The sample size was determined through a power analysis based on the effect sizes found in the classic experiments (Power: 1-β = 0.95, Significance: alpha = 0.05). The complete power analysis is provided in Appendix 1. The survey will be pretested with 10 participants on Amazon Mechanical Turk (just to ensure no technical problems, no data peeking).

Exclusion Criteria

We will determine exclusions based on:

* All participants indicating a low proficiency of English (self-report<5)
* Participants who self-report not being serious about filling in the survey (self-report<5).

In any case, we will report exclusions in detail with results for full sample and results following exclusions (in either the manuscript or the supplementary).

Procedure

A Qualtrics survey will be used for this study. The survey design is attached to the project to reconstruct the idea. See attached exported Qualtrics survey for full procedure and materials.

## Analysis plan

1. Experiment 1 and 2 will be analyzed by using a Chi-square test. It will be assessed if the distribution significantly deviates from a distribution with random chance (p=.5).
2. Experiment 3:
	1. One-way ANOVA of the three conditions with t-test contrasts on all DVs.
	2. Replicated study methods: If no differences between condition 2 and 3 (conditions for abnormal), these will be combined and a t-test comparison will be performed between the abnormal (2 and 3) versus normal (1).

## Additional hypotheses and analyses beyond replication

Going beyond the replication we added new measures on separate pages after the replication:

1. Experiment 1:
	1. Social norms. Based on Kahneman and Miller (1986) we expect the person regularly taking hitch-hikers will be less common and more criticized by society. Chi-square analyses.
	2. Negative affect considering both social norms and past behavior: Exploratory, no specific hypothesis. Two-way chi-square analyses (past behavior + perceived norms -> negative affect).
2. Experiment 2, added Miller, Turnbull, and McFarland (1989) related measures about chance and luck.
	1. Coincidence: Likelihood that accident is random chance for each of the described persons. Within t-test comparison.
	2. Luck: Which of the two is less lucky: abnormal will be considered less lucky? Chi-square.

# Materials used in Experiment 1

## Scenario #1

Mr. Jones almost never takes hitch-hikers in his car. Yesterday he gave a man a ride and was robbed. Mr. Smith frequently takes hitch-hikers in his car. Yesterday he gave a man a ride and was robbed.

Comprehension questions

Who almost never takes hitch-hikers in his car?

Mr. Jones (1)

Mr. Smith (2)

Who frequently takes hitch-hikers in his car?

Mr. Jones (1)

Mr. Smith (2)

Who got robbed?

Mr. Smith (1)

Mr. Jones (2)

Both Mr. Smith and Mr. Jones (4)

Regret

Who do you expect will experience greater regret over the episode?

Mr. Jones (1)

Mr. Smith (2)

Social Norms 1

Whose behavior do you think is more common in society?

Mr. Jones (1)

Mr. Smith (2)

Social Norms 2

Whose behavior do you think will be more criticized by others in society?

Mr. Jones (1)

Mr. Smith (2)

Negative affect

Contemplating your previous answers about this scenario and factoring in both Mr. Jones and Mr. Smith personal routines and your perceptions of social norms and possible social criticism, who do you think overall experienced more negative feelings about the decision to take a hitch-hiker that day?

Mr. Jones (1)

Mr. Smith (2)

## Scenario #2

Mr. Adams was involved in an accident when driving home after work on his regular route. Mr. White was involved in a similar accident when driving on a route that he only takes when he wants a change of scenery.

Comprehension questions:

Who was driving home after work on his regular route?

Mr. Adams (1)

Mr. White (2)

Who was driving on a route that he only takes when he wants a change of scenery?

Mr. Adams (1)

Mr. White (2)

Who was involved in an accident?

Mr. Adams (1)

Mr. White (2)

Both Mr. Adams and Mr. White (4)

Regret:

Who is more upset over the accident?

Mr. Adams (1)

Mr. White (2)

Random chance:

Please rate your agreement with the following statements:
Mr. Adam's accident is just a random coincidence ( 1 – strongly disagree to 7 – strongly agree)

Mr. White's accident is just a random coincidence ( 1 – strongly disagree to 7 – strongly agree)

Luck:

Which of the two do you think is less lucky?

Mr. Adams (1)

Mr. White (2)

## Scenario #3

Condition 1

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.

Condition 2

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.

Condition 3

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 Store A was temporarily closed for renovations. 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.

Comprehension questions:

Which convenience store does Mr. Paul visit frequently?

Store A (1)

Store B (2)

Which convenience store did Mr. Paul visit last night?

Store A (1)

Store B (2)

Did Mr. Paul lose the use of his right arm as a result of a gunshot wound?

Yes (1)

No (2)

How much money should Mr. Paul receive in compensation for his loss?

0 $ (1)

100k $ (2)

200k $ (3)

300k $ (4)

400k $ (5)

500k $ (typical award) (6)

600k $ (7)

700k $ (8)

800k $ (9)

900k $ (10)

1,000k $ (11)

Assume there was no compensation given to Mr. Paul. How much regret does he feel over the situation?

no regret (0)

weak regret (1)

medium regret (2)

strong regret (3)

very strong regret (4)

# Pre-registration Experiment 2

We pre-registered the experiment on 2018-02-19 12:59 UTC on the Open Science Framework and data collection was launched later that day. The section pertaining to the current manuscript included the following below:

## Hypotheses

Description of essential elements

Norm theory by Kahneman and Miller (1986) proposed that abnormal behavior makes it relatively easy to think of what might have been. In fact, people will perceive higher regret on an episode with a negative outcome when they derive from an intrapersonal norm.

In the first experiment we ran the following three scenarios:

* Experiment 1 (hitch-hiker scenario) and Experiment 2 (car accident scenario) are a replication of scenarios and data presented in the Kahneman and Miller (1986) review paper.
* Experiment 3 (supermarket scenario) is a replication of Study 1 in Miller & McFarland (1986).

We successfully replicated the first two, but failed to show a direct replication of Study 1 in Miller & McFarland (1986) using their compensation DV.

The purpose of this study is to again attempt to replicate Study 1 in Miller & McFarland (1986). Since we already conducted a pre-registration for the first attempt to replicate, we note the following changes from the pre-registration of the first attempt:

1. This experiment will focus solely on Study 1 in Miller & McFarland (1986) with no additional studies bundled together, to address possible order effects or that the other experiments somehow affected the experiment.
2. We removed the comprehension checks prior to answering the DV, to address possible effects that these questions may have had on answering the dependent variable.
3. Although the original article indicated a typical compensation award of 500,000 we decided to remove the reference to the typical award from the scale description, as in the previous replication attempt, most participants seemed to simply result to these typical ones. Also, in the previous version we shortened 500,000 to 500k, but in this replication attempt we display the full numerical values, to more closely resemble the original study.

Also, although we failed to replicate the effect, we did find support for the manipulation affecting a regret measure DV which asked "assume there was no compensation given to Mr. Paul. How much regret does he feel over the situation?” (1 – no regret to 5 – very strong regret). In this experiment we made slight changes in the framing of the question to ask about the decision, rather than the situation " Assume there was no compensation given to Mr. Paul. How much regret does he feel about visiting store A?". Also, related to a different project we have on free will attributions, we expected that exceptionality (deviation from routine) would be attributed higher free will than routine, and therefore added an additional DV.

Hypotheses

From the previous pre-registration: We expect an impact of intrapersonal norms on perceived regret over a negative outcome. In specific, it is assumed that people would evaluate a person deviating from his or her own past behavior norm as experiencing higher regret in comparison to a person who acted according to his or her own past behavior norm.

New in this study: self-induced exceptionality (a chosen deviation from routine) would be attributed higher free will than routine. In terms of types of exceptionality, we expect that self-produced exception would be the highest free will, compared to other-produced exception. We entertain competing hypotheses regarding the comparison between routine and other-produced exception (exploratory).

## Methods

Design

* Experiment
	+ IV: 3 conditions between-subject, normal versus abnormal-intentional versus abnormal-unintentional (compared to past behavior)
	+ DV:
		- Compensation
		- Regret
		- Free will attributions. This measure of free will attribution (adapted from Clark et al., 2014) will be assessed with three items rated on a 7-point scale.

Planned Sample

* All experiments will be run with 336 participants from the USA recruited online by using Amazon Mechanical Turk. The sample size was determined through a power analysis based on the effect sizes found in the classic experiments (Power: 1-β = 0.95, Significance: alpha = 0.05). The complete power analysis is provided in Appendix 1. The survey will be pretested with 10 participants on Amazon Mechanical Turk (just to ensure no technical problems, no data peeking).

Exclusion Criteria

We will determine exclusions based on:

* All participants indicating a low proficiency of English (self-report<5)
* Participants who self-report not being serious about filling in the survey (self-report<5).

In any case, we will report exclusions in detail with results for full sample and results following exclusions (in either the manuscript or the supplementary).

Procedure

A Qualtrics survey will be used for this study. The survey design is attached to the project to reconstruct the idea. See attached exported Qualtrics survey for full procedure and materials.

## Analysis plan

Experiment 3:

1. One-way ANOVA of the three conditions with t-test contrasts on all DVs.
2. Replicated study methods: If no differences between condition 2 and 3 (conditions for abnormal), these will be combined and a t-test comparison will be performed between the abnormal (2 and 3) versus normal (1).
3. Free will attributions: We will average the 3 items, if the Cronbach’s alpha is superior or equal to .70. If the Cronbach’s alpha is inferior to .70, we will analyze the items independently.
Items (1 = strongly disagree, 7 = strongly disagree):
	1. Mr. Paul could have chosen to do otherwise and visit a different store
	2. By visiting that specific store, Mr. Paul was exercising his free will
	3. Mr. Paul's choice of which store to visit was his own free choice

Criteria: NHST, using alpha < .05, one-tail. This is to mirror the original studies.

## Additional hypotheses and analyses beyond replication

Going beyond the replication we added new measures in separate pages after the replication:

1. In accordance with previous pre-registration: added a measure of regret
2. New: added free will attributions. (to serve a different project)

# Materials used in Experiment 2

Condition 1

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.

Condition 2

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.

Condition 3

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 Store A was temporarily closed for renovations. 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.

Mr. Paul seeks compensation for both the physical and psychological harm suffered.
How much money should Mr. Paul receive in compensation?

0 $ (1)

100k $ (2)

200k $ (3)

300k $ (4)

400k $ (5)

500k $ (typical award) (6)

600k $ (7)

700k $ (8)

800k $ (9)

900k $ (10)

1,000k $ (11)

Assume there was no compensation given to Mr. Paul. How much regret does he feel about visiting store [A/B]?

no regret (0)

weak regret (1)

medium regret (2)

strong regret (3)

very strong regret (4)