

Examining the Causes of Irrational Food Buying and Delaying Gratification as a Solution

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Abstract. Impulsive food buying resulting in wasted items and emotional regrets is regarded as biased buying behaviours through irrational decision making. Extensive previous research has brought forward projection bias, associative memory and episodic foresight, emotions and impulsivity, affective forecasting, and physical arousal as some of the contributors to the tendency to pursue immediate rewards of thrill and satiation over delayed and long-term fulfillment. The present study focuses on the causes of this phenomenon from the psychological perspective, identifying various internal and environmental factors and their relevance based on evidence of past research. It closely compares the Rational Choice Theory with actual shopping behaviours and challenges a fixed definition of objectivity and rationality in decision making. It then attempts to make connections between the cognitive causes of irrational decision making and immediate gratification, suggesting that postponing gratification may help with making more rational decisions when browsing for foods.

Keywords: delay gratification, decision making, rational choice theory, impulsivity.

1. Introduction

With choice biases and the inability to project an objectively optimal solution, humans-and specifically adults-are not completely rational beings. In terms of prospective judgments, a very common problem, namely the optimum bias, occurs when humans underestimate the likelihood of a negative event happening but overestimate the chance of a positive event happening (Kress & Aue, 2017). Similarly, individuals that are impulsive favour immediate rewards over long-term gains by reducing their sensitivity to negative outcomes associated with their choice (Martin & Potts, 2009). It appears that irrational decision makers tend to pursue thrill and immediacy in these rewards and not assess the potential outcomes and the likelihood of the other options.

By contrast, the theory of Rational Choice, with models proposed in behavioural economics, provides an opposite claim for how decisions would be made. It argues that the ideal process is the one that is executed to meet an eventual objective, which would also maximize a person's self-interest (Ganti, 2022). This suggests that people should be accurate in predicting their use and needs, and one demonstrates this accuracy by choosing between different options based on their prediction and evaluation (Briz et al., 2015)- 'Which item would make me happier immediately afterwards/long after I have made this decision?'; 'Which item would benefit me more?' By maximizing relative utility and self-interest, people align their decisions with a seemingly objective level of rationality, meeting the standard of a reasoned choice that would elicit fewer regrets in the long run.

A primary focus of the present study is on scenarios in which weekly food shoppers evaluate two different and mutually exclusive options: they could either abide by their original plan, usually in the form of a shopping list with all the food items necessary and sufficient to feed themselves; or, they could deviate from this original plan and indulge on unnecessary food items such as snacks and beverages. Beyond this differentiation in the products purchased, the study looks into its extension on the different waiting times for receiving these outcomes. It hypothesizes that the first of the two options demonstrates the shopper's choice to favour long-term gains, since the values of this outcome may not be realized until much later. On the other hand, the latter option can be linked to irrational shoppers favouring immediate rewards that can be consumed right after their purchase. Along with other differences considered, the first goal of the present study is to suggest potential variables that would lead to irrational shopping in this particular context.

The fundamental difference in terms of the relative worth of the two options in the present scenario lies in the assumption that the outcome requiring longer waiting time is always more valuable in an

objective manner and in the long run. If the immediate outcome is more emotionally rewarding and economical, then there is no purpose in leaving it for a less worthy item to be obtained later. However, it is only logical to shift towards sooner options when the future is anticipated to be uncertain because otherwise there is a risk that the consumer may not receive the reward with the expected value (Bulley et al., 2016). For example, if delay discounting happens and the perceived (i.e., subjective) value of the delayed reward reduces over the waiting period, this may drive consumers away from the reward (Bulley et al., 2016). It is worth noting that this assumption itself challenges the defining features of rationality and objectivity from an individual's point of view, which requires a reassessment of the balance between self-interest and utility.

As demonstrated by previous research, rational buying also involves the ability to delay gratification: this translates to the ability to forgo immediate rewards to obtain a more valuable outcome at some point in the future (e.g., Beran & Evans, 2006). In other words, the better we are at delaying gratification and at self-control, the more rational the choice becomes. Hence, this study hypothesizes that when irrational consumers are trained to delay gratification, they will be able to avoid making decisions that could ultimately hinder their ability to be rational.

As such, the present study first examines the similarities and differences observed between the Rational Choice Models and actual buying behaviours (food buying in particular) which are influenced by individual preferences and biases in decision making. It then aims to outline the key factors affecting the level of rationality among decision-makers, assessing their relevance and making a suggestion on how they can in turn be used to improve the decisions that are made.

2. Rationality as Defined by Behavioural Economics

The Normative Expected Utility Theory defines rationality as choosing an act with the highest expected utility (Briggs, 2019). Utility, by definition, is what contributes to a consumer's satisfaction through their use of a purchased item. In Behavioural Economics, researchers assume that consumers can accurately predict their utility and that rational human beings behave in a manner that would maximize this utility. However, as suggested by Briggs (2019), there is a conflict between interpreting utility as personal preference versus *objective betterness*. In the current scenario especially, whether the consumer prefers short-term gains or long-term rewards is up to their individual choices, and both may bring about risks and costs. While some people may prefer to reward themselves with snacks from time to time, others may be more grounded in healthy dieting and budget buying. In the case where the budget may be tight, most would prefer not to indulge in unnecessary items since doing so will increase emotional regrets. In other cases where money does not pose an issue, even if the indulgence provides short-term fulfillment, there may still be regrets associated with the usage of money and their overall health. Hence, this section attempts to use the normative expected utility theory to navigate the common ground over this objective portrait of food item utility.

A closer look into the definition and application of *self-interest* may help gain some insight. The concept of self-interest is different from utility because it involves considering one's welfare and happiness (Oxford *English Dictionary*, 2022). In his work on human motivations and behaviours, Kamarck (2002) makes the distinction between first- and second-order desires. Our primary desires may include items from the bottom levels in Maslow's Hierarchy of Needs, and in this case, hunger and a sense of security in resources (Maslow, 1943). And self-interest is to be considered a second-order desire. Often, fulfilling desires for the former is the goal of the latter. When applied to the scenario of our interest then, it would be the personal preferences that would need to be assessed first before a conclusion can be reached on a judgment of self-interest.

Table 1. Psychological Consequences of Buying Behaviours and Ability to Delay Gratification

		State of delayed gratification	
		able to delay	unable to delay
Acts	buy healthy	no regrets, fulfilled	temporary regrets, long-term fulfillment
	buy unhealthy		temporary fulfillment, long-term regrets

However, assuming that the consumer population may usually prefer to have little financial regrets and maximum emotional fulfillment, it is also worth using a regret-minimizing model to judge the rationality of a buying decision. Table 1 outlines the possible outcomes associated with different buying behaviours and the ability to delay gratification (its significance is outlined in the previous section). An evaluation of outcome utilities and how valuable a choice is can be demonstrated by a direct comparison of the consequences of falling into one of the three situations. As can be suggested, a numerical quantity of evaluation would be needed for direct comparison, as the concepts of temporary and long-term results are ambiguous when it comes to mathematical modelling.

Even so, the table does shed light on the importance of having the ability to delay gratification in determining the emotional and economical outcome. When people impulsively buy foods in real life, they may lack the ability to both notice their feelings and delay gratification. Hence, for them to make more rational decisions, they would need to be simultaneously self-controlled. A breakdown of the context and ability to delay gratification among food shoppers will be explored in the following sections.

3. Variables Influencing Consumer Shopping Behaviours

Past studies have conducted various experiments to investigate decision-making processes for intertemporal choice tasks, which involve choosing between a smaller and sooner option and a larger but later one (Addessi et al., 2013). In the study by Mischel and Ebbesen (1970) where delay behaviours were studied in children, it was found that during the waiting period, if the participants were attending to both rewards (that is, the small immediate one and the large delayed one), the mean minutes waited was much lower than when none of the rewards were present. This suggests that reward visibility plays a role in both the choice and maintenance of the delay. Since the goal is to wait longer and receive the delayed reward, it may be the case that distracting shoppers from viewing any of the rewards or solely from the immediate reward would encourage further waiting for the later reward.

In a realistic situation where shoppers are exposed to both of the food items but not the conceptual rewards in a visual way, the attention allocated to either of the options may directly influence their final choice. This is dependent upon factors such as food packaging, aisle arrangements and display, ability to imagine and recall memories of tastes of particular foods, and so forth. Moreover, they may rely on their prospective picturing of emotions, ability to associate memory with their actions, and imagining future scenarios through episodic foresight to eventually compare these conceptual rewards. These will be discussed in a following section.

In experimental conditions, subjects look at the length of their waiting time to help determine if it is worth choosing the delayed option. Under circumstances where the period is short, they are more likely to prefer the delayed reward (Bulley et al., 2016). Conversely, posing an extended delay interval may also influence decision-making, since the maintenance requires self-control that comes into conflict with the temptation to obtain the immediate reward (Beran & Evans, 2006). As is suggested by research, the two components of delaying gratification are the choice and maintenance of the delay. The determining factor here is maintenance since if at any point the subject decides to no longer wait for a better outcome, their stress on this maintenance can be eased. In essence, the period of contemplation should be seen as a continuous spectrum where no decisions will be made until the final stage of buying. The maintenance component usually requires continual self-control from the subject (Beran & Evans, 2006). Since the decision is made through their own will, delays that are self-imposed rather than externally imposed are likely to be longer. In other words, once the subject has identified a personal goal related to the benefits of delayed gratification, they can make more rational decisions when buying food.

A significant factor that puts the rationality of food shoppers at risk is their level of impulsivity. Impulsive actions are by definition behaviours of choosing immediate rewards over more premeditated ones despite the risk of negative consequences in the future (Martin & Potts, 2009).

According to Frijda et al. (2014), they are powerful in their sense of urgency and aim, but they should not be relied on when the goal is to make rational decisions. Additionally, since the goal of impulsivity is to end an uncomfortable state or event (i.e., hunger), the very perception of the sense of hunger and the emotions surrounding it can dominate the drive towards making irrational decisions, such as indulging in snacks and processed foods.

People behave differently in hunger states compared to satiated states (Briz et al., 2015). Arousal like a strong and persistent state of hunger makes it harder to make decisions rationally (Chard, 2021). Studies suggest that neural circuits associated with decision-making are being influenced and interfered with by heightened arousal states, making the mind's primary goal of action to alleviate this arousal rather than prioritize rational decision-making (Chard, 2021). Moreover, foods that appeal to the consumer population may appear more appetizing to hungry shoppers, leading to an increase in both the quantity and the variability in the items being purchased. According to Schmidt et al. (2017), greater valuation of the immediate rewards (due to choice biases) also causes impulsive buying behaviours as their attention is being directed away from the delayed rewards. Hence, these obstacles contribute to buyers' impulsivity and as a result, a lack of rationality in their shopping behaviours.

4. Link between Emotions, Associative Memory, and Episodic Foresight

Food shoppers are often faced with a decision where they have to choose to purchase an item that would only be consumed long after buying. This necessitates a self-evaluation in a future context, where they would have to imagine their future needs, appetite, emotions, and other variables that may drive their decision to consume that particular food item. Hence, consumers' interest to buy and willingness to pay (WTP) can be heavily dependent on their ability to project themselves to the point where they receive a bigger but delayed reward (Briz et al., 2015). Additionally, the emotional valence and intensity carried along with this projection play a role in consumers determining their next move. While many people may be aware that they sometimes fall for projection bias, they would nonetheless rely on their present and, in a sense, future emotions as a guide to make their choice between the two options. Whether or not this reality is concerning to their emptying wallets, it at least indicates a strong relationship between emotions and episodic foresight, and that they have a combinatory influence on the quality of consumers' projections and their subsequent choices.

A choice to be made at present can be driven by retrieving associative memories of past experiences, reward cues, and behaviours (Leuttgau et al., 2020). Having positive associative memories related to the long-term rewards from previously choosing the delayed option may increase the likelihood of letting go of the immediate reward. However, this process is not equivalent to the rational decision-making framework since it is emotionally driven and not a comprehensive assessment of the utility of the outcomes. Still, when there are emotional memories surrounding the options available, it enhances one's ability to associate a behaviour with a feeling in return (Madan et al., 2019), even in the case of the immediate reward. This demonstrates the significance of valence in emotions and how irrational decision-makers use emotions as a shortcut to decide on what to buy.

As previously mentioned, the ability to imagine future affective scenarios associated with a present choice would theoretically allow consumers to determine the need for delayed gratification (Bulley et al., 2016). This capacity to imagine the future, termed *episodic foresight*, simulates detailed future scenarios and informs shoppers' in making more rational decisions (Bulley et al., 2016). Engaging in episodic foresight not only reduces the likelihood of delayed discounting, but it also uses personal cues to redirect shoppers' attention to the later reward (Peters & Büchel, 2010). Although the engagement may differ in clarity of the image and the sensation of emotions attached to the outcome, it serves as a tool to lead consumers to imagine both the positive effects of the later rewards and also the potentially negative outcomes related to the immediate rewards, driving them further away from these impulsive and irrational choices.

Concerning future thinking and its effects on present planning, projection bias can occur when individuals fail to predict their future conditions, leading to biased decisions that may be regretted later (Briz et al., 2015). For instance, considering the risk of arousal and hunger shopping, Briz and colleagues have suggested that shoppers can over-predict their hunger (i.e., more hungry than reality suggests) and under-predict satiation because of their present physiological and psychological state. This causes projection bias and an over-emphasis on immediate gratification as they fail to predict their future conditions accurately and fairly. On a positive note, despite the fact that it can be challenging sometimes to make current decisions regarding future consumption, cognitive skills such as retrospective thinking and learning from experiences in the past can help with making more accurate decisions.

5. Conclusion and Future Directions

The present study aimed at identifying why people make irrational decisions and offered various possible solutions to tackle each of the problems identified. It first asserted that decisions are made irrational when the utility in response to one's self-interests has not been maximized. It then grouped reward visibility, attention allocation and length of the delay as crucial variables influencing a shopper's ability to make rational decisions. It was suggested that when these variables are manipulated artificially, it is possible that consumers would redirect their focus to delaying gratification and waiting for the more valuable reward. Next, impulsivity related to hunger and emotional arousal was explored as a factor contributing to irrational decision-making. Consumers' ability to use associative memory and episodic foresight act as underlying mechanisms for rational choice models and for explaining their behaviours. In summary, these factors play a major role in determining the level of rationality behind a choice.

There has been extensive research conducted on human impulsivity and delayed gratification, so this study benefited from that and delved into a real-world scenario involving decision-making. Nevertheless, a handful of studies shall be carried forward to gain insight into the valuation of utility in different situations regarding different groups of subjects. In addition, a cross-examination of clinical, neurological, social and cognitive factors associated with rationality and decision-making is recommended to reach a comprehensive conclusion on the causes, consequences, and assessment directed towards this topic.

References

- [1] Addressi, E., Paglieri, F., Beran, M. J., Evans, T. A., Macchitella, L., De Petrillo, F., & Focaroli, V. (2013). Delay Choice vs. Delay Maintenance: Different Measures of Delayed Gratification in Capuchin Monkeys (*Cebus apella*). *J Comp Psychol.*, 127(4). <https://doi.org/10.1037/a0031869>
- [2] Beran, M. J., & Evans, T. A. (2006). Maintenance of delay gratification by four chimpanzees (*Pan troglodytes*): The effects of delayed reward visibility, experimenter presence, and extended delay intervals. *ScienceDirect Behavioural Processes*, 73(2006), 315-324. <https://doi.org/10.1016/j.beproc.2006.07.005>
- [3] Briggs, R. A. (2019). Normative Theories of Rational Choice: Expected Utility. In E. N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*. <https://plato.stanford.edu/archives/fall2019/entries/rationality-normative-utility/>
- [4] Briz, T., Drischoutis, A. C., & House, L. (2015). Examining projection bias in experimental auctions: the role of hunger and immediate gratification. *Agricultural and Food Economics*, 3(22). <https://doi.org/10.1186/s40100-015-0040-7>
- [5] Bulley, A., Henry, J., & Suddendorf, T. (2016). Prospection and the Present Moment: The Role of Episodic Foresight in Intertemporal Choices Between Immediate and Delayed Rewards. *Review of General Psychology*, 20(1), 29-47. <https://dx.doi.org/10.1037/gpr0000061>
- [6] Chard, L. (2021, Sept 23). Arousal makes it harder to make decisions. *BioTechniques*. <https://www.biotechniques.com/neuroscience/arousal-makes-it-harder-to-make->

decisions/#:~:text=The%20current%20state%20of%20understanding%20of%20the%20effects,leads%20to%20a%20decrease%20in%20successful%20decision%20making.

- [7] Frijda, N. H., Ridderinkhof, K. R., & Rietveld, E. (2014). Impulsive action: emotional impulses and their control. *Frontiers in Psychology*, 5(518). <https://doi.org/10.3389/fpsyg.2014.00518>
- [8] Ganti, A. (2022, May 24). Rational Choice Theory Definition. Investopedia. <https://www.investopedia.com/terms/r/rational-choice-theory.asp>
- [9] Kamarck, A. M. (2002). *Economics as a Social Science*, University of Michigan Press. <https://doi.org/10.3998/mpub.17159>
- [10] Kress, L., & Aue, T. (2017). The link between optimism bias and attention bias: A neurocognitive perspective. *Neuroscience and Biobehavioral Reviews*, 80(2017), 688-702. <https://dx.doi.org/10.1016/j.neubiorev.2017.07.016>
- [11] Luettgau, L., Tempelmann, C., Kaiser, L. F., & Jocham, G. (2020). Decisions bias future choices by modifying hippocampal associative memories. *Nature Communications*, 11(3318). <https://doi.org/10.1038/s41467-020-17192-7>
- [12] Madan, C. R., Scott, S. M. E., & Kensinger, E. A. (2019). Positive emotion enhances association-memory. *Emotion*, 19(4), 733-740. <https://doi.org/10.1037/emo0000465>
- [13] Martin, L. E., & Potts, G. F. (2009). Impulsivity in Decision-Making: An Event-Related Potential Investigation. *Personality and Individual Differences*, 46(3). <https://doi.org/10.1016/j.paid.2008.10.019>
- [14] Maslow, A. H. (1943). A Theory of Human Motivation. *Psychological Review*, 50, 370-396.
- [15] Mischel, W., & Ebbesen, E. B. (1970). Attention in Delay of Gratification. *Journal of Personality and Social Psychology*, 16(2), 329-337.
- [16] Moscati, I. (2016). How Economists Came to Accept Expected Utility Theory: The Case of Samuelson and Savage. *Journal of Economic Perspectives*, 30(2), 219-236.
- [17] Peters, J., & Büchel, C. (2010). Episodic future thinking reduces reward delay discounting through an enhancement of prefrontal-mediocortical interactions. *Neuron*, 66(1), 138-148. <https://doi.org/10.1016/j.neuron.2010.03.026>
- [18] Schmidt, B., Holroyd, C. B., Debener, S., & Hewig, J. (2017). I can't wait! Neural reward signals in impulsive individuals exaggerate the difference between immediate and future rewards. *Psychophysiology*, 54(2017), 409-415. <https://doi.org/10.1111/psyp.12796>