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### Motivational Affordance and Risk-taking across Decision Domains

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### Abstract

We propose a motivational affordance account to explain both stability and variability in risk-taking propensity in major decision domains. We draw on regulatory focus theory to differentiate two types of motivation (prevention, promotion) that play a key role in predicting risk-taking. Study 1 demonstrated that prevention motivation is negatively associated with risk-taking across six key decision domains, including health/safety, ethics, recreation, gambling, investment, and social. In contrast, promotion motivation is positively associated with risk-taking in the social and investment domains. Study 2 replicated the same pattern and provided direct evidence that promotion motivation is a strong predictor of risk-taking only in domains where there is true potential for gains. Study 3 manipulated promotion (versus prevention) motivation experimentally to demonstrate that motivational affordance is a critical mechanism for understanding risk-taking behaviors.

*Keywords:* domain specific risk-taking, motivational affordance, regulatory focus

### Motivational Affordance and Risk-taking across Decision Domains

A number of independent research streams have shown that risk preferences are not stable across situations (Fox & Tannenbaum, 2011). Perhaps the most well-known approach for conceptualizing risk preference inconsistency is prospect theory, which has showed that people display distinct risk preferences depending on whether options are framed as gains versus losses (Kahneman & Tversky, 1979). In addition to framing effects, others have argued for the importance of understanding variability in risk preferences by considering the *content* of different decision domains (Kogan & Wallach, 1964; Maccrimmon & Wehrung, 1990; Schoemaker, 1990; Weber & Milliman, 1997). One prominent example, the domain specific risk-taking (DOSPERT) approach, was developed to cover a comprehensive range of risk-taking situations encountered by adults in Western cultures, including gambling, investment, social, health/safety, ethical, and recreational domains (Johnson, Wilke, & Weber, 2004; Weber, Blais, & Betz, 2002). Research in this tradition has shown that individuals who exhibit high levels of risk-taking behavior in one life domain (e.g., investment) may simultaneously exhibit moderate or low levels of risk-taking behavior in other life domains (e.g., recreational activities like sky-diving) (Blais & Weber, 2006; Hanoch, Johnson, & Wilke, 2006).

Although the same person can show different levels of risk-taking propensity across different situations, much evidence has shown that there are also substantial individual differences in overall likelihood of taking risks. For example, Nicholson (2005) found that risk takers score high on extraversion and openness and low on neuroticism, agreeableness, and conscientiousness. Likewise, sensation seeking (Weber et al., 2002; Zuckerman & Kuhlman; 2000) and narcissism (Foster, Shenese, & Goff, 2009; Lakey, Rose, Campbell, & Goodie, 2008) are both positively associated with risk-taking across all decision domains. Further, various personality traits have been developed to classify people as either generally risk-seeking or risk-averse (Bromiley & Curley, 1992; Eysenck & Eysenck, 1977; Lejuez et al., 2002). In sum, research on personality and risk preference has tended to focus on what personality traits predict risk-taking, irrespective of domain.

These two approaches exemplify the classic debate between person and situation for understanding risk-taking: the domain matters (e.g., DOSPERT; Weber, Blais, & Betz, 2002) versus the person matters (e.g., sensation seeking; Zuckerman & Kuhlman; 2000). Instead of treating these two approaches as competing accounts, we argue that it is important to take both the nature of the domain and the nature of the person into account in order to predict risk-taking. Whereas some individuals display consistent risk-taking propensity across domains, others may display systematic variability across domains. In this regard, recent

studies on regulatory focus motivation (prevention, promotion; Higgins, 1997) have shown that stable individual differences can account for both stability and variability in risk preference under conditions of loss versus gain (Scholer, Zou, Fujita, Stroessner, & Higgins, 2010; Zou, Scholer, & Higgins, 2014). In this paper, we build upon the prior research on motivation and risk to examine the effects of promotion and prevention motivation on risk preferences across the six distinct decision domains identified by the DOSPERT framework (Weber, Blais, & Betz, 2002). We argue that this integrative approach presents new insights for the literatures on both risk-taking and regulatory focus theory.

### **Domain Specific Risk-Taking**

A critical insight from prior analyses on domain specific risk-taking is that differences in risk-taking across domains may be partially, or even fully, explained by differences in individuals' perceptions of the benefits and risks of those behaviors (Weber & Milliman, 1997). To be more specific, Weber and colleagues (Weber, 1988; Weber, et al., 2002) adapted a risk-return model from the finance literature, which decomposes risk preference into two components: (a) the expected benefit of an option (e.g., "How much benefit you would obtain from each situation") and (b) perceived risk ("How risky you perceive each situation"). This model allows one to assess whether perceptions of benefits and risks differ across domains and which component is more closely related to risk-taking. Findings from this model suggest that variation in risk-taking across domains reflects differences in perceived benefits and risks, not domain-specific differences in risk attitudes per se. For example, one person might take significantly more risks in the investment versus health/safety domain, but only because this person perceives more risks and fewer benefits in the health/safety versus investment domains. That is, the link between risk perception and risk-taking is relatively stable across domains.

However, research in regulatory focus theory (Higgins, 1997) suggests that individuals might differ in their sensitivity and reaction towards the different components that motivate risk-taking. Specifically, this theory distinguishes between two motivational systems: promotion and prevention. Promotion-focused individuals are concerned with nurturance needs, are oriented toward desired end-states as ideals and accomplishments, and are particularly sensitive to the difference between gains and non-gains. In contrast, prevention-focused individuals are concerned with security needs, are oriented toward desired end-states as duties and responsibilities, and are particularly sensitive to the differences between non-losses and losses (Brendl, Higgins, & Lemm, 1995; Shah, Higgins, & Friedman, 1998).

In this regard, one might suspect that prevention motivation would moderate the effect of perceived losses whereas promotion motivation would moderate the effect of perceived gains. Notably, perceived loss is related to, but not the same as, perceived risk. Perceived risk is typically measured in a way that encompasses a broader construct involving not only perceived danger and negative affect, but also uncertainty and lack of control (Slovic, 1987; Slovic et al., 1980); thus, perceived loss is one critical element of perceived risk. Given that risky situations tend to entail potential losses and that prevention-focused individuals are particularly sensitive to potential losses, we might assume that prevention focus would intensify the effect of perceived losses in a risky situation. On the other hand, given that promotion-focused individuals are particularly sensitive to potential gains, one might assume that promotion focus might intensify the effect of perceived benefits, a construct synonymous with perceived gains<sup>1</sup>. In other words, prevention-focused individuals might take fewer risks in domains with a higher level of perceived losses, whereas promotion-focused individuals might take more risks in domains with a higher level of perceived gains.

We instead argue that this linear reasoning does not capture the complexity of individual differences in predicting risk preference. In the following sections, we first review the research on regulatory focus systems and risk preference, and then develop three specific hypotheses explaining how promotion motivation and prevention motivation play distinct roles in driving risk preference across and within decision domains. We subsequently report three studies that tested our predictions. We maintain and document that individual differences can lead to both stability and variability in risk-taking across domains.

### **Prevention Motivation**

The prevention system focuses primarily on maintaining safety and security. Prevention-focused individuals prefer vigilant strategies in goal pursuit—that is, approaching non-loss situations and avoiding loss situations (Higgins et al., 1994; Molden & Higgins, 2004, 2008). Typically, these vigilant strategies have been associated with risk-averse tactics; maintaining safety is best served by cautious, conservative behaviors (Crowe & Higgins, 1997; Friedman & Förster, 2001; Scholer, Stroessner, & Higgins, 2008). Recent study has further confirmed that prevention-focused individuals become risk-seeking in the financial domain only (a) when they experience themselves in a clear state of loss and (b) risk-seeking is the only way to return to the status-quo ante (Scholer et al., 2010). Prevention-focused individuals are not risk seeking

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<sup>1</sup> We directly tested this assertion in Study 2.

when they are in a state of non-loss or as a way to increase gains (Zou et al., 2014). In sum, prevention-focused individuals are typically risk-averse unless very specific conditions are met.

The behaviors in the DOSPERT scale were developed as prototypes of risky behavior in each domain; all of them, by definition, carry some potential loss liability (Yates & Stone, 1992). Given that all of the behaviors expose individuals to potential losses, we argue that prevention-motivation will be associated with reduced risk-taking across domains. Furthermore, we argue that this relationship emerges simply because the risky behaviors exceed a minimum threshold of potential losses; there will not be a linear relationship between perceived losses and risk-taking within the prevention system. This prediction is consistent with the Scholer et al. (2010) studies, which found that risk is undertaken only when it is perceived to *eliminate* loss. The conditions of loss alone are not enough to drive risk-taking. Thus, for these behaviors under the DOSPERT, all of which carry some liability potential, risk is not sought.

*Hypothesis 1: Prevention motivation is negatively associated with risk-taking across all decision domains.*

### **Promotion Motivation**

The promotion system is motivated primarily by potential gains and growth opportunities (Higgins, 1997). What matters in the promotion system is making progress from the status quo “0” to a “+1” better state. Promotion-focused individuals prefer eager strategies in goal pursuit—enthusiastically approaching gains and avoiding non-gains (Crowe & Higgins, 1997; Wang & Lee, 2006). Historically, the eagerness of the promotion system has been linked to a general preference for risk-taking in decision-making (Friedman & Förster, 2001; Molden & Higgins, 2004). However, recent research using a stock investment paradigm suggests that promotion motivation does not lead to increased risk-taking in the domain of losses (Scholer et al., 2010). Further evidence suggests that promotion-focused individuals do not always display risk-taking even in the domain of gains (Zou et al., 2014). A particularly interesting finding is that promotion-focused individuals preferred the risky option only to the extent that they could make progress from the risky investment. Once progress had been clearly achieved (i.e., successfully attained a “+1” gain), promotion-focused individuals preferred a risk-averse option as a way to sustain eagerness and hold onto recently achieved progress. In other words, for promotion motivation, risk-taking is dictated by how well risky behaviors lead to and sustain progress.

What counts as clear progress for engaging in the DOSPERT behaviors? Here, we argue that it is important to consider the ratio between perceived gains and perceived losses. As mentioned above, risky

behaviors inherently involve the potential for loss. Even though the promotion system is not primarily sensitive to losses, perceived losses may still play an important role in shaping how perceived gains are interpreted. If perceived losses exceed perceived gains (regardless of the absolute level of perceived gains), taking risks does not offer the potential for true progress. Only when perceived gains are larger than perceived losses does risk-taking afford real gains. That is, the gain/loss ratio captures the potential for progress in a given domain (i.e., progress can be experienced to the extent that gains exceed losses) and domains likely differ in this ratio. Thus, we hypothesize that promotion motivation will have a positive association with risk-taking only in domains where the gain/loss ratio is larger than one; the gain/loss ratio will moderate the effect of promotion motivation on cross-domain risk-taking.

*Hypothesis 2a: Promotion motivation will show significant variability in predicting risk-taking across domains.*

*Hypothesis 2b: Promotion motivation will be associated with risk-taking only in domains where the gain-loss ratio is larger than 1.*

We further argue that *within* the domains in which the gain-loss ratio is bigger than 1, perceived gains alone will be the driving force that explains increased risk-taking. In this regard, prior research in the investment domain has shown that promotion motivation's risk-taking propensity in the domain of financial gains is triggered uniquely by variations in perceived gains, not losses (Zou et al., 2014). Further evidence has shown that promotion-focused individuals would rather have experiences that contain extremely positive components, even at the expense of including some negative components, than experiences that are moderate or average on all dimensions (Zhang & Mittal, 2007). Thus, in domains in which perceived gains are larger than perceived losses, promotion-focused individuals will become sensitive to the amount of perceived gains, irrespective of losses; perceived gains will mediate the effect of promotion motivation on risk-taking within these domains.

*Hypothesis 3: Within the domains in which the gain-loss ratio is larger than 1, the association between promotion motivation and risk-taking will be driven through perceived gains.*

### **Overview of Studies**

In Study 1, we first focused on cross-domain analyses, establishing the link between regulatory focus and risk-taking across domains (Hypotheses 1 and 2a). In Study 2, we conducted not only cross-domain but also within-domain analyses, directly tested Hypotheses 1-3. In Study 3, we narrowed our investigation by focusing on within-domain analysis (Hypothesis 3). We manipulated both regulatory focus and goal

affordance to examine the causal effect of perceived gains on promotion-focused risk-taking within the social domain. Together, the studies provide new insights into how individual differences (regulatory focus motivation) and situational factors (domain-specific affordances) explain stability and variability in risk-taking across decision domains.

### Study 1

Study 1 examined the relationship between chronic regulatory focus and domain-specific risk preferences on the DOSPERT scale (Blais, & Weber, 2006). We predicted that prevention motivation would be associated with reduced risk-taking across all domains (Hypothesis 1), whereas promotion motivation would show variability in predicting risk-taking across domains (Hypothesis 2a). For example, we expected a significant link between promotion motivation and risk taking in the investment domain, replicating the previous findings in this domain (Crowe & Higgins, 1997; Zou, et al., 2014). However, we did not expect an effect of promotion motivation in the health/safety domain, as it is not clear how risk-taking behaviors in this domain (e.g., failing to wear sunscreen) afford clear progress. Apart from predictions in these two domains, we did not have a strong priori hypothesis about what profile of domain-specific risk-taking would characterize promotion motivation. We conducted this study as an initial exploratory step to establish different profiles of risk-taking depending upon an individual's regulatory focus.

#### Participants and Design

We recruited 302 individuals (43.7% female;  $M_{age}=36.4[SD=12.1]$ ; 82.1% Caucasian, 7.6% Asian, 4.6% Black, 4.0% Hispanic, 1.7% other) to participate for \$1 via Amazon's Mechanical Turk online marketplace. We recruited only participants who self-reported as residents of the United States and spoke English as first language. Because over 80% of participants were Caucasian, we created an ethnicity variable and coded the non-Caucasian participants as 1 and the Caucasian participants as 0. Participants completed scales to assess their regulatory focus orientation and the likelihood that they would engage in 30 different risk-taking behaviors. At the end of the survey, participants provided demographic information.

**Regulatory focus.** The Regulatory Focus Questionnaire (RFQ; Higgins et al., 2001) is one of the most commonly used and well-validated measurements of regulatory focus motivation (Haws, Dholakia, & Bearden, 2010). This scale includes 11 questions, which includes six items on promotion focus (e.g. "How often have you accomplished things that got you 'psyched' to work even harder?",  $M=3.53$ ,  $SD=0.67$ ,  $\alpha=0.71$ ) and five items on prevention focus (e.g. "Not being careful has gotten me into trouble at times"



(reverse scored),  $M=3.32$ ,  $SD=0.87$ ,  $\alpha=.83$ ). The response scale for these questions ranges from 1 (*never or seldom*) to 5 (*very often*).

**Domain-specific risk-taking scale.** Risk attitude was assessed using the domain-specific risk-taking scale (DOSPERT; Blais & Weber, 2006). Participants rated the likelihood that they would participate in each of 30 different risky behaviors (e.g., “Investing 5% of your income in a very speculative stock”) (1=*extremely unlikely*, 6=*extremely likely*). Following the typical procedure for analysis of this scale, we created a summary score for each of the six behavioral domains: social ( $M=4.22$ ,  $SD=0.80$ ,  $\alpha=0.65$ ), recreational ( $M=2.4$ ,  $SD=1.10$ ,  $\alpha=0.83$ ), health/safety ( $M=2.45$ ,  $SD=0.96$ ,  $\alpha=0.71$ ), ethical ( $M=2.04$ ,  $SD=0.79$ ,  $\alpha=0.68$ ), gambling ( $M=1.75$ ,  $SD=1.15$ ,  $\alpha=0.76$ ), and investment ( $M=2.88$ ,  $SD=1.22$ ,  $\alpha=0.89$ ).

## Results

Overall, the means of the six domains included in the sample were comparable with results documented in other research (Hanoch et al., 2006; Nicholson et al., 2005; Weber et al., 2002). People take relatively more risks in the social domain, which was the only domain with an average score above the scale mid-point (3.5),  $t(301)=15.57$ ,  $p < .001$ . With the exception of the investment domain with an average risk-taking score near the mid-point, the average risk-taking propensities in the other four domains (gambling, ethical, recreational, and health/safety) fell below the scale mid-point,  $t_s > -8.87$ ,  $p_s < .001$ .

Consistent with previous findings, there was a significant effect of gender (Byrnes, Miller, & Schafer, 1999). With the exception of the social domain ( $t=.008$ ,  $p=.93$ ), female participants were significantly less likely to take risks relative to male participants across all other five domains ( $t_s > 14.82$ ,  $p_s < .001$ ). In addition, one decision domain yielded a significant ethnicity difference. Non-Caucasian participants were significantly less likely to take risk in the health/safety domain ( $t=8.21$ ,  $p < .004$ ). Correlational results also showed that older participants were less likely to take risk in recreational ( $r=-.23$ ,  $p < .001$ ), health/safety ( $r=-.22$ ,  $p < .001$ ), and ethical ( $r=-.16$ ,  $p < .007$ ) domains. In addition, female participants reported higher prevention motivation ( $r=.13$ ,  $p < .025$ ), but gender was not associated with promotion motivation ( $r=.08$ ,  $p=.16$ ).

To test our hypothesis, we used random-effects GLS models, treating responses to each risk-taking item as repeated measures within each participant. This model allows us to control for non-independent observations of responses to the 30 DOSEPERT items within a participant. Under the random-effects model (“xtreg” under Stata, with data clustered at the participant level), we tested the within-group and between-group relations within a single analysis. That is, the model accounts for the variability both within

individuals (across domains) and across individuals at the same time. In addition, we used effect coding to create five variables to capture the six decision-domains categories. We chose health/safety as the baseline as it was the category that was closest to the grand mean ( $M=2.69$ ,  $SD=.66$ ). Under this coding method, the resulting coefficient of each coded variable tests the change of risk-taking level in a given decision-domain compared to the grand mean of risk-taking in the sample.

First, we regressed risk-taking on the five decision domain variables (gamble, social, recreation, ethics, and investment), together with promotion and prevention motivation simultaneously, while controlling for participant age, gender, and ethnicity (Table 1, Model 1). Overall, people took significantly more risks in social ( $b=1.56$ ,  $se=.03$ ,  $z=52.23$ ,  $p<.001$ , 95% CI[1.50, 1.62]) and investment ( $b=.22$ ,  $se=.04$ ,  $z=5.66$ ,  $p<.001$ , 95% CI[.15, .30]) domains and significantly less risks in recreation ( $b=-.25$ ,  $se=.03$ ,  $z=-8.46$ ,  $p<.001$ , 95% CI[-.31, -.19]) and ethical domains ( $b=-.62$ ,  $se=.03$ ,  $z=-20.72$ ,  $p<.001$ , 95% CI[-.68, -.56]). Consistent with Hypothesis 1, prevention motivation showed a significant and negative main effect ( $b=-.24$ ,  $se=.04$ ,  $z=-5.89$ ,  $p<.001$ , 95% CI[-.31, -.16]). There was no significant main effect of promotion motivation ( $b=.07$ ,  $se=.05$ ,  $z=1.42$ ,  $p=.13$ , 95% CI[-.31, .16]).

Next, we repeated the same regression by adding the interaction terms between the decision domains and promotion and prevention motivation respectively (Table 1, Model 2). We standardized promotion and prevention motivation before calculating the interaction term. The main effect of prevention motivation remained significant ( $b=-.23$ ,  $se=.04$ ,  $z=-5.62$ ,  $p<.001$ , 95% CI[-.31, -.15]). And consistent with Hypothesis 2a, we observed three significant interaction effects between promotion motivation and decision domains: social ( $b=.20$ ,  $se=.03$ ,  $z=6.55$ ,  $p<.001$ , 95% CI[.14, .26]), investment ( $b=.19$ ,  $se=.04$ ,  $z=4.82$ ,  $p<.001$ , 95% CI[.11, .27]), and ethical ( $b=-.18$ ,  $se=.03$ ,  $z=-6.07$ ,  $p<.001$ , 95% CI[-.24, -.12]).

To further identify the predictive power across six domains, we conducted a simple regression analysis within each domain. We created a summary score of each participant's risk-taking propensity within each domain. Next, we regressed risk-taking on promotion and prevention motivation simultaneously within each of the six domains respectively, while controlling for age, gender, and ethnicity. Figure 1 summarizes the regression coefficients of promotion and prevention motivation. As predicted, prevention motivation significantly predicted lower risk-taking propensity in all six domains. Also as predicted, promotion motivation showed divergent effects across the six domains. Promotion motivation did not predict risk-taking in the recreational, gambling, and health/safety domains. However, promotion motivation predicted higher risk-taking propensity in the social ( $b=.34$ ,  $se=.07$ ,  $t=5.07$ ,  $p<.001$ , 95% CI

[.21, .47]) and investment domains ( $b=.37, se=.10, t=3.56, p < .001, 95\% CI[.17, .57]$ ). Interestingly, promotion motivation predicted less risk-taking propensity in the ethical domain ( $b = -.20, se=.06, t = -3.13, p < .002, 95\% CI[-.32, -.07]$ ).

## Discussion

This first study provided preliminary evidence that motivational antecedents predict both consistency and variability in risk attitudes across domains. These effects were obtained while controlling for demographic variables (e.g., age and gender), which have been associated with risk preferences in prior work (Bromiley & Curley, 1992; Jianakopulos & Bernasek, 1998, 2006). Consistent with Hypothesis 1, prevention motivation predicted risk-averse attitudes across all domains. Also consistent with Hypothesis 2a, promotion motivation was differentially associated with risk attitudes in different domains. It is interesting that promotion motivation was related to risk-seeking in just two domains: social and investment. The lack of relationship between promotion motivation and risk-taking in the gambling, health/safety, and recreational domains may reflect the perception that taking risks in these domains, on balance, is unlikely to be associated with clear gains. For example, whereas taking a social risk like “approaching your boss to ask for a raise” or “moving to a city far away from your extended family” could potentially lead to significant personal gains, it is less clear how a health risk like “regularly eating high cholesterol foods” would be as closely associated with perceived gains. Similarly, whereas investment is seen as a generally accepted way in which to gamble one’s money, gambling per se (e.g., “betting a day’s income at the horse races”) is often associated with poor self-regulatory skills (Baumeister, Heatherton, & Tice, 1994). In sum, we suspect that promotion-focused individuals may only perceive the potential for clear gains in social and investment domains, but not other domains, a notion we directly tested in Study 2.

## Study 2

Drawing on the findings from Study 1, Study 2 included three additional assessments of each domain to examine what may drive the different risk-taking profiles of promotion versus prevention motivation across domains. We included the two predictors specified in earlier risk-return model (perceived gains and perceived risks) and also directly measured perceived losses; this study therefore allowed us to examine Hypotheses 1-3.

Although the research with the DOSERPT scale (Blais & Weber, 2006) used the term “benefits,” we used the term “gains” as it is more consistent with earlier regulatory focus research and provides a better conceptual match to our promotion-focused predictions. It is important to note, however, that we see

perceived benefits and perceived gains as psychologically equivalent. To verify this assumption, we conducted a pilot study in which we measured only perceived benefits and perceived gains in random order.<sup>2</sup> Consistent with our intuition that benefit and gain are semantically equivalent, these two measurements were highly correlated across all domains ( $p_s < .001$ , social:  $r[100]=.84$ , recreational:  $r[100]=.92$ , health/safety:  $r[100]=.96$ , ethical:  $r[100]=.78$ , investment:  $r[100]=.70$ , and gambling:  $r[100]=.64$ ). Further, the average within individual correlation between the two scales was 0.83 ( $SD=.20$ ). Thus, we felt confident that using the term “gains” allowed us to speak both to prior DOSPERT (Weber, et al., 2002) and regulatory focus (Higgins, 1997) research.

In contrast, we felt it was important to distinguish between perceived risk and perceived losses. As discussed in the introduction, prior research suggests that perceived risk encompasses not only perceived losses, but also feelings of uncertainty and lack of control (Slovic, 1987; Slovic, et al., 1980). In other words, perceived risk is not reducible solely to perceived losses. Prior work in the investment domain (Scholer et al. 2010; Zou et al., 2014) has also shown that perceived risk does not differ as a function of regulatory focus motivation, even though risky behaviors do. Thus, it was important to measure perceived losses directly as our best analogue of perceived gains. Further, by measuring both perceived risk and perceived losses we could directly evaluate the relationship between the two and replicate prior work that has only assessed perceived risk.

We predicted that across all domains, the risky behaviors would be perceived to involve significant loss; in all domains, therefore, as in Study 1, we expected prevention motivation to be negatively related to risk-taking (Hypothesis 1). In contrast, we predicted that the gain-loss ratio would differ across domains, allowing us to examine variability in promotion-focused risk-taking (Hypotheses 2-3). Given the pattern of results of Study 1, we speculated that the domains in which the gain-loss ratio would be greater than 1 would be the social and investment domains.

### **Participants and Design**

We recruited 235 individuals (55.7% female;  $M_{age}=33.55[SD=10.84]$ ; 81.7% Caucasian, 5.1% Asian, 7.7% Black, 3.8% Hispanic, 1.7% other) to participate for \$1 via Amazon’s Mechanical Turk online marketplace. We recruited participants who self-reported as residents of the United States and spoke English

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<sup>2</sup> We recruited 100 individuals (45.5% female; average age = 35.67 [ $SD = 12.7$ ]; 91.2% Caucasian, 3.0% Asian, 2.0% Black, 2.0% Hispanic, 1.0% other; residents of the United States; English as first language) to participate for \$0.5 via Amazon’s Mechanical Turk online marketplace.

as first language. As in Study 1, given that over 80% of the sample was Caucasian, we created a dummy variable for ethnicity (Caucasian=0, non-Caucasian=1).

The procedure in Study 2 was similar to that used in Study 1<sup>3</sup>. In this study, participants were asked to answer four distinct questions about each DOSPERT scale item. For each behavior, participants were asked to rate perceived risk, perceived gains, and perceived losses. The perceived risk question was taken directly from Blair and Weber (2006). Participants also reported perceived potential gains (i.e., “*How much potential gains you would experience*”) and losses (i.e., “*How much potential losses you would experience*”) for each behavior on a 5-point Likert scale (0 = *not much at all*, 4 = *very much*). Then participants reported their likelihood of engaging in each risky behavior (as in Study 1). Table 2 summarizes the descriptive statistics of the key variables.

## Results

### Predicting Risk-taking

We first sought to replicate the findings from Study 1<sup>4</sup>. We followed the same procedure and regressed risk-taking on the five decision domain variables (gamble, social, recreation, ethics, and investment), together with promotion and prevention motivation simultaneously, while controlling for participant age, gender, and ethnicity (Table 1, Model 3). Consistent with Study 1, people on average took significantly more risks in social ( $b=1.50, se=.04, z=42.99, p < .001, 95\% CI[1.44, 1.57]$ ) and investment ( $b=.28, se=.05, z=6.06, p < .001, 95\% CI[.19, .37]$ ) domains, but significantly less risks in the ethical domain ( $b = -.85, se=.04, z = -24.22, p < .001, 95\% CI[-.92, -.78]$ ). In contrast to Study 1, people did not take significantly less risk in the recreation domain, but did take significantly less risk in the gambling domain ( $b = -.94, se=.05, z = -20.28, p < .001, 95\% CI[-1.03, -.85]$ ). Consistent with Study 1 and Hypothesis 1, prevention motivation showed a significant and negative main effect ( $b = -.26, se=.05, z = -5.19, p < .001, 95\% CI[-.37, -.17]$ ).

We then examined the interaction terms between the decision domains and promotion and prevention motivation respectively (Table 1, Model 4). Again, the main effect of prevention motivation remained significant ( $b = -.25, se=.05, z = -4.81, p < .001, 95\% CI[-.35, -.15]$ ). Also consistent with Study 1, we

<sup>3</sup> Before participants filled in the DOSPERT, they were asked to fill in an 8-item short form of the sensation seeking measurement on a 6-point Likert scale ( $M = 3.32, SD = 1.01, \alpha = 0.84$ ; Stephenson, Hoyle, Palmgreen, & Slater, 2003). The sensation-seeking scale showed a significantly negative association with prevention motivation ( $r = -.27, p < .001$ ), but was unrelated to promotion motivation ( $r = .02, p = .72$ ). Adding sensation seeking as a control variable, we observed the same pattern of results and prevention motivation remained a significant negative predictor of risk taking across domains.

<sup>4</sup> Given the purpose of this analysis is to replicate the finding in Study 1, we did not include perceived risk in the analysis. Additional analysis with perceived risk as a control variable showed the same pattern of results.

observed three significant interaction effects between promotion motivation and decision domains: social ( $b=.11, se=.04, z=2.91, p < .004, 95\% \text{ CI} [.04, .18]$ ), investment ( $b=.23, se=.05, z=4.72, p < .001, 95\% \text{ CI} [.14, .33]$ ), and ethical ( $b = -.22, se=.04, z = -3.41, p < .001, 95\% \text{ CI} [-.19, -.05]$ ).

Next, we conducted within-domain analyses by simultaneously regressing risk-taking on promotion motivation and prevention motivation, controlling for age, gender, and ethnicity. Figure 2 summarizes the coefficients of promotion and prevention motivation across domains. Consistent with Study 1, promotion focus predicted risk-taking in the social ( $b=.17, se=.07, t=2.29, p < .023, 95\% \text{ CI} [.02, .35]$ ) and investment ( $b=.27, se=.11, t=2.28, p < .023, 95\% \text{ CI} [.06, .55]$ ) domains, but risk aversion in the ethical domain ( $b = -.31, se=.06, t = -5.31, p < .001, 95\% \text{ CI} [-.49, -.22]$ ). Also consistent with Study 1, promotion focus did not show any predictive power in the gambling, health/safety, or recreational domains.

### Perceived Risk, Losses, and Gains

We first sought to clarify the relationship among perceived risk, gains and losses. Table 2 summarizes the descriptive statistics. Notably, perceived losses were significantly higher than the scale mid-point (2) in five domains ( $t_s > 12.36, p < .001$ ). For the social domain, perceived losses were just slightly below the scale mid-point ( $M=1.89, SD=.66$ ), but clearly passed a minimum threshold (point 1 on the scale,  $t=43.89, p < .001$ ). This provides direct evidence that the risky behaviors under all DOSPERT domains were perceived to involve significant potential for loss.

Table 3 summarizes the correlation among these three variables, as well as risk-taking, across domains. As we suggested above, perceived risk is a function of both perceived gains and perceived losses, but is unrelated to promotion and prevention motivation. To verify this assumption, we regressed perceived risk on perceived gains, perceived losses, promotion and prevention motivation, controlling for age, gender, ethnicity, and decision domains (Table 1, Model 5). Indeed, perceived risk had a significant negative association with perceived gains ( $b = -.09, se=.01, z = -6.83, p < .001, 95\% \text{ CI} [-.11, -.06]$ ) and a significant positive association with perceived losses ( $b=.68, se=.01, z=51.85, p < .001, 95\% \text{ CI} [.65, .70]$ ). And replicating earlier work (Scholer et al., 2010), neither promotion or prevention motivation was associated with perceived risk.

Given that perceived risks and perceived losses were highly associated, we conducted a further analysis to test the independent effects of perceived risks and perceived losses. We regressed risk-taking on perceived risk and perceived losses simultaneously, controlling for perceived gains, promotion and prevention motivation, and the other control variables (Table 1, Model 6). Both perceived risk ( $b = -.37,$

$se=.01$ ,  $t = -29.78$ ,  $p < .001$ , 95% CI[-.39, -.34]) and perceived losses ( $b = -.17$ ,  $se=.02$ ,  $t = -10.44$ ,  $p < .001$ , 95% CI[-.20, -.13]) showed significant negative association with risk-taking. In the subsequent analyses, perceived risk was treated as a control variable. Additional analyses without this control yield the same pattern of results, if not stronger.

### **Gain-Loss Ratio Effect**

To test Hypothesis 2b, we first created a ratio of perceived gains and perceived losses for each DOSPERT item. Because we argue that the psychological nature of the risky behavior is qualitatively different when the ratio is bigger than 1, we created a dummy variable (GL-ratio) to capture this difference (1 if the perceived gains/perceived losses  $> 1$ , 0 otherwise). We then regressed risk-taking on GL-ratio controlling for perceived risk, decision domains and individual difference variables (Table 1, Model 7). GL-ratio had a significant positive association with risk-taking,  $b=.56$ ,  $se=.04$ ,  $z=13.55$ ,  $p < .001$ , 95% CI[.48, .64].

Next, we repeated the same regression analysis by adding the interaction term between GL-ratio and promotion and prevention motivation (Table 1, Model 8). Consistent with Hypothesis 2b, the GL-ratio  $\times$  promotion motivation interaction term was significant,  $b=.15$ ,  $se=.04$ ,  $z=3.77$ ,  $p < .001$ , 95% CI[.07, .23]. To unpack the pattern of interaction effect, we ran two separate regressions by regressing risk-taking on promotion motivation, controlling for prevention motivation and other control variables. When GL-ratio was larger than 1, promotion motivation showed a significant positive association with risk-taking ( $b=.18$ ,  $se=.08$ ,  $z=2.12$ ,  $p < .034$ , 95% CI[.01, .35]). When GL-ratio was smaller than or equal to 1, promotion motivation was unrelated with risk-taking ( $b = -.001$ ,  $se=.06$ ,  $z = -0.02$ ,  $p = .99$ , 95% CI[-.12, .12]). In both conditions, prevention motivation showed a significant negative association with risk-taking.

### **Perceived Gain Effect**

Next, we tested hypothesis 3 that perceived gains uniquely drive the link between promotion motivation and risk-taking within domains with a GL-ratio bigger than 1 (i.e. rating on the risk-taking item is bigger than 1). Specifically, perceived gains could play two important roles when GL-ratio is bigger than 1: 1) promotion-focused people may see more gains in engaging in a risk-taking behavior; and 2) among high promotion-focused people, the effect of perceived gains on risk-taking is stronger. Figure 3 summarizes this moderated mediation pathway.

We focused our analysis on the DOSPERT behaviors that were perceived to have a GL-ratio larger than 1. We first regressed perceived gains on promotion motivation, controlling for prevention motivation,

perceived losses, perceived risk, and other individual difference variables (Table 4, Model 1). As predicted, promotion motivation showed a significant and positive association with perceived gains,  $b=.19$ ,  $se=.05$ ,  $z=3.80$ ,  $p < .001$ , 95% CI[.09, .29]. Next, we regressed risk-taking on promotion motivation, perceived gains, and their interaction term, controlling for perceived losses, perceived losses  $\times$  promotion motivation, perceived gains  $\times$  prevention motivation, perceived losses  $\times$  prevention motivation and other control variables (Table 4, Model 2). As predicted, the promotion motivation  $\times$  perceived gains interaction term had a significant positive association with risk-taking,  $b=.16$ ,  $se=.08$ ,  $z=1.98$ ,  $p < .048$ , 95% CI[.002, .32].

To specify the pattern of moderated mediation, we conducted a multi-level Structural Equation Model (SEM) analysis by following the PROCESS Model 74 under Stata (Hayes, 2013; 500 resamples) to compute bootstrap standard errors and 95% confidence intervals for the indirect effect (denoted as  $ab$ ) of promotion motivation on risk-taking via perceived gains. Under the multi-level SEM analysis (“GSEM” commend under Stata), we treated GL-ratio at the item level and estimated the within individual (across items) and between individual differences in a single analysis. In addition, as some work has suggested that the percentile confidence interval (CI) outperforms BC accelerated CI (Biesanz, Falk, & Savalei, 2010), we report the percentile CI below. Controlling for the promotion motivation  $\times$  perceived gains interaction term, the direct effect of promotion motivation was no longer significant ( $p = .16$ ). More importantly, among high promotion-focused people (+1 SD above mean), the bootstrap coefficient for the indirect effect of promotion motivation on risk-taking via perceived gain was significant ( $ab=0.09$ ,  $se=.04$ , Percentile 95% CI[.0192, .1805]). Among low promotion-focused people (–1 SD below mean), the indirect effect of promotion motivation on risk-taking via perceived gain was non-significant ( $ab=0.05$ ,  $se=.04$ , Percentile 95% CI[–.0212, .1367]).

## Discussion

Study 2 replicates and extends the findings from Study 1: Whereas prevention motivation was negatively related with risk-taking in all domains, promotion motivation was positively related to risk-taking only in domains where the gain-loss ratio was larger than 1. Across domains, prevention motivation was unrelated to both perceived gains and losses. In other words, the findings offered no evidence that the risk-averse preferences of prevention-focused individuals were driven linearly by these factors. Indeed, the risky behaviors across domains were perceived to expose individuals to significant loss. Thus, consistent with earlier work (Crowe & Higgins, 1997; Scholer et al., 2010; Zou et al., 2014), prevention-focused individuals



do not appear to take risks when doing so exposes them unnecessarily to loss. Within each domain, prevention motivation was negatively associated with risk-taking, independent of perceived losses.

Also consistent with Hypothesis 2a, promotion motivation showed clear variability in its association with risk-taking preference across domains. And consistent with Hypothesis 2b, promotion motivation was only associated with risk-taking behavior when the ratio between perceived gains and perceived losses was larger than 1, as these domains stand out by offering true potential for clear gains. Further, supporting Hypothesis 3, within the domains where the gain/loss ratio was bigger than 1, the link between promotion motivation and risk-taking behavior was solely driven through perceived gains (i.e., perceived losses were no longer relevant to promotion motivation).

### Study 3

Study 2 provided evidence that promotion motivation uniquely predicts risk-taking in the domains that afforded clear gains, whereas prevention motivation does not respond to differences in gain-loss perceptions across domains. In Study 3, we sought to further test this difference by directly manipulating whether risk-taking behaviors can afford clear gains for promotion and prevention goals. That is, we directly manipulated the second stage of the moderated mediation model presented above (Figure 3) and examined whether this manipulation would lead to a change in risk-taking (Spencer, Zanna, & Fong, 2005). We chose to focus on the social domain, as it revealed divergent risk preferences for promotion- and prevention-focused individuals in Studies 1 and 2.

One advantage of the regulatory focus framework is that, although individuals differ in the chronic strength of these systems, regulatory orientations can also be situationally manipulated (e.g., Friedman & Förster, 2001; Higgins et al., 1994). Thus, we can manipulate promotion and prevention concerns to more directly test the ways in which risk-taking in the social domain affords promotion-focused, but not prevention-focused, goal pursuit. Specifically, we manipulated whether social goals were framed in terms of promotion goals (opportunity and growth) versus prevention goals (duties and responsibilities) and also manipulated whether individuals reflected on how social relationships facilitated or obstructed gains for these goals.

There are different ways to characterize what it means to take social risk; our approach to these manipulations was guided by the nature of the social domain DOSPERT items. These items highlight the extent to which one is willing to risk the stability of one's *existing* relationships: asking a boss for a raise, moving away from extended family, or speaking your mind about an unpopular issue. In other words, taking

social risk in this context means a willingness to give up or potentially jeopardize existing social ties. We hypothesized that individuals in a promotion focus would be more willing to risk existing social ties to the extent that doing so increased the likelihood of personal advancement and gains. Specifically, we predicted that when participants reflected on the ways in which social relationships obstructed their promotion goals, they would be even more likely to let go of existing social ties and take social risks. In other words, there is more value to taking social risks (e.g., moving away from extended family) if those social relationships are perceived to be stifling progress. By contrast, we predicted that when participants reflected on the ways in which social relationships facilitated their promotion goals, they would be more hesitant to take social risks. There are no added gains and thus no reason to risk losing social relationships if those relationships are supporting promotion goals.

In contrast, we expected participants in the prevention conditions to be less affected by the goal manipulation. Studies 1 and 2 have shown that prevention-focused individuals tend to be risk-averse in the social domain, arguably because of the potential for loss that accompanies any of the DOSPERT behaviors. Although framing risking social relationships as a facilitating factor for meeting duties and obligations might be predicted to increase risk-taking among those in a prevention focus, we thought it unlikely that this would overcome the loss liability represented by each of the behaviors in the social domain, especially given that there is no indication to participants that their current state is unsatisfactory (Scholer et al., 2010). However, including the prevention conditions allows us to test this assumption and also provides a valuable contrast for assessing our promotion predictions by allowing us to test not only the contrast within the promotion condition (goal facilitation versus obstruction) but also the contrast between promotion and prevention within the goal obstruction condition.

### **Participants and Design**

We recruited 329 individuals (43% female;  $M_{age}=28.66[SD=10.29]$ ; 77.9% Caucasians, 8.2% Asian Americans, 6.4% African Americans, 0.9% Hispanic Americans, and 6.6% other) via Amazon's Mechanical Turk online marketplace to participate for \$1. We recruited participants who self-reported as residents of the United States and spoke English as first language. Following the same procedures as in Studies 1 and 2, we created a dummy variable for ethnicity (Caucasian=0, non-Caucasian=1).

### **Procedure and Materials**

Participants were asked to take part in two different tasks—an essay-writing task and a survey task. Then, they were assigned randomly to one of four essay-writing task conditions that served as the

manipulation of regulatory focus and motivational affordance. Regulatory focus was manipulated by asking participants to focus on their current aspirations, ideals, and hopes (promotion goals) or on their current obligations, duties, and responsibilities (prevention goals) (see Freitas & Higgins, 2002; Higgins et al., 1994). Motivational affordance was manipulated by asking participants to write about how social relationships either facilitated or obstructed their focal goal pursuits: Whether relationships with others opened them up or made them miss “new opportunities and potential for personal growth”; or helped them meet or prevented them from meeting “responsibilities” and “obligations” (see Methodology File Study 3 for the complete essay prompts). A pilot test with an independent sample provided direct evidence that the motivational affordance manipulation significantly affected participants’ perceptions that their social relationships helped or hurt personal goals. Consistent with our assumption, participants in the promotion focus goal obstruction condition were most likely to report that relationships hold back their personal gains.<sup>5</sup>

After the essay task, participants were asked to fill in a slightly adjusted DOSPERT scale on the likelihood that they would engage in the risky behavior “right now.” Although the manipulation was designed to test only the effects on social risks, we presented all items in random order, as in Studies 1 and 2, to reduce the likelihood of creating demand characteristics and to reduce suspicions among participants. To control for the possibility that the goal affordance manipulation might directly affect participants’ moods (e.g., Leith & Baumeister, 1996), which could affect risk preference (e.g., Isen & Simmonds, 1978), participants were also asked to complete the PANAS questionnaire (Watson, Clark, & Tellegen, 1988), on a 5-point scale (1 = *not at all or very slightly*, 5 = *extremely*). Participants also provided their demographic background information.

## Results and Discussion

To check whether participants’ moods changed across conditions, we first conducted a 2 (regulatory focus: promotion vs. prevention) x 2 (motivational affordance: facilitate vs. obstruct) MANOVA on positive

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<sup>5</sup> To more clearly make the link between this study and Studies 1 and 2, we conducted a study with an independent sample via M-Turk (200 individuals for \$0.50, 49.1% female;  $M_{age}=36.65[SD=12.02]$ ; 72.9% Caucasians, 2.5% Asian Americans, 4.5% African Americans, 8.4% Hispanic Americans, and 11.7% other) to verify that our promotion focus manipulations of motivational affordance did indeed affect participants’ perceptions of the potential for gains in their social relationships. Participants were randomly assigned to one of the four essays prompts and then responded to three questions on a 6-point likert scale (1 = *strongly disagree*, 6 = *strongly agree*): 1) “Social relationships can sometimes hold me back from making gains on my personal goals; 2) “Social relationships have made me miss some opportunities to make progress on my personal goals” and 3) “My relationships never get in the way of my personal pursuits” (reverse coded). We averaged these three items to create an index of the extent to which social relationships were seen to obstruct personal gains ( $\alpha = 0.90$ ). A 2 (regulatory focus: promotion vs. prevention) x 2 (motivational affordance: facilitate vs. obstruct) analysis of variance (ANCOVA) controlling for gender, age, and ethnicity, revealed a significant interaction effect,  $F(1, 196)=7.62, p < .006, \eta_p^2=.04$ , as well as a significant main effect of regulatory focus,  $F(1, 196)=5.37, p < .022, \eta_p^2=.03$  and of motivational affordance,  $F(1,196) = 102.72, p < .001, \eta_p^2=.34$ . Overall, participants in the goal obstruction condition reported that relationships obstruct personal gains ( $M= 4.19, SD = 1.11$ ) more than those in the goal facilitation condition ( $M= 2.72, SD = 1.05$ ). Simple contrast analysis showed that motivational affordance manipulation was significant across the prevention conditions ( $F[1,196] = 28.89, p < .001, \eta_p^2=.13$ ) and promotion conditions ( $F[1, 196] = 78.54, p < .001, \eta_p^2=.29$ ). On average, participants in the promotion-focused condition reported that relationships obstruct personal gains ( $M = 3.53, SD = 1.35$ ) more than those in the prevention focused condition ( $M = 3.32, SD = 1.26$ ). Simple contrast analysis also revealed that participants in the promotion-focused goal obstruction condition were more likely to think that relationships obstructed personal gains than those in the prevention-focused goal obstruction condition,  $F(1, 196) = 12.18, p < .001, \eta_p^2=.06$ . That is, consistent with our assumption, the motivational affordance manipulation significantly affected participants’ perceptions of whether social relationships facilitated or hindered personal gains, particularly in the promotion-focused condition.

and negative moods, controlling for age, gender, and ethnicity. We found no main effects of the two manipulations on either positive or negative moods ( $F_s < 0.62$ ,  $p_s > .37$ ). Furthermore, no significant two-way interaction existed ( $F_s < 0.29$ ,  $p_s > .60$ ).

Consistent with our hypothesis, a 2 (regulatory focus: promotion vs. prevention) x 2 (motivational affordance: facilitate vs. obstruct) analysis of variance (ANCOVA) revealed a significant interaction effect on social risk-taking,  $F(1, 325)=4.08$ ,  $p < .031$ ,  $\eta_p^2=.014$ , controlling for gender, age, and ethnicity. Table 5 summarizes the means and standard errors of the four conditions.

A planned contrast revealed a significant effect of the affordance manipulation in the promotion motivation conditions,  $F(1,325)=7.03$ ,  $p < .008$ ,  $d=0.47$ . Participants were more likely to risk social relationships when relationships obstructed, rather than facilitated, promotion-focused goal pursuits. In contrast, no significant difference existed in risk-taking when motivational affordance differed in the prevention motivation conditions,  $p = .69$ . In addition, when social relationships obstructed goal pursuits, participants were more likely to take social risk for promotion versus prevention goals,  $F(1,325)=5.89$ ,  $p < .016$ ,  $d=0.32$ . That is, participants took significantly more social risks when these risks allowed them to pursue their personal ideals (promotion goals) but not social obligations (prevention goals).

We also conducted a 2 x 2 MANOVA to predict risk preferences in the other five decision domains. As expected, we did not observe any significant interactions or main effects.

In sum, Study 3 provided additional evidence that taking social risk is a consequence of promotion-motivated goal pursuit. People are more prone to take social risks when such risk-taking behaviors allow them to make gains in the context of promotion-focused goals (Hypothesis 3).

### **General Discussion**

The present research advances a motivational affordance approach to understand both the stability and variability of risk preference across major decision domains. Studies 1 and 2 demonstrate consistent predictive power of promotion and prevention motivations in risk-taking across six decision domains. Prevention motivation was negatively associated with risk-taking across all domains. By contrast, promotion motivation was associated positively with risk-taking only in domains where the gain-loss ratio was larger than one (i.e., domains in which there was the potential for true progress). In Study 2, we also conducted detailed within-domain analyses. Within a domain in which the level of perceived gains was higher than perceived losses, perceived gains mediated the link between promotion focus and risk-taking. Last but not least, Study 3 provided direct, causal evidence that perceived gains only matter to the promotion, but not

prevention system. Examining risk-taking in social domains, Study 3 showed that people are only willing to take risks when the risk leads to promotion-focused gains (i.e., personal ideals and growth) but not prevention-focused gains (i.e., obligations and security).

This motivational approach contributes to research on risk preferences and regulatory focus theory in three meaningful ways. First, we provide direct evidence that individual differences in prevention and promotion motivations can explain not only stability but also variability in risk-taking across decision domains. Our findings demonstrate the stability of prevention motivation in predicting risk aversion in all domains. Perhaps the more interesting finding is for promotion motivation. The current work identifies the gain-loss ratio as a critical factor to explain why promotion-focused people display distinct risk-taking propensity across decision domains. In the social and investment domains, where the gain-loss ratio is larger than one, promotion motivation was positively associated with risk-taking. However, in the ethical domain, where the gain-loss ratio is smaller than one, promotion motivation was negatively associated with risk taking.

This negative link in the ethical domain is especially interesting. Our findings suggested that high promotion-focused people are less likely to engage in unethical behaviors. However, some prior studies have shown the opposite pattern: Gino and Margolis (2011) showed that over-reporting, or cheating, which served as a measure of unethical behavior, was highest when the decision was framed in terms of aspirations and when participants were in a promotion-focused orientation. It is worth noting that the manipulations used by Gino and Margolis (2011) highlight unethical behaviors as means to achieve aspiration. These researchers also made gains obvious to participants (e.g., money for performance; projected accomplishment). However, in Studies 1 and 2, gains were less clear (or even nonexistent) to participants when being asked whether they would like to engage in risky unethical behaviors. We see the contrasting findings between the current and Gino and Margolis' (2011) studies as an indirect demonstration of our motivational affordance account. When potential gains are highlighted, as in the Gino & Margolis study (i.e., a gain-loss ratio larger than 1) or as in Study 3, promotion-focused individuals are then more likely to take risks. However, in many settings in which unethical behaviors can entail substantial potential losses, promotion-focused people will avoid taking those risks.

Second, the current paper also contributes critically to the research on regulatory focus theory. Although research on regulatory focus theory has long argued that the prevention system is more sensitive to loss (negative) stimuli and promotion system is more sensitive to gain (positive) stimuli, relatively little

research has directly explored the nature of such sensitivity in the context of decision-making. In the context of DOSPERT, our findings suggest that perceived losses and prevention motivation are not linearly related. As long as a minimum threshold of losses is met, prevention motivation is negatively associated with risk-taking. In future work, it will be important to investigate more fully the nature of this threshold and whether it is similar in magnitude across domains. On the other hand, perceived gains play two distinct functions in explaining both across-domain difference and between-individual difference within a domain. Across domains, promotion-focused people are sensitive to not simply perceived gains but the gain-loss ratio. That is, the gain-loss ratio (motivational affordance for true progress) explains what is about a decision domain that drives promotion-focused people to take more or less risks. However, within the domains where gain-loss ratio is bigger than 1, perceived gains alone mediate the link between promotion motivation and risk-taking.

Third, our findings have significant implications for the broader literature on risk management and intervention strategies. For example, past research has shown that many organizational relevant factors, such as leadership styles, organizational mission statements, or ethical codes, could affect the organizational culture or members' regulatory focus orientations (Brockner & Higgins, 2001; Gino & Margolis, 2011; Kark & Van Dijk, 2007). Our findings suggest that regulatory focus orientation, manifested as different forms of leadership styles and organizational policies, may affect risk preferences differently depending on the industry and task areas. For example, a promotion-focused organizational culture may lead to more risk-taking in the financial industry, but may not have implications in the recreation industry. Future studies should examine the implications of our findings in different organizations and industries across the six major decision domains.

### **Limitation and Future Directions**

As an initial step to integrate the motivation perspective with domain-specific risk preferences, further investigation will complement and extend the current studies. First, we examined risk-taking across domains using the same measurement in all three studies. Although the DOSPERT is perhaps the most well-established and widely used measure to capture risk-taking behaviors across different domains, future studies should examine a wider range of behavioral outcomes. Another direction for future study is to develop the notion of motivational affordance further by going beyond promotion and prevention systems and by integrating other frameworks on affordance. In this regard, a number of social, cultural, and ecological psychologists (e.g., Cantor, 1994; Gibson, 1977; Kitayama, Mesquita, & Karasawa, 2006) have

discussed affordance. Although they study very different phenomena, ranging from animal behavior to cultural differences of emotional experience, a common thread is the notion that individuals' subjective experiences and behaviors are fundamentally shaped by physical and social situations. The contribution of identifying a psychological mechanism is to specify the interfaces where situational features interact with individuals' psychological states. Different situations afford, demand, or discourage particular types of goal pursuits. In our case, we focused on motivational states, as either chronic or manipulated promotion or prevention motivation. Future studies should apply this general framework to examine risk-taking behaviors that can afford other emotional states or other human needs.

### **Coda**

In sum, this paper investigated how risk-taking in different decision domains affords either promotion or prevention motivation, which leads to distinct patterns of risk preference. Our findings provide strong evidence for the motivational affordance approach to understand risk preference and call for more research to examine the motivational mechanisms that underlie risk preference.

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Table 1. Coefficients with Z-scores in Parentheses of the Regression Analyses Testing Hypotheses 1 and 2

Model	Study 1				Study 2			
	1	2	3	4	5	6	7	8
	Risk-taking	Risk-taking	Risk-taking	Risk-taking	Perceived Risk	Risk-taking	Risk-taking	Risk-taking
Age	-0.01 (-2.90)**	-0.01 (-2.90)**	-0.01 (-1.91) <sup>+</sup>	-0.01 (-1.91) <sup>+</sup>	0.00 (0.16)	-0.00 (-0.16)	-0.01 (-1.80) <sup>+</sup>	-0.01 (-1.74) <sup>+</sup>
Female	-0.41 (-5.95)***	-0.41 (-5.95)***	-0.30 (-3.60)***	-0.30 (-3.60)***	0.21 (2.91)**	-0.08 (-1.16)	-0.09 (-1.21)	-0.09 (-1.20)
Non-Caucasian	-0.14 (-1.58)	-0.14 (-1.58)	0.08 (0.74)	0.08 (0.74)	0.27 (2.91)**	0.12 (1.32)	0.14 (1.45)	0.15 (1.55)
Social	1.56 (52.23)***	1.56 (52.62)***	1.50 (42.99)***	1.51 (43.37)***	-0.67 (-21.31)***	0.79 (23.81)***	0.85 (25.14)***	0.85 (25.15)***
Recreation	-0.25 (-8.46)***	-0.25 (-8.53)***	0.08 (2.22)*	0.08 (2.21)*	0.05 (1.58)	0.16 (5.17)***	0.09 (3.08)**	0.09 (3.07)**
Ethical	-0.62 (-20.72)***	-0.62 (-20.87)***	-0.85 (-24.22)***	-0.85 (-24.42)***	-0.03 (-1.16)	-0.67 (-21.83)***	-0.78 (-25.38)***	-0.78 (-25.30)***
Investment	0.22 (5.66)***	0.22 (5.70)***	0.28 (6.06)***	0.28 (6.19)***	0.09 (2.22)*	0.05 (1.19)	0.22 (5.40)***	0.21 (5.27)***
Gamble	0.01 (0.32)	0.01 (0.33)	-0.94 (-20.28)***	-0.94 (-20.47)***	0.58 (14.53)***	-0.73 (-17.31)***	-0.54 (-13.07)***	-0.54 (-13.07)***
Promotion Focus	0.07 (1.42)	0.08 (1.51)	-0.02 (-0.37)	-0.01 (-0.12)	0.03 (0.50)	0.01 (0.26)	0.02 (0.31)	-0.03 (-0.47)
Prevention Focus	-0.24 (-5.89)***	-0.23 (-5.62)***	-0.27 (-5.19)***	-0.25 (-4.81)***	-0.05 (-1.17)	-0.26 (-6.18)***	-0.27 (-6.14)***	-0.27 (-6.04)***
Promotion X		0.20		0.11				
Social		(6.55)***		(2.91)**				
Prevention X		0.04		0.04				
Social		(1.28)		(0.99)				
Promotion X		0.01		0.13				
Recreation		(0.37)		(3.61)***				
Prevention X		0.00		-0.12				
Recreation		(0.10)		(-3.41)***				
Promotion X		-0.18		-0.22				
Ethical		(-6.07)***		(-5.83)***				
Prevention X		0.03		0.07				
Ethical		(1.04)		(1.94) <sup>+</sup>				
Promotion X		0.19		0.23				
Investment		(4.82)***		(4.72)***				
Prevention X		0.08		0.17				
Investment		(2.09)*		(3.67)***				
Promotion X		0.06		-0.12				
Gambling		(2.06)*		(-2.53)*				
Prevention X		0.15		-0.03				
Gambling		(4.84)***		(-0.57)				
Perceived Gains					-0.09 (-6.83)***	0.24 (18.10)***		
Perceived Losses					0.68 (51.85)***	-0.17 (-10.44)***		
Perceived Risks						-0.37 (-29.77)***	-0.42 (-37.79)***	-0.42 (-37.68)***
G-L ratio							0.56 (13.55)***	0.56 (13.59)***
Promotion X								0.15
G-L ratio								(3.77)***
Prevention X								0.02
G-L ratio								(0.44)
Constant	3.69 (16.72)***	3.64 (16.37)***	4.14 (14.14)***	4.03 (13.65)***	1.89 (7.32)***	5.23 (20.81)***	5.50 (21.41)***	5.65 (21.68)***
R <sup>2</sup> within	0.27	0.28	0.27	0.28	0.42	0.46	0.44	0.44
R <sup>2</sup> between	0.26	0.26	0.18	0.18	0.36	0.41	0.35	0.35
R <sup>2</sup> overall	0.27	0.28	0.26	0.27	0.42	0.45	0.43	0.43
sigma_u	0.53	0.53	0.58	0.58	0.50	0.48	0.50	0.50
sigma_e	1.35	1.34	1.39	1.38	1.16	1.20	1.22	1.22
rho	0.13	0.14	0.15	0.15	0.16	0.14	1.44	0.15

+  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

Table 2

*Descriptive Statistics (Means with Standard Deviations) of the Key Variables in Study 2*

	Social	Recreational	Health/Safety	Ethical	Investment	Gambling
Risk-taking <sup>a</sup>	4.28(0.84)	2.86(1.23)	2.61(1.03)	1.93(0.74)	3.06(1.24)	1.84(1.26)
Perceived Risk <sup>b</sup>	2.98(0.89)	4.28(0.97)	4.62(0.89)	4.35(0.89)	4.23(1.06)	5.08(1.17)
Perceived Gains <sup>c</sup>	2.32(0.70)	1.53(0.92)	0.69(0.58)	1.39(0.67)	2.78(0.88)	2.59(1.20)
Perceived Losses <sup>c</sup>	1.89(0.66)	2.65(0.79)	3.12(0.66)	2.86(0.64)	2.68(0.84)	3.18(0.94)
Gain-Loss Ratio <sup>c</sup>	1.21(0.40)	0.75(0.40)	0.43(0.21)	0.65(0.26)	1.08(0.40)	0.90(0.36)

*a: The range of the risk-taking scale is from 1 to 6.*

*b: The range of the perceived risk scale is from 1 to 7.*

*c: The range of the perceived gains and perceived losses scales is from 0 to 4.*

Table 3

*Correlations among the Key Variables Across Domains in Study 2*

	Social	Recreational	Investment	Gamble	Ethical	Health /Safety
Risk-taking, Perceived Risk	-.307**	-.450**	-.437**	-.527**	-.438**	-.487**
Risk-taking, Perceived Gains	.346**	.517**	.143*	.087	.344**	.382**
Risk-taking, Perceived Losses	-.208**	-.392**	-.411**	-.407**	-.450**	-.426**
Perceived Gains, Losses	.128	-.298**	.274**	.252**	-.270**	-.354**
Perceived Risk, Gains	-.093	-.278**	.017	.121	-.154*	-.158*
Perceived Risk, Losses	.537**	.512**	.507**	.581**	.469**	.536**

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

Table 4

*Coefficients with Z-scores in Parentheses of the Regression Analyses within Domains with Gain-loss Ratio Larger than 1 (Study 2)*

Model	1	2
	Perceived Gains	Risk-taking
Age	-0.00 (-0.44)	0.00 (0.68)
Female	0.27 (4.34)***	0.11 (1.00)
Non-Caucasian	0.04 (0.48)	0.06 (0.44)
Promotion Focus	0.19 (3.80)***	-0.32 (-0.92)
Prevention Focus	-0.09 (-2.29)*	-0.62 (-2.47)*
Perceived Risks	-0.02 (-1.55)	-0.34 (-11.74)***
Perceived Losses	0.34 (13.09)***	0.27 (0.82)
Perceived Gains		-0.56 (-1.69) <sup>+</sup>
Prevention X Perceived Losses		0.01 (0.11)
Promotion X Perceived Losses		-0.08 (-0.99)
Prevention X Perceived Gains		0.09 (1.48)
Promotion X Perceived Gains		0.16 (1.98)*
Constant	2.97 (12.70)***	6.77 (4.99)***
R <sup>2</sup> within	0.12	0.11
R <sup>2</sup> between	0.20	0.19
R <sup>2</sup> overall	0.17	0.16
sigma_u	0.37	0.51
sigma_e	0.67	1.39
rho	0.23	0.12

<sup>+</sup>  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$



Table 5

*Risk-Taking Propensity as a Function of Regulatory Focus and Motivational Affordance (mean with standard deviation)*

	Facilitate Goal Pursuit	Obstruct Goal Pursuit
Prevention Motivation	4.14 (0.86)	4.19 (0.94)
Promotion Motivation	4.10 (0.83)	4.47 (0.79)

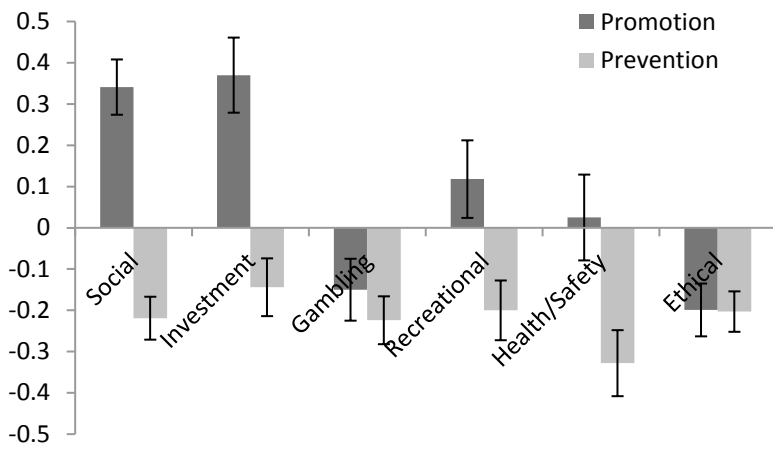


Figure 1. *Coefficients of promotion and prevention motivation in predicting risk-taking within each domain. Error bars represent standard error (Study 1, controlling for gender, age, and ethnicity)*

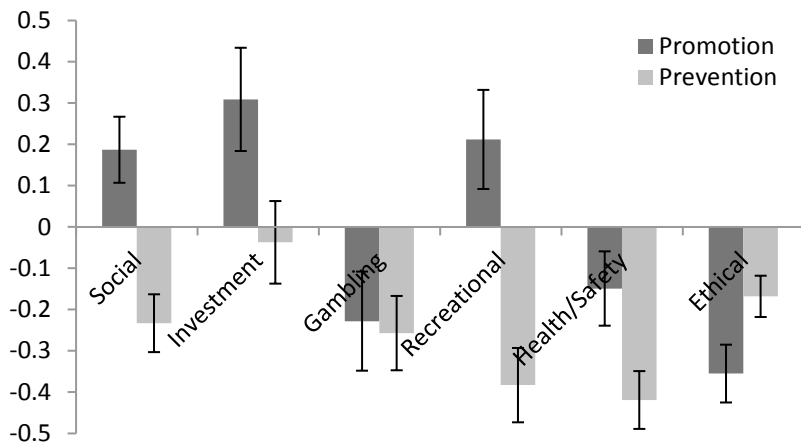
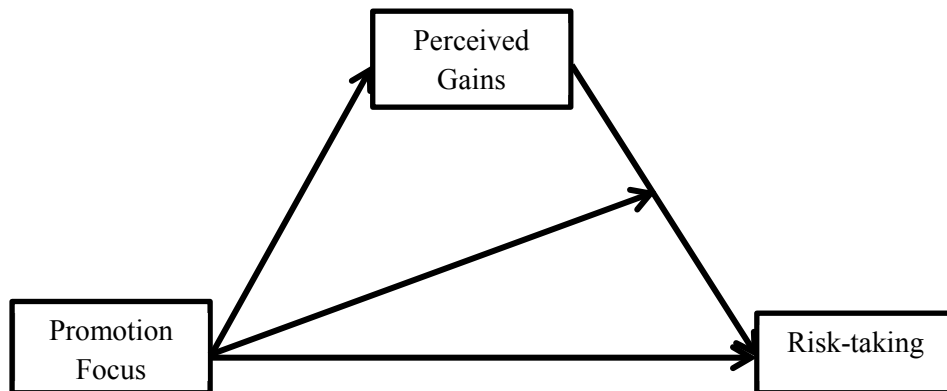


Figure 2. *Coefficients of promotion and prevention motivation in predicting risk-taking within domain. Error bars represent standard error (Study 2, controlling for gender, age, and ethnicity)*



*Figure 3.* Moderated mediation model of perceived gains in the domains where gain-loss ratio is larger than 1.