TO CHOOSE OR NOT TO CHOOSE:
THE EFFECTS OF CONFLICT AND RISK ON CHOICE DEFERRAL

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Abstract

When making decisions, people are often faced not only with a choice among available alternatives, but also with the option of deferring choice. Two factors have been shown to influence the likelihood of choice deferral, namely, choice difficulty and deferral-related risk. Two experiments considered the interaction between these two factors. Choice difficulty was operationalized as the presence versus absence of a dominant alternative in an initial two-option set. Risk was operationalized as the probability that the choice set will become less desirable as a result of delay. It was found that the likelihood of choice deferral is highly influenced by level of risk when a choice is straightforward but has little influence when it is difficult. However, this finding appears limited to situations in which risk is stated explicitly. The results suggest that, at least in some situations, people may have trouble integrating deferral-related risk information when making difficult choices.
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When making decisions, one must often determine not only what to choose but also when to choose. Deciding when to choose can be critical to the achievement of goals. For example, when investing in the stock market, deciding not only what stocks buy and sell but also when to do so are important decisions with weighty financial consequences. In public policy making, determining the appropriate time to introduce a legislative bill or to begin foreign policy negotiation is pivotal to the initiative’s success (Kingdon, 1995; Renshon & Larson, 2002). Likewise, the timing of physicians’ action—or inaction—literally can be a matter of life and death. Deciding when to act is an essential component of these and many other decisions frequently encountered in everyday life. In short, while timing may not be everything, it is certainly quite important.

The present work focuses on timing as it relates to the quality of the choice set. In everyday situations, choice sets often change over time rather than remaining static throughout the decision process. Applying for a job position, purchasing an airplane ticket, or choosing an unexplored research topic typically involves choice sets that change over time. Choosing early can mean missing out on better alternatives that would have come along later, while waiting comes with a risk of losing the initial options as they become unavailable over time (Bearden, Murphy, & Rapoport, 2005; Eisenhardt, 1993; Yates & Tschirhart, 2006). This leaves open the questions of how people should and how they do decide when to commit to an available alternative versus to continue to seek additional options.
Despite its critical importance, the question of when choices are made has received considerably less attention than that of what should be chosen. Rational choice models (von Neumann & Morgenstern, 1947), the underpinnings of economics and decision science, have focused on offering a normative perspective on choice in the context of static sets. Only recently have researchers begun to address issues surrounding when an alternative should be chosen from a dynamic set (that is, one in which the alternative set changes over time; Corbin, 1980). One rational choice model that has been extended to dynamic situations is expected utility theory, according to which the expected utility of an alternative is the sum of the utility (the value to the individual) of each possible outcome weighted by its likelihood of occurrence. For example, in a static situation, the utility of choosing a lottery ticket with an 80% chance of winning $50 and a 20% chance of winning nothing is (.8 * $50) + (.2 * 0) = 40, assuming for ease that the utility is the dollar value. When presented with a choice between multiple alternatives, the normative choice is the alternative with the highest expected utility.

In dynamic situations, expected utility theory can be applied specifically to the decision of whether or not to defer (Bastardi & Shafir, 1998). In contexts of dynamic choice sets, in which additional options can become available and current options can become unavailable over time, the expected utility of choice is that of the preferred alternative in the existing choice set, while the expected utility of choice deferral is the sum of the utility of each possible future choice set weighted by the probability of obtaining it. Whether it is rational to defer choice depends on the probability of
superior alternatives becoming available over time (i.e., the possible benefits of deferral) and the probability that currently available alternatives will become unavailable over time (i.e., the risk associated with deferral). In these cases, whether or not deferral is the best course of action depends on a careful assessment of the environment and recognition that choosing either too early or too late can yield suboptimal outcomes (Eisenhardt, 1993; Yates & Tschirhart, 2006). According to this application of expected utility, the course of action that should be chosen is the one that maximizes expected utility, whether it be selecting one of the existing alternatives or deferring in hopes of obtaining a better choice set.

Extending from this normative perspective to descriptive decision making, two complementary literatures bear on the question of how individuals decide when to choose. One literature considers whether or not individuals appropriately adjust their delay behavior in response to potential benefits and risks associated with delay throughout the decision process. The other literature addresses not judgment and normative models but, rather, non-normative heuristics that promote decision deferral. This latter literature considers characteristics of decision scenarios as well as traits of the individual decision maker that lead to deviations from the standards prescribed by normative models. Each of these literatures is considered in turn.

**Behavioral adaptivity to benefits and risks of deferral**

This section addresses how and how well individuals respond to risk-related information at different stages of the decision making process. Surprisingly, there is little research that specifically considers how decision makers modulate their deferral
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behavior in response to anticipated changes in the choice set. For this reason, a
discussion is included of how decision makers consider the benefits and risks of
obtaining more information about already existing alternatives (e.g., the yearly taxes
on a prospective home purchase), where risks can include loss of money associated
with getting the information or a decrease in the value of the alternatives over time.
Overall, the evidence from these literatures suggests that individuals adaptively adjust
their decision making behavior in response to benefits and risks of delay and are
discussed presently.

Compelling findings from the information search literature suggest that
individuals are adept at processing and integrating risk-related task demands when
selecting desired information about existing alternatives that vary on multiple
dimensions. When faced with opportunity costs, such as a reduction in the payoffs of
the alternatives over time, people modulate information search by processing
information more selectively. This adaptivity leads to more successful outcomes than
would result from a less selective strategy (Payne, Bettman, & Johnson, 1993),
though cognitively taxing demands can sometimes limit this success (Payne, Bettman,
& Luce, 1996). Moreover, in simpler contexts, it has been shown that individuals
will pursue almost any single relevant piece of information when the risk associated
with doing so is negligible, but will pursue only instrumental information (i.e.,
information that determines which alternative will be chosen) when risks associated
with this pursuit are introduced (Bastardi & Shafir, 1998; Duncan, Wengrovitz,
Sedlovskaya, & Patalano, 2007). These findings suggest that the risks inherent in a
decision context play important roles in the decision making process, at least at the level of searching for information about available alternatives.

In a similar vein, research on sequential search problems provides further evidence that individuals largely and successfully adjust their deferral behavior to the perceived benefits and risks of deferral. In a “secretary problem” (Ferguson, 1989; Freeman, 1983), one is presented with options sequentially and is asked to accept or reject each option. Each option is typically identified only by its rank relative to previously presented options. If the decision maker rejects an option, the next alternative in queue is presented, from which the decision maker is faced with another accept-or-reject decision until an option is selected. In situations such as these, a rational decision maker will consider both the rank of the current option, as well as the likelihood of obtaining a better option in the future. Paralleling the literature on information search, individuals adaptively adjust their behavior to the task, searching a fair number of alternatives to assess a representative range of values and then selecting the next highly desirable alternative that is encountered, though again some deviations have been noted (Ferguson, 1989; Bearden et al., 2005). In sum, individuals seem to well modulate behavior in response to risk information.

Additional evidence that individuals are proficient in their overall behavioral sensitivity to risk information comes from a recent work involving a computer-based course selection task (Patalano & Wengrovitz, in press). In that work, individuals were asked to select a hypothetical college course from a set of available courses, each of which varied on five attributes, such as the quality of the professor or the time
of day the course meets. In addition to searching for information on the quality of each course, participants were able to defer their choice up to four times and to request that new courses be added to the set. When the act of requesting additional courses was risk-free, choice was deferred for as many times as possible in order to maximally increase the size of the choice set. However, when risks associated with deferral were imposed (i.e., existing alternatives could become unavailable over time), the number of deferrals decreased, suggesting assessment and utilization of risk information when deciding when to choose. Interestingly, however, some individuals—namely, more decisive individuals, as determined by a self-report scale measure—seemed more capable of this risk-related adjustment of deferral behaviors than others. This latter finding touches on a crucial point that will be considered later in regard to competing influences on deferral behavior.

Taken together, these findings demonstrate that individuals largely adjust their deferral behavior in search of additional information or for more options in accordance with the consequences of doing so, taking into account the benefits as well as the risks associated with postponement of choose. Although some exceptions have been noted, evidence from these literatures demonstrates that decision makers are well equipped to effectively assess risk information and to act accordingly by appropriately adjusting search and deferral strategies to the task, consistent with the predictions of rational choice models applied to the question of waiting for alternatives.
**Decision difficulty and deferral**

The benefits and risks of delay, in terms of the quality of the choice set over time, constitute only one influence—albeit an important one—on deferral behavior. Outside of the risk literature, in contexts in which the benefits and risks associated with deferral have not been considered, a growing body of literature has begun to document systematic ways in which the characteristics of the choice set, as well as those of the individual decision maker, influence deferral for reasons not described by rational choice models. One broad determinant of deferral in this area is selection difficulty (Anderson, 2003). Some decisions are straightforward and can be made with relative ease; for others, the most preferred choice among alternatives is not obvious, and the decision maker might delay choice as a result.

Anderson (2003) introduced the construct of selection difficulty to encompass over a dozen factors that have been shown to influence the tendency to defer choice. In applied work, a recent field experiment found that fewer people in a grocery store purchased a jam when presented with 24 choices than when presented with only 6 choices, presumably because choosing an item from the larger choice set was more difficult than choosing from the smaller set (Iyengar & Lepper, 2000; see also Greenleaf & Lehmann, 1995). Similar results have been found in medical decision making contexts, with experienced physicians being less likely to prescribe a medication when given a choice between two drugs than when either one is available alone (Redelmeier & Shafir, 1995). During difficult situations such as these, people
often incur frustration and, ultimately, less satisfaction with their choice than they would have had if there had been fewer alternatives (Schwartz, 2004).

Of the many factors contributing to difficulty in Anderson’s (2003) model, one that has attracted considerable research attention is the degree of decisional conflict among alternatives. Conflict does not have a standard formal definition (Tversky & Shafir, 1992), but it is essentially the difficulty faced by an individual when trading off the advantages and disadvantages of competing choice alternatives.

The notion of decisional conflict is perhaps best explained with an illustration. Consider a choice between two job offers. One job provides a modest starting salary, boasts a collegial office environment, and is well known in the industry. The other job comes with a higher starting salary, has an austere work environment, and is a relatively new player in the industry. In cases such as this one, in which alternatives differ from one another in their advantages and disadvantages, decision makers frequently have trouble prioritizing desired attributes and trading off one attribute for another, leading decision makers to favor deferral over choice (see Shafir & LeBoeuf, 2004). This situation can be contrasted with situations of dominance in which one alternative is superior to others on all attributes of interest.

Experimental findings provide support for this account of the role of conflict in choice deferral, at least in contexts in which risk has not been considered. Conflict is typically manipulated experimentally by creating one choice set in which options have different strengths and weaknesses, and another choice set in which one alternative dominates the others. Across a range of decision contexts, including
monetary gambles as well as apartments that vary in price and location, individuals demonstrate a greater propensity toward deferral when deciding under conflict than when deciding under dominance (Tversky & Shafir, 1992). In other words, at least in contexts that have not considered or manipulated risks associated with postponement of choice, individuals hold a clear bias towards deferral when selection difficulty is high due to conflict.

Though the experiments presented here will focus on conflict, another prominent influence on selection difficulty is the similarity in the attractiveness of choice alternatives, whether or not conflict is present. In hypothetical consumer purchase contexts, Dhar (1997) found that when choice alternatives were very close to one other in their overall levels of attractiveness, decision makers were more likely to postpone choice, presumably due to greater difficulty identifying a preferred alternative. For example, individuals were more likely to choose to purchase a CD player when one was highly desirable and the other was moderately desirable than when both were highly desirable. Dhar (1997) suggested that deferral occurs because individuals lack confidence in their abilities to fully and accurately prioritize their values. Because a precise analysis of values is required to identify a preference among highly similar alternatives, individuals are left uncertain as to which alternative they prefer, and do not make a choice.

Both Tversky and Shafir’s (1992) use of tradeoff conflict and Dhar’s (1997) use of preference similarity as proxies for choice difficulty suggest that choice difficulty leads to deferral. This influence of choice difficulty on deferral is noteworthy given
that it has no place in a rational account of decision making. Recall that, according to rational choice models, a decision maker should pursue the course of action that maximizes expected utility—whether this be to choose or to defer—irrespective of the difficulty of doing so. However, when lacking a clear preference, a decision maker might postpone choice not because of the expected utility of the option sets yet to come, as dictated by normative models, but rather because of difficulty committing with confidence to one alternative over the others or generating compelling reasons to pursue one course of action (see Shafir & LeBoeuf, 2004; Shafir, Simonson, & Tversky, 1993).

In addition to these and other contextual influences, person-related contributors to deferral have also been identified. In particular, individuals have been shown to vary in indecisiveness, a factor associated with reluctance, difficulty, and inability to commit to a choice during decision making, as measured by self-report questionnaires (Frost & Shows, 1993; see also Ferrari, Johnson, & McCown, 1995). Indecisive individuals experience more choice difficulty and report being less ready to decide when making choices among multiattribute alternatives (Veinott, 2002). They are more likely than more decisive individuals to choose an “I don’t know” alternative in response to strongly worded social statements (such as “Suicide is never a rational option”; Rassin & Muris, 2005). Indecisive individuals also take more time to make simple decisions (e.g., picking one of two menu items; Frost & Shows, 1993) as well as more complex ones (e.g., choosing one of six classes, each with five attributes; Ferrari & Dovidio, 2000, 2001). Just as contextual factors like conflict have been
shown to do, the high degree of difficulty experienced by indecisive individuals during a selection task appears to contribute to choice deferral.

To summarize the literatures reviewed, on the one hand, individuals have been shown to temper their deferral behavior in response to risk information by searching for additional alternatives when the risk of doing so is low or absent, but limiting deferral behavior when the risk of doing so is high (see Duncan et al., 2007; Patalano & Wengrovitz, in press; Payne et al., 1993); this behavior is consistent with the extension of rational choice models to the decision of whether or not to defer choice. On the other hand, both contextual factors such as conflict and person-specific factors such as indecisiveness have been shown to promote deferral for reasons related to task difficulty (Anderson, 2003; Shafir & LeBoeuf, 2004); this behavior is inconsistent with rational choice models. No known work has considered how these independent and potentially incompatible factors—level of deferral risk and choice difficulty—jointly influence how individuals decide to choose or not to choose, despite the frequent confluence of these factors. The present work addresses this important issue.

**Competing influences on deferral and present work**

Consider a situation in which you are trying to decide which plane ticket to purchase from two available choices that differ in cost and length of the flight, namely, Ticket A [$500 / 24 hours in flight] versus Ticket B [$600 / 30 hours in flight]. Your travel agent tells you that there is an 85% chance that a better ticket will become available in the future but that, if you wait to choose, you will likely lose the
present options. The risk literature predicts that you would likely wait in this situation, but that you would be less likely to wait if the chance decreased to 15%. The question addressed here is whether this pattern of sensitivity to risk information is influenced by choice difficulty. To be more concrete, might one be less likely to modulate his or her response to risk if Ticket A were instead initially paired with Plane Ticket C [$1000 / 12 hours in flight], thus creating a more conflict-laden initial choice? More generally, how, if at all, might the choice deferral behaviors that have emerged in the absence of risk change in the context of the kind of risk information that is frequently available in everyday decision making?

At first consideration, the difficulty of choice might appear to be unrelated to the question of whether or not to wait for a potentially better choice set, and this is certainly the normative perspective. However, the notion that conflict interferes with responsiveness to risk information is supported by studies identifying limits on people’s behavioral adaptivity to risk information (e.g., Payne et al., 1996). Recall that individuals, by and large, appear to be adaptive decision makers when it comes to adopting strategies for searching for information by effectively trading off the desire to achieve a good outcome with the desire to minimize the cognitive effort needed to reach a decision (Payne et al., 1993). However, when decision contexts are characterized by multiple, competing, and cognitively rigorous demands (e.g., large choice sets, secondary working memory loads), individuals often fail to fully or effectively adopt adaptive search strategies, often leading to less optimal outcomes than they otherwise would obtain (Payne et al., 1996).
Additional evidence supporting the hypothesis that conflict interferes with behavioral sensitivity to risk comes from recent work on indecisiveness and response to risk (Patalano & Wengrovitz, in press). It was found that individuals overall deferred substantially more when no risk was associated with deferring than when a risk was present, consistent with the normative perspective on deferral. Critically, however, individuals’ level of indecisiveness played a central role in determining how one searched for information and deferred choice. Decisive individuals modulated their deferral behavior in response to risk, but indecisive individuals did not, instead deferring for a length of time halfway in between that of the decisive individuals under low risk and that of decisive individuals under high risk. These findings provide initial evidence that conflict might asymmetrically affect the tendency to defer choice under different risk conditions, just as indecisiveness does as a person-specific element of selection difficulty.

The decision to choose or not to choose in the kinds of situations under discussion entails careful assessment on the part of the decision maker of myriad features of the decision scenario. Such elements may include the attractiveness of the existing alternatives, the risk of losing some of these alternatives with deferral, the attractiveness of potential future alternatives, and the likelihoods of actually gaining these alternatives. By definition, under conditions of conflict, choice of a preferred alternative from a current choice set may be problematic for decision makers. In such cases, compelling reasons to choose one alternative over another are neither intuitive nor straightforward, thus increasing selection difficulty and imposing considerable
cognitive demands on the decision maker (Anderson, 2003; Shafir et al., 1993). The present work raises the possibility that by focusing attention on the conflict between alternatives, and by devoting cognitive resources to discerning the best alternative among a conflict-ridden choice set, decision makers may neglect or fail to fully consider risk information when deciding whether or not to defer choice.

Two experiments were conducted here to test the claim that choice difficulty—conflict, in particular—interferes with the ability to respond adaptively to risk information. Both experiments employed a decision scenario in which an apartment must be selected from a dynamic choice set. Individuals could choose between two initially presented apartments, or they could defer choice by requesting another option that had some chance of being more attractive versus less attractive than both of the two initial alternatives. Following Tversky and Shafir (1992), conflict was manipulated such that, in the Conflict conditions, one option was superior on one attribute and inferior on another attribute relative to a second option. In the Dominance conditions, one option was superior to the second one on both attributes. In the first experiment, risk was manipulated directly by explicitly informing participants of the chance of obtaining more versus less desirable alternatives that could replace the initially presented ones. In a second experiment, risk was manipulated indirectly by showing a list of apartments that were either largely more attractive or largely less attractive, in terms of expected utility, than those in the initial set.
Although the central purpose of these experiments was to investigate the effects of conflict and risk on choice deferral, a dependent measure of decisional confidence was also collected and a self-report scale was administered to identify individual differences in indecisiveness. For the confidence measure, it was predicted that individuals would report less confidence in the Conflict conditions relative to the Dominance conditions. This measure served loosely as a check that the Conflict conditions were, in fact, more difficult for participants. For indecisiveness, based on past research (Patalano & Wengrovitz, in press; Veinott, 2002), it was expected that indecisive participants might exhibit a more pronounced behavioral insensitivity to risk information than would decisive ones. Finally, given that indecisiveness is associated with lower levels of decisional confidence (Frost & Shows, 1993; Patalano & Wengrovitz, 2006), it was hypothesized that indecisive individuals would also be less confident than decisive ones in all conditions here.

**Experiment 1**

The primary goal of Experiment 1 was to investigate the influences of conflict and risk on deferral behavior, testing the hypothesis that conflict interferes with decision makers’ response to risk. To do so, a dynamic apartment selection task modeled after that of Tversky and Shafir (1992) was used. Participants were presented with a choice of two apartments to rent. Participants in a Conflict condition were given a pair such that one of the apartments was better on one dimension (e.g., lower monthly rent price), while the other apartment was better on the other dimension (e.g., shorter distance to workplace). In contrast, in a Dominance
condition, one of the apartments was the same as in the Conflict condition but it was now paired with an option that was inferior to it on both dimensions. In both conditions, participants could either choose one of these two apartments or defer choice and request an additional apartment.

To manipulate risk within each level of conflict, participants in a High Risk condition were told that there was a 65% chance of obtaining a better alternative (and a 35% chance of obtaining a worse one) if they deferred choice, whereas those in a Low Risk condition were told there was an 85% chance of obtaining a better alternative (and a 15% chance of obtaining a worse one) if they deferred choice. This manipulation allowed for comparisons of behavioral responsiveness to risk in the context of a Conflict versus a Dominance condition. Dependent measures were the decision to choose versus to defer choice and one’s confidence in the decision as rated on a Likert scale. At the end of the experiment, Frost and Shows’ (1993) 15-item Indecisiveness Scale (alpha range = .80 - .90; Frost & Gross, 1993; Frost & Shows, 1993; Gayton, Clavin, Clavin, & Broida, 1994; 1-month test-retest $r = .67$, Wengrovitz & Patalano, 2006) was also administered.

If conflict interferes with the ability to process and act responsively to risk information, a conflict by risk interaction should be observed, such that more individuals defer under low risk than under high risk when deciding under conditions of dominance, but individuals in both the High Risk and Low Risk conditions defer equally under conditions of conflict. Alternatively, if conflict does not interfere with the use of risk information, a greater proportion of individuals should defer choice
when the risk associated with doing so is low relative to when it is high, irrespective of the level of conflict. It was expected that conflict would also affect level of confidence, but no strong prediction about the influence of risk on confidence was made.

**Method**

**Participants.** A total of 128 undergraduates (62 women and 66 men) participated in this study as part of an Introductory Psychology course requirement or in exchange for a piece of candy and entry into a raffle for a $50 gift certificate. Participants were run independently or in one of several small group sessions.

**Apartment selection task.** Participants were instructed to imagine that they had recently moved to a new city and were looking for an apartment to rent. They were told that apartments varied on monthly rent price ($600 - $1100) and on distance to the workplace (up to 60 min away). They were also informed that price and distance to their workplace varied independently, and that other than differences in price and distance all of the apartments were equally desirable. Following Tversky and Shafir (1992), in the Conflict conditions, the apartments were: Apartment A [$900 a month and 15 min from your office] and Apartment B [$700 a month and 35 min from your office]. In the Dominance conditions, the apartments were: Apartment A [$750 a month and 40 min from your office] and Apartment B [$700 a month and 35 min from your office]. Note that the best apartment in the Dominance condition (Apartment B) also appeared in the Conflict condition.
To manipulate levels of risk associated with choice deferral, participants were informed that they could either select one of those two apartments or that they could request a third apartment; in the latter case, however, both of the current options were likely to be rented out to other people in the meantime. In the High Risk conditions, participants were told that if they opted to request a third option, thereby risking losing out on both of the initially available alternatives, there was a 65% chance that the added option would be better than both of the current apartments and a 35% chance that it would be worse than both. In the Low Risk conditions, participants were told that there was an 85% chance that the added option would be better than both of the current apartments and a 15% chance that it would be worse than both. See Appendix A for the exact wording of all versions of the decision problems.

**Confidence measure.** To assess whether choice deferral is related to subjective level of confidence, participants were asked to indicate their confidence that they made the “right choice” (however this was interpreted by participants) on an 11-point Likert scale, ranging from 0 = “not at all confident” to 10 = “extremely confident.” See Appendix B for this confidence measure.

**Indecisiveness measure.** The Frost and Shows’ (1993) Indecisiveness Scale was administered to all participants. This self-report questionnaire contains 15 items assessing the difficulty, confidence, pleasure, anxiety, delay, and regret surrounding decision making. Participants were instructed to assess the extent to which they agreed with each statement and to respond on a Likert scale ranging from 1 = “very strong disagreement” to 9 = “very strong agreement.” Participants were informed
that this was a “personal questionnaire” and nowhere in the questionnaire instructions was decision making discussed. See Appendix C for the full scale.

**Procedure.** Participants were randomly assigned to one of four experimental groups: Conflict-High Risk, Conflict-Low Risk, Dominance-High Risk, or Dominance-Low Risk. The procedure was identical for all four groups in that participants were given all materials in a paper packet and were instructed to proceed sequentially at their own pace and without revisiting previously completed pages. The first item in the booklet was the apartment selection task. Once a decision was made by the participant to choose one of the initially presented apartments or to defer choice, he or she went on to complete the confidence measure, an unrelated 30-min categorization distractor task, and the Indecisiveness Scale. Excluding the distractor task, the experiment took approximately 10 min to complete.

Note that for 100 of the participants (78%), Indecisiveness Scale scores had been collected 3 months earlier as part of an introductory psychology prescreening administered to all enrolled students. To ensure that completion of the apartment selection task did not influence participants’ scores on the post-task Indecisiveness Scale, the correlation between pre- and post-task scores was computed, \( r(100) = .81, \ p < .001 \), providing compelling evidence that completion of the apartment selection task did not significantly alter relative test scores. Thus, for ease, all relevant analyses are based on post-task Indecisiveness Scale scores.
Results

Deferral behavior by conflict and risk. A total of 46 of 128 participants (36%) deferred choice. The percentage of participants in each condition who decided to defer choice rather than to select one of the two available apartments is shown in Figure 1. No overall effect of conflict ($\chi^2 (1, N = 128) = 0.14, p = .713$) or of risk ($\chi^2 (1, N = 128) = 2.17, p = .141$) was found. That is, individuals were equally likely to defer in Conflict versus Dominance conditions when the results were collapsed over level of risk, and they were equally likely to defer under high risk versus low risk when the results were collapsed over level of conflict.

Figure 1. Percentage of participants who decided to defer choice in each of the four experimental groups of Experiment 1.

To test for a simple effect of risk at each level of conflict, two chi-square goodness of fit tests were run. Under dominance, three times as many participants deferred choice in the Low Risk condition relative to the High Risk condition, $\chi^2 (1, p = .0001)$. Under conflict, the difference was even more pronounced, with almost 10 times as many participants deferring choice in the Low Risk condition, $\chi^2 (1, p < .0001)$. These results suggest that risk played a greater role in the decision to defer choice under conflict than under dominance.
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N = 64) = 9.60, p = .002. Under conflict, however, an equal percentage of
participants deferred choice in the High Risk and Low Risk conditions, \( \chi^2 (1, N = 64) = 1.11, p = .292 \). To test for a simple effect of conflict at each level of risk, two
further chi-square goodness of fit tests were run. Under high risk, a greater
percentage of participants deferred choice in the Conflict condition as compared with
the Dominance condition, \( \chi^2 (1, N = 64) = 3.67, p = .055 \). Conversely, under low
risk, a greater percentage of participants deferred choice in the Dominance condition
as compared with the Conflict condition, \( \chi^2 (1, N = 64) = 5.19, p = .023 \).

Of the participants who opted to choose one of the two initially presented
apartments, 100% chose Apartment B ([$700 a month and 35 min from your office]),
the dominant alternative in the Dominance conditions; in the Conflict conditions,
80% chose Apartment B ([$700 a month and 35 min from your office]), and 20%
chose Apartment A ([$900 a month and 15 min from your office]). Because
Apartment A ([$900 a month and 15 min from your office]) was presented to
participants in the Conflict conditions but not in the Dominance conditions (in those
conditions, Apartment A was [$750 a month and 40 min from your office]), the 16
participants who chose this option were removed (6 from the Conflict-High Risk
condition and 10 from the Conflict-Low Risk condition; \( \chi^2 (1, N = 16) = 1.00, p = .317 \)) and all chi-square analyses were re-run.

As shown in Figure 2, when these participants were removed from analyses, by
and large, similar results were found. Under dominance, a greater proportion of
individuals deferred in the Low Risk than in the High Risk condition, \( \chi^2 (1, N = 64) = \)
To choose or not to choose 25

9.60, \( p = .002 \). Under conflict, individuals in the High Risk and Low Risk conditions deferred equally, \( \chi^2 (1, N = 48) = 0.40, p = .529 \). Under high risk, individuals were more likely to defer in the Conflict condition than in the Dominance condition, \( \chi^2 (1, N = 58) = 6.36, p = .012 \); under low risk, they were more likely to defer in the Dominance condition than in the Conflict condition, \( \chi^2 (1, N = 54) = 1.23, p = .268 \), though this difference did not reach statistical significance as it did earlier.

![Figure 2. Percentage of participants who decided to defer choice in each of the four experimental groups of Experiment 1, excluding participants choosing Apartment A.](image)

**Confidence.** Participants reported a mean confidence rating of 7.02 (range = 3 – 10). The means and standard errors of confidence by experimental group are shown in Figure 3. To determine whether reported confidence ratings varied across experimental groups, a 2 (conflict) x 2 (risk) between-subject ANOVA was run. A significant main effect of conflict was found (\( F(1,124) = 5.37, MSE = 10.12, p = \))
To choose or not to choose 26

.022), with individuals in the Dominance conditions reporting higher levels of confidence ($M = 7.3$, $SD = 1.36$) than those in the Conflict conditions ($M = 6.7$, $SD = 1.37$). No effect of risk ($F(1,124) = 0.15$, $MSE = 0.28$, $p = .700$), nor a conflict by risk interaction ($F(1,124) = 0.04$, $MSE = 0.07$, $p = .847$) was found.

![Figure 3](image)

*Figure 3. Mean confidence ratings (0-10) of participants in each of the four experimental groups of Experiment 1. Error bars show standard errors.*

As shown in Figure 4, the pattern remained when the 16 participants who chose Apartment A in the Conflict conditions were removed, $F(1,108) = 4.85$, $MSE = 9.58$, $p = .030$, for the main effect of conflict; all other $F$'s < 1, $p$'s > .70.

**Indecisiveness and deferral behavior.** The internal consistency was computed for the Frost and Shows’ (1993) Indecisiveness Scale to assess how well the 15 items measure a single construct. Cronbach’s alpha was found to be .81, an acceptable value at the conventional alpha > .70 criterion. Indecisiveness scores for individual
participants were computed by reverse coding item responses as appropriate and then summing all responses. The mean indecisiveness score was 66 out of a possible 135, with scores ranging from 29 to 108. A median split (mdn = 67.5) was used to divide the participants into two equally sized groups of decisive and indecisive individuals. The split resulted in 64 indecisive ($M = 81$, $SD = 9.9$) and 64 decisives ($M = 50$, $SD = 9.9$) individuals.

![Figure 4. Mean confidence ratings (0-10) of participants in each of the four experimental groups of Experiment 1, excluding participants choosing Apartment A. Error bars show standard errors.](image)

To determine whether indecisive and decisive individuals differed in their deferral behaviors, the choice deferral data were further broken down by indecisiveness group, as shown in Table 1. Chi-square goodness of fit tests revealed that indecisive individuals did not differ reliably from their decisive counterparts in their deferral behavior in any of the four risk by conflict groups: $\chi^2 (1, N = 32) = 2.50, p = .114$ for the Conflict-High Risk; $\chi^2 (1, N = 32) = 1.74, p = .187$ for Conflict-Low Risk; $\chi^2 (1,$
To choose or not to choose

\(N = 32\) = 0.01, \(p = .952\) for Dominance-High Risk; \(\chi^2 (1, N = 32) = 0.37, p = .542\) for Dominance-Low Risk.

**TABLE 1**

*Percentages of Decisive and Indecisive Individuals Deferring Choice by Condition for Experiment 1*

<table>
<thead>
<tr>
<th>Risk Condition</th>
<th>Conflict</th>
<th>Dominance</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indecisive</td>
<td>30%</td>
<td>19%</td>
</tr>
<tr>
<td>Decisive</td>
<td>58%</td>
<td>18%</td>
</tr>
<tr>
<td>Low Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indecisive</td>
<td>42%</td>
<td>64%</td>
</tr>
<tr>
<td>Decisive</td>
<td>20%</td>
<td>52%</td>
</tr>
</tbody>
</table>

Note. Cell \(n\)'s range from 11 – 21.

Additionally, an independent t-test was conducted to determine if indecisiveness groups differed from each other with respect to reported confidence. It was found that indecisive (\(M = 6.84, SD = 1.65\)) and decisive (\(M = 7.20, SD = 1.04\)) participants did not differ reliably in their confidence ratings, \(t(126) = 1.47, p = .143\).

**Discussion**

The main findings are that under dominance, the rates of deferral differed according to risk level, with three times as many people deferring under low risk than...
under high risk. Strikingly, however, under conditions of conflict there were no differences in deferral rates in response to risk. In fact, slightly more participants deferred choice when the risk associated with doing so was high than when it was low, although this difference was not reliable. These findings were interpreted as evidence that conflict acts on deferral behavior by interfering with behavioral response to risk, leading individuals to defer more when the risks associated with deferral are high and less when the risks associated with deferral are low relative to patterns of deferral observed under dominance conditions.

Individuals in Conflict and Dominance conditions also differed with respect to their reported levels of decisional confidence. Specifically, those in the Conflict condition had lower levels of confidence than did those in the Dominance condition; risk had no effect on confidence. Somewhat surprisingly, no differences between decisive and indecisive individuals were observed in regard to either deferral behavior or reported confidence. However, it is possible that any differences in tendency were mitigated by the strong contextual influences or that the sample size was too small to detect subtle differences.

The manner in which risk was manipulated in this experiment warrants some consideration. Participants were explicitly informed of the probability that they would encounter a better or worse apartment to replace the initially presented pair of options if they decided to defer choice. In everyday decision contexts, however, it is not often the case that risk information is so clearly and explicitly available to decision makers. In actual housing decisions, for example, a decision maker is rarely
explicitly informed of the risks associated with delay. Rather, the level of risk depends on the quality of the current versus the anticipated future choice sets. If the current option is poor relative to what is expected to go on the market in the future, there are good reasons to believe that later option sets will be superior. In contrast, when the present option is a good one relative to typical market options, it is less likely that a better alternative will come along.

To replicate and further generalize the present findings, it is valuable to consider whether the same differences emerge when risk is manipulated indirectly. To test whether individuals behave similarly when risk associated with choice deferral is indirectly stated, in Experiment 2 risk was manipulated by varying the relative utilities of the initially presented apartments in relation to an overall choice set. In doing so, the likelihood that deferral would bring about better or worse alternatives was manipulated without explicitly stating the probabilities of obtaining better or worse options as was done in the first experiment.

**Experiment 2**

The primary goal of Experiment 2 was to test whether conflict interferes with decision makers’ response to risk when risk is manipulated indirectly. Participants in both conditions were presented with a pair of apartments drawn from an overall set of 14 apartments from which any additional choice option would ostensibly be drawn. In a High Risk condition, the two presented options were more desirable than most of the remaining options on the list. In Low Risk condition, the two presented options were less desirable than much of the remaining options on the list. Risk could be
assessed by comparing the present options with the others on the list to determine the likelihood of obtaining a more versus a less desirable choice set in the future.

As in Experiment 1, participants in Conflict conditions were presented with a pair of apartments such that one of the apartments was better on one dimension (e.g., lower monthly rent price), while the other apartment was better on the other dimension (e.g., shorter distance to workplace). In contrast, in the Dominance conditions, one of the apartments was the same as in the Conflict condition but it was now paired with an option that was inferior to it on both dimensions. In both conditions, participants could either choose one of the two apartments or defer choice and request an additional apartment. Dependent measures were the decision to choose versus to defer choice and one’s confidence in the decision as rated on a Likert scale. The Frost and Shows’ (1993) 15-item Indecisiveness Scale was also administered at the end of the experiment.

If conflict interferes with the ability to process and to act responsively to risk information, a conflict by risk interaction similar to that found in Experiment 1 should be observed. Alternatively, if conflict only interferes with response to risk when this information is presented explicitly, but not when alternatives’ relative utilities serve as indirect proxies for risk, only a main effect of risk should be observed, with a greater proportion of individuals deferring choice when the risk associated with doing so is low relative to when it is high, irrespective of level of conflict. As predicted and observed in the first experiment, it was also expected here that conflict would affect reported decisional confidence.
Method

**Participants.** A total of 128 undergraduates (70 women and 58 men) participated in this study in exchange for a piece of candy and entry into a raffle for a $50 gift certificate. Participants were run independently or in one of several group sessions.

**Apartment selection task.** The apartment selection task was similar to that used in Experiment 1, except for the manner in which risk was manipulated. Rather than explicitly informing participants of the likelihood of obtaining a more versus less attractive option as a consequence of deferral, risk was manipulated indirectly by varying the relative utilities of apartments to the overall set of 14 apartments (see Appendix D for the exact wording for all versions of the decision problems). Participants were able to view the list of apartments for as long as they wished, but then it was removed before they were presented with a pair of apartments from the overall list of 14. Participants were informed that they could either select one of the two apartments, or that they could request a third apartment to be selected from the set shown previously. In the latter case, however, both of the current options were likely to be rented out to others in the meantime.

The pairs of apartments varied such that in the two High Risk conditions, participants were presented with two apartments with high utilities relative to the overall set (assuming an equal weighting of each dimension, the apartments constituting the Conflict-High Risk condition were tied for 3rd best in the overall set; the apartments constituting the Dominance-High Risk condition were ranked 3rd and 5th). The other two of the four pairs, comprising the two Low Risk conditions, had
relatively low utilities (the apartments constituting the Conflict-Low Risk pair were tied for 7th best in the overall set; the apartments constituting the Dominance-Low Risk pair were ranked 7th and 9th). Thus, with a finite set of 14 apartments, the expected utility associated with choice deferral varied inversely with the quality (i.e., utility) of the apartment pairs initially shown. See Appendix E for the rank ordering of all 14 apartments.

Confidence measure. The confidence measure remained unchanged from Experiment 1 (see Appendix B); each participant denoted his or her confidence in the decision using the same 11-point Likert scale used in Experiment 1.

Indecisiveness measure. As in the previous experiment, the Frost and Shows’ (1993) Indecisiveness Scale (Appendix C) was administered to all participants.

Procedure. The procedure was identical to that in the first experiment, except that no distractor task was included. The entire experiment took approximately 10 min to complete.

Results

Deferral behavior by conflict and risk. The percentage of participants in each condition who decided to defer choice rather than to select one of the two available apartments is shown in Figure 5. A total of 62 of 128 participants (48%) deferred choice. An overall effect of risk ($\chi^2 (1, N = 128) = 24.52, p < .001$) and a marginally significant effect of conflict ($\chi^2 (1, N = 128) = 3.13, p = .077$) were found. Individuals were significantly more likely to defer choice in the Low Risk than in the
High Risk conditions, and they were marginally less likely to defer in the Conflict conditions than in the Dominance conditions.

Figure 5. Percentage of participants who decided to defer choice in each of the four experimental groups of Experiment 2.

To test for a simple effect of risk at each level of conflict, two separate chi-square goodness of fit tests were run. Under dominance, more participants deferred choice in the Low Risk condition as compared with the High Risk condition, $\chi^2 (1, N = 64) = 9.14, p = .002$. Likewise, under conflict, more participants deferred choice in the Low Risk condition as compared with the High Risk condition, $\chi^2 (1, N = 64) = 16.58, p < .001$. Additionally, to test for the simple effect of conflict separately at each level of risk, two further chi-square goodness of fit tests were run. Under high risk, more participants deferred choice in the Dominance condition than in the Conflict condition, $\chi^2 (1, N = 64) = 3.93, p = .048$. Under low risk, there was not a
significant difference in the percentage of participants who deferred choice in the Conflict and Dominance conditions, $\chi^2 (1, N = 64) = 0.67, p = .412$.

Of the participants who opted to choose one of the two initially presented apartments, in the Dominance conditions, 100% chose the dominant one, Apartment A ([$700 a month and 35 min from your office] in the High Risk condition; [$800 a month and 45 min from your office] in the Low Risk condition). In the Conflict conditions, 71% chose Apartment A ([$700 a month and 35 min from your office] in the High Risk condition; [$800 a month and 45 min from your office] in the Low Risk condition) and 29% chose Apartment B ([$900 a month and 15 min from your office] in the High Risk condition; [$1000 a month and 25 min from your office] in the Low Risk condition). Because Apartment B ([$900 a month and 15 min from your office] in the High Risk condition; [$1000 a month and 25 min from your office] in the Low Risk condition) was presented to participants in the Conflict conditions but not in the Dominance conditions (in those conditions, Apartment B was [$750 a month and 40 min from your office] in the High Risk condition; [$850 a month and 50 min from your office] in the Low Risk condition), the 19 participants who chose this option (13 from the Conflict-High Risk condition and 6 from the Conflict-Low Risk condition; $\chi^2 (1, N = 19) = 2.58, p = .108$) were removed and the above analyses were re-run.

As shown in Figure 6, when these participants were removed from analyses, differences in deferral between levels of conflict were no longer statistically significant overall ($\chi^2 (1, N = 109) = 0.03, p = .874$), in the Low Risk condition ($\chi^2$
To choose or not to choose

(1, \( N = 59 \)) = 0.06, \( p = .803 \)), or in the High Risk condition (\( \chi^2 (1, N = 50) = 0.49, p = .486 \)). That is, individuals were approximately equally likely to defer under each level of conflict. Differences in deferral between levels of risk, however, remained significant overall (\( \chi^2 (1, N = 109) = 19.72, p < .001 \)), in the Conflict condition (\( \chi^2 (1, N = 45) = 11.07, p = .001 \)), and in the Dominance condition (\( \chi^2 (1, N = 64) = 9.14, p = .002 \)).

![Figure 6](image)

**Figure 6.** Percentage of participants who decided to defer choice in each of the four experimental groups of Experiment 2, excluding participants choosing Apartment B.

**Confidence.** Overall, participants reported a mean confidence rating of 6.59 (range = 0 – 10). The means and standard errors by experimental condition are shown in Figure 7. To determine whether reported confidence ratings varied across experimental conditions, a 2 (conflict) x 2 (risk) between-subject ANOVA was run. No significant main effects or interactions were found, \( F's < 1, p's > .70 \), except that the effect of risk approached statistical significance, \( F(1,124) = 3.02, MSE = 14.11, p = .002 \).
= .085. As shown in Figure 8, the same results were found when the 19 participants who chose Apartment B were removed, $F’s < 3$, $p’s > .10$.

**Figure 7.** Mean confidence ratings (0-10) of participants in each of the four experimental groups of Experiment 2. Error bars show standard errors.

**Figure 8.** Mean confidence ratings (0-10) of participants in each of the four experimental groups of Experiment 2, excluding participants choosing Apartment B. Error bars show standard errors.


**Indecisiveness and deferral behavior.** The internal consistency was computed for the Frost and Shows’ (1993) Indecisiveness Scale to assess how well the 15 items measure a single construct. A Cronbach’s alpha of .87 was found, an acceptable value at the conventional alpha > .70 criterion. Indecisiveness scores for individual participants were computed by reverse coding items as appropriate and then summing all responses. The mean was 65 out of a possible 135, with scores ranging from 22 to 109. A median split (mdn = 64.5) was used to divide the data into two equally sized groups of decisive and indecisive individuals. The split resulted in 64 indecisive ($M = 79, SD = 11.1$) and 64 decisives ($M = 49, SD = 11.2$) individuals.

To determine whether indecisive and decisive individuals differed in their deferral behaviors, the choice deferral data by condition were broken down by indecisiveness group, as shown in Table 2. Chi-square goodness of fit tests revealed that indecisive individuals did not differ from their decisive counterparts in their deferral behavior in any of the four risk by conflict groups: $\chi^2 (1, N = 32) = 0.92, p = .337$, for Conflict-High Risk; $\chi^2 (1, N = 32) = 0.13, p = .722$, for Conflict-Low Risk; $\chi^2 (1, N = 32) = 0.53, p = .465$, for Dominance-High Risk; $\chi^2 (1, N = 32) = 0.67, p = .414$, for Dominance-Low Risk. Additionally, an independent $t$-test was conducted to determine if indecisiveness groups differed from each other with respect to reported confidence. It was found that indecisive ($M = 5.88, SD = 1.89$) participants reported significantly lower confidence ratings than did decisive ones ($M = 7.30, SD = 2.20$), $t(126) = 3.95, p < .001$. 

Table 2
Percentages of Decisive and Indecisive Individuals Deferring Choice by Condition for Experiment 2

<table>
<thead>
<tr>
<th></th>
<th>Conflict</th>
<th>Dominance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk Condition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indecisive</td>
<td>23%</td>
<td>31%</td>
</tr>
<tr>
<td>Decisive</td>
<td>11%</td>
<td>44%</td>
</tr>
<tr>
<td>Low Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indecisive</td>
<td>63%</td>
<td>69%</td>
</tr>
<tr>
<td>Decisive</td>
<td>69%</td>
<td>81%</td>
</tr>
</tbody>
</table>

Note. Cell n’s range from 13 – 19.

Discussion

The main findings are that a greater percentage of individuals deferred under low risk than under high risk, irrespective of Conflict or Dominance condition. Participants deferred at equivalent rates across the two levels of conflict, and conflict did not appear to hinder individuals’ response to risk information. Additionally, individuals did not differ with respect to their reported levels of decisional confidence in any of the experimental groups, although indecisive participants reported a reliably lower level of confidence in their decisions than did their decisive counterparts. No differences in deferral patterns as a function of indecisiveness were observed.
One possibility that cannot be ruled out as to why no effect of conflict was found in this experiment is that conflict was not successfully or sufficiently established. While the pairs of apartments in the two Conflict conditions did differ from each other in their advantages and disadvantages, consistent with the manner in which conflict was manipulated in Experiment 1 and in past work (e.g., Tversky & Shafir, 1992), it is possible that participants did not perceive any conflict between the alternatives or experience any increase in selection difficulty. Specifically, individuals may have clearly preferred one alternative to the other or assessed independently each alternative’s utility relative to the overall set. This explanation is plausible especially in that no difference in reported level of confidence across levels of conflict was found, unlike in Experiment 1.

**Combined Results of Experiments 1 and 2**

Because analyses involving indecisiveness groups consisted of only 64 individuals per indecisiveness group per experiment, the indecisiveness and deferral data from both experiments were combined to consider patterns of choice and deferral between indecisive and decisive individuals. A median split (mdn = 66.5) was used to divide the combined data from both experiments into two equally sized groups of decisive and indecisive individuals; only 4 participants changed indecisiveness groups when this overall median was used. The split resulted in 128 indecisive ($M = 81, SD = 9.5$) and 128 decisives ($M = 50, SD = 10.5$) individuals. Chi-square goodness of fit tests supported the results of the independent experiments that indecisive individuals did not differ from their decisive counterparts in their deferral
behavior in any of the four risk by conflict condition permutations: $\chi^2 (1, N = 64) = 0.06, p = .807$ for Conflict-High Risk; $\chi^2 (1, N = 64) = 1.53, p = .216$ for Conflict-Low Risk; $\chi^2 (1, N = 64) = 0.40, p = .528$ for Dominance-High Risk; $\chi^2 (1, N = 64) = 0.15, p = .702$ for Dominance-Low Risk.

Additionally, an independent $t$-test was conducted to determine if indecisiveness groups differed from each other with respect to reported confidence. It was found that indecisive ($M = 6.34, SD = 1.84$) participants were significantly less confident in their decisions than their decisive counterparts ($M = 7.27, SD = 1.70$), $t(254) = 4.18, p < .001$.

**General Discussion**

Two experiments investigated factors influencing how people decide when to commit to a choice alternative, specifically testing the hypothesis that decision difficulty interferes with the ability to respond to risk information. In Experiment 1, not surprisingly, when choice was straightforward because one alternative dominated another, more individuals deferred choice under a low risk context than under a high risk one. Strikingly, however, and in support of the hypothesis, when the choice was difficult because the two alternatives were in conflict, individuals were equally likely to defer choice under both low risk and high risk contexts. Decisional confidence ratings were higher when one alternative dominated the other than when there was conflict, regardless of level of risk, consistent with the intention that choice be more difficult under conflict than under dominance. In Experiment 1, risk was explicitly stated as a numerical probability that a more attractive choice set would emerge.
In contrast, in Experiment 2, individuals responded in a similar manner in both conflict and dominance situations to the now indirect risks associated with deferral that were linked to the relative utilities of the initially available apartments. That is, in both conflict conditions, individuals were more likely to defer choice when the risk of obtaining a less attractive future choice set was low relative to when it was high. Another way of saying this is that all individuals behaved similarly to those in the dominance situations of Experiment 1. Participants here were also equally confident in their decisions under conflict versus dominance, raising the possibility that choice might not actually have been more difficult under conflict, and that the manipulation might not have been wholly successful. No differences in rates of deferral were found between decisive and indecisive individuals in this experiment or in Experiment 1, but consistent with past work on indecisiveness, decisive participants were more confident in their decisions than were indecisive ones.

**The influence of conflict on deferral**

Normative models of choice do not dictate or presume to know individuals’ values or goals. They are agnostic, for example, as to whether a specific decision maker in a specific decision context should behave risk aversey or should exhibit risk seeking behavior. However, the normative perspective *does* assert that patterns of choice and deferral should be coherent and internally consistent and that they should not be influenced by factors unrelated to expected utility (Adam & Reyna, 2005). Yet, in a wide range of hypothetical and real decisional contexts including consumer, medical, and financial decision scenarios, conflict—a factor unrelated to expected
utility—has been shown to increase the tendency to defer choice (Dhar, 1997; Iyengar, Jiang, & Huberman, 2004; Iyengar & Lepper, 2000; Redelmeier & Shafir, 1995; Shafir et al., 1993; Shafir & LeBoeuf, 2004; Tversky & Shafir, 1992). In all of these studies, deferral was not associated with any experimentally manipulated changes in the choice set; so, while there was no normative reason to defer, there was also arguably no compelling reason not to defer either.

The results of Experiment 1 extend the deferral phenomenon to situations in which there is also an expectation of possible change in the choice set as a result of deferral. Namely, it is when the risk associated with deferral is high that individuals differ in the extent to which they are willing to defer choice. As found in Experiment 1, individuals with the dominance choice set were less likely to defer than those deciding under conflict, presumably because they were able to identify a preferred option and thus had no reason to defer. Relative to those with the dominance choice set, those deciding under conflict were more likely to defer despite the risks of doing so. The results provide evidence that the phenomenon is not limited to static choice situations. Even when there is a normative reason not to defer, the effect of conflict continues to emerge. Of course, when there is a high likelihood of obtaining a better choice set, and thus a low risk associated with deferral, it is not surprising that no effect of conflict is found because the vast majority defer choice.

**The influence of risk on deferral**

Past work has found that people adaptively modulate search strategy to fit task demands (Payne et al., 1993), and that they adjust behavior in sequential search
situations to try to obtain the most attractive alternative (Ferguson, 1989; Bearden et al., 2005). Having said this, the types of tasks that have been previously considered have largely focused on modulation of strategy in response to time or to resource cost rather than to the risk of acquiring a less attractive choice set. Sequential search tasks have incorporated dynamic choice sets, but these sequential tasks are quite unique in that only one alternative is presented at a time for acceptance or rejection, and the alternative is stated only in terms of its rank relative to past ones. Only Patalano and Wengrovitz (in press) and Duncan et al. (2007) and have looked at risk in the context of dynamic choice sets that are not given in terms of rank, but in terms of their attractiveness on various dimensions.

Patalano and Wengrovitz (in press) used a course-selection choice set that was “updated” on each day of a five-day simulation, finding that participants—at least decisive ones—waited fewer days before making a selection when risk of loss of alternatives was present versus when it was absent. Duncan et al. (2007) used a two-option versus deferral procedure, finding that individuals waited for most any additional attribute information when there was no risk of loss of alternatives but that they only waited for critical information when such a risk was present. The current experiments build on this past work, finding that individuals are more likely to defer choice when there is a low risk than when there is a high risk of loss of alternatives. Only when the risks associated with deferral are explicitly stated and individuals are deciding under conditions of conflict are they limited in their response to risk information.
Conflict and behavioral insensitivity to risk

While aspects of the present work provide support for the effects of conflict on deferral and for the use of risk information in dynamic decision contexts, the most notable finding that emerges is the relationship between conflict and risk. The results provide strong evidence in support of the hypothesis that rather than promoting deferral per se, conflict can interfere with integration and behavioral response to multiple, discrete contextual factors of a selection task by increasing deferral when the risks are high and increasing choice when the risks are low. Despite explicit mention of high and low risks associated with deferral in the first experiment, the introduction of conflict severely limited the ability of participants to behave sensitively to these incentives for immediate choice versus for delay, respectively. Specifically, conflict promoted deferral when risk was high and promoted choice when risk was low relative to deferral rates in the absence of conflict.

This striking effect of conflict was observed in Experiment 1, when risk information was presented explicitly, but not in Experiment 2, when the risks were presented indirectly. In Experiment 2, individuals in both the Conflict and Dominance conditions responded equally well to risk information by deferring more under low risk than under high risk. Although initially puzzling, this discrepancy between experiments in fact suggests an account of the process by which conflict influences the tendency to defer choice as well as putative cognitive mechanisms by which conflict may interfere with response to risk. In particular, it may be that under conflict, decision makers’ attention is focused on the choice alternatives because
these decision makers must devote undue cognitive resources to determining which alternative to choose. As a result, they are distracted from, and thus fail to fully process or integrate, any decision problem information that is not specifically tied to the choice alternatives, such as explicit risk information.

Recall that under conflict, individuals were unable to respond to explicit risk information; an equal number of participants deferred choice under the high and low risk conditions in Experiment 1. Conflict might have interfered with at least some participants’ ability to simultaneously attend to, or to fully integrate, the two discrete features of the decision task: the qualities of the available alternatives and the stated risk associated with deferral. When risk is explicit and thus separate from the qualities of the available alternatives, individuals might first direct attention to assessing the qualities of the available alternatives and to discerning which is superior; that is, this might occur before directing thoughts to determining if the possible benefits of deferral outweigh the risks and thus warrant choice deferral. Because the choice task under conflict is so challenging, people may fail to ever consider risk. Under conditions of dominance, in contrast, discerning which of the initially presented alternatives is most attractive is trivial given that, by definition, one alternative is clearly superior to the other. Under dominance, then, decision makers can easily proceed to consider the possible risks associated with deferral.

Unlike the explicit risk manipulation of the first experiment, when risk information was presented indirectly in Experiment 2 as either relatively desirable or relatively undesirable initial alternatives, the level of risk was inextricably linked to
the initially presented alternatives. When decision makers approach this type of
decision task—again first assessing the qualities of the available options and
attempting to discern which of the two alternatives was superior—they can likely
simultaneously attend to risk given that this information is inseparable from the
relative qualities of these alternatives. Even under conflict, when the task of
identifying a preferred option is a more difficult one, individuals can still attend to the
risk information because it is linked to the quality of the alternatives being
considered. Thus, the competing attentional demands placed on the decision maker to
consider explicit risk information and to discern which of the two conflicting
available alternatives to choose is never introduced. This allows individuals to
simultaneously consider the utilities of the available alternatives as well as the risks
associated with deferral.

**The role of indecisiveness in deciding when to choose**

Although no differences in choice deferral behavior between indecisiveness
groups were found here, the present finding that conflict interferes with response to
risk complements earlier work on indecisiveness and behavioral insensitivity to risk.
In this earlier work, Patalano and Wengrovitz (in press) utilized a dynamic course-
selection grid that involved information search, choice among as many as 13
alternatives, and the option of choice deferral up to four times. They found that while
decisive individuals were able to effectively modulate their deferral behaviors in
response to presence versus absence of risk, indecisive individuals did not. The
present work shows that, like indecisiveness, conflict can interfere with adaptive
response to risk, increasing rates of deferral under explicitly presented high risks and increasing rates of choice under explicitly presented low risks, relative to deferral patterns under dominance. In other words, when selection difficulty is high, due either to conflict or to indecisiveness, individuals do not simply increase their rates of deferral; rather, they are irresponsive to the risk-related consequences of delay. This parallel is also important for the study of indecisiveness; it suggests that experimental manipulations might be used to simulate and to further explore this variable.

There are many plausible reasons as to why deferral behavior did not vary as a function of indecisiveness in the present work, as the task here was very different from the one previously used. One possible reason that an effect of indecisiveness is not found here is that because the contextual effects of conflict and risk are strong determinants of deferral behavior, these variables overwhelm any contribution of indecisiveness. A second possibility is that indecisive and decisive individuals might differ not in whether they engage in delay, but rather in the length of time for which they are willing to delay before making a choice. If true, the influence of indecisiveness might emerge only in situations with a continuous dependent measure such time spend in delay. A third possibility is that indecisiveness effects arise from decision strategy differences triggered by information search rather than by the simple choice task used here. Further work is needed to explore these possibilities.

**Limitations and directions for future work**

The experiments here focused on the influence of conflict and deferral-related risk on deferral behavior. However, the broader interest is on the influence of choice
difficulty and outcome-related loss more broadly defined. Though conflict was used as a proxy for difficulty, conflict is only one kind of choice difficulty. Anderson’s (2003) model includes conflict as one of over a dozen factors that have been shown to influence deferral behavior for non-normative reasons, including time pressure, the number of alternatives, and the emotionality of a decision. Moreover, in addition to risk, other penalties linked with postponement of choice—including costs, effort, and time—and are ubiquitously present in dynamic decision situations in everyday life. Experimentally considering how choice difficulty might interact with these and other deferral penalties is an important next step in research on how individuals decide when to choose.

A second direction for future research stems from the use of a dichotomous dependent measure in the present work, namely, choice versus deferral. In many decision contexts, it is possible to defer choice multiple times, or even indefinitely. For instance, in the context of purchasing a home, there are always more houses that come on the market—one may theoretically continue to postpone choice until the point at which one has lived one’s whole life without ever purchasing the desired home. Use of a continuous measure of deferral, similar to that of the college course selection task used by Patalano and Wengrovitz (in press), would be a valuable way to test and to replicate the findings presented here with a more sensitive measure that is capable of capturing a greater range of deferral behaviors.

A third direction is suggested by the manner in which alternatives and information are presented in the present work, as this element of decision tasks has been shown to
dramatically affect the way decision makers search for information, choose among alternatives, and make decisions about deferring choice (see Kleinmuntz & Schkade, 1993; Payne et al., 1993). Whether information about alternatives in a choice set is presented one attribute at a time, one alternative at a time, or as a complete matrix, for example, has been shown to influence the amount of information acquired (Schkade & Kleinmuntz, 1994) and the amount of time spent on the choice task (Bettman & Kakkar, 1977). Future research may wish to manipulate these and related elements of decision tasks in order to fully consider the specific ways in which choice difficulty interferes with response to risk information.

Applications and broader contexts

Rational choice models and classical economic theories have long endorsed the notion that the addition of more alternatives to a choice set—be they television channels to watch, travel destinations to add to itineraries, or ways to customize a grande skim latte—is necessarily advantageous to a decision maker: With more alternatives from which to choose, the better decision makers can find the courses of action that allow them to best achieve their decisional goals. However, research on the “paradox of choice”—a term coined by Schwartz (2004) to refer to the multiple and antithetical effects of choice in everyday life—demonstrates that adding alternatives to a choice set may not always be beneficial and can also bring about negative personal and social consequences (see also Iyengar & Lepper, 2000; Botti & Iyengar, 2006; Iyengar, Wells, & Schwartz, 2006), often leading “to bad decisions,
to anxiety, stress, and dissatisfaction—even to clinical depression” (Schwartz, 2004, p. 3).

The present work relates to that body of research in two principal ways. Firstly, in the present work, choice deferral in search of additional alternatives did not solely confer advantages, but also came with disadvantages, namely the risk of missing out on available options. Secondly, addition of alternatives through deferral can have a powerful effect on subsequent choice by redefining its level of conflict. If deferral brings about a clearly superior alternative, a previously conflict-ridden and difficult selection task transforms into a substantially easier one. Conversely, if deferral yields a clearly inferior alternative relative to the initial ones, selecting one of the two initial options may become easier since now they each dominate another option. Yet, if deferral brings about a highly similar or conflicting alternative, decision makers may face even more difficulty due to introduction of additional conflict. Thus, the paradox of deferred choice.

Furthermore, the present account of conflict has important implications for the world beyond the laboratory setting. Most immediately, the findings are relevant to the business world and, in particular, to the marketing of goods and services. Principally concerned with increasing consumption, marketers employ tactics to strategically influence how individuals decide to choose or to defer choice. The results of the present work suggest that businesses attempting to increase their market share might benefit from considering not only how their product compares to competitors’ products, but also to actual or perceived product availability. The latter
refers to the frequency of incidents when a supplier runs out of inventory, the risk a potential customer faces when opting to defer. To increase the odds of choice over deferral, marketers may wish to highlight this risk explicitly to potential purchasers (e.g., “Available for a limited time only” or “Act today! Supplies are limited!”) while providing ample ways for purchasers to differentiate products from those of competitors (consider Gillette’s slogan, “The Best a Man Can Get” or Budweiser’s claim as “The King of Beers”).

Likewise, the present studies also have direct applicability to related work on decision aids and have implications for individual decision makers who wish to improve their decision making skills. Decision aids, often in the form of balance sheets or electronic spreadsheets, provide a prescriptive account of how decision makers should overcome conflict in order to make better decisions. For example, Hammond, Keeney, and Raiffa (2002) suggest that decision makers rank alternatives on each relevant dimension or characteristic to form a “ranking table,” or a matrix that differentiates each option from the others. By transforming conflict-ridden choice sets into more manageable sets with rank ordered alternatives, decision makers may not only begin to more easily discern which alternative to choose, but doing so may also allow them to attend to other elements of the decision task, including risk information, that they otherwise may not have been able to consider.

Conclusions

Decision making is an integral part of everyday life. Indeed, the freedom of choice has been said to be central to human existence. Wrote author and psychiatrist
Frankl (1959/1992) in *Man’s Search for Meaning*, “Everything can be taken from a man but one thing: the last of human freedoms—to choose one’s attitude in any given set of circumstances, to choose one’s own way” (p. 75). Although individuals exercise this essential freedom on a daily basis, individuals can be limited, biased, or otherwise influenced by the context in which a choice is made. Among important contextual factors is the difficulty inherent in a decision, oftentimes in the form of conflict among alternatives, such that individuals may find it difficult to make the tradeoffs necessary to choose a course of action. The present work demonstrates how conflict and risk jointly influence how individuals decide to choose versus to defer choice. By manipulating risk, both explicitly and indirectly, the present work considered how conflict influences behavioral sensitivity to risk, a previously neglected yet critical question. The results suggest that the effect of conflict on sensitivity to risk in choice deferral is a complex one, and they make clear the importance of considering how multiple elements of the decision context jointly influence choice deferral.
References


APPENDIX A
Apartment Selection Task Used in Experiment 1

Example is for Conflict-High Risk. Modifications for other conditions are noted.

Imagine that you have recently moved to a new city and are looking for an apartment. Apartments in this city range considerably in their rent price per month, as well as in their distance to your workplace.

The most desirable apartments for you might cost $600 a month, but other apartments might cost as much as $1100 a month. Most apartments are located within 60 minutes of your workplace, and price doesn’t necessarily imply closer or further to your work.

Other than differences in price and distance, it’s safe to assume that all of the apartments presented to you are equally desirable.

In particular, two apartments have been brought to your attention and are listed below in terms of their monthly rent and their distance to your new place of employment.

(a) $900 a month and 15 min from your office
(b) $700 a month and 35 min from your office

You can choose now between the two apartments or you can continue to search for apartments. In the latter case, however, both of the current options are likely to be rented out to other people in the meantime.

If you opt to request a third option (and to risk losing out on these two), a realtor has informed you that there is a 65% chance that any new option will be BETTER than both of the current apartments and a 35% chance that it will be WORSE than both of them. Since you need a place to live soon, you might have to commit to that new apartment if the two current options are rented out in the meantime.

Please make your decision by circling one of the below options now:
(a) $900 a month and 15 min from your office
(b) $700 a month and 35 min from your office
(c) Request another apartment

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a In Low Risk condition, replace value with: 85%
b In Low Risk condition, replace value with: 15%
c In Dominance condition, replace with: $750 a month and 40 min from your office
APPENDIX B
Confidence Measure

How confident are you that you made the right choice?

Please select the most appropriate number on a scale of 0 to 10 (with 0 indicating “not at all confident” and 10 indicating “extremely confident”).

Not at all confident

0-------1-------2-------3-------4-------5-------6-------7-------8-------9-------10

Extremely confident
APPENDIX C
Frost and Shows’ (1993) Indecisiveness Scale

1. I try to put off making decisions.
2. I always know exactly what I want.
3. I find it easy to make decisions.
4. I have a hard time planning my free time.
5. I like to be in a position to make decisions.
6. Once I make a decision, I feel fairly confident that it is a good one.
7. When ordering from a menu, I usually find it difficult to decide what to get.
8. I usually make decisions quickly.
9. Once I make a decision, I stop worrying about it.
10. I become anxious when making a decision.
11. I often worry about making the wrong choice.
12. After I have chosen or decided something, I often believe I’ve made the wrong choice or decision.
13. I do not get assignments done on time because I cannot decide what to do first.
14. I have trouble completing assignments because I cannot prioritize what is most important.
15. It seems that deciding on the most trivial things takes me a long time.

Note. Items 2, 3, 5, 6, 8, and 9 are reverse coded.
APPENDIX D
Apartment Selection Task Used in Experiment 2

Example is for Conflict-High Risk. Modifications for other conditions are noted.

Available Apartments

Because the location of your new job is in a city with a tight housing market, your employer has a set of apartments for its employees. They are listed below in terms of their cost and their distance to the office. Other than the differences below, all of the apartments are equally attractive.

Look them over just until you have sense of what the apartments are like. When you are done, go on to the next page.

$600 and 25 min
$1100 and 50 min
$800 and 45 min
$700 and 35 min
$750 and 40 min
$1150 and 45 min
$950 and 20 min
$1000 and 25 min
$850 and 50 min
$650 and 5 min
$900 and 55 min
$1050 and 40 min
$900 and 15 min
$950 and 60 min

[page break in materials]

Your new employer has offered you a choice between the two apartments below. You can either commit to renting one of these, or request a third option to be chosen at random from the set you saw earlier. If you request a third option, however, both of the current options are likely to be rented out to other employees in the meantime.

Please make your decision by circling one of the below options now:

(a) $700 a month and 35 min from your office
(b) $900 a month and 15 min from your office
(c) Request another option

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For Conflict-Low Risk, replace with: $800 a month and 45 min from your office
For Dominance-Low Risk, replace with: $800 a month and 45 min from your office
For Dominance-High Risk, replace with: $750 a month and 40 min from your office
For Conflict-Low Risk, replace with: $1000 a month and 25 min from your office
For Dominance-Low Risk, replace with: $850 a month and 50 min from your office

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APPENDIX E

Rank (Utility) Ordering of Apartments in Experiment 2

To determine the rank ordering of the apartments shown and presented to participants in Experiment 2, principles of multiattribute utility theory (MAUT; see Keeney & Raiffa, 1976) were employed. A normative perspective on decision making, MAUT is a method that assigns values to attributes for purposes of assessing relative goodness (i.e., utility) of alternatives in a choice set, each with multiple dimensions. In this case, it was assumed not only that the distance to workplace referred to the utility of that distance and that the dollar amount given as the rent price per month was equal to the utility of that amount, but also that price per month and distance were equally important to decision makers, and thereby equally influential in determining the overall goodness (i.e., utility) of each apartment. An asterisk denotes that an option has the same utility as the preceding option and therefore has the same rank.

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