

The Selection of Focal Options Attenuates the Effect Of Opportunity Cost on Choice-Induced Preference Change

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Abstract

Previous research has delved into whether and when people consider outside options during decision-making but has overlooked how this consideration of outside alternatives influences preferences for chosen and foregone options, ultimately shaping judgments. Our study aims to bridge this gap by investigating how the conspicuous opportunity costs affect shifting preferences caused by the choice effect. The findings indicate that when opportunity costs are explicitly considered, the commitment to the chosen option is weakened, enhancing its desirability for the competing options. While many decisions are made without a clear focus on opportunity costs, our research highlights their critical role in attenuating the link between choice and preference. This research offers new insights into the moderating influence of opportunity cost consideration in decision-making.

Keywords: Opportunity Cost, Decision Making, Free Choice Paradigm, Cognitive Dissonance Theory, Random Regret Minimization choice model.

Introduction

Humans have countless desires but limited resources, necessitating choices between alternatives (Haghpour et al., 2022). For example, the decision to pursue an advanced degree versus accepting a job offer from a multinational company (MNC) after graduation illustrates this dilemma. The value of the best foregone alternative, known as the opportunity cost, becomes a critical factor in such decisions (Spiller, 2019; Hubbard & et al., 2014; Parkin, 2016). Choosing to spend years in academia over immediate employment in an MNC involves a cost determined by the value of the best foregone alternative. This choice not only impacts immediate preferences but also influences subsequent evaluations of both the selected and rejected alternatives. The degree to which individuals consider opportunity costs has been explored across various fields, including

psychology, behavioral economics, consumer behavior, and experimental accounting (Friedman & Neumann 1980; Northcraft & Neale 1986; Greenberg and Spiller, 2016). Opportunity cost consideration can be influenced by the availability of outside options, which is often driven by the resources at hand (Becker, & et al., 1974; Jones & et al., 1998). For instance, a Starbucks gift card might prompt one to think about coffee, thereby making the opportunity cost of alternative uses of that time and money less conspicuous. While economic literature suggests that individuals evaluate alternative uses of their constrained resources to maximize outcome utility. In contrast, consumer behavior research indicates that people do not always seek to maximize utility. The random regret minimization (RRM) choice model proposes that people prioritize minimizing regret over maximizing utility (Lim & Hahn, 2020). Taking opportunity costs and outside alternatives into account can decrease the likelihood of purchasing a focal option. While this consideration may appear optimal from an economic standpoint, it underscores the complexities involved in individual choice behavior.

Among choice behavior theorists, it is widely acknowledged that preferences influence decisions (Alós-Ferrer & Granic, 2023; Frederick et al., 2009; Holden, 2013; Lee & Daunizeau, 2020; Nakamura & Kawabata, 2013; Sagarin & Skowronski, 2009; Seitz et al., 2022; Westbrook & Braver, 2015). For example, a strong preference for tea can impact the choice between tea and coffee. However, preferences can evolve during the decision-making process to align with the chosen option (Alós-Ferrer & Granic, 2023; Frederick et al., 2009; Holden, 2013; Lee & Daunizeau, 2020; Arad, 2013; Nakamura & Kawabata, 2013; Sagarin & Skowronski, 2009; Seitz et al., 2022; Westbrook & Braver, 2015). For instance, choosing a particular travel destination might lead to a future preference for similar destinations, while other options are viewed less favorably. Numerous studies demonstrated this bidirectional relationship between preference and

choice (Alós-Ferrer & Granic, 2023; Frederick et al., 2009; Holden, 2013; Lee & Daunizeau, 2020; Nakamura & Kawabata, 2013; Sagarin & Skowronski, 2009; Seitz et al., 2022; Westbrook & Braver, 2015). This bidirectional relationship is supported by various theories, like cognitive dissonance theory and self-perception theory. The cognitive theory suggests that choices generate dissonance, which is alleviated by downplaying the value of foregone alternatives while elevating the chosen ones (Brehm, 1956; Festinger, 1957). On the other hand, self-perception theory posits that people derive insights about their preferences by reflecting on their choices (Bem, 1967; Chen, 2010). This advocates that when commitment to the focal option is heightened before considering alternatives, the focal option is protected from the influence of nonfocal competing options associated with other choices (Frederick et al., 2009; Spiller, 2011; Greenberg and Spiller 2016). Additionally, research indicates that increased commitment to an option leads individuals to inhibit the activation of desire for competing alternatives. Further research suggested that this relationship is moderated by the perception of choice, framing effects, external circumstances, available options, personal values, or other possible moderators that can affect the magnitude of preference shift induced by choice (Chen & Risen, 2010; Greenberg and Spiller, 2016). Recent research on factors influencing the relationship between choice and preferences has found that opportunity cost cue moderates the impact of choices on shifting preferences (Spiller, 2011; Greenberg and Spiller, 2016).

This study will extend the prior work on preference shift and its moderators. We will investigate whether these preference shifts are caused by the act of choosing and how considering opportunity costs affects those preference change. The primary focus is to understand how the effect of conspicuous opportunity costs during making a choice influences the later evaluation of both chosen and foregone options. Specifically, this study assesses whether increased awareness of

opportunity costs during decision-making affects individuals' later evaluations of their decisions. By exploring this, we aimed to enhance the understanding of the cognitive processes involved in decision-making and the effects of considering opportunity costs. We discussed how the conspicuous opportunity costs moderate the relationship between choice and preference, and how thinking about the opportunity cost of selecting one alternative over another might change individuals' preferences. Our study indicates that when opportunity costs are not conspicuous, the influence of choices on shifting preferences is enhanced. This effect extends to various choices where some alternatives are not explicitly considered. This research offers initial evidence that the consideration of outside options during making a choice impacts the likelihood of choosing the focal option. Additionally, we uncovered a new mechanism by which these outside options influence buying decisions and found that evaluating alternatives to the focal option activates supplementary goals, which subsequently lowers the intent of choosing the focal option.

Literature Review

Choice can intensify the perceived opportunity cost of not utilizing an offer by increasing the subjective value of the rejected option. Losing the selected option due to inaction thus becomes a more painful outcome (Gabillon, 2020). From this perspective, choice heightens the assessment of opportunity costs only to the extent that selecting an option enhances its perceived value. However, when external constraints compel individuals to choose among several mutually exclusive offers, they may erroneously perceive that failing to follow through on their selection results in losing not just the chosen option but also the unselected alternatives. Consequently, the greater the desire to utilize all mutually exclusive options, the higher the perceived opportunity cost (or loss) associated with not using the chosen option. Normatively, the desirability of using all mutually exclusive

offers should not influence perceptions of loss, as only one option can be utilized in total (Weiss & Kivetz, 2019).

The salience of opportunity costs is shaped by decision framing and resource type. Explicit cues that highlight alternative uses of money reduce neglect by making trade-offs more tangible (Haghpour & *et al.*, 2022; Spiller, 2011). For example, framing unspent funds as usable for future purchases decreases impulsive spending (Frederick *et al.*, 2009; Frisch, 1993; Mental). Additionally, resource fungibility plays a crucial role: money, being interchangeable, facilitates opportunity cost evaluation, whereas time and effort, which are context-dependent, complicate assessments (Okada & Hoch, 2004; Spiller, 2019). The salience of constraints prompts more deliberate evaluations (McFall, 2015). These moderators highlight the contextual variability in opportunity cost integration. Moreover, it was noted that resource availability and memory can trigger individuals to take opportunity costs into account, leading to potentially greater shifts in preferences, as highlighted by Spiller (2011).

Despite the well-established notion in choice behavior literature that various factors can potentially moderate the relationship between preference and choice (Chen and Risen, 2010), significant gaps remain as to how these factors operate. Spiller (2011) demonstrated that considering opportunity costs enhances the salience of outside options. However, this study did not explore how such sensitivity affects other aspects of choice-induced preference change phenomena. Although many choices are made without conspicuous opportunity costs, the effect of such conspicuous opportunity costs on shifting preferences has received limited consideration among behavior theorists. Additionally, in selective situations past studies have accounted for cognitive dissonance to explain the increased commitment to a selected option over a rejected one in subsequent decision-making processes but it failed to explain the underlying psychology in general

(Northcraft & et al., 1986, Potter & et al., 2012, O'Donnell, 2016, Otto, 2019). There is a need for research highlighting the underlying psychological mechanisms for a better understanding of factors that inhibit the activation of competing alternatives' desirability over previously selected ones. Previous studies have not examined how heightened commitment to the focal option before considering alternatives affects its protection from the influence of non-focal competing options associated with other choices. This necessitates an inquiry to understand how the conspicuous opportunity costs in one decision may influence subsequent choices (Mead, 2023). This study seeks to address these gaps by exploring how the prominence of opportunity costs and the consideration of outside alternatives influence preference shifts induced by choices and subsequent decision-making behaviors.

Overview

In this study, we employed the traditional Free Choice Paradigm (FCP) to explore how making choices affects preferences, acknowledging the challenge of noise or random variation when measuring these preferences. Specifically, we examined the impact of choice on preferences by evaluating participants' preferences towards eleven different marketing promotional offers. The experiment was structured according to the FCP protocol, where participants first rated the eleven marketing offers, then chose one offer from each of the ten sets. Participants rated their subjective likeness of the offers using a 7-point scale (1 for "not at all" to 7 for "very much"). In this study, we revealed that considering opportunity costs attenuates the impact of choice on shifting preferences.

We sought to examine the moderating impact of considering opportunity costs through a three-session experiment using the FCP framework: pre-choice rating session, choice session, and post-choice rating session. In the second phase, participants made selections either with or without

overt opportunity cost cues. We tested two hypotheses: (i) whether considering opportunity costs at the time of choice affects later evaluations of both chosen and unchosen options, and (ii) when and how this consideration influences the subsequent evaluation of chosen and foregone options.

Method

Participants

A total of 180 participants took part in the experiment ($n = 180$; female = 71; Mean age = 30.87). The target sample size (120) was determined before data collection began; it was based on ballpark estimates from previous work (Greenberg & Spiller, 2016).

Stimuli/Materials

This study employed two between-subjects conditions, where opportunity costs were either overt or covert during the choice task session. A total of 93 participants were assigned to the covert condition, and 87 participants to the overt condition. All participants completed the experiment across three sessions: a pre-choice rating session, a choice session, and a post-choice rating session. The aim was to test whether the consideration of overt opportunity costs influences preferences.

Procedure / Design

The experiment has been designed using an online survey platform. Based on existing literature and our study objectives, we incorporated only the most essential characteristics into the stated preference experimental design. The experiment was conducted through an online survey format. All the participants first completed an informed consent form, and then, participants provided demographic information, including age, gender, education, experience, marital status, etc. They were then sequentially introduced to the three sessions of the experiment, which included:

Pre-choice rating session: In this session, participants were provided with a hypothetical scenario and they were asked to imagine that they were entitled to receive some offers. as part of a marketing promotion. Each offer are independent offer like a Two-month OTT (over-the-top) platform subscription, Four movie tickets of your choice, etc. Participants were asked to rate that how much they would like each of the presented offers on a 7-point Likert scale (1 = not at all, 7 = very much). The eleventh offer is a ₹ 1000 Visa gift card, which represented the opportunity cost during the choice session and the order of all the offers was counterbalanced among participants.

Choice session: Following the pre-choice rating session, participants were given the second hypothetical scenario and asked to imagine that they had done some purchasing in the past and accumulated 50,000 bonus points, which were soon to expire. If they did not use these points before the expiration, the online shopping platform would automatically send them a ₹1000 Visa gift card. Participants then decided whether to spend their points on each of the ten focal offers (e.g., "Two-month OTT platform subscription"). Each option was presented as an independent decision, with instructions emphasizing that each choice should be treated as the only opportunity to use their points before expiration. Consequently, the ten focal offers competed only with the opportunity cost (i.e., the ₹1000 Visa gift card), rather than with one another. This session was conducted under two conditions: covert cue of opportunity cost and overt cue of opportunity cost. Although framed differently, the two conditions were formally equivalent. Participants in the covert condition chose between accepting a focal offer (e.g., "Spend my bonus points on a Two-month OTT platform subscription") or rejecting it (e.g., "Do not spend my points on the Two-month OTT platform subscription"), where the opportunity cost was implied. In contrast, participants in the overt condition made choices between accepting a focal offer or rejecting it (e.g., "Do not spend my points on the Two-month OTT platform subscription, and instead take the ₹1000 Visa gift card"; Greenberg and Spiller, 2016).

Post-choice rating session: In this session the post-choice evaluations were measured by asking participants to once again rate how much they would like each of the eleven such offers on a 7-point Likert scale (1 = not at all, 7 = very much) as in the pre-choice rating session. The order in which the offers were presented was counterbalanced. Afterward, participants were asked what they thought would happen to their bonus points if they chose “do not spend” them on the presented offers. Finally, an attention validation task was administered, where participants were required to respond according to specific instructions for a particular question.

Analysis and Results

To examine whether the awareness of opportunity costs during the choice session affects later assessments of chosen and foregone alternatives, we conducted a multiple regression analysis. The post-choice spread was regressed on three explanatory variables: condition (1 = overt, -1 = covert), the proportion of focal offers chosen (ranging from 0, all rejected, to 1, all selected), and their interaction (the primary effect of interest). Pre-choice spread was controlled for this model. We calculated the preference shift for both focal offers (averaged over the ten offers) and the opportunity cost cue (a ₹1000 Visa gift card) by comparing the difference between pre-choice and post-choice ratings. The change in the spread between pre-choice ratings and post-choice ratings of focal offers and opportunity costs represents incurred preference shifts. The spread ranged from -6 to 6. Table 1 presents the multiple regression results.

Table: Results of Multiple Regression

Variables	b	SE	t (178)	p
Primary analysis predicting post-choice spread				
Intercept	1.38	0.27	5.11	< 0.001
Pre-choice spread	0.34	0.06	5.07	< 0.001
Proportion of focal offers chosen	-1.91	0.39	-4.81	< 0.001
Opportunity Costs	-0.62	0.26	-2.42	0.01
Opportunity Costs x Proportion Chosen	1.02	0.38	2.65	0.008

Opportunity cost, overt and covert cues were represented with two dummy values, 1 and -1. The assigned value of 1 represents the overt condition, and -1 represents the covert condition. The interaction between the opportunity cost condition and the PFOC term represents the effect of opportunity costs on preference shift. The proportion of focal offers chosen ranged from 0 to 1 and varied across conditions (Overt condition: $M = 0.536$, $SD = 0.309$; Covert condition: $M = 0.639$, $SD = 0.256$; $t(178) = -2.458$, $p = 0.007$).

The key test examines the interaction between the independent variable—the proportion of focal offers chosen (PFOC)—and opportunity cost across two conditions: the presence (Overt) and absence (Covert) of opportunity cost cues. We found that the degree to which post-choice spread varied with the PFOC subject to whether opportunity cost cues were overt or covert at the time of choice. When opportunity costs were covert, the post-choice spread decreases with PFOC. However, the post-choice spread was reduced in the covert condition as well. It indicates that the cognitive dissonance generated during the choice task is strengthened when opportunity costs are overt. This effect depends on the magnitude of PFOC. The positive coefficient of interaction between the evaluation of opportunity cost and the proportion of focal offers chosen represents an increase in post-choice spread between the evaluation of opportunity cost and the evaluation of focal offers.

General Discussion

The results imply that opportunity cost consideration attenuates the effect of choice on preference change. The decrease in the coefficient of the PFOC and opportunity cost means the spread is due to a change in the consideration of alternatives. When participants shift their attention from the focal offers to opportunity cost, the preference shift phenomenon weakens and vice versa. The psychological mechanisms driving the consideration of opportunity costs and the effects are different for each condition (Overt and Covert). In this study, various types of offers were employed in a decision-making design that could influence evaluations of focal offers. Our findings indicate a greater post-choice spread between evaluations of focal offers and opportunity costs when the opportunity costs were made overt at the time of choice, compared to when they remained covert.

In this experiment, we extended the FCP design to investigate how opportunity cost cues influence choice-induced preference change (CIPC). The results showed that highlighting opportunity costs attenuates the impact of choices on preferences. These experiments were conducted to explore the factors that influence the relationship between choices and preference shifts. It was observed that perception of choice, available options, and consideration of opportunity costs moderate this effect. Furthermore, the findings suggest that decision-makers often evaluate alternative ways to allocate their resources before making purchase decisions. The results indicate that greater commitment to a chosen option suppresses the consideration of competing alternatives. This research also explored when and how individuals consider outside options during decision-making and found that these alternatives influence judgments. Despite the diversity of alternatives, people still take them into account when evaluating the target option. This supports the idea that considering outside alternatives is a crucial factor that affects purchase decisions. Further, the study's findings reveal that when individuals are considering opportunity costs, they are less likely to consider alternative options and exhibit a reduced intention to purchase the target option compared to those who do not consider opportunity costs. This is attributed to the fact that thinking about opportunity costs at the moment of decision-making alters the decision processes. Previous research has shown that the salience of opportunity costs affects people's choices (Spiller, 2011; Potter & Sanders, 2012; Greenberg and Spiller, 2016; Lim, & Hahn, 2020). Our findings extend this by suggesting that it also influences preferences for the alternatives, mainly by shifting evaluations of opportunity costs.

Implications

These results are likely applicable to a wide range of decisions where not all alternatives are explicitly presented. Implied opportunity costs from one decision can influence subsequent

judgments. For example, if someone chooses a tropical beach vacation over a cultural city tour, they may later rate cultural city tours less favorably than if they had chosen not to travel at all, decreasing their future interest in such trips. Similarly, in career choices, an individual who opts for a high-paying corporate job over a more fulfilling nonprofit role might later view nonprofit positions less positively, reducing their inclination to consider such jobs in the future.

In this research area, building a comprehensive database on people's choice behavior regarding opportunity cost consideration during decision-making can provide valuable insights. Analyzing patterns and trends will help identify key factors influencing the consideration of opportunity costs and their impact on decision-making outcomes. Understanding the behavioral responses of individuals to the concerns about the effect of opportunity cost consideration on increased sensitivity to the value of outside alternatives, can help future research in revealing the underlying psychology of such sensitivity effects on short-term and long-term decision-making processes. Additionally, our research contributes significantly to the understanding of how psychological factors shape decision-making and post-decision evaluation of chosen and foregone alternatives, particularly in the presence and absence of conspicuous opportunity cost. It has a broad applicability in fields ranging from behavioral economics to public policy.

Limitations and Future Scope

The current research on opportunity cost consideration in decision-making has some limitations. Firstly, the choices in our study were hypothetical and did not carry real consequences, and results might differ when decisions have real consequences. Furthermore, using a different experimental design could alter how individuals evaluate focal options and opportunity costs. Additionally, existing literature often overlooks how factors like resource constraints and memory cues impact opportunity cost consideration, which could significantly shift preferences. Since our findings

identified opportunity cost consideration as a crucial moderator of CIPC, further investigation is necessary to fully understand these effects.

Further investigation is needed on how resource constraints and memory cues, noted by Spiller (2011), prompt individuals to consider opportunity costs, causing significant changes in preferences. Effortful searches for new options in the environment should be studied to understand how they foster preferences for discovered options, as discussed by Ge, and et al., (2015). Similarly, examining whether effective memory searches for opportunity costs influence preferences is essential. While we have addressed this issue through the lens of regret theory literature, further research is needed to directly examine how considering opportunity costs impacts people's well-being (Haghpour et al., 2022). Additionally, studies should investigate how heightened sensitivity to the value of outside alternatives, as shown by Spiller (2011), influences both short-term and long-term decision-making processes. Exploring the complexities of individual choice behavior, such as the tendency to delay using resources (e.g., free coupons) in hopes of finding the perfect opportunity, is crucial. Researchers should assess how considering opportunity costs and outside alternatives might reduce the likelihood of choosing a focal option and lead to underconsumption, as observed by (Spiller, 2011). Finally, there is a need to examine the impact of effortful searches for new options in the environment and memory on preference formation, as discussed by Ge & et al., (2015). The current research does not adequately address how these searches may affect people's preferences and decision-making outcomes.

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