The Cost Outweighs the Benefit: Myopic Risk Neglect in Sequential Decision-Making

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Date: 2024-08-01T00:00:00+00:00

Abstract

In daily life and business operations, people often suffer irreversible consequences due to neglecting potential "high-probability, high-loss" risks. To investigate the scientific questions underlying this phenomenon, this research proposal introduces for the first time the novel concept of "myopic risk neglect." Specifically, this concept refers to the phenomenon wherein decision-makers, when engaged in multiple rounds of identical or similar decisions, due to myopic evaluation and cognitive limitations, have difficulty accurately recognizing or assessing the interdependence among decisions, thereby pursuing immediate gain objectives in single-round decisions at the expense of global optimal objectives, and gradually neglecting long-term risks. Therefore, the attitude of myopic risk neglect can be regarded as a specific type of myopic risk attitude in sequential decision-making. Sequential decision-making refers to a dynamic decision process in which individuals, groups, or organizations conduct multiple decisions in chronological order to achieve an optimal overall objective, with each decision being interrelated. Although most real-world decisions are sequential, current behavioral decision research primarily focuses on single-shot decisions and rarely explores individuals' actual behavioral patterns in sequential decision-making, which has limited the attention and exploration of the myopic risk neglect phenomenon in previous studies. To address this limitation, this research proposal aims to reveal the phenomenon of myopic risk neglect from a sequential decision-making perspective, and to clarify its behavioral patterns and main characteristics. Furthermore, this research proposal will develop a specific research paradigm to measure the attitude of myopic risk neglect, and investigate its formation mechanisms from two dimensions: decision process and decision objectives. The research findings are expected to complement and expand behavioral decision research, and provide a theoretical foundation for the future development of sequential decision support systems.

Full Text

The Loss Outweighs the Gain: Myopic Risk Ignorance in Sequential Decision Making

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Abstract

In daily life and business operations, individuals often overlook potential "high-probability, large-loss" risks, leading to irreparable consequences. To explore the underlying scientific issues of this phenomenon, this project introduces the novel concept of "myopic risk ignorance." Specifically, this concept refers to the difficulty decision-makers encounter in accurately perceiving or assessing the interdependencies among repeated similar decisions due to myopic evaluations and cognitive limitations. As a result, driven by the pursuit of immediate gains in individual decisions, decision-makers often sacrifice global optimal goals and gradually ignore long-term risks. Thus, myopic risk ignorance attitude can be viewed as a specific form of myopic risk attitude within the context of sequential decision making. Sequential decision making characterizes a dynamic process where individuals, groups, or organizations make a series of interconnected decisions over time to achieve an optimal overall goal. Despite the prevalence of sequential decision making in real-life scenarios, current behavioral decision-making research predominantly focuses on one-shot decisions, overlooking genuine behavioral patterns in sequential decision making. This oversight has limited the exploration of myopic risk ignorance. To address this gap, the project aims to reveal the patterns and key characteristics of myopic risk ignorance within the framework of sequential decision making. Furthermore, it will develop a tailored research paradigm to measure attitudes toward myopic risk ignorance and investigate its underlying mechanisms within decision processes and objectives. The findings are expected to complement and broaden the field of behavioral decision-making research and provide a theoretical foundation for the future development of sequential decision support systems.

Keywords: myopic risk ignorance, sequential decision making, decision process, decision goal

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The 2008 U.S. subprime mortgage crisis swept across the globe, devastating the world economy. The profound lesson from this crisis was that numerous financial institutions continuously pursued short-term profits while blindly trusting financial instruments, turning a blind eye to the enormous risks accumulated through subprime mortgages over the long term. Ultimately, mortgage defaults and the bursting of the real estate bubble triggered a global financial crisis. This

historical event highlighted the costs of excessively pursuing immediate gains while neglecting continuously accumulating long-term risks in financial decision-making. In the environmental domain, the World Meteorological Organization's global climate report (World Meteorological Organization, 2023) revealed that 2015-2022 were the eight consecutive warmest years on record globally. Simultaneously, sea levels continued to rise, and Antarctic sea ice shrank to its lowest recorded extent. Similar to the financial crisis, these phenomena largely stem from human activities driven by short-term interests, excessive reliance on fossil fuels, and willful ignorance of the long-term threats posed by continuous greenhouse gas emissions, ultimately leading to sustained global warming and increasingly frequent extreme weather events in recent years. In the business world, the phenomenon of relentlessly pursuing short-term profits at the expense of long-term development goals while ignoring cumulatively growing risks is also common. Companies aspiring to become or already established as century-old enterprises often fall into existential crises because they cannot resist frequent temptations of short-term gains, as exemplified by Japan's Toshiba Corporation. The same holds true in personal life, where people frequently ignore long-term health goals due to persistent pursuit of immediate comfort. For instance, individuals may choose prolonged sedentary behavior, avoid exercise, or stay up late playing games or scrolling through their phones. Despite understanding the potential risks behind these behaviors, they deliberately ignore them and knowingly engage in such activities, avoiding contemplation of the long-term health risks that may result from these seemingly minor daily decisions. However, each seemingly insignificant daily choice contributes to a series of unhealthy behavioral habits that, accumulated over years, cause irreversible damage to one's body.

These real-world problems reveal common characteristics displayed by decision-makers when making multiple rounds of identical or similar decisions: in each round, due to myopic evaluation, they pursue immediate gain goals while neglecting long-term sustainable development objectives. Furthermore, because they struggle to accurately perceive or assess the interconnections among decisions, they gradually ignore long-term risks, leading to immeasurable consequences. To better understand this phenomenon, we propose and define it as "myopic risk ignorance." Unlike classical decision-making research based on single decisions—such as risk decision-making, intertemporal decision-making, and later extensions like mixed intertemporal decision-making (Rao & Li, 2011) and risky intertemporal decision-making (Keren & Roelofsma, 1995)—the decisions in myopic risk ignorance are more complex, involving multi-round, multi-objective, and interrelated sequential decision-making.

Regarding the similarities and differences with single-round decisions, mixed intertemporal decision-making research primarily focuses on choices between options involving "small gains now, large losses later" and "small losses now, large gains later," or requires judgments about willingness to accept single mixed-outcome options (e.g., Shen, Xige, et al., 2023; Shen, Wang, et al., 2023; Ma et al., 2021; Rao & Li, 2011). These options do not contain probabilistic (risk) fac-

tors. Risky intertemporal decision-making research primarily examines choices between two intertemporal options ("small gain now" vs. "large gain later" or "small loss now" vs. "large loss later") where outcomes occur with certain probabilities (e.g., Hardisty & Pfeffer, 2017; Luckman et al., 2020; Sun & Li, 2010). Here, the available options involve pure gains or pure losses. In contrast, the single-round decision in our proposed myopic risk ignorance concept essentially comprises two consecutive decisions: decision-makers must first choose whether to "execute" or "not execute" a risky behavior, and if they choose to execute, they must then decide the degree of execution. For the risky behavior, "execution" involves obvious "immediate small gains" but also carries "dynamic losses" that are often deliberately ignored. Notably, both the objective probability and magnitude of these losses gradually increase with the degree of execution and the number of execution rounds. The "non-execution" option primarily involves restraining the desire for "immediate small gains," accurately assessing "dynamic losses," and pursuing sustainable long-term goals.

Currently, little is known about the main characteristics and formation mechanisms of myopic risk ignorance. To a large extent, this is because existing behavioral decision theories primarily originate from and serve single decisions, and researchers tend to abstract complex multi-round decisions into simple single decisions for study. Although single decisions are methodologically purer and easier to analyze, they differ significantly from most real-life decision-making scenarios. In reality, almost all decisions cannot exist independently as single events; current choices and their rationales are often closely related to past and future decisions (Nguyen et al., 2019). Compared to single decisions, multi-round sequential decision-making more closely approximates real-life decision scenarios (Link & Raab, 2021). Whether for governments, enterprises, or individuals, long-term overall development goals are not achieved through one-time decisions or isolated decisions, but through a series of interconnected decisions. Compared to the single decisions traditionally studied in decision-making research, sequential decision-making is a more universal form of decision-making that concerns the achievement of future overall goals. Therefore, this research proposal suggests revealing the characteristics of myopic risk ignorance and exploring its formation mechanisms from the perspective of sequential decision-making.

2.1 Myopic Risk Attitude

Although previous research has not directly investigated myopic risk ignorance, the field of behavioral decision-making contains several related concepts concerning myopic risk attitudes. The earliest related concept is myopic loss aversion, proposed by Benartzi and Thaler (1995), which integrates loss aversion from prospect theory (Tversky & Kahneman, 1991) and mental accounting (Thaler, 1999). This concept was introduced to explain why most investors do not tend to choose investment options with higher long-term returns (such as purchasing stocks). Benartzi and Thaler (1995) argued that because investors frequently

evaluate portfolio risks, they assign excessive weight to current losses and thus cannot rationally assess long-term-beneficial investment portfolios. Similarly, domestic scholars Jiang Chengming et al. (2014) proposed the concept of "myopic effect" in their review, defined as "investors' difficulty in viewing multiple investments as a whole in the long term, instead tending to segment them into single decisions, thereby exhibiting risk aversion in each decision." Another related concept is myopic risk seeking, proposed by Haisley et al. (2008) to explain why lotteries, despite being expensive, remain popular, especially among low-income groups. The researchers suggested that when purchasing a single lottery ticket, buyers may derive utility (such as entertainment or excitement) that exceeds the monetary cost. Consequently, buyers choose to purchase lottery tickets repeatedly, demonstrating risk-seeking behavior. Meanwhile, the small cost of a single lottery ticket purchase leads buyers to ignore the large cumulative cost accumulated over the long term.

Overall, myopic loss aversion reflects decision-making behavior in daily financial decisions where people avoid choosing investment options with better long-term returns to prevent current small losses. Myopic risk seeking reflects decision-making behavior in lottery purchasing where people continuously pay small losses to obtain extremely low-probability large rewards while ignoring long-term cumulative costs. However, myopic risk ignorance, as proposed in this research proposal, explains decision-making behavior in various daily decisions where people actively ignore long-term cumulative risks to continuously obtain immediate small benefits. Compared to the aforementioned two concepts, myopic risk ignorance is a broader and more widely applicable myopic risk behavior. For example, the myopic risk seeking behavior of continuously purchasing small lottery tickets can be viewed as a special form of myopic risk ignorance by reframing the description and introducing the concept of long-term risk. When the ultimate goal is an extremely low-probability large gain, decision-makers ignore the long-term risk posed by accumulated costs because they continuously derive pleasure from each small lottery ticket purchase, potentially plunging originally low-income families into even greater financial hardship.

Moreover, scholars have primarily investigated these two behavioral concepts based on existing behavioral decision theories for single decisions. For instance, they have analyzed the impact of myopic evaluation on preferences for different lottery sequences through prospect theory (Langer & Weber, 2005), or explored the characteristics of these concepts by manipulating choice bracketing (Read et al., 1999) as narrow (results of a single choice at a time) or wide (overall results of multiple choices at a time) (Haisley et al., 2008). However, this research proposal approaches from the perspective of sequential decision-making and intends to explore the phenomenon and formation mechanisms of myopic risk ignorance through a dynamic decision-making framework.

2.2 Sequential Decision Making

Sequential decision making refers to a dynamic process where individuals, groups, or organizations make a series of interconnected decisions over time to achieve an optimal overall goal. Its complex characteristics determine that it encompasses numerous categories. Due to its high similarity with real-life decisions, research paradigms are typically constructed based on actual decision-making situations in daily life. Examples include individuals making multiple interconnected moral decisions (Bostyn & Roets, 2022), multi-person sequential voting decisions (Frey & Van De Rijt, 2021), doctors making treatment decisions updated based on patient conditions (Hong et al., 2019; Scherrer et al., 2015), police making geographically spatial decisions continuously updated based on outcomes when apprehending criminals (Goodwill, 2014), decision-making in rock-paper-scissors games that relies on predicting based on previous outcomes (Mohammadi Sepahvand et al., 2014), and individual mate selection decisions (Long & Campbell, 2015). These sequential decisions involve one or multiple decision-makers, decisions made for oneself or others, decision intervals that may be long or short, and diverse decision scenarios with distinct characteristics. Therefore, to better study sequential decision-making, adopting decontextualized abstract task paradigms is necessary and important.

To avoid the influence of decision context, most sequential decision-making research is based on existing, more abstract classic task paradigms, primarily including: (1) Sequential risk-taking task paradigms, such as the Balloon Analogue Risk Task (BART; Lejuez et al., 2002; Wallsten et al., 2005), the Devil Task (Slovic, 1966), the Columbia Card Task (Figner et al., 2009), the Angling Risk Task (Pleskac, 2008), and the "Deal or No Deal" game (Andersen et al., 2008; Chen & John, 2018, 2021; Post et al., 2008); (2) Optimal stopping problems task paradigms, such as the classic secretary problem (Goldstein et al., 2020) and virtual foraging decisions (Korn & Bach, 2018); and (3) Bandit problems task paradigms (Acuña & Schrater, 2010; Meyer & Shi, 1995; Steyvers et al., 2009). Decontextualized abstract task paradigms effectively reduce interfering factors, making key variables easier to manipulate. Given the advantages of abstract task paradigms, this research proposal will develop a decontextualized abstract task paradigm for measuring attitudes toward myopic risk ignorance based on classic sequential decision-making paradigms and relevant real-life decisions.

In terms of research content, current sequential decision-making research both domestically and internationally primarily involves four directions. First, seeking optimal mathematical models to cover the entire decision-making process, including using Bayesian decision theory methods (e.g., Jiang et al., 2013; Schechter, 1990), Bayesian reinforcement learning (e.g., Acuña & Schrater, 2010), and Markov decision processes (e.g., Alagoz et al., 2010) to analyze or explore complex processes in sequential decision-making. Second, using existing mathematical models to obtain or provide optimal strategies (e.g., Gu et al., 2021; Yang & Yuan, 2015; Mann, 2021; Scherrer et al., 2015), normative models

(e.g., Nguyen et al., 2019; Steyvers et al., 2009), or optimal planning (e.g., Hausman, 1969) for relevant sequential decisions. Third, constructing mathematical models to explore people's underlying decision-making patterns or information processing methods. Most current research is based on two-stage decision tasks where outcomes from the first stage affect options in the second stage. Such research primarily investigates whether people's decisions are model-based or model-free and their neural mechanisms (e.g., Deserno et al., 2015; Friedel et al., 2014; Gershman et al., 2014; Xu et al., 2021). Additionally, some studies explore decision-makers' information needs by manipulating their use of optimal strategies (e.g., Long & Campbell, 2015). Chen and John (2018) combined reinforcement learning and expected utility models to explore how people process expected information under different decision frameworks.

Fourth, by modeling sequential decision-making processes, researchers explore whether individual behavior patterns conform to normative models. In sequential decision-making, the Bayesian strategy is the most frequently mentioned decision strategy. However, Lisi et al. (2021) found in a dual-decision task that people do not always follow this strategy. Korn and Bach (2018) noted that although individuals may adopt normatively optimal strategies, actual decisions rely more on accessible optimal heuristics. Mohammadi Sepahvand et al. (2014) discovered through rock-paper-scissors games that people tend to use suboptimal reinforcement learning-based methods rather than objectively superior statistical learning methods. These findings support Simon's (1955, 1965) view that humans are boundedly rational decision-makers limited by information processing and learning capabilities. Busemeyer and Pleskac (2009) also pointed out that even when provided with all necessary information to adopt optimal strategies, people in dynamic decision-making still lack sufficient cognitive resources and knowledge to clearly solve such complex problems. Therefore, as a form of dynamic decision-making, sequential decision-making makes it difficult for people to be fully rational.

This research proposal introduces myopic risk ignorance from the perspective of sequential decision-making, which also constitutes irrational behavior. Given that people struggle to be fully rational in sequential decision-making processes, the concept of myopic risk ignorance is both reasonable and necessary. Moreover, considering the complexity of sequential decision-making and its key features such as temporal correlation, process relevance, and goal multiplicity, this proposal will further explore process relevance and goal multiplicity in sequential decision-making to establish a theoretical foundation for revealing the formation mechanisms of myopic risk ignorance.

2.2.1 Process Correlation in Sequential Decision Making Previous sequential decision-making research has provided relevant verification regarding the correlation of decision-making processes across sub-stages. Chen and John (2018) found when analyzing players' decision strategies in the "Deal or No Deal" game that players do not consider each round of decision-making as in-

dependent; they consider possible option combinations that may appear in the next round when making decisions. Post et al. (2008) found for the same game that players' choices in each round are strongly influenced by previous outcomes. In research on sequential decisions involving continued investment, Hoelzl and Loewenstein (2005) discovered that anticipated regret enhances individuals' tendency to continue investing. In a study of beach volleyball athletes, Link and Raab (2021) found that professional athletes are very sensitive to base rates in continuous decision-making and adjust their strategies based on opponents' performance. In a task where participants sequentially evaluated preferences for pictures from different categories, Chang et al. (2017) found assimilative sequential effects, where individuals' preferences for previous pictures modulated their preferences for subsequent pictures. Additionally, the model of history-dependent risk attitude (Dillenberger & Rozen, 2015) emphasizes the relevance of individuals' previous round decision preferences as history and indicates that individuals become more risk-averse after experiencing a negative emotional experience (disappointment) than after a positive emotional experience (elation).

Although these studies all indicate that sub-stage decisions are interrelated in sequential decision-making, due to cognitive limitations, people often cannot accurately process all relevant information, making it difficult to rationally interpret the connections among decisions. A series of heuristics and cognitive biases that appear when individuals process sequential information and sequential outcomes indirectly support this view in previous research. For example, the primacy effect (Anderson, 1965; Baird & Zelin II, 2000; Nahari & Ben-Shakhar, 2013) indicates that initial results or information obtained in early decision stages greatly influence subsequent judgments and decisions. Conversely, the recency effect (Baddeley & Hitch, 1993; Isarida & Isarida, 2006) suggests that because recent information is more easily recalled clearly, it has a substantial impact on individuals' judgments and decisions. Both heuristics related to sequential information weighting imply that in sequential decision-making, individuals may ignore most past information when making current-stage decisions and be primarily influenced by option or outcome information from a specific stage (beginning or end).

Among cognitive biases related to sequential outcome presentation, the gambler's fallacy and the hot hand fallacy are two typical examples. The gambler's fallacy occurs when, after a series of identical outcomes in random events, individuals incorrectly believe that the probability of that outcome occurring subsequently will decrease, a fallacy particularly common in gambling contexts (Croson & Sundali, 2005). Conversely, the hot hand fallacy occurs when, after a series of identical outcomes in random events, especially a series of positive outcomes, individuals incorrectly believe that the probability of that outcome occurring subsequently will increase, a fallacy particularly evident when evaluating player performance in sports competitions (Gilovich et al., 1985). These two cognitive biases further suggest that path patterns formed by multiple consecutive outcomes (whether good or bad) in sequential decision-making may trigger cognitive biases that subsequently influence individuals' decisions.

Overall, previous evidence indicates that decisions at various sub-stages are interrelated in sequential decision-making. However, a series of heuristics and cognitive biases related to sequential information weighting and sequential outcome presentation indirectly suggest that individuals likely exhibit irrational behaviors when processing historical decision options and decision outcome information during sequential decision-making processes. Therefore, this research proposal hypothesizes that individuals will ignore some interdependencies among decisions in sequential decision-making, and that this evaluation bias regarding decision process correlation constitutes an important factor triggering myopic risk ignorance attitudes.

2.2.2 Goal Multiplicity in Sequential Decision Making Sequential decision-making involves multiple stages or rounds of decisions, requiring decision-makers to simultaneously consider two goals at each stage: the local goal of the current stage and the overall goal of the entire process. Melioration theory (Herrnstein, 1991; Herrnstein & Prelec, 1991) posits that human choice is often constrained by myopic tendencies, favoring options with higher local rates of reward while neglecting the overall goal of maximizing global utility. Additionally, "choosing smaller current or local gains over larger long-term gains" is considered a behavioral tendency of humans (Sims et al., 2013), a phenomenon reflected in intertemporal decision-making (for relevant reviews, see Frederick et al., 2002; Urminsky & Zauberman, 2015). Intertemporal decision-making primarily focuses on one-time decisions between earlier, smaller rewards and later, larger rewards, whereas the discounting problem in sequential decision-making is more complex, involving individuals' continuous trade-offs between pursuing long-term global optimal goals and short-term local optimal goals.

Although previous research indicates that people prefer smaller current or short-term gains over larger long-term gains, this phenomenon has not been systematically studied in the context of sequential decision-making. This research proposal hypothesizes that in sequential decision-making, individuals will tend to assign higher weight to current local optimal goals compared to long-term global optimal goals, and that this difference in goal weighting constitutes an important factor triggering myopic risk ignorance attitudes.

3 Research Proposal

Based on the many important real-world decision-making problems mentioned at the beginning, this research proposal introduces and defines "myopic risk ignorance" for the first time. This concept refers to the phenomenon in multi-round identical or similar decision-making where, due to myopic evaluation and cognitive limitations, decision-makers struggle to accurately perceive or assess the interdependencies among decisions. Consequently, they pursue current gain goals in single-round decisions at the expense of global optimal goals and gradually ignore long-term risks. "Gray rhino" events frequently reported in

the media can essentially be regarded as crises triggered by myopic risk ignorance. Due to the absence of the myopic risk ignorance concept in previous research, people have difficulty detecting its long-term latent presence in daily decisions. Its potential risks snowball over time, potentially leading to irreparable massive losses. This research proposal intends to reveal the phenomenon and characteristics of myopic risk ignorance in daily decision-making based on process correlation and goal multiplicity in sequential decision-making, develop a specific research paradigm to measure attitudes toward myopic risk ignorance, and explore its formation mechanisms. The proposed research consists of three components: phenomenon revelation, attitude measurement, and mechanism exploration.

3.1 Study 1: Revealing the Phenomenon of Myopic Risk Ignorance
Study 1 aims to reveal the patterns and main characteristics of myopic risk ignorance phenomena in daily real-life decision-making and test their universality. To achieve this goal, this study will develop a scenario questionnaire to measure individuals' myopic risk ignorance behaviors in daily life and verify the universality of this phenomenon in real work and life based on actual behaviors. The expected results will form a daily scenario assessment tool and indicators for myopic risk ignorance, providing a realistic basis for subsequent theoretical research. Specifically, we will start with daily decision-making scenarios, selecting approximately 15 decision situations closely related to personal well-being, wealth, and health that involve long-term risks (such as sedentary behavior, staying up late playing games or scrolling through phones) as primary research materials. We plan to recruit approximately 20 participants for semi-structured interviews to collect their thoughts (cognition), feelings (emotions), and choices (behaviors) at different decision stages to initially construct assessment indicators for the myopic risk ignorance phenomenon. Subsequently, this study will recruit a large sample of participants to more carefully screen and adjust the initially formed assessment indicators. Regarding decision situations, we will eliminate those applicable to only a minority of decision-makers' behavioral habits based on data, expecting to retain approximately 10 representative daily life decision situations. Simultaneously, we will form assessment questions based on data-induced similarities and differences across decision stages.

3.2 Study 2: Measuring Attitudes Toward Myopic Risk Ignorance
While Study 1 aims to reveal myopic risk ignorance phenomena in daily real-life decision-making, developing an abstract task paradigm based on real-world scenarios is crucial for in-depth theoretical research on myopic risk ignorance. Therefore, Study 2 will focus on developing a decontextualized abstract task paradigm to measure attitudes toward myopic risk ignorance and test the validity of this paradigm.

The first sub-study of Study 2 is inspired by the classic sequential decision-making paradigm—the Columbia Card Task, particularly its cold version. Based on the characteristics of behavioral options in myopic risk ignorance phenom-

ena (i.e., as individuals continuously choose to execute or deepen execution, they continue to receive "small gains" while facing "dynamic losses with gradually increasing probability and magnitude"), we will design a corresponding card-flipping task as a decontextualized abstract task paradigm to simulate real-life decision-making processes. Additionally, this study will combine mathematical modeling and other methods to determine key parameters of the task paradigm and estimate threshold values for these parameters, thereby constructing cognitive, emotional, and behavioral measurement indicators for myopic risk ignorance attitudes. For example, on the cognitive dimension, the number of cards flipped each time reflects individuals' risk preferences. This study will use the rate of change in risk preferences over time to assess the emergence and severity of myopic risk ignorance attitudes. When individuals' risk preferences remain unchanged or become increasingly risk-seeking over time, this rate of change is greater than or equal to 0, indicating that individuals exhibit myopic risk ignorance. On the emotional dimension, we will use individuals' self-rated satisfaction after each round's decision outcome as the primary indicator, expecting that a continuous gain state will increase individuals' satisfaction and make their risk preference change rate larger.

The second sub-study of Study 2 will simultaneously use the scenario questionnaire developed in Study 1 and the abstract task paradigm developed in the first sub-study to measure individuals' myopic risk ignorance attitudes and test the consistency of measurement results between the two methods. This study will employ a within-subjects design, where participants must complete both the recall scenario questionnaire and the multi-round card-flipping task. We will complete cross-validation of the myopic risk ignorance attitude research paradigm by analyzing the correlation of myopic risk ignorance assessment indicators between the two tasks.

3.3 Study 3: Mechanisms Underlying Attitudes Toward Myopic Risk Ignorance Based on the hypotheses constructed earlier, Study 3 intends to reveal the formation mechanisms of myopic risk ignorance attitudes from the perspectives of decision process correlation and decision goal multiplicity in sequential decision-making, and provide theoretical support for behavioral interventions for myopic risk ignorance.

The first sub-study of Study 3 will primarily explore the impact of decision process correlation on myopic risk ignorance attitudes. We will add relevant questions to the recall scenario questionnaire to assess the correlation of decision options at each stage (i.e., the degree of risk change perceived by individuals in each round of decision-making) and the correlation of decision outcomes (i.e., the degree to which current round decision outcomes are influenced by previous outcomes). Additionally, in the multi-round card-flipping task, we will add estimations of event occurrence probabilities and use time series statistical models to test the causal relationship between decision process correlation and changes in individuals' risk attitudes at various decision stages.

The second sub-study of Study 3 aims to explore the impact of decision goal multiplicity on myopic risk ignorance attitudes. Through text analysis of the scenario questionnaire and variable manipulation in the abstract task paradigm, this study will compare differences in myopic risk ignorance attitudes under different goal weightings. Specifically, in the recall scenario questionnaire, we will add questions about trade-offs between goal outcomes, requiring participants to describe in detail their thinking about specific goal outcomes. Using query theory (Johnson et al., 2007), we will construct a relevant index of goal content and explore its predictive effect on myopic risk ignorance attitudes. In the multi-round card-flipping task, by manipulating focus of attention (e.g., focusing on local goals vs. focusing on overall goals), this study will test whether myopic risk ignorance measurement indicators differ significantly under different goal focuses.

4 Theoretical Framework

This research proposal introduces the concept of myopic risk ignorance to analyze people's behavior in sequential decision-making in daily life and reveals the characteristics of myopic risk ignorance from three dimensions: cognition, emotion, and behavior. Furthermore, this proposal will develop a specific task paradigm based on classic sequential decision-making paradigms to measure attitudes toward myopic risk ignorance and form measurement indicators. Subsequently, by analyzing two key features of sequential decision-making—process correlation and goal multiplicity—it will explore the formation mechanisms of myopic risk ignorance (Figure 1 [Figure 1: see original paper]).

This research proposal demonstrates significant theoretical innovation. First, although potential "high-probability, large-loss" risk events, such as "gray rhino" events frequently reported in the media, are often mentioned, the scientific issues behind these events have not been clearly defined. This proposal defines the phenomenon of myopic risk ignorance from a scientific perspective for the first time, providing a brand-new theoretical perspective for related research and supplementing research content in the fields of risk decision-making and intertemporal decision-making. Second, this proposal deeply analyzes the myopic risk ignorance phenomenon by exploring people's cognitive, emotional, and behavioral characteristics in sequential decision-making. This perspective not only provides new directions and innovative foundations for sequential decision-making research but also offers new ideas for proposing and constructing new theories in behavioral decision-making. Additionally, this proposal explores the formation mechanisms of myopic risk ignorance from the perspectives of decision process and goals in sequential decision-making, establishing an important theoretical foundation for building a prediction and intervention system for social phenomena.

The research results of this proposal have promising application prospects. Myopic risk ignorance profoundly impacts people's lives and work, yet effective methods to improve or optimize this consequential decision-making behavior

are currently lacking. The research findings can provide more precise targets for subsequent intervention studies on myopic risk ignorance and help decision-makers more effectively identify, assess, and avoid potential long-term risks in various daily situations, thereby reducing the occurrence of myopic risk ignorance. Furthermore, the research results will provide a theoretical foundation for developing future sequential decision support systems, promoting more effective achievement of long-term goals and enhancing long-term well-being for decision-making entities including governments, enterprises, and individuals.

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Note: Figure translations are in progress. See original paper for figures.