Deterrence Stability Research Initiative

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Title of Proposal:

LOSS AVERSION AND THE ONSET OF CONFLICT: EXAMINING PERCEPTIONS OF REALITY AND DETERRENCE THROUGH COGNITIVE PSYCHOLOGY

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1.0 Abstract

Decision making during conflict escalation entails incredible risks, and our current methods of both formulation and execution of solutions is inherently flawed in that they do not factor contemporary advancements in understanding of cognitive psychology. Prospect theory offers a proven and effective alternative to our previous misconceptions of effective deterrence policy made under rational choice theory. However, this change in understanding has yet to be empirically proven. This proposal wishes to assuage hesitation to adoption of prospect theory in current U.S. deterrence models by demonstrating the saliency of cognitive biases and the dramatic effect they can have on decision making. Dramatic cognitive effects can lead to faulty assumptions in our perception of our standing in a conflict escalation scenario, and without recognizing these biases, we will be blind to our own callous decision making as the ramifications create drastic consequences. Here, we wish to examine both quantitative examples and qualitative trends in the prevalence of the cognitive bias loss aversion through an enduring rivalries lens.

2.0 Research Rationale

Policy Problem and Background

Decision making in the international environment is not a perfect science. There is no perfect set of guidelines for any leader to follow when faced with a deterrence situation, conflict escalation, or the prospect of all out war. Most importantly, decision making at the international level carries incredible risk. Misinterpreting the intentions of an adversary, and subsequent action, can have disastrous outcomes for both the states as well as the global order, economic networks, and all affected by the intertwined modern world. Put simply, risky decision making is a facet of contemporary international conflict negotiation, and the factors that contribute to this are not just those for which we account.

For example, the recent situation of Russian troop buildup on the border of Ukraine, and now the subsequent stand off between the Russian government against NATO, the E.U., and the U.S., gives us a look into the practical application of deterrence. Subsequently, it offers a view of the cognitive factors at play. If we perceive Russia to be in a gains frame by the logic that they had recently acquired Crimea, we may elect to bolster defenses of Ukraine and pursue a hardline stance, as Russia would be more risk averse if they believe themselves to already be ahead. However, suppose we misjudged this, and Russia is actually in a mega-losses frame that arches from the fall of the Soviet Union. Here, they would be more risk-seeking, and a hardline, aggressive approach by the NATO coalition would most likely be met with an even more aggressive response. Such conflict could spill over into Belarus and Poland, with sympathizers of both sides embedded within their countries, and with their own possible gains or loss frames from which to make aggressive or risk averse situations. If conflict escalates in Europe, does

China seize the opportunity and invade Taiwan, knowing of Western resources devoted elsewhere? If conflict erupts, do states such as the U.S., China, and Russia deploy tactical nukes and usher in a new era of warfare that would decimate the planet on a scale unseen in previous war?

Such is the gravity of decisions in deterrence, all starting within the mind of a singular NATO commander in Eastern Europe. Moreover, such is the gravity of perception, for perceiving correctly can be the difference between a sound military choice that preserves deterrence, and one that plunges the world into a nuclear winter where human metacognitive processes as these are rendered useless.

Explanation

In any given conflict scenario, there is an underlying reality which we can only assume to ascertain. Our perception of reality is unique to every individual, and though the reality itself is objective, we can only hope to bridge the gap between it and our perceptions through use of assumptions. Perception itself is not just a passive acceptance of stimuli, but an active process involving memory and other internal processes.[1] This opens the door to the myriad of factors at play in any conflict management decision, but more importantly it underpins the dichotomy that exists there: the present factors of which we are aware, and those that exist subconsciously. From the factors that are known, we already contend with misperception of value to our adversaries, as our perception of objective value can be entirely different from that of our opponent, punching holes in the rational deterrence theory that both sides simply make a cost-benefit analysis

[1] Gregory R. L. (1987) *Oxford Companion to the Mind* (see essay on 'Perception as hypotheses'), p. 608. Oxford

regarding each conflict scenario.[2] Both are also equally influenced by our individual pasts, leadership styles, cultural norms, and the differing cognitive processes that judge the decision making capacity of anyone with a brain.

Key among these is a cognitive bias with arc over all humans and their decision making processes: loss aversion. In general, people try to make decisions that will minimize or avoid losses, and the frame of reference serves as the catalyst for the choice. If in a loss frame, as in the third quadrant of Figure 1, one would be more keen to seek risk, as losses diminish in value and gains are more valuable. However, if in a gains frame, as in the first quadrant, one would be more risk averse: keen to keep what they have and not attempt to make risky decisions that would jeopardize their current gains. In general psychology, this holds salience, as scholars contend, "Both of these tendencies are sensible; surely it is a good idea to hold tight to gains and avoid sure losses. The problem, though, is what counts as a loss or gain depends on one's reference point. This is the key to framing effects."[3]

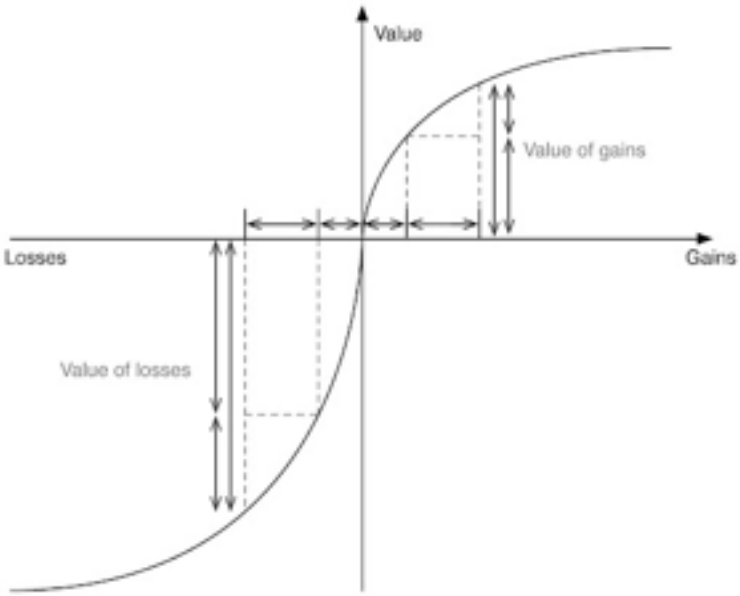

Figure 1: Loss Aversion Through the Prospect Theory Visualization

This framework, to be detailed more in the theory section, illustrates a point of contention between what our modern deterrence frameworks can be, and what they used to be. Original

[2] Jervis, Robert (1983) "Deterrence and Perception" *International Security*, Winter 1982/1983 (Vol. 7, No.3)

[3] Gleitman, Henry, Gross, James, and Reisberg, Daniel (2011) *Psychology*, 8th Ed. W.W. Norton & Company Inc.

deterrence thought echoed rational choice theory, namely through general cost-benefit analysis when faced with a crisis decision: use methods of deterrence to ensure that your adversary sees that the costs of action outweigh the costs of inaction. All too often, this has been flawed due to its inability to capture all the cognitive factors at play in a simple decision, with historical data to support its shortcomings.[4] Historical data aside, our modern understanding of human cognition also contends that rational choice theory is outdated. "As a result of advances in evolutionary psychology, we now know that how the brain interprets actions and makes decisions is complicated, imperfect, greatly dependent upon emotions, and varied among humans."[5]

It is the hope of this study that more light can be shone upon the variation in human cognitive processing, as well as the confounders within crisis decision making that are not accounted for in modern deterrence systems. By proving the salience of loss aversion, further cognitive biases and heuristics can explored in accordance with creation of an adaptable framework for future threat management. These frameworks cannot be introduced, or even implemented, however, without first a step towards understanding. To come to a conclusion, we must first ask the research question: in a loss frame, which states attack first? Empirically testing the theories around the buildup to first strike ties directly to the funding goal, and would serve future deterrence operations well in revolutionizing their conflict management systems.

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[4] Snyder, Jack L. (1976) "Rationality at the Brink: The Role of Cognitive Processes in Failures of Deterrence" *RAND Corporation*

[5] Thayer, Bradley A. (2007). "Thinking about Nuclear Deterrence Theory: Why Evolutionary Psychology Undermines Its Rational Actor Assumptions" *Comparative Strategy*. 26 (4), 311-323

Research Methods

3.0 Theoretical Approach

The theoretical model for this design is two-fold. The first, since the study concerns cognitive bias, it also carries through the science of cognitive psychology. The important differentiation that cognitive psychology offers is in its distinguishing nature from behaviorism, which drove contemporary understanding of psychology until the mid-20th century. Behaviorism, put simply, delegates human interaction into simple reflex response mechanisms. This aligns more closely with rational choice theory, and therefore does not adhere to our study. Behaviorism in conflict management is more binary, arguing that an individual will make certain decisions based on reflex responses to certain stimuli, in a very primitive understanding of how human thought perceives a situation and its outcome. Rather, *metacognition* allows us to view the intricacies of conflict management with the added factors of not just how humans think about their decisions before making them, instead of just making reflex decisions, but how we think about our thoughts. Regular decision making is flawed as is, but how we perceive the veracity of our decisions is just as complex, and often just as good of an example of misperception.[6]

In this sense, we defer from simple cost-benefit analysis, which can become algorithmic, and rather use prospect theory and rational choice theory in a metacognitive aspect to, "Involve continuously generating possibilities, weighing those options, exploring subsets of options, and evaluating the results," as education professor Michael E. Martinez puts in applying this to simple education.[7] Concluding, "Conscious processes and automated processes often

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[6] Glenberg, Arthur M. and Epstein, William (1985) "Calibration of Comprehension" *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 11 (4), pp. 702-18.

[7] Martinez, Michael E. (2006) "What is Metacognition?" *Phi Delta Kappan*

complement one another in complex cognition." Using cognitive psych for our theoretical background opens the door to better understand the wide range of biases that may then occur during decision-making now that we have concluded that conflict management is not simply reflex-response.

Second, and central to the methodology, is the notion of prospect theory. While cognitive psychology allows us to view decision making as a fluid process, prospect theory provides a frame of reference for our understanding of a decision at a particular point in time. As Levy defines in his landmark paper on the subject, "Prospect theory posits that individuals evaluate outcomes with respect to deviations from a reference point rather than with respect to net asset levels." From this, we are able usurp rational deterrence models by adding a cognitive element. Whereby individuals would make decisions rationally regardless of their position, prospect theory posits the notion of gains and losses frames, whereby decision making is heavily influenced by the reference point from which an individual is making a decision.[8]

This gains and losses framework, and how it makes individuals more risk-averse or risk-seeking, respectively, is key to understanding the subsequent research methodology of first strike likelihood. This is particularly true in exploring our main cognitive bias for the research: loss aversion. Through prospect theory, this implies, "That decision makers will act more aggressively to avoid a loss than to secure an equal gain, and will pursue loss aversion beyond a rational expectation of benefits."[9] Rather than simply making the most cost-beneficial decision, as rational deterrence theory suggests, individuals both perceive their own loss frame in a

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[8] Berejikian, Jeffrey D. (2002) "A Cognitive Theory of Deterrence" *Journal of Peace Research*. 39 (2)

[9] Berejikian, Ibid.

metacognitive sense, as well as the possible loss or gains frame of their adversary. As depicted in the example at the beginning of this proposal, an incorrect assumption as to the frame of an adversary can have disastrous consequences. For our research design, we want to ascertain how this literature has carried through in historical confrontations. By isolating the frames of previous scenarios, we can more adequately handle cases of misjudgment of framing in the future.

3.1 Research Design

Quantitative Study

The first part of this study, a statistical analysis will look at a handful of cases across history within the context of enduring rivalries. The selection of cases will follow late 20th century situations of tension escalation, between the USSR and US in the 1960s, China and India in the late 1980s, and the USSR and US again in the 1980s. The common theme is enduring rivalries and the influence of outside perceptions on the propensity towards conflict, such as factors of economic stability, cultural conflict within the target country, political repression, and stability of alliances, both regional and transnational. These will be derived largely from the enduring rivalries data from the New Rivalries dataset, as well as with information from other datasets to provide context for militarized interstate conflict as well as finding objectivity in determining loss frames.

- Independent Variable: the loss frame. This allows us to articulate what expected actions a state may take in accordance with prospect theory and general cognitive understanding of how human beings react, whether that be risk averse or risk seeking.
- Dependent Variable: will be split into two:

- instigating conflict or
- threatening militarily

These two variables can be juxtaposed to allow leniency in operationalizing aggression from loss frames, as actual military action cannot be codified the same as amassing troops at a border, while actual threat of military action gives us a middle option between the two, in respect to description of conflict management.

Controls: recency of conflict (or military exhaustion, which would deter further military action due to pre-established loss frames), and democracy (to illustrate democratic peace theory perceptions).

These cases will also include brief policy report explanations as to extemporaneous conflict, such as US involvement in Vietnam or Soviet involvement in Afghanistan, plus even smaller events such as 1969's Sino-Soviet conflict in which the status quo was upheld rather than conflict, and how they would factor into a grand-scale quantitative study, if it were applicable.

Qualitative Study

Second, the statistical analysis will be followed by a case study on US and Russia relations, to look more specifically into incidents where Russia committed military acts during a loss frame from 1935 to 2020. The in-depth analysis will be to pair our statistical study with the qualitative. If the hypothesis is found to be true in the quantitative portion, it would enforce an understanding that perceptions drive everything. If the hypothesis is found to be true in the qualitative portion, it could indicate that perceptions vary, particularly with respect to cultures, leaders' personalities, or numerous other aspects for future research that would be further explored should the two studies conflict. Even though varying backgrounds offer explanation for

varying decisions in light of loss aversion, the commonality of our cognitive capacities as humans could indicate similarities in perception previously unconsidered.

As said before, theories on perception motivate our research design here, and we expect to find that loss aversion does cause instigation of conflict or military threat, and moving from the theoretical background we also expect to find that despite cultural and geopolitical nuances from the case study on Russia, we will find similar instances of loss aversion leading to conflict or threat, something that could be a statement on human behavior across cultures. Loss frames are never black and white, and our perceptions of them can guide our understanding, and, most importantly, our assumptions. Avoiding risky assumptions is the goal of this proposal. Therefore, the case study lets us bridge the gap and offer description of the scenarios that may have been at play in our ascertaining of whether military actions in Russia's history were made in a loss frame.

4.0 Implications for National Defense

Looking at previous exhibitions of loss aversion and potential conflict, we can improve our perceptions of our own positions in the status quo, coupled with better understanding of our adversaries' perceptions prior to conflict, which gets us closer to understanding the reality of the situations we face. A stronger and more aware position on all these sides can strengthen our assumptions, and subsequently, guide the accuracy of our military decisions. Further, our study can create guidelines to check prior to instigation of conflict, in order to best guard against human error, both consciously and and in particular, subconsciously. Lastly, we can open the door to future empirical research on the effects of cognitive biases and heuristics, as a similar study could be used to explore survivorship bias, recency bias, etc.

Besides giving us a frame of the problem, cognitive psychology also offers solutions. Loss aversion is a universal problem in human decision making, but within the problem of framing effects as this is also a solution: "By recasting our options, the shift in framing changes our reference point—and the consequence is that people are left open to manipulation by whoever chooses the frame."[10] But if we establish a framing position for our future decisions, we can utilize manipulation to our advantage. A possible solution framework would be to train decision makers in the cognitive concept of the frequentist hypothesis put forward by evolutionary psychologists Leda Cosmides and John Tooby in 1996. Under this framework, we are able to account for cognitive biases yet still create a quasi-algorithmic process by which to make decisions in situations of conflict. The core tenet of the frequentist hypothesis is that some human reasoning mechanisms are designed to take as input frequency and then produce as output

[10] Gleitman, Gross, and Reisberg, Ibid.

frequency, which allows significant advantages in both a solid framework for conflict management but also with the plasticity needed to control for biases and loss frames:[11] The process is simple and follows as input information is received in this sequence:

1. Allow a person to preserve the number of events on which a judgment was based.
2. Allow a person to update his or her database when new events and information are encountered.
3. Allow a person to construct new reference classes after the events have been encountered and remembered, and to reorganize the database as needed.

Presenting information in this format has been shown to improve problem solving performance, and with proven results, its implementation would be groundbreaking in deterrence policy.[12][13] As cognitive science continues to expand, along with our understanding of how we process

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[11] Buss, David M. (2016) *Evolutionary Psychology: The New Science of the Mind*. 5th ed. *Routledge*

[12] Cosmides, L. and Tooby, J. (1996) "Are humans good intuitive statisticians after all? Rethinking some conclusions from the literature on judgement of uncertainty" *Cognition*, *58*, 1-73

[13] The primary example Cosmides and Tooby illustrate is the following medical diagnosis problem: "If a test to detect a disease whose prevalence is 1/1000 has a false positive rate of 5%, what is the chance that a person found to have a positive result actually has the disease, assuming you know nothing about the disease?" Of a sample of Harvard Medical School students, only 18% answered correctly. However, if the same situation is framed using the frequentist method, the question reads, "1 out of every Americans has disease X. A test has been developed to detect when a person has disease X. Every time the test is given to a person who has the disease, the test comes out positive. But sometimes the test also comes out positive when it is given to a person who is completely healthy. Specifically, out of every 1000 people who are perfectly healthy, 50 of them test positive for the disease. Imagine we have assembled a random sample of 1000 Americans. They were selected by a lottery. Those who conducted the lottery had no information about the health status of any of these people. Given the information above: on average, how many people who test positive for the disease will actually have the disease? ____ out of ____." In this framing, 76% participants answered correctly (2%).

decisions, our subsequent practical applications for decision making should adapt alongside. The growing opportunities are as limitless as the crises to solve.[14]

[14] Repasky, et al. (2012) "An Exploratory Study Utilizing Expressive Writing and a Novel Cognitive Tool as Strategies for Enhanced Moral Perception" *International Journal of Business, Humanities, and Technology*, 2 (3)

5.0 MANAGEMENT PLAN

The team and management plan will be simple to make the study as streamlined as possible. There will be two deterrence experts to complete the statistical analysis based on the aforementioned datasets. Two Russian history and conflict experts, with expected Russian linguistic capabilities in order to fully encapsulate available literature, will complete the Russian case study. This includes study in Russian at universities across the country in order to best incorporate all available literature in determining cultural and other factors demonstrating loss aversion. Both teams will then meet in the U.S. following the one year research period, post data collection to compile the final deliverable and determine results to present to the board over a 6 month window.

6.0 PROJECT SCHEDULE (1 YEAR)

Stage 1: Assemble team. Quantitative team begins assembling data to ascertain hypothesis of research design. Qualitative team begins research in Russia, beginning at Moscow State Institute of International Relations. (6 months)

- Further universities to retrieve data include Lomonosov Moscow State University, Saint Petersburg-State University, Novosibirsk State University, and finalizing at Kyiv (Shevchenko) University in Kiev, Ukraine.

Stage 2: Team reconvenes in the U.S. and processes data. This will include consultation with national security experts and academia in how best to present the data and effectively codify results in accordance with objective understanding of loss frames. (4 months)

Stage 3: With data properly codified, the official write-up of the study will be compiled for presentation before the Department of Defense, in accordance with department guidelines

and with tailored policy recommendations for both command headquarters and individual branches for possible implementation or adaptation of existing deterrence and conflict management frameworks. (2 months)

7.0 COST ESTIMATE

1 Year, 6 Month Cost Estimate

Deterrence Researcher 1	$50,000
Deterrence Researcher 2	$50,000
Russian Researcher 1	$60,000
Russian Researcher 2	$60,000
Travel	$12,000
Data Collection and Document Access	$8,000
Indirect Costs (50%)	$120,000
Total:	$360,000

7.0 Bibliography

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