

## THE ROLE OF REGRET IN RATIONAL DECISION MAKING

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*Abstract:* Rational decision making can be defined as a tendency to make a normative decision, while incorporating post-choice predicted emotions into the decision making process. The study investigates the role of anticipated and experienced regret in rational decision making as well as the role of 'passing time' in regret reduction. It was found that rational decision makers anticipate regret during the decision making process, but they are not good at correctly predicting regret intensity, in comparison with non-rational decision makers. According to the obtained results it can be stated that regret emerges from the single act of decision making and not from the type of inference which precedes the choice. 'Passing time' however decreases the intensity of regret.

*Key words:* rational decision making, anticipated regret, experienced regret, regret reduction

Rational decision-making can be seen as a prototype of a normative decision making, when the subject evaluates all alternatives, clearly sees their negative and positive characteristic, considers all available information, and makes a rational decision after correct inference. However, this "ideal" conception of rational decision making process is not accurate for human beings, because real life decision making is marked with reduced rationality. According to the theory postulated by Herbert Simon, we cannot make a correct rational decision because we are limited by our biological givenness. In spite of the fact that a totally rational decision cannot be made by a human, people try to reach it. Therefore, in our view, rational decision making is a tendency to make a normative decision, which means that the

subject *tries* to evaluate all alternatives, tries to identify their losses and gains, tries to consider all available information and finally has a tendency to make a correct inference.

Some studies show that decision making based on the principles of rationality is followed by regret (Shafir, Simonson, Tversky, 1993; Schwartz et al., 2002; Carmon, Wertenbroch, Zeelenberg, 2003; Pierro et al., 2008). Regret is the negative, cognitively based emotion that we experience when realizing or imagining that our present situation would have been better had we acted differently (Zeelenberg, 1999, p. 326). Because regret is a negative emotion the subject tries to avoid it. It means that we tend to make decisions which produce minimal regret (Zeelenberg et al., 2000). The ten-

dency to avoid future regret expects the ability to anticipate this emotion in the decision making process. Thus, there are two types of regret: experienced and anticipated. *Experienced regret* occurs after the decision, and is caused by counterfactual thinking when we compare the current state of situation with the other possible outcome of a different decision (Zeelenberg, 1999). Carmon, Wertenbroch and Zeelenberg (2003), on the other hand, found that after the choice, the decision maker realizes that because of the selection, he/she has lost the positive aspects of the non-chosen alternative and got the negative aspects of the chosen alternative. This experience leads to the feeling of regret. This period of regret is due to the choice made and occurs immediately thereafter, but it is not influenced by the exact consequences of the alternatives as defined by Zeelenberg (1999). *Anticipated regret* is the prediction of a future emotion, when we imagine the possible emotional consequence of a decision.

In the decision making process we have to choose one of several alternatives. So we try to evaluate all alternatives and choose the one which predicts the highest utility. The likeness of this expected utility is based only on a prediction, but it significantly affects our decision. In a rational choice the expected utility equals the experienced utility (for a review see Zeelenberg, 1999). However, the experienced utility is influenced by emotions after the decision. The same is true for experienced regret. It means that in rational decision making, we have to predict our future emotions correctly in order to reach the equality between expected and experienced utility. If anticipated and experienced emotions are not almost the same, the expected and experienced utility will not be

equal either. It means that after the rational decision making the intensity of the expected and anticipated regret should be almost the same.

The main aim of this study is to reveal the nature of the relationship between rational decision making and regret. Firstly, we would like to investigate whether the process of rational decision making includes the step of regret anticipation, as it was postulated by the theoretical hypothesis (Zeelenberg, 1999; Carmon, Wertenbroch and Zeelenberg, 2003). Secondly, we would like to investigate a possible difference between rational and non-rational decision makers in the intensity of the experienced regret after the decision. Thirdly, we would like to find out whether 'passing time' can be classified as an effective regret reduction mechanism. It is widely known that 'passing time' influences memories, so it is highly possible that according to this process our emotions can be effected simply by 'passing time'. Only few studies have investigated this topic up to now (e.g., Gailon, Wattson, 1967; Frey et al., 1984).

## METHOD

### *Participants*

A total of 63 (55 females, 8 males) undergraduates aged 18 - 25 years (mean = 19.6) participated in the study. All of them gave informed consent to participate in the research.

### *Measures*

Rational decision making questionnaire was used for the classification of participants into rational and non-rational decision makers. The questionnaire was developed by the

authors of this study and was based on research results and recent theories of rational decision making. The questionnaire contains 11 items, referring to four aspects of rational decision making (e.g., Before the decision I try to consider the maximum of available information; During decision making I try to anticipate the consequences of my future decision; Before the decision I need to clearly see the pros and cons of the decision alternatives; I try to evaluate all of the possible decision alternatives). Participants expressed the agreement/disagreement on presented statements on a 6-point scale. The higher the score the higher the tendency to rational decision making. Participants were divided into a rational and non-rational group according to their results in the questionnaire (the dividing criterion was a median of the scores from all participants the value of which was 48).

To evaluate a general tendency of regret anticipation during the decision making process, the participants expressed agreement/disagreement on three statements on a 6-point scale concerning regret anticipation (e.g., Before making a decision I think about the possible regret after the choice).

For the evaluation of the extent of the actually experienced regret (three times during the research procedure) and for the back-evaluation of the actually anticipated regret the participants used a 6-point scale. They had to express their agreement/disagreement with the presented statement (i.e., I regret that I did not choose the other personality questionnaire).

#### *Procedure*

The main part of our research procedure was that all of the participants (both rational

and non-rational decision makers) were exposed to regret inducing situations. We manipulated the external stimulus in such a way as to decrease the subjective satisfaction with the previous choice.

The researcher worked with only one participant at a time, whose task involved choosing between one of the two presented personality questionnaires to be filled out in the future. The questionnaires were characterized as being almost equally attractive. After the decision between the questionnaires, the subjects had to evaluate the intensity of regret emerging from the fact that he/she did not select the second questionnaire (experienced regret was measured here for the first time, right after the decision). Next, the subject was informed that he/she can listen to a feedback on the two questionnaires from a participant who filled them both earlier. In fact, researchers prepared two types of feedbacks with a cooperator. In the first recording the cooperator values positively questionnaire "A" and negatively questionnaire "B", while in the other recording the cooperator values positively questionnaire "B" and negatively questionnaire "A". In order to induce experienced regret, the participant heard that specific type of feedback where the cooperator values positively the non-chosen questionnaire and values negatively the chosen one. So we manipulated an external factor (recorded feedback as an independent variable) to induce experienced regret (rate of experienced regret as a dependent variable). After the feedback, the participant was asked for the second time to evaluate the intensity of regret that he/she did not select the other questionnaire. The intensity of experienced regret was measured again following a period of time after the feed-

back. The time period varied between participants. The intensity of anticipated regret was measured backward after the whole session ("During the decision making process concerning choice between the two presented questionnaires did you think about regret that may follow your choice? If yes, could you evaluate its intensity on the presented 6 point scale?"), as it could not be measured directly without revealing the true aim of the procedure.

### RESULTS

The first aim of this study was to clarify whether the process of rational decision making includes the step of regret anticipation. The score from the evaluation of general tendency of regret anticipation during the decision making process was higher in the rational group (median = 8; mean rank = 35.53) than in the non-rational group (median = 5; mean rank = 21.53). According to obtained results it can be stated that rational decision makers have a higher tendency of regret anticipation during decision making process than non-rational decision makers ( $U = 181$ ;  $p = 0.02$ ).

There were no differences in the experienced regret intensity between the rational and non-rational group immediately following the decision ( $U = 365$ ,  $p = 0.65$ ) nor following the listening to the feedback, where the cooperator values positively the non-chosen questionnaire and negatively the chosen one ( $U = 326$ ,  $p = 0.32$ ).

The rational group was not good at accurately predicting the intensity of experienced regret (no correlation between anticipated and experienced regret after the feedback was found  $-r_s = -0.04$ ;  $p = 0.87$ ). Surprisingly, the non-rational group could predict the inten-

sity of experienced regret more precisely ( $r_s = 0.51$ ;  $p < 0.05$ ).

In addition, negative correlation between experienced regret and time passed since the decision was found ( $r = -0.18$ ;  $p < 0.05$ ), which means that the intensity of experienced regret was reduced by the passing time.

### DISCUSSION

The ideal process of rational decision making cannot be complete without anticipation of regret. Our results reveal that a person who subjectively thinks that he/she is as a rational decision maker, also expresses a tendency of regret anticipation. From this perspective, the results obtained are in line with the theoretical hypothesis (for a review see Zeelenberg, 1999). On the other hand, we discovered that rational decision makers are not good at predicting experienced regret. Our results correspond with the finding that, on average, people are not good in predicting the intensity of future emotions (Sevdalis, Harvey, 2007; Hopfensitz, Winden, 2008). It seems that despite the expectations, rational decision makers lack the ability to predict the intensity of expected regret. On the other side, non-rational decision makers were relatively successful in the intensity of experienced regret prediction. Together with the fact that they had a lower score in the tendency of regret anticipation during the decision making process, it is tempting to speculate that non-rational decision makers are not fully aware of their tendency of anticipating emotion.

Moreover, we did not find differences between rational and non-rational decision makers in the perceived intensity of regret.

According to these results it may be hypothesized that either decision making type (rational or non-rational) does not determine the occurrence of regret. It seems that regret emerges from the single act of decision making, as it was defined by Carmon, Wertenbroch and Zeelenberg (2003), and not from the type of inference which precedes the choice.

It was found out that 'passing time' stimulates the regret reduction process. But there is still a need for experimental verification whether there are differences in the intensity of experienced regret regulation with regard to different regulation strategies (see Zeelenberg, Pieters, 2007).

#### CONCLUSION

We have found that rational decision makers anticipate regret during the decision making process, but they are not good at predicting regret intensity. In contrast, non-rational decision makers can predict the intensity of regret much better. Moreover, we have found no differences between the rational and non-rational group in the intensity of experienced regret. According to the results obtained it can be stated that regret emerges from the single act of decision making and not from the type of inference which precedes the choice. Passing time, however, decreases the intensity of regret.

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## ÚLOHA LÚTOSTI PRI RACIONÁLNOM ROZHODOVANÍ

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*Súhrn:* Racionálne rozhodovanie môžeme chápať ako tendenciu rozhodovať sa v súlade s normatívnym ideálom, pričom rozhodovateľ by mal zakomponovať očakávané emócie po voľbe do rozhodovacieho procesu. Štúdia skúma rolu očakávanej a prežívanej ľútosti v racionálnom rozhodovaní a tiež úlohu plynúceho času v redukcii ľútosti. Preukázalo sa, že respondenti s vysokou mierou racionality očakávali ľútosť počas rozhodovacieho procesu, avšak nepredpokladali mieru prežívanej ľútosti korektnejšie, ako participanti s nízkou mierou racionality. Získané výsledky poukazujú na to, že ľútosť pramení zo samotného aktu voľby medzi alternatívami, a nie z druhu usudzovania, ktorý predchádza rozhodnutie. S plynúcim časom sa na druhej strane znižuje intenzita prežívanej ľútosti.

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