Exploring the Impact of Atypical Events on Regret: Analysis Through Hitchhiker, Car Accident, and Robbery Scenarios*

Reproduction of 'The impact of past behaviour normality on regret: replication and extension of three experiments of the exceptionality effect' (Lucas Kutscher & Gilad Feldman, 2018)

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This study aims to replicate Kutscher and Feldman's findings, which examine regret based on the norm theory. According to norm theory, an individual's activity can be categorized as either typical or atypical with the latter, on the other hand, eliciting a stronger emotional response. We focused on replicating three specific scenarios: hitchhiking, car accidents, and robberies. Examining how people recalled their behaviour in these specific scenarios helped our perception of the emotion of regret. This replication is consistent with the original study.

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1 Introduction

Regret is an uncomfortable state of mind that encompasses feelings of sorrow and distress over unfortunate events, perceived personal failures, losses, violations, deficiencies, or errors(Gilovich and Medvec 1995). It associates to many things in our daily life. Matters of regret can include both acts done and opportunities missed; they may extend from intentional actions to those that are involuntary or happenstance; they could be tangible actions carried out or purely thoughts, whether self-initiated or by others; and they might constitute ethical or legal violations, or be actions that are neutral in terms of morality and law (Gilovich and Medvec 1995).

From the original paper (Kutscher and Feldman 2019), norm theory (Kahneman and Miller 1986) posits that people cognitively categorize events as either typical or atypical, with atypical events eliciting more potent responses because typical occurrences are more readily recalled, thus simplifying the generation of counter factual scenarios for atypical events. The greater ease of conjuring these hypothetical alternatives for atypical outcomes amplifies the sensation of regret when the results are unfavorable. For instance, people's habitual behaviors are more memorable and mentally prominent, which facilitates the construction of customary 'what if' scenarios in contrast to an anomaly. Consequently, departures from one's usual behavior are perceived as more changeable and evoke stronger feelings of regret.

We replicate the paper by Kutscher and Feldman (2019) with replicating and focusing the three scenarios of the experiment:

- Hitchhiker-scenario
- Car accident scenario
- Robbery scenario

The original paper used R (R Core Team 2021) for data processing and analysis in its replication package, we use R (R Core Team 2021) as well for all data wrangling and analysis and R packages tidyverse (Wickham et al. 2019),ggthemes(Arnold 2019), patchwork(Pedersen 2020), here(Müller 2017), ggplot2(Wickham 2016), dplyr(Wickham et al. 2021), psych(Revelle 2021),reshape2(Wickham 2007) to produce the figures.

2 Data

2.1 Data Source and Methodology

All of the data for REGRET and COMPENSATION contained 344 observations, and 21 VARIABLES were taken from the data underlying Kutscher and Feldman's study(Kutscher and Feldman 2019), which was collected as a questionnaire. The questionnaire recipients read a scenario in which a robbery occurred at a grocery store. In the first scenario (routine

behaviour), Mr. Paul visited the store he frequented. In the second scenario (self-produced exception), the main character went to another store because he wanted a change of scenery. In the third scenario (other produced exception), Mr. Paul is forced to patronize another store because the store he frequents is closed for construction, and he runs into a robbery taking place in the store. In the next question, we ran a compensation measure followed by a regret measure. Respondents were asked how much money Mr. Paul should receive in compensation for his loss—scale from 0 to 10: 0\$ to 1000000\$. The next question was: assume no compensation was given to Mr. Paul. How much regret does he feel over the situation? Scale 1 from no regret to 5, very strong regret.
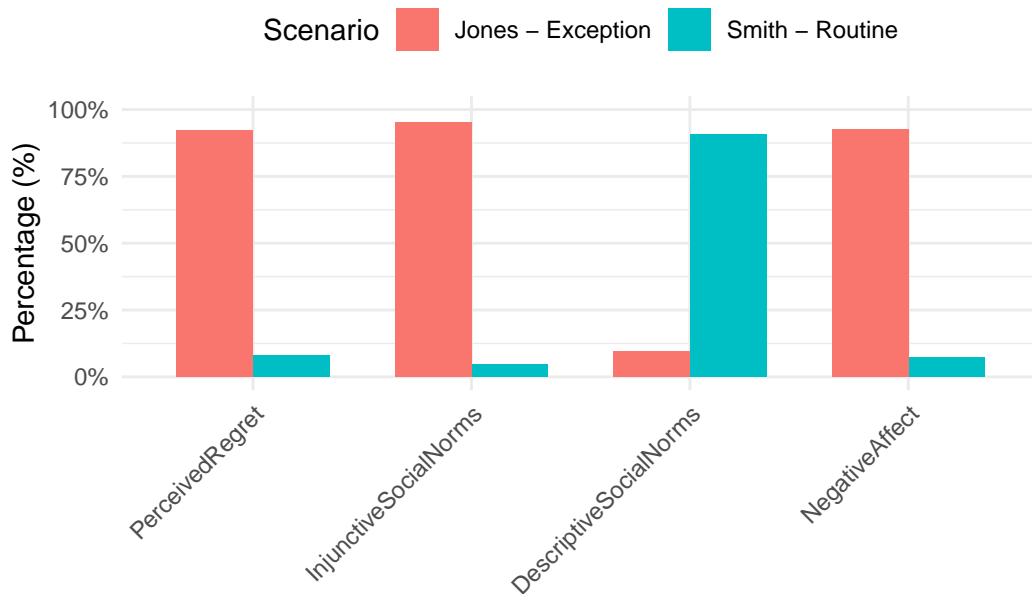
3 Results

3.1 fig1

Figure 1: Proportions for perceived regret, injunctive social norms, descriptive social norms, and negative affect

Figure 1 shows the evaluation results of participants in two different scenarios: Mr. Jones, who never uses his car to pick up hitchhikers, and Mr. Smith, who often uses his car to pick up hitchhikers, were also picked up by themselves yesterday. After the car was robbed by the people, it was different in all aspects. In the Perceived Regret assessment, the proportion of regret towards Mr Smith was relatively low (7.9%). In contrast, the regret for Mr. Jones reached 92.1%, which was significantly higher than the former. Similar to regret in Injunctive Social Norms, Mr. Smith and Mr. Jones were at 4.7% and 95.3% respectively. This suggests

that most people view Mr. Jones (who never picks up hitchhikers) as more common in society, and therefore feel a greater sense of regret for what happened to him. In addition, another reason is that Mr. Jones encountered extremely low-probability events on rare occasions, which is even more unacceptable. As for Descriptive Social Norms, it is naturally the opposite of the first two. Mr. Smith's proportion is extremely high, reaching 90.6%, while Mr. Jones's is only 9.4%. In addition, as the chart shows, a strong sense of regret will bring about Negative Affect. Therefore, the proportion of Negative Affect in Mr. Jones' scene is very high, 92.7%. The proportion in Mr. Smith's scenario was lower, 7.3%. Based on the above results, it can be seen that most participants believe that Mr. Jones is more in line with social rules than Mr. Smith. However, because the two have also experienced small-probability negative events, participants will gain more in Mr. Jones's scenario. Feelings of regret and experiencing negative emotions. shows the evaluation results of participants in two different scenarios: Mr. Jones, who never uses his car to pick up hitchhikers, and Mr. Smith, who often uses his car to pick up hitchhikers, were also picked up by themselves yesterday. After the car was robbed by the people, it was different in all aspects. In the Perceived Regret assessment, the proportion of regret towards Mr Smith was relatively low (7.9%). In contrast, the regret for Mr. Jones reached 92.1%, which was significantly higher than the former. Similar to regret in Injunctive Social Norms, Mr. Smith and Mr. Jones were at 4.7% and 95.3% respectively. This suggests that most people view Mr. Jones (who never picks up hitchhikers) as more common in society, and therefore feel a greater sense of regret for what happened to him. In addition, another reason is that Mr. Jones encountered extremely low-probability events on rare occasions, which is even more unacceptable. As for Descriptive Social Norms, it is naturally the opposite of the first two. Mr. Smith's proportion is extremely high, reaching 90.6%, while Mr. Jones's is only 9.4%. In addition, as the chart shows, a strong sense of regret will bring about Negative Affect. Therefore, the proportion of Negative Affect in Mr. Jones' scene is very high, 92.7%. The proportion in Mr. Smith's scenario was lower, 7.3%. Based on the above results, it can be seen that most participants believe that Mr. Jones is more in line with social rules than Mr. Smith. However, because the two have also experienced small-probability negative events, participants will gain more in Mr. Jones's scenario. Feelings of regret and experiencing negative emotions.
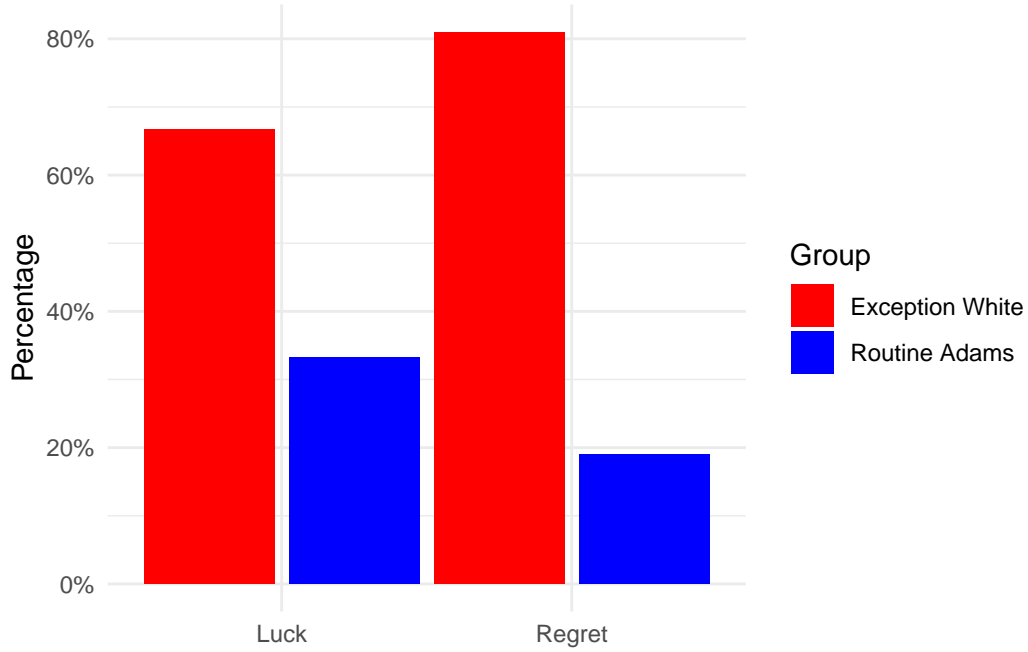
3.2 fig2

Figure 2: Proportions for perceived regret and luck

The figure named Figure 2 is a replication of Figure 2 in the original paper, and it shows the proportions for perceived regret and luck in two Groups, which are Mr. Adams with the circumstance of routine and Mr. White with the circumstance of the exception. According to the table 2, the proportion of perceived regret for the group of Mr. Adams with the circumstance of routine is 19%, which 19 percents of participants in the experiment feels that Mr. Adams was more upset over the accident for the second scenario. In contrast, the proportion of perceived regret for the group of Mr. White with the circumstance of the exception is 81%, which 81 percents of participants in the experiment feels that Mr. White was more upset over the accident for the second scenario. What's more, the proportion of perceived luck for the group of Mr. Adams with the circumstance of routine is 33.3%, which 33.3 percents of participants in the experiment supposes that Mr. Adams was less lucky. Instead, the proportion of perceived luck for the group of Mr. White with the circumstance of the exception is 66.7%, which 66.7 percents of participants in the experiment supposes that Mr. White was less lucky.

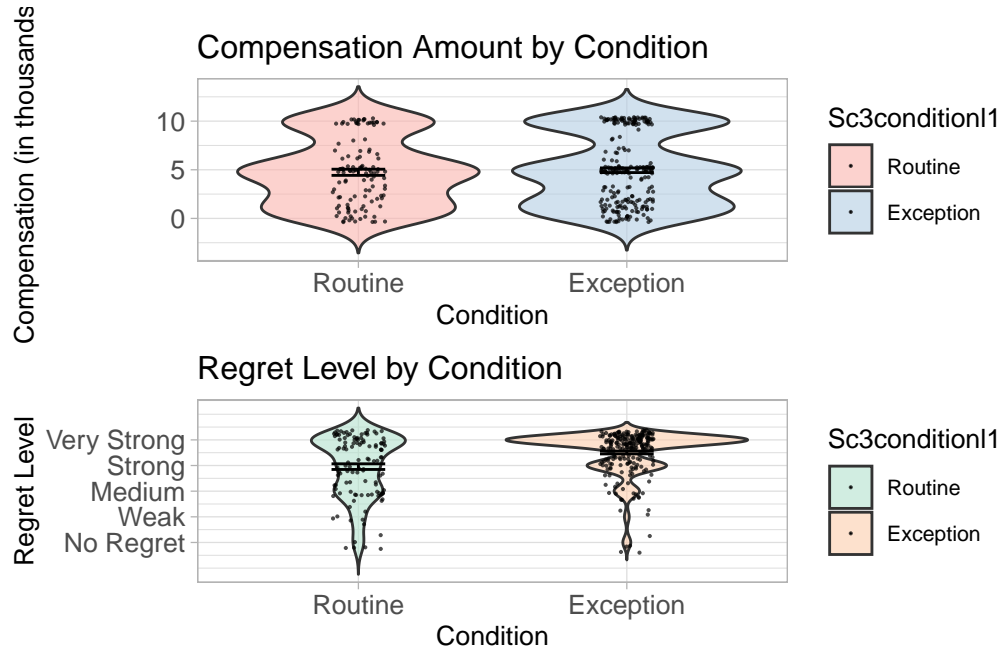### 3.3 The Influence of Exceptionality on Compensation and Regret

Figure 3: Victim compensation and regret with exception conditions combined

Respondents were reading about whether Mr. Paul was injured because he happened to be robbed when he went to his everyday store or another store because of construction. Through the questionnaire, we observed the respondents on the compensation measure and the regret measure, and the two violin plots in Figure 3 show the distribution of the data. The distribution of compensation amount is roughly similar in regular and exceptional cases, and we can conclude that people do not define compensation separately for regular and special cases. However, we can observe that in the graph of the degree of regret, the degree of regret is more pronounced in the EXCEPTION situation. Regret is a complex emotional response; in general, regular events do not cause regret, but people are more likely to regret when they think that another decision might have led to a better outcome, which is in line with the results of our graph. Neal J. Roese and Amy Summerville have mentioned in their research that regret is related to perceived opportunities in life; that is, people perceive opportunities, the more opportunities people perceive, the more regretful they are(Roese and Summerville 2005). This is consistent with the situation in our study, in which Paul was robbed at a different store because of a store renovation, and respondents saw an opportunity not to be robbed, i.e., to go to the original store, and therefore had a generally higher level of regret. But when Paul is robbed when he goes to the original store, people don't see the chance not to be robbed, so the level of regret is smaller. So, our reproduced graph is consistent with the conclusions obtained from the original article.

4 Discussion

4.1 Bais

Ethical implications and biases naturally arise when collecting quantitative and qualitative data. The data collected in this article were basically provided by the participants. Although efforts were made to screen the participants fairly and make them fully meet the required conditions, in the context of their simple one-to-one comparison, data bias is more likely to occur. For example, when testing for deviant effects, findings showed stronger regret for action than for inaction when using presentations involving the fate of two people, but this effect was very weak when using designs involving a single individual. This suggests that simple comparison scenarios may overestimate the size of the deviant effect. In addition, because the data used in the article are not original data, the selection of experimental participants may not be representative of a wider population, or the experimental situation may deviate from real-world situations, then these research results may not be widely generalizable to in a broader context, thus illustrating potential sampling bias issues.

4.2 Future

The results obtained in this article can be useful in several fields in the future: firstly in psychology and behavioral economics, with the results regarding the link between the emotion of regret and decision-making behavior, especially when taking into account the regularity of the behavior and deviancy, research on how individuals process decision outcomes and how these processes influence future decisions can be considered at a psychological level. In addition, the findings provide a better understanding of how consumers make decisions based on past behavior and whether those behaviors are routine or unusual. The second is in terms of public policy and education, these findings can provide a better understanding of how people evaluate their own behavior and how these evaluations affect their emotions and behavioral intentions, which can help develop more targeted and effective interventions, and also More effective teaching strategies and learning tools can be developed. Finally, it can even be applied to artificial intelligence and machine learning, which has also been a hot topic in recent years. When designing intelligent systems, these research results can provide information about the process and results of how humans make decisions, and can help developers create algorithms that are more consistent with human behavior and emotional responses.

5 Conclusion

In summary, our study replicated Kutscher and Feldman's findings by examining the effects of past behaviour on regret, precisely scenarios related to hitchhiking, car accidents, and robberies. We found that individuals are more likely to experience regret when confronted with atypical

events than with typical events. In hitchhiking and car accident scenarios, regret increases when people deviate from normal behavioural patterns. Also, we found that even the increase in regret does not affect the compensation domain. We can find from the violin plots that the need for compensation is very similar in both regular and special situations. Our analysis is consistent with the original research of Kutscher and Feldman and the findings of Neal J. Roese and Amy Summerville. It also emphasizes the complexity of regret as an emotion and that when people have more choices, they experience more regret when they believe they are missing out on other, more favourable outcomes because of the wrong choices(Roese and Summerville 2005). Future research could continue to explore the association between regret and other different emotions and whether levels of regret change over time, which could inform and help future psychology, compensation, and legal liability.

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