Statement of Research

My research is in the broad area of judgment and decision-making and comprises three main lines. First, I examine how stable individual differences influence risk-taking. Second, I use the framework of risk-sensitivity theory to examine how situational conditions of need influence decisions under risk. Third, I examine how individual differences and situational factors interact to produce inequality and relative deprivation, and how these conditions in turn influence decisions and decision outcomes in numerous domains. Here, I summarize my core research program.

INDIVIDUAL DIFFERENCES AND RISK-TAKING

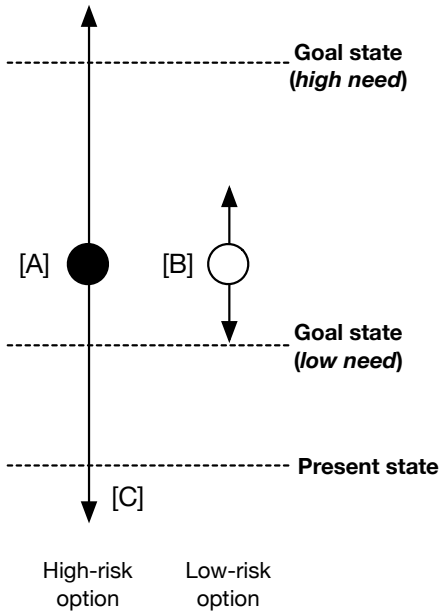
Numerous theoretical frameworks across multiple disciplines suggest that various forms of risk-taking (i.e., behaviors that involve exposure to outcome variance; Mishra, 2014) should co-occur among individuals (e.g., Gottfredson & Hirschi, 1990; Jessor, 1991; Mishra, 2014; Mishra, Barclay & Sparks, in press). My work examining stable individual differences in risk-taking has focused on examining this phenomenon of the "generality of risk". Across several studies, my collaborators and I have demonstrated that many forms of risk-taking—including future discounting, gambling and problem gambling, and antisocial conduct—share common variance that can be in large part explained by stable individual differences associated with poor impulse control (e.g., low self-control, high impulsivity), and sensation-seeking (Mishra & Lalumière, 2009; Mishra, Lalumière, & Williams, 2010; Mishra, Lalumière, Morgan, & Williams, 2011; Mishra & Lalumière, 2011; Mishra & Lalumière, in press; Mishra, Lalumière, & Williams, in press; Mishra & Carleton, under review).

The evidence that we (and others) have collected suggests that various forms of risk-taking and risk-propensity tend to co-occur among individuals. However, this evidence is limited in that it has almost exclusively focused on the co-occurrence of antisocial and impulsive forms of risk-taking. More recent theorizing and empirical evidence suggests that risk-taking is not entirely domain-general; rather, risk-taking may be better understood as the domain-specific product of estimated costs and benefits (reviewed in Mishra et al., in press). Furthermore, associations between individual differences and risk-taking behaviors are not particularly large, suggesting an important situational component. In the next section, I summarize my research examining how a key situational input (need) motivates risk-taking behavior; later, I describe a recently developed theoretical framework (the *relative state model*) that my colleagues and I have developed to reconcile seemingly different patterns of risk-taking (e.g., domain-specificity vs. domain-generality; differential engagement in antisocial and non-antisocial risk-taking).

RISK-SENSITIVITY

People are generally risk-averse, preferring low variance options to high variance options (reviewed in Mishra, 2014). Risk-sensitivity theory, however, predicts that decision-makers should shift from risk-aversion to risk-preference in situations of high *need*, where *need* describes disparity between an individual's present state and goal (or desired) state (Mishra, 2014; Mishra et al., in press; Mishra & Lalumière, 2010). Under such circumstances of disparity, risk-taking allows for obtaining outcomes that might otherwise be unattainable. For example, someone with a pressing $5,000 debt may prefer a gamble with a 10% chance of winning $5,000 over earning a certain $500. Although both options have the same expected value, only the riskier option allows for a chance to meet one's need. Risk-sensitivity theory is summarized in Figure 1.

Figure 1. *Risk-sensitivity theory. The black (white) circle represents the expected value of a high (low) risk option, and the arrows represent the outcome variance for each. When forced to choose between options of similar expected value but differing in risk (i.e., outcome variance), decision-makers should prefer high-risk [A] options in situations of high need (because it is the only option that offers a chance of meeting one's need) and prefer low-risk [B] options in situations of low need (to ensure the goal state is achieved and avoid unnecessary downside costs) [C]).*



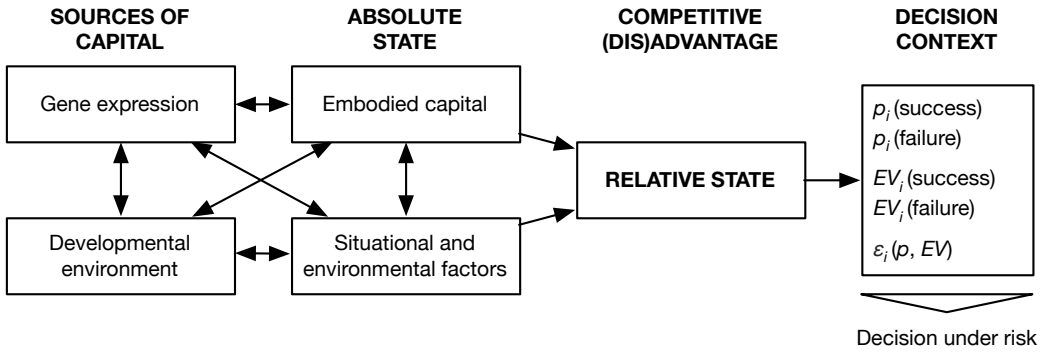
My colleagues and I have published several studies showing that both external and self-constructed need states predict people's risk-taking consistent with risk-sensitivity theory in a number of different domains and contexts (e.g., social, economic, finance/investment; ecological; team/group; Gonzales, Mishra, & Camp, in press; Mishra, Barclay, & Lalumière, 2014; Mishra, Lalumière, Williams, & Daly, 2012; Mishra & Fiddick, 2012; Mishra, Gregson, & Lalumière, 2012; Mishra & Lalumière, 2010; Mishra, Son Hing, & Lalumière, 2015; reviewed in Mishra, 2014; Mishra et al., in press). In these studies, people engaged in risk-taking when they were at distance from (or perceived they were at distance from) desired or imposed goals that could not be met with low-risk options.

Risk-sensitivity theory has important implications for understanding patterns of risk-taking outside the laboratory. My colleagues and I recently examined whether people from poor socioeconomic backgrounds who appear to be risk-persistent (e.g., problem gamblers, convicts, drug addicts) are risk-sensitive decision-makers (Mishra, Lalumière, Williams, & Daly, 2012). The typical assumption is that such individuals are "fixed" into a pattern of reckless and maladaptive risk-taking. However, risk-sensitivity theory suggests otherwise: Risk-taking may instead represent an adaptive and rational response to situational cues of disparity. What appears to be disposition-driven risk-persistent behavior may be in part a product of enduring situational evocation (i.e., persistent situations of need; Buss & Greiling, 1999). We found that risk-persistent people who were brought into a safe, neutral situation away from their typical environments of decision-making made decisions that did not differ from more privileged risk-averse populations (Mishra et al., 2012). That is, people who appeared to be risk-persistent made "rational" risk-sensitive decisions independent of their socioeconomic background. These results provide evidence that risk-taking is in part a flexible behavioral response sensitive to modifiable costs and benefits in the environment (reviewed in Mishra, 2014, Mishra et al., in press).

INTEGRATING INDIVIDUAL DIFFERENCES AND RISK-SENSITIVITY: THE RELATIVE STATE MODEL

In the above, I summarized two lines of research that suggest that (a) stable individual differences have an influence on motivating various risk-taking behaviors, and (b) people are situationally-sensitive risk-takers. We propose in a recent theoretical paper that these two superficially at-odds bodies of evidence may be reconciled by considering two (non-independent) pathways to risk: *need-based* and *ability-based*. The need-based pathway suggests that risk-taking is a product of competitive disadvantage consistent with risk-sensitivity theory. The ability-based pathway suggests people engage in risk-taking when they possess abilities or traits that increase the expected value of the risky behavior itself and/or have signaling value. Our proposed *relative state model* integrates both pathways, and accounts for how both situational and embodied factors influence the estimated costs and benefits of risk-taking in different contexts/domains. Very briefly, the model suggests people make risk-relevant decisions sensitive to (1) their *relative state*, which is a computation of competitive (dis)advantage derived from the interaction of embodied and situational factors, (2) the probability of success or failure of a given decision, and (3) the expected values of success and failure from a particular decision (Figure 2).

Figure 2. *The relative state model. For each choice i (from 1 to n, where n represents the number of choices in a context): (1) p_i(success) and p_i(failure) are estimated probabilities of success and failure, respectively; (2) EV_i(success) and EV_i(failure) are estimated expected values of success and failure, respectively; (3) ε_i is uncertainty regarding exact estimates of probabilities and expected values. Decision-makers should prefer, on average, choices within decision contexts that maximize estimated p(success) and/or minimize p(failure), as well as maximize EV(success) and minimize EV(failure) given their own relative state.*



INEQUALITY AND RELATIVE DEPRIVATION: APPLYING THE RELATIVE STATE MODEL

One salient and important social condition that influences relative state is inequality. Victims of inequality are at disadvantage relative to others and may consequently act to improve their standing. Risk-sensitivity theory predicts that conditions of inequality and/or competitive disadvantage should facilitate increased risk-taking. Victims of inequality may therefore set goal states that are determined by the relative privilege of others around them.

Consistent with these predictions, my colleagues and I have demonstrated that people engage in greater risk-taking after experiencing inequality manifesting either through disparity in income (i.e., pay inequality; Mishra et al., 2015), or perceptions of competitive disadvantage (i.e., inequality derived from unfavorable social comparisons with others; Mishra et al., 2014). Victims of economic inequality and those who perceived themselves to be competitively disadvantage relative to others engaged in significantly higher risk-taking. Furthermore, amelioration of the conditions that produced inequality

led to subsequent decreases in risk-taking in both studies (Mishra et al., 2014, 2015). These results again suggest that interventions targeted at addressing modifiable instigative factors can be successful in reducing risk-taking.

Inequality invites negative upward social comparisons, leading to feelings of *relative deprivation* (i.e., resentment, dissatisfaction, and anger associated with being deprived of deserved outcomes; Bernstein & Crosby, 1980). My colleagues and I have shown that downstream effects of inequality have negative consequences for behaviors in several domains, including physical and mental health and well-being. In a diverse community sample, we demonstrated that feelings of relative deprivation are linked with a wide array of important consequences, including risk-related outcomes (e.g., risky personality, antisocial behavior, delay discounting; Mishra & Novakowski, 2016), and key health outcomes (physical health, general mental health, depressive symptoms; gambling and problem gambling; Beshai, Mishra, Meadows, Parmar, & Huang, in press; Mishra & Carleton, 2015; Mishra, Lalumière, et al., 2012; Mishra & Novakowski, 2016). These results provide further evidence that inequality and its downstream affective consequences have serious impacts on risk-taking, health, and well-being.

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