

Article

How Consideration of Future Consequences, Prior Gain or Loss, Personal Risk Profile, and Justification Affect Risk–Payoff Preferences

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Abstract: This study examines (1) how risk–payoff preference can be affected by differences in consideration of future consequences (CFC), prior gain/loss, and personal risk profile, and (2) whether one’s risk–payoff preference may vary with justification prompts. Using an experimental design with 366 undergraduate business students, participants are tasked to make risk–payoff choices in two scenarios, with the combined risk–payoff outcomes serving as the dependent variable. In addition, participants are assessed on their personal risk profiles and also complete the 14-item CFC scale to gauge the propensity to take into account future consequences of their behaviors. Findings show that one who scores low (high) in CFC will prefer lower (higher) risk and payoff. Further, for an individual who scores high in CFC and has a prior gain (loss), he/she will be more inclined to prefer lower (higher) risk and payoff, though this effect is moderated by one’s risk profile. Finally, justification prompts help to reduce one’s propensity toward high risk–payoff, irrespective of prior gain/loss and risk profile considerations. With regard to consumers’ financial choices, particularly in a volatile economic environment, the findings here indicate that prompting for strategic justifications before making decisions can help lower one’s overall propensity toward high risk–payoff choices.

Keywords: consideration of future consequences; prior gain or loss; personal risk profile; justification; payoff



Citation: Lee, W. Eric. 2024. How Consideration of Future Consequences, Prior Gain or Loss, Personal Risk Profile, and Justification Affect Risk–Payoff Preferences. *Journal of Risk and Financial Management* 17: 83. <https://doi.org/10.3390/jrfm17020083>

Academic Editor: Thanasis Stengos

Received: 3 November 2023

Revised: 28 December 2023

Accepted: 4 January 2024

Published: 18 February 2024



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1. Introduction

In this study, consideration of future consequences (CFC) is defined as the importance a person assigns to the immediate versus delayed consequences of their actions (Strathman et al. 1994). In predicting how individual differences in CFC may impact one’s financial decision-making, Joireman et al. (2005) showed that individuals high in CFC are more inclined to use a hypothetical windfall in a fiscally responsible fashion, like exhibiting greater promptness in paying down one’s credit card debt. Howlett et al. (2008) similarly found that consumers who display a higher propensity to consider the future consequences of their behaviors (i.e., higher CFC) will be more likely to make decisions and evaluations that will maximize their future financial well-being. In matters concerning personal finance, one with a higher level of CFC reports a higher likelihood of contributing to a 401 K plan, though this is moderated by one’s self-regulatory state and the level of financial knowledge.

Prior literature concerning aspiration level has also shown that investment choices are largely based on loss aversion, with individuals typically being risk-averse over gains, but risk-seeking over losses (see Payne et al. 1980, 1981). The economic theory of endowment effect posits an asymmetry between gains and losses, whereby loss is considered more aversive than gain of the same size (Kahneman and Tversky 1979). With outcome dispersion or variance often used as a proxy for risk, a greater (lower) risk can portend a lower (higher) probability of an event occurring (see Libby and Fishburn 1977; Payne 2005). Prior research has shown that using lower- (versus higher-) level construal to represent information about near (versus distant) events in the future increases one’s preference for a

higher (lower) probability of a lower (higher) expected payoff (Joireman and Balliet 2004; Sagristano et al. 2002).

Finally, Tetlock (1983, 1985) has found that prompting a more effortful process to justify one's decision choices could attenuate the tendency of making fundamental attribution errors. Applied to one's risk–payoff preference and conditional on one's CFC, prior gain/loss, and risk profile considerations, this study hereforth examines if strategic justification prompts could provide an effective prescription toward reducing one's propensity for making high-risk choices.

Using an experimental design with 366 undergraduate business students, participants are tasked to make risk–payoff choices in two scenarios, with the combined risk–payoff outcomes serving as the dependent variable. In addition, participants are assessed on their personal risk profiles and also complete the 14-item CFC scale to gauge the propensity to take into account future consequences of their behaviors. The findings of this study show that one who scores low (high) in CFC will prefer a lower (higher) risk and payoff. For an individual who scores high in CFC and has a prior gain (loss), he/she will be more inclined to prefer a lower (higher) risk and payoff. In examining the moderation effect arising from one's risk profile, results show that one with high CFC and a prior loss will demonstrate a preference for higher risk regardless of their personal risk profile. On the other hand, one with high CFC and a prior gain will choose the less risky approach if they were risk avoiders, versus the more risky approach if they were risk seekers. Finally, justification prompts help to reduce one's propensity toward high risk and payoff, irrespective of prior gain/loss and risk profile considerations.

Prior studies in financial statement risk assessment have provided theoretical insights by using both decision theory and behavioral variables in explaining investors' decision judgments, as well as investors' biases toward the different labeling and disclosures used in financial instruments (e.g., Koonce et al. 2005a, 2005b). This experimental study makes at least three incremental contributions to risk–payoff decision research. First, from a methodological standpoint, prior research in the areas of risk tolerance and risk-taking have predominantly used archival data from surveys, illuminating the importance of household demographics, individuals' life domains, and portfolio structures as well as a composite of subjective and objective financial knowledge in determining one's financial risk tolerance level or risk-taking propensity (see Grable and Rabbani 2014; Heo et al. 2021; Irandoust 2017; Noman et al. 2023; Rabbani et al. 2021; Schooley and Worden 2016). Experimental studies examining this research stream have also primarily looked at various individual effects, such as the effects of inducing differing time pressures or stressors on risk-taking preferences/behaviors (see, e.g., Cahlikova and Cingl 2017; Kirchler et al. 2017; Kocher et al. 2013). This study uses an experimental setting to further examine a multitude of important constructs on respondents' risk preference decisions.

Second, it extends the findings of earlier studies by introducing the important concept of CFC. Many of our life decisions involve a temporal element that hinges on our ability to look past the immediate and into the future. Contrary to the piecemeal approaches of prior studies in studying various individual concepts, this study consolidates and examines the dynamics of how one's CFC, prior gain/loss, and risk profile may interact with justification requirement to affect risk–payoff judgments. Thus, incorporating CFC within the broader financial decision-making framework can serve as a springboard for more future research involving a temporal dimension. Third, on a practical level, findings of this study indicate that, notwithstanding one's CFC, prior gain/loss, and risk profile, prompting for crucial justifications before making decisions can effectively be used to evoke a more cognitively vigilant mental processing mode, thereby helping to mitigate one's propensity toward making highly divergent, and often risky, choices. Overall, one could take heed of the findings from this study and gain a better understanding of the mechanism shaping one's decision-making processes. From a personal financial planning perspective, this can hopefully help steer investors toward making more reasoned financial choices,

with *lower* overall risks, particularly in a volatile economic environment when investors are more prone to make emotion-driven decisions.

The remainder of this paper is organized into five sections. The next section provides the theoretical background to the study. This is followed by the hypotheses development, research design, analyses, limitations and future research, and finally, the conclusion and implications.

2. Theoretical Background

2.1. Consideration of Future Consequences

Prior research has demonstrated that CFC's immediate-versus-future orientation is a stable personality characteristic with a significant influence on one's domain-specific behavioral outcomes (Murphy et al. 2020; Zimbardo and Boyd 1999). As defined by Strathman et al. (1994), individual differences in CFC reflect "the extent to which people consider the potential distant outcomes of their current behaviors and the extent to which they are influenced by these potential outcomes." Past research has shown an inverse relationship between CFC and temporal discounting, in that one who scores lower in CFC will prefer a smaller but more certain outcome amount, while in comparison, a person who scores higher in CFC will prefer a larger (i.e., higher expected utility) but less certain payoff (Joireman and Balliet 2004; Sagristano et al. 2002).

Related, construal level theory (CLT) proposes that temporal distance changes one's responses to future events by changing the way one mentally represents those events (Liberman and Trope 1998; Trope and Liberman 2000). One will use lower- (higher-)level construal to represent information about nearer (more distant) events in the future. As CLT proposes, in the context of making decision choices, if one thinks of the probability of (immediate) winning as subordinate to (distant) payoffs, then information regarding the probability of winning will be more prominent in construing near-future than distant-future decision choices, whereas information regarding payoffs will be more prominent in construing distant-future than near-future decision choices (Sagristano et al. 2002).

Inducing the near- versus distant-future concepts of CLT to predict how individual differences in CFC may impact one's financial decision-making, Joireman et al. (2005) showed that individuals high in CFC are more inclined to use a hypothetical windfall in a fiscally responsible fashion, like exhibiting greater promptness in paying down one's credit card debt. Howlett et al. (2008) further found that consumers who display a higher propensity to consider the future consequences of their behaviors (i.e., higher CFC) will be more likely to make decisions and evaluations that will maximize their future financial well-being. In matters concerning personal finance, one with a higher level of CFC reports a higher likelihood of contributing to a 401 K plan, though this is moderated by one's self-regulatory state and the level of financial knowledge.

2.2. Prior Gain/Loss and Risk

The phenomenon of mere ownership bias effect is one whereby an object will be regarded more favorably by an owner than by a non-owner (Hoorens et al. 1990). From the mere ownership effect comes the endowment effect phenomenon, the latter defined as an increment in value that accrues to an object when it becomes part of a person's endowment due to ownership (see Heider 1958). As put forth subsequently by Kahneman and Tversky (1979), in economic theory terms, the endowment effect is thought to occur because of the asymmetry between gains and losses, with a loss viewed as more aversive than a comparable gain (Kahneman et al. 1990). This endowment-driven, loss aversion impact on one's preference decisions could change depending on whether one is in a position with a prior gain or loss. Such tendency follows from the tenets of individuals being risk-averse over gains but risk-seeking over losses (Kahneman and Tversky 1979). Intuitively, this could impact one's preference, such that a prior gain (loss) position will evoke a lower (greater) propensity to take on risky investment decisions. When combined with prior

findings related to CFC, one's prior gain or loss should also be considered when tasked to make decision choices.

Several recent research studies have examined the topics of financial risk tolerance (FRT) and risk-taking behavior. Grable and Rabbani (2014) had earlier constructed a risk-tolerance portrait for individuals near retirement, to accurately characterize risk attitudes across seven domains. Focusing on the financial crisis event in 2008, Noman et al. (2023) examined a 2009–2018 data set and found that investors' FRT was associated more with their subjective than their objective financial knowledge, though the relative influence of subjective knowledge increased as the survey periods progress further away from 2008. Schooley and Worden (2016) also used a 2007–2009 panel data set to examine changes in perceived and realized risk tolerance after the financial crisis. They found that households who perceived less risk tolerance (particularly those whose wealth had decreased) were more likely to have reduced their portfolio risk. Single, less educated, self-employed, or unemployed households were also most susceptible to portfolio reduction during this period, and thus may need financial advice to help prevent them from selling too quickly and potentially missing out on gains as the market recovers.

Separately, Rabbani et al. (2021) used a January 2018 to January 2019 data set to compare one's FRT pre- to post- 3 October 2018 (i.e., the date of market high for the year 2018). They found a decrease in FRT levels post-October, with the most acute decrease evident with younger and less financially experienced respondents. There was no significant decrease in FRT post-October though, for those who have worked with financial advisors and counselors. Focusing from the COVID perspective by analyzing a data set from April 2019 to July 2020, Heo et al. (2021) found a general decrease in FRT as a result of the pandemic.

On one's risk-taking propensity, Irandoust (2017) investigated, in the context of Sweden, the effects of factors that may influence the probabilities of one being risk-averse or risk-seeking. Results from questionnaire responses conducted in Sweden during May 2015 showed that one's willingness to take financial risks depended on a multitude of portfolio and personal (i.e., gender, age, education, etc.) factors. Some previous studies have also examined the impact of inducing acute stressors or varying time pressures on risk-taking behaviors, finding inconsistent risk preferences toward gains and losses in response to differing conditions (Cahlikova and Cingl 2017; Kirchler et al. 2017; Kocher et al. 2013).

The normative mean-variance model as posited by Sharpe (1970) is centered on the value of an investment with its expected return (whereby more is preferred to less) and standard deviation (whereby less is preferred to more). In terms of one trying to reach an aspiration (i.e., success) level, the corresponding aim of loss aversion is often emphasized (Payne et al. 1980, 1981). Loss aversion, by definition, emphasizes a greater weighting attached to a negative event (Kahneman et al. 1990). Insofar as availability heuristics is concerned, people often base their predictions of the rate of occurrence within a population on the ease with which an example can be brought to mind (Tversky and Kahneman 1973). In the context of making decision choices, one will thus be more inclined to choose that option with a greater presence of positive outcomes, assuming equal actual expected outcome values for the different options.

Prior studies regarding decisions under uncertainty in finance and risk management have also postulated the importance of risk, in that an investor's emphasis is on avoiding the prospect of not meeting some target rate of return (Mao 1970). Payne (2005) conceptualized risk from the perspective of the overall probability of success or positive outcome in obtaining a certain level of return, thus the focus is on both increasing the overall probability of a gain as well as decreasing the overall probability of a loss. In effect, the higher (lower) the risk, the lower (higher) the probability of a favorable outcome, or conversely, the higher (lower) the probability of an unfavorable outcome. Edwards (1954) similarly showed in his study that the research subjects prefer low probabilities of losing large amounts of money to high probabilities of losing small amounts. Striving to consistently stay above one's aspiration (success) level, Siegel (1957) provided further evidence in this regard.

Earlier studies have so far largely identified the risk construct into two main groups: (1) as mentioned earlier, those conceiving risk as the failure to obtain a certain level of returns, and (2) those conceiving risk as relating to the total dispersion of the outcomes (i.e., measured in terms of the whole distribution variance) (Libby and Fishburn 1977). Since prior evidence has largely suggested that risk is more related to probability and the amount of loss (hence adhering to such decision rules as ‘minimize possible loss’ or ‘maximize possible gain’) (e.g., Slovic 1972), this study varies the level of risk (i.e., with an inverse relationship to the probability of success or a favorable outcome) and examines one’s risky investment decision choices given a prior gain (as compared to a loss or neutral) condition. Hence, controlling for one’s CFC, this study examines whether one’s prior gain/loss and personal risk profile can impact their risk–payoff choices.

2.3. Justification

Justification strategies in investment, shopping, or health-related decisions provide various rich contexts to examine judgment accountability (e.g., Huber et al. 2009; Johnson and Kaplan 1991; Park and Hill 2018; Schippers and Rus 2021; Tetlock 1983), whereby the process of explaining one’s decision to support a chosen option over another could evoke a more cognitively vigilant mental processing mode. One’s fundamental attribution error tendency could also be attenuated when meaningful accountability is introduced (Tetlock 1985; Lerner and Tetlock 1999). In essence, by being mindful and deliberate, in spending enough time to consider as many factors as possible before making a decision, this thought process could potentially reduce the risk of ending up with information-processing failures, thereby minimizing any divergence in one’s decision preference across differing endowment effects.

The main impetus for incorporating strategic justification requirements as an experimental treatment in this study is to examine if this will lead to a reduction in one’s propensity toward making high-risk choices. Using a more effortful process to document one’s formal decision rules will hopefully point to a more effective prescription toward reducing biased and risky choices previously observed. Hence, based on one’s prior gain or loss and personal risk profile, this study further examines if and how a more in-depth cognitive reasoning process impacting one’s choice preference can be evoked through the imposition of a justification requirement.

3. Hypotheses Development

Prior focus on the overall probability of success stemming from aspiration level is evident from studies by Payne and Brauneis (1971), Payne et al. (1980, 1981), and Payne (2005). Results indicate that subjects prefer the option with a higher overall probability of a positive outcome or gain, *ceteris paribus*. Insofar as the endowment effect is concerned, an increment in value is evident as a result of a person’s endowment due to ownership. This arises primarily because of the asymmetry between gains and losses, with a loss generally viewed as more aversive than a comparable gain (Kahneman and Tversky 1979). In this study, the objective is to examine whether one with a prior gain position can accentuate such an endowment-driven, loss-aversion phenomenon, while a prior loss position can conversely mollify such an endowment-driven, loss-aversion phenomenon. Thus, in adherence to prior findings related to the endowment effect, with a prior gain (loss), one will intuitively have greater (lower) loss- and risk-aversion tendencies, hence will be more inclined to prefer decisions with lower (higher) risk.

Individuals with lower CFC will logically prefer a more certain but smaller expected payoff, while a person higher in CFC will comparatively prefer a less certain but larger expected payoff. This study thus addresses the gap in the existing literature by further examining how one’s CFC could induce differing temporal distance perceptions in adherence to the near- versus distant-future construal, which when considered in conjunction with one’s prior gain or loss position, will impact one’s decision choices. Prior research established that one who scores low in CFC is less affected by their prior gain or loss, and will

be more inclined to direct resources away from the options maximizing long-term future benefits toward those options maximizing more certain short-term interests, in effect seeking the less risky (i.e., more certain) option (Joireman and Balliet 2004; Joireman et al. 2005). On the other hand, for those with high CFC, the endowment effect with a longer-term future benefit will likely take precedence (depending on whether one has a prior gain or loss), thus resulting in a stronger response to a loss than to a corresponding gain. Subject to “risk-seeking in the losses” and possibly moderated by one’s personal risk profile, this study also further builds on prior postulation and examines one’s risk–payoff choice preferences, depending on whether one has a prior gain or loss in a high CFC setting. Hypotheses One and Two are henceforth formally stated as:

H1. *One who scores low (high) in CFC will be more inclined to prefer decisions with lower (higher) risk (i.e., higher (lower) probability) and lower (higher) payoff.*

H2a. *One with a prior gain (loss) and who scores high in CFC will be inclined to prefer decisions with lower (higher) risk and lower (higher) payoff.*

H2b. *The effect of prior gain/loss and CFC on risk–payoff preference is moderated by one’s personal risk profile.*

Tetlock (1983) first discussed the construct of accountability in terms of justification, defining it as the social pressure to justify one’s decisions to others. Simonson and Nye (1992) found that, depending on the decision context, accountability can end up improving, degrading, or not changing one’s performance. In enhancing one’s self-critical attention to the judgment process as well as evoking a greater cognizance of the information provided, this study further examines if imposition of a justification requirement will lead to a less biased choice in a high CFC setting, potentially enabling one to pivot toward a decision with lower risk–payoff dynamics. As one documents the formal decision rules to follow, a more de-biased overall outcome should logically eventuate. Hypothesis Three, in imposing a strategic justification requirement, is henceforth formally stated as:

H3. *For one who scores high in CFC, justification prompts will help to reduce the propensity toward high risk–payoff.*

4. Research Design

The objective of this study is to examine the difference in risk–payoff preference between one with a prior gain vis-a-vis one with a prior loss. The experimental design is 3 (prior gain, prior loss, and neutral as control) \times 2 (no justification versus justification requirement) randomized between-subject, with 370 undergraduate business students (recruited over two semesters) from a public university in the U.S., participating in exchange for extra course credits in an undergraduate accounting course. To improve participation, besides being awarded the extra course credits, each participant was entered into a cash lottery draw of USD 25 for each class of participants. Participants in the “justification requirement” condition provided their opinions on the specific reasons they have adopted in regard to their choices. An open-ended response format was used for participants who were prompted to provide justification for their choices. All participants were assessed on their CFC and personal risk profiles after they had indicated their choices. Four participants were removed from the final usable sample for leaving right after the experimental study began or for having not spent any time to reason (when prompted to justify),¹ thereby rendering their subsequent responses invalid with the substantially missing data responses (final sample: $n = 366$, 45% male, 55% female, median age = 20.6).

Part of the experimental instrument regarding the risk choice options was adapted from Sagristano et al. (2002), Payne (2005), and Payne et al. (1980). It started by narrating a synopsis whereby the participant is currently assumed to be in a position of net gain,

neutral, or net loss. Recently, the participant became aware of a prospectus regarding a new investment fund. Each participant is to assume that this new investment fund comes with two options (Choice A or B). To prevent participants’ selection from being confounded by order effects, two within-subject scenarios were provided. In Scenario 1, Choice A has a lower risk (i.e., higher probability) of a lower expected payoff as compared to Choice B. Conversely, in Scenario 2, Choice A has a higher risk (i.e., lower probability) of a higher expected payoff as compared to Choice B. Each participant is then tasked to choose whether to invest in Choice A or B for both scenarios. A coding of “1” is used when a participant chooses lower risk and lower payoff, and “2” when one chooses higher risk and higher payoff, hence providing a possible range of 2 (lowest) to 4 (highest) in summing the combined choices made for the two scenarios.² This risk score (i.e., the risk variance spread preference value) will form the dependent variable in our analyses. A copy of the case is found in Appendix A.

All participants completed the adapted 14-item CFC scale (see Joireman et al. 2012, 2006; Strathman et al. 1994), as shown in Appendix B. The 14-item CFC scale contains general statements regarding a person’s propensity to take into account future consequences of their behavior. Participants were asked to indicate whether each of the fourteen statements was characteristic of themselves by circling the appropriate number on the scale, ranging from 1 (extremely uncharacteristic) to 7 (extremely characteristic). Uni-dimensionality of items in the composite CFC measurement model was affirmed using factor analysis to ascertain reliability (SRMR = 0.030, RMSEA = 0.045, CFI = 0.995, TLI = 0.993).³ Upon completion of the experiment, each participant answered a post-experimental debriefing questionnaire, eliciting demographic information for use in subsequent covariate testing.

5. Analyses

Analyses of covariates (ANCOVA) ascertain that the following factors exert no qualitative influence on the final results: gender, age, class level, major, GPA, work experience, current investments, personal and family net worth, as well as perceived investment sophistication level (all $p > 0.100$). All participants of the final usable sample completed the adapted 14-item CFC scale (modified from Strathman et al. 1994). Prior research has shown that CFC is a reliable, stable, and valid construct with wide-ranging behavioral implications. In effect, individuals with low (high) CFC attach a high (low) degree of importance to the immediate consequences of their behaviors, and a low (high) importance to the delayed consequences of their behaviors (Joireman et al. 2006). As illustrated in Table 1, the Cronbach alpha value based on standardized items is 0.877 ($p = 0.000$, $DF = 91$). Table 2 also shows the correlation matrix of the 14 items used in the CFC scale administration (with significant p values), hence affirming the reliability of the CFC items used.

Table 1. KMO and Bartlett’s test.

Kaiser–Meyer–Olkin measure of sampling adequacy.	0.877	
Bartlett’s test of sphericity:	Approx. chi-square	1.666×10^3
	Df	91
	Sig.	0.000

To test for Hypothesis 1, an independent sample t -test was performed to compare the group statistics between those with high versus low CFC (by dividing their responses using the CFC scale’s midway point).⁴ Evident from Tables 3 and 4, those with low CFC show a significantly lower risk (i.e., higher probability) preference as compared to those with high CFC (low CFC at mean = 2.26 as compared to high CFC at mean 2.83, significantly different at $p = 0.000$).⁵ In effect, the results here indicate that those with low (high) CFC prefer near- (distant-) future preferences for higher (lower) probability, albeit a lower (higher) risk–payoff, thus affirming Hypothesis 1.

Table 2. Inter-item correlation matrix among consideration of future consequences (CFC) items ^a.

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14
C1	1.0	0.317	0.372	0.344	0.110	0.332	0.245	0.186	0.302	0.326	0.403	0.296	0.527	0.552
C2	0.317	1.0	0.233	0.237	0.217	0.298	0.093	0.190	0.132	0.219	0.364	0.297	0.267	0.335
C3	0.372	0.233	1.000	0.684	0.243	0.280	0.183	0.155	0.293	0.361	0.604	0.365	0.335	0.396
C4	0.344	0.237	0.684	1.000	0.287	0.244	0.191	0.148	0.312	0.313	0.555	0.352	0.341	0.386
C5	0.110	0.217	0.243	0.287	1.000	0.042	−0.009	−0.011	0.190	0.241	0.292	0.253	0.039	0.073
C6	0.332	0.298	0.280	0.244	0.042	1.00	0.356	0.200	0.131	0.296	0.389	0.247	0.329	0.388
C7	0.245	0.093	0.183	0.191	−0.009	0.356	1.00	0.239	0.398	0.364	0.272	0.149	0.370	0.313
C8	0.186	0.190	0.155	0.148	−0.011	0.200	0.239	1.00	0.176	0.199	0.219	0.061	0.230	0.238
C9	0.302	0.132	0.293	0.312	0.190	0.131	0.398	0.176	1.000	0.469	0.407	0.296	0.366	0.355
C10	0.326	0.219	0.361	0.313	0.241	0.296	0.364	0.199	0.469	1.000	0.505	0.310	0.366	0.330
C11	0.403	0.364	0.604	0.555	0.292	0.389	0.272	0.219	0.407	0.505	1.000	0.469	0.394	0.425
C12	0.296	0.297	0.365	0.352	0.253	0.247	0.149	0.061	0.296	0.310	0.469	1.000	0.294	0.294
C13	0.527	0.267	0.335	0.341	0.039	0.329	0.370	0.230	0.366	0.366	0.394	0.294	1.00	0.646
C14	0.552	0.335	0.396	0.386	0.073	0.388	0.313	0.238	0.355	0.330	0.425	0.294	0.646	1.000
Sig. (1-tailed)														
C1		0.000	0.000	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
C2	0.000		0.000	0.000	0.000	0.000	0.038	0.000	0.006	0.000	0.000	0.000	0.000	0.000
C3	0.000	0.000		0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000
C4	0.000	0.000	0.000		0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000
C5	0.018	0.000	0.000	0.000		0.211	0.432	0.415	0.000	0.000	0.000	0.000	0.230	0.083
C6	0.000	0.000	0.000	0.000	0.211		0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000
C7	0.000	0.038	0.000	0.000	0.432	0.000		0.000	0.000	0.000	0.000	0.002	0.000	0.000
C8	0.000	0.000	0.002	0.002	0.415	0.000	0.000		0.000	0.000	0.000	0.122	0.000	0.000
C9	0.000	0.006	0.000	0.000	0.000	0.006	0.000	0.000		0.000	0.000	0.000	0.000	0.000
C10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
C11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000
C12	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.122	0.000	0.000	0.000		0.000	0.000
C13	0.000	0.000	0.000	0.000	0.230	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
C14	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Note: ^a Determinant = 0.009.

Table 3. Test of difference between high and low CFC.

	Group Statistics				
	CFC	n	Mean	Std. Deviation	Std. Error Mean
	DV	Low	27	2.26	0.526
	High	339	2.83	0.854	0.046

Note: DV dependent variable: risk variance spread preference (2: low to 4: high).

Table 4. Independent samples test.

	Levene's Test for Equality of Variances		t-Test for Equality of Means							
	F	Sig.	t	df	Sig. (2-Tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
DV	Equal variances assumed	22.309	0.000	−3.393	364	0.001	−0.567	0.167	−0.895	−0.238
	Equal variances not assumed			−5.091	37.961	0.000	−0.567	0.111	−0.792	−0.341

To test for Hypotheses 2, variance tests of between-subject effects were performed on those with high CFC values. Table 5 illustrates the descriptive statistics of the different

factors (personal risk profile,⁶ prior gain/loss, justification requirement, and one’s CFC position). Table 6 shows that, among the group with high CFC, those who are risk-seekers will uniformly adopt a more risky preference (i.e., higher risk scores), vis-a-vis that for risk avoiders.

Table 5. Between-subject factors.

Description	Type	n
Risk	Seeker	185
	Avoider	181
Prior	Gain	151
	Neutral	68
	Loss	147
Justification	No	177
	Yes	189
CFC	Low	27
	High	339

Table 6. Descriptive statistics for high CFC responses.

Prior Gain/Loss	Justification	Risk Profile	Mean	Std. Deviation	n
Gain	No	Seeker	3.81	0.397	30
		Avoider	2.06	0.246	30
		Total	2.94	0.941	60
	Yes	Seeker	2.25	0.615	41
		Avoider	2.02	0.152	41
		Total	2.14	0.462	82
	Total	Seeker	2.91	0.941	71
		Avoider	2.04	0.197	71
		Total	2.48	0.807	142
Neutral	No	Seeker	3.76	0.437	15
		Avoider	2.50	0.516	14
		Total	3.15	0.795	29
	Yes	Seeker	3.05	0.405	16
		Avoider	2.12	0.342	14
		Total	2.63	0.598	30
	Total	Seeker	3.39	0.549	31
		Avoider	2.31	0.471	28
		Total	2.88	0.744	59
Loss	No	Seeker	3.82	0.385	38
		Avoider	3.77	0.423	37
		Total	3.80	0.403	75
	Yes	Seeker	3.00	0.250	31
		Avoider	2.03	0.171	32
		Total	2.51	0.533	63
	Total	Seeker	3.45	0.528	69
		Avoider	2.97	0.936	69
		Total	3.21	0.796	138
Total	No	Seeker	3.81	0.395	82
		Avoider	2.92	0.887	82
		Total	3.37	0.816	164
	Yes	Seeker	2.67	0.610	89
		Avoider	2.04	0.204	86
		Total	2.36	0.553	175
	Total	Seeker	3.22	0.771	171
		Avoider	2.47	0.771	168
		Total	2.85	0.856	339

Notes: Dependent variable: risk variance spread preference (2: low to 4: high).

Also shown in Table 6, for those without justification requirement as well as irrespective of the risk profile, with a prior gain (loss), one who scores high in CFC will be significantly more (less) inclined to prefer decisions with a lower risk (mean of 2.94 versus 3.80, $p < 0.010$), thus affirming Hypothesis 2a. Further, in examining the possible moderation effects arising from one's personal risk profile, for participants with a prior loss and without justification prompt, those with high CFC will show a greater propensity to prefer a choice entailing a higher risk regardless of their personal risk profile (mean for risk seekers = 3.82 versus mean for risk avoiders = 3.77, at $p > 0.100$). On the other hand, with a prior gain and without justification prompt, participants with high CFC will choose the less risky approach if they are risk avoiders (mean = 2.06) versus the more risky approach if they are risk seekers (mean = 3.81, at $p < 0.010$). This moderating effect of one's prior gain/loss position with their personal risk profile is also graphically evident from Figure 1, thus affirming Hypothesis 2b.⁷

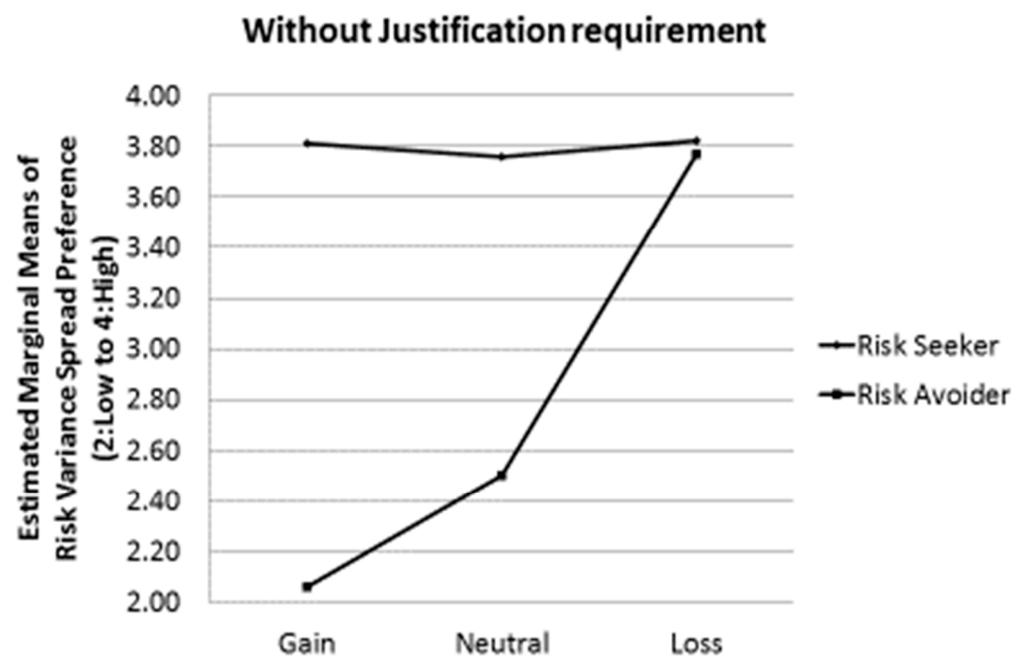


Figure 1. Estimated marginal means of decision choice for one with high CFC.

Finally, in affirming Hypothesis 3, the findings show that when those with high CFC were prompted to provide strategic justifications, an overall reduction in one's propensity toward high risk–payoff is evident, irrespective of prior gain/loss and risk profile ($p < 0.010$). Additional analyses also show that, when those with high CFC were prompted to provide their justifications, there was no significant difference in choice preference for risk avoiders with a prior gain versus loss (mean for gain group = 2.02 versus mean for loss group = 2.03, at $p > 0.100$). However, under the same conditions, there is a significant difference in choice preference for risk seekers with a prior gain versus loss (mean for the gain group = 2.25 versus mean for the loss group = 3.00, at $p < 0.010$). This effect is statistically illustrated by the interaction effect of one's prior gain/loss position with the imposition of a justification requirement ($p = 0.000$) in Table 7, and is also graphically evident from Figure 2. Overall, Table 7 shows that insofar as one's prior gain/loss position, imposition of a justification requirement, as well as personal risk profile are concerned, each exerts main and 2-way interaction effects on the dependent variable (all at $p = 0.000$, and with adjusted R-squared = 0.690 affirming a good-fitting model).⁸ A summary of all the findings is shown in Table 8.

Table 7. Tests of between-subject effects for high CFC responses.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	186.385 ^a	8	23.298	102.624	0.000
Intercept	2573.013	1	2573.013	1.133 × 10 ⁴	0.000
PriorGL (prior gain/loss position)	28.226	2	14.113	62.165	0.000
Justification	61.741	1	61.741	271.961	0.000
RiskProfile	52.518	1	52.518	231.333	0.000
PriorGL × RiskProfile	5.433	2	2.717	11.966	0.000
PriorGL × justification	7.642	2	3.821	16.831	0.000
Error	74.91	330	0.227		
Total	3234	339			
Corrected total	267.432	338			

Note: ^a R-squared = 0.697 (adjusted R-squared = 0.690). Dependent variable: risk variance spread preference (2: Low to 4: high).

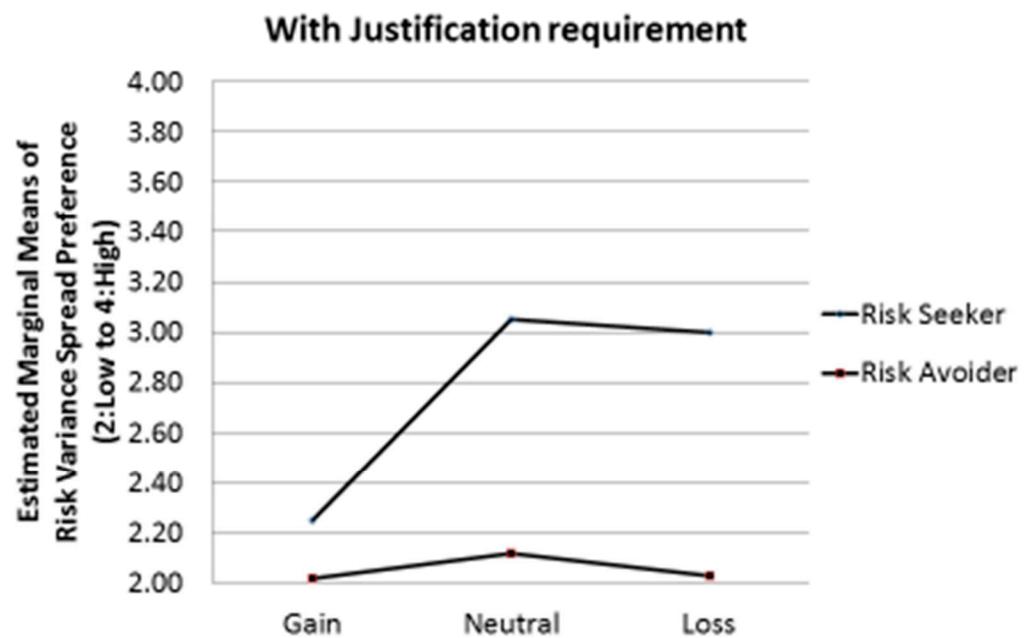


Figure 2. Estimated marginal means of decision choice for one with high CFC.

Table 8. Summary of findings.

CFC	Prior Gain/Loss	Risk Avider/Seeker	Justification	Risk–Payoff Preference	Tests
Low				Low	H1 ✓
High				High	
High	Gain		No	Lower	H2a ✓
High	Loss		No	Higher	
High	Gain	Avoider	No	Lower	H2b ✓
High	Gain	Seeker	No	Higher	
High	Loss	Avoider	No	Higher	
High	Loss	Seeker	No	Higher	
High	Both Gain and loss	Avoider	Yes	Lower	H3 ✓
High	Gain	Seeker	Yes	Lower	Overall lower
High	Loss	Seeker	Yes	Higher	

6. Limitations and Future Research

The results of this study should be interpreted in light of its contextual limitations. In the name of parsimony, no mention is made in this study to the magnitude of the prior gain or loss amounts nor regarding the timeline for the existing as well as that of the

intended future investments. The time value of money doctrine may affect how one will allocate their wealth. Also, in both experimental scenarios, participants were prompted to choose only one of the two profit options provided, while not provided with any loss option nor with the choice of prorating fractional allocations. Further, since this study was only conducted with an undergraduate business participant pool, with no decision-based monetary incentive at stake, findings may be biased. Future research could potentially explore the generalizability and real-world relevance of these findings across different demographic, cultural, and geographic settings.⁹ Similarly, one can extend this study toward a corporate setting, examining the motivations that may drive managerial decision-making processes. Last but not least, in conducting a laboratory experiment, participants were provided with the probability of achieving the various outcomes in each choice option, *ex ante* would not be feasible in reality.

7. Conclusions and Implications

Overall, in affirming the three hypotheses, one's decision choice preference is shown to be dependent upon CFC inclination, prior gain or loss, as well as personal risk profile. Nonetheless, with justification requirements, there is an overall reduction in one's propensity for making high risk–payoff choices.

In terms of theoretical implications, this study complements prior research of [Howlett et al. \(2008\)](#), [Koonce et al. \(2005a\)](#), as well as [Koonce et al. \(2005b\)](#) by examining choice preference effects of varied CFC profiles in conjunction with other important variables like one's personal risk profile, prior gain or loss, as well as the crucial imposition of a justification requirement. Juxtaposing the construct, consideration of future consequences, with the variables examined in prior research studies, findings here allude to the boundary conditions particularly for individuals with high CFC, whereby only those with a prior gain will manifest endowment effect tendencies. This would, in turn, result in one's aversion toward committing to a higher-risk decision. On the contrary, one with a prior loss would gravitate toward making a higher-risk decision. Further, when a strategic justification requirement is imposed, an overall reduction in one's propensity toward high risk–payoff is evident. Additional analyses also show that the personal risk profile will moderate the effects when a justification requirement is imposed, resulting in a de-biased effect for risk avoiders, while exacerbating the biased effect for risk seekers.

The research findings here hold practical implications, particularly in a volatile economic environment, whereby, with increased pressure, the use of heuristics for investment decision-making may become more prevalent. In matters concerning personal finance, investors should remain leery of potentially misleading and sometimes fraudulent claims from investment scheme promoters during bad economic times, a period when an investor's investment portfolio and psyche could typically take a hit. Many unfortunate human situations unfold in circumstances where people take desperate gambles and potentially turn manageable failures into even greater disasters. Classic quote from the famed Warren Buffett sums it up, 'When the tide goes out, you learn who's been swimming naked.' Capitalizing on investors' weakened morale and cognitive biases as a result of suffering a loss in their existing investment portfolios, marketers will often take advantage of the situation to push investment products that promise greater potential gain (while obfuscating the potential loss), thus entailing a greater level of risk. Despite the observed pitfalls, results from this study's justification prompt exercise show that investors can reduce their propensity for making high risk–payoff choices by exercising greater due diligence through formal, justifying reasoning in strategic areas when rationalizing one's decisions. This mechanism seems to cause risk avoiders to uniformly seek lower risk–payoff choices. On the other hand, for risk seekers, with a justification requirement, those with a prior gain (loss) will now be inclined to make a lower- (higher-) risk decision, although the *overall* risk level undertaken by either risk profile is still significantly decreased as compared to that without the justification requirement.

Ultimately, a conscious effort to strategically justify should uniformly help lower risk in varying degrees, thereby leading to a more reasoned and rational mechanism in decision-making, irrespective of one's CFC, prior gain/loss, and risk profile. From a public interest perspective in personal financial planning, when tasked to make risky decision choices, one could take heed of the findings from this study and strive to conduct a more efficacious deliberation as part of due diligence. Particularly in a volatile economic environment, when investors are more prone to make emotion-driven decisions, this study will hopefully result in an overall greater understanding of the mechanism shaping one's decision-making processes.

Funding: The author acknowledges financial and research support from Washington State University and the University of Northern Iowa.

Data Availability Statement: The raw data supporting the conclusions of this article are available on request from the author.

Conflicts of Interest: The author declares no conflict of interest.

Appendix A

Case Background

Gain condition: You have so far made a gain (resulting in a net positive sum to date).

Neutral condition: You have so far not made a gain or loss (resulting in a breakeven to date).

Loss condition: You have so far made a loss (resulting in a net negative sum to date).

Instruction

Recently, you received a prospectus regarding a new investment fund. With some money on hand to invest, you are now deciding whether to invest in **CHOICE A** or **CHOICE B** (i.e., two possibilities), assuming you know the probabilities of the payoffs for each choice.

For each of the two scenarios below, probabilities of earning the payoffs are listed.

No justification requirement condition:

For each scenario, choose (by circling) only ONE choice you would put your money in.

Scenario 1:

CHOICE A: 60% probability of gaining USD 3000

CHOICE B: 40% probability of gaining USD 4500

Scenario 2: (to be reverse coded)

CHOICE A: 40% probability of gaining USD 12,000, 20% probability of gaining USD 11,000

CHOICE B: 70% probability of gaining USD 6000, 70% probability of gaining USD 4000

Justification requirement condition:

Provide your justification within the box by listing down your reasons, as you assess your choice A or B selection in each of the two scenarios below. After assessing, for each scenario, choose (by circling) only ONE choice you would put your money in.

Box A1

Scenario 1:

CHOICE A: 60% probability of gaining USD 3000

CHOICE B: 40% probability of gaining USD 4500

Scenario 2: (to be reverse coded)

CHOICE A: 40% probability of gaining USD 12,000, 20% probability of gaining USD 11,000

CHOICE B: 70% probability of gaining USD 6000, 70% probability of gaining USD 4000

For both No Justification requirement and Justification requirement conditions:

All participants are assessed their *Consideration of Future Consequences* and *Personal Risk Profiles* after they have circled their choices for both scenarios.

Appendix B

Assessing consideration of future consequences (CFC)

For each of the statements below, indicate **whether or not** the statement is **characteristic of you** based on the 1–7 scale shown below. Please write your answer in the **LEFT SPACE** provided.

1-----	2-----	3-----	4-----	5-----	6-----	7-----
Extremely Uncharacteristic	Moderately Uncharacteristic	Slightly Uncharacteristic	Neutral	Slightly Characteristic	Moderately Characteristic	Extremely Characteristic
___ 1.						
						I consider how things might be in the future, and try to influence those things with my day-to-day behavior.
___ 2.						
						Often, I engage in behaviors to achieve outcomes that may not produce results for many years.
___ 3. R						
						I only act to satisfy immediate concerns, figuring the future will take care of itself.
___ 4. R						
						My behavior is only influenced by the immediate and short-term outcomes of my actions.
___ 5. R						
						My convenience is a big factor in the decisions I make or the actions I take.
___ 6.						
						I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.
___ 7.						
						I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.
___ 8.						
						I think it is more important to perform a behavior with important distant consequences than a behavior with less important immediate consequences.
___ 9. R						
						I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.
___ 10. R						
						I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.
___ 11. R						
						I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.
___ 12. R						
						It is more important to me to take care of my day-to-day work that has immediate outcomes than my work that has distant outcomes.
___ 13.						
						When I make a decision, I think about how it might affect me in the future.
___ 14.						
						My behavior is generally influenced by future consequences.

R: Reverse-scored items.

Notes

- 1 This is affirmed through a time clock monitored by a third-party researcher during the experimental study. In addition, there is no significant difference in the amount of time spent on both tasks by the participants from both conditions ($p > 0.100$). Justification responses received for both tasks were also quite uniform in length.
- 2 In analyzing the participants' responses, Scenario 2 was reverse-coded. Lower (higher) combined scores for the responses from both scenarios thus indicate a greater affinity for lower (higher) risk and payoff.
- 3 Vilar et al. (2022) and Joireman et al. (2012) have alternatively suggested a two-factor solution (CFC-Future and CFC-Immediate) to the CFC scale. Dichotomizing into two factors, factor analyses similarly affirmed adequate internal reliabilities for both factors and a sufficiently robust model fit.
- 4 A greater number of participants responded in the upper half of the CFC scale (i.e., $n = 339$ for those with averages above '4' on the CFC scale), as compared to those who responded in the lower half of the CFC scale (i.e., $n = 27$ for those with averages below '4' on the CFC scale). Since '4' on the 7-point CFC scale denotes a *neutral* position, and with the upper half denoting *characteristic* and the lower half denoting *uncharacteristic*, this study dichotomizes the high versus low CFC group at the midway point of the CFC scale.
- 5 Mann-Whitney U-testing was performed as a nonparametric alternative, with the results remaining qualitatively unchanged ($p > 0.100$).

- ⁶ Respondents were asked to self-assess their personal risk profile on a 0 (unwilling to take risks) to 10 (fully prepared to take risks) scale with the following question: “How do you see yourself in financial matters: Are you a person who is fully prepared to take risks or do you try to avoid taking risks?” (adapted from Dohmen et al. (2005)). The ‘risk avoider’ versus the ‘risk seeker’ group was differentiated using the midway point of 5 on the scale. Additional testing for the small number of respondents scoring ‘5’ shows that their subsequent responses were much closer to those of risk avoiders ($p < 0.050$), hence were also counted as risk avoiders. The results of the study remain qualitatively unchanged when this middle group is removed from the test sample ($p > 0.100$).
- ⁷ Results for risk and payoff are both directionally consistent; Untabulated analyses based on responses from those with low CFC showed that this group exhibits a uniformly greater inclination to prefer decision choices with a lower risk (i.e., higher probability) of a payoff, irrespective of differences in risk profiles as well as prior gain or loss position (all $p > 0.100$).
- ⁸ Untabulated analyses for those with low CFC show that the earlier observed preference for a lower risk variance spread remains unchanged regardless of whether a justification requirement is imposed or not ($p > 0.100$).
- ⁹ The sample and the general population data may differ in various dimensions. For instance, according to the U.S. Census Bureau projections’ data for 2022, the percentage of the population in the 18–24 age group is 9.4%, the percentage of the male population is 49.6%, and the percentage of persons 18–24 years of age with a Bachelors’ degree is 11.4% among that age group (see <https://www.census.gov> (accessed on 27 December 2023)).

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