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Adapting Prospect Theory to the Study of Foreign Policy Decision Making: A Series of Experimental Explorations

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Abstract

The use of prospect theory to develop explanations of risk behavior in foreign policy decision making is by now well established. Unfortunately, the original empirical work that serves as the foundation for this research involved gambling or medical decisions with forced dichotomous choices between prospects that included only a single value dimension. This paper reports the results of an experiment where subjects responded to foreign policy scenarios involving monetary outcomes or human lives; were allowed to choose "none of the above"; choices were made between two, four or six options; and prospects included one, two or three value dimensions. The results of this experiment illuminate the difficulties experienced when attempting to adapt a theory developed in a particular domain to a new milieu.

Did Jean-Bertrand Aristide recently leave Haiti after a "constitutional resignation" or was he the victim of a "political abduction"? Was the recently signed interim Iraqi constitution "stillborn" or a "milestone on the path to democracy"? Is John Kerry more "cognitively complex" than President Bush or is he an "indecisive waffler"? In a world of "spinmeisters", where CNN is derided as the "Clinton News Network" and Fox News claims to be "fair and balanced", the importance of "framing" and the impact of alternative perceptual lenses on decision making is well established. Scholars in both American[1] and International[2] politics have developed frame-based explanations for an expansive list of political behaviors. Topics as diverse as candidate evaluation, military intervention decisions, collective action, bargaining and negotiation, war termination and political reform strategies have all been examined by researchers focused on the manipulation (both intended and unintended) of relevant actors. This body of research has moved beyond the simple borrowing of insights from other disciplines toward novel efforts to engage in "indigenous" theory building. Current research focuses less on establishing the fact that "frames matter" and more on explorations of the limits of framing and the special character of the political domain that may ameliorate or aggravate framing effects.[3] As a result, political scientists have begun to develop an empirical foundation for theories of framing

[1]A sample of interesting work includes Druckman 2001a,b&c; Iyengar 1991; Krosnick and Brannon 1993; Miller and Krosnick 2000; Nelson and Oxley 1999; Nelson, Oxley and Clawson 1997; and Quattrone and Tversky 1988.

[2]A somewhat incomplete list includes Berejikian 1992, 1997; Boettcher 1997, 2004a; Bueno de Mesquita, McDermott and Cope 2001; Farnham 1992; Haas 2001; Huth, Bennett and Gelpi 1992; Kowert and Hermann 1997; Levy 1998; McDermott 1992, 1998; McDermott and Kugler 2001; McInerney 1992; Pauly 1993; Richardson 1993; Taliaferro 1998; Vertzberger 1995, 1997, 1998; Welch 1993; and Weyland 1996, 1998.

[3]See Boettcher 1995, 2004b; Bueno de Mesquita, McDermott and Cope 2001; Druckman 2001a,b&c; Jervis 1992; Kowert and Hermann 1997; Levy 1992a&b, 1997a&b; Nelson, Oxley and Clawson 1997; O'Neill 2001; and Vertzberger 1995, 1998.

that are adapted to the political context and have begun to "give back" to other disciplines engaged in framing research.

Research on framing in international relations has largely been based on "prospect theory", a situational model of risk behavior developed and popularized by two psychologists Daniel Kahneman and Amos Tversky (1979, 1982, 1984; Tversky and Kahneman 1981, 1992).[4] Prospect theory is intuitively compelling and its observations regarding framing and loss aversion have been empirically supported by a large body of research across a number of disciplines (see Kühberger 1998). Unfortunately, this body of research has also highlighted certain limitations on the applicability of prospect theory[5] that are relevant for political scientists, but have often been ignored. This paper focuses on five potential concerns regarding the "unreality" of the original prospect theory experiments– the use of medical or gambling decisions, the use of monetary outcomes versus human lives, the fact that subjects were forced to make a choice, the limitations on the number of alternatives available to subjects (usually only two) and the limitations on the number of value dimensions included in the problems (usually just one). In order to test for framing effects in a more "realistic" setting an experiment was constructed using foreign policy scenarios including monetary outcomes or human lives, allowing subjects to choose to support "neither plan", allowing subjects to choose from a number of alternatives (two, four or six) and including a number of value dimensions in the problem (one, two or three). The results from this experiment reveal that the relationship between framing/loss aversion and subject risk behavior is

[4]Daniel Kahneman received the Nobel prize in Economics in 2002, in part for his work on prospect theory. Unfortunately, Amos Tversky died in 1996 and was not recognized for his contribution because the Nobel committee does not make posthumous awards. Kahneman began his Nobel lecture by recognizing his departed colleague and friend.

[5]See Fagley and Miller 1997; Kühberger 1995, 1998; Levin, Schneider and Gaeth 1998; and Mandel 2001.

much more complex under more “realistic” conditions. These empirical findings suggest a number of implications for the future study of prospect theory in international relations.

Prospect Theory in Psychology

Tversky and Kahneman (1981:453) introduced the term “decision frame” to “refer to the decision-maker’s conception of the acts, outcomes, and contingencies associated with a particular choice”. Their experiments led them to observe that subjects deviated from the assumptions of rational choice theory. The explanation for these deviations from rational behavior focused on subjective perceptions of decision problems. They suggested that individuals evaluate and weight the different components of a decision problem and modify their choices accordingly. They further noted that “changes of perspective often reverse the relative size of objects and the relative desirability of options” (1981:453). An individual might have an alternative perspective on the appropriateness of particular acts (say military intervention versus diplomacy), the value associated with particular outcomes (especially for decisions involving human life, prestige or some other good that resists quantification and comparison) and/or the reasonableness of certain contingencies (say a 50% chance versus a “sure thing”). Fortunately, these changes in perspective and deviations from rationality seemed to be systematic– subjects appeared to consistently adopt the frames presented to them.

Using gambling and medical decision problems, Kahneman and Tversky were able to demonstrate the impact of a particular kind of outcome framing– the coding of “gains” and “losses” from a reference point. They showed that most people “normally perceive outcomes as gains and losses, rather than as final states of wealth or welfare” (1979:274). The experimenters explicitly framed the decision problems so they were confident that their subjects adopted a

particular reference point, but they also noted that “it is sometimes set by social norms and expectations; it sometimes corresponds to a level of aspiration, which may or may not be realistic” (Tversky and Kahneman 1981:456). The reference point seemed to function like a situational goal (see Heath, Larrick and Wu 1999), subjects tended to undervalue outcomes viewed as gains and overvalue outcomes that could be viewed as losses. They were generally risk-averse when choosing between risky alternatives that only produced gains and risk-acceptant when choosing between risky alternatives that only produced losses. The value function for subject choices was therefore “concave above the reference point and convex below it” (Tversky and Kahneman 1981:454) and much steeper below the reference point (revealing that even small losses were overvalued). The dual concepts of framing and loss aversion combined to provide a compelling explanation for the observed behavior.

Initial skepticism regarding the validity and reliability of Kahneman and Tversky’s experiments has given way to research focusing on the scope conditions limiting the general applicability of prospect theory. While a massive meta-analysis of 136 papers (reporting the results of experiments involving 30,000 subjects) found that “framing is a reliable phenomenon” it also noted that “procedural features of experimental settings have a considerable effect on effect sizes in framing experiments” (Kühberger 1998:23). As Levin, Schneider and Gaeth (1998:149) stated in the title of their paper– “All frames are not created equal”. As researchers discovered prospect theory and applied it in their home disciplines they engaged in minor adaptations of the original Kahneman and Tversky experimental designs. First they moved beyond gambling and medical problems to study economic, social or political decisions. This shift in “problem domain” (see Kühberger 1998:29) resulted in an expansion of the outcomes

under study (beyond money and lives), while attempting to retain a focus on goods that were quantifiable. Even within the traditional domains of medical and gambling decisions, experimenters began to discern a difference in framing effects across the “arenas of outcome” (Fagley and Miller 1997:355). When comparing subject risk behavior regarding outcomes involving money versus risk behavior regarding outcomes involving human life, a number of researchers have observed consistently riskier choices when human life was at stake (see Boettcher 1995; Fagley and Miller 1997). While they seem to value human life much more highly than monetary outcomes, subjects tend to be more willing to take all-or-nothing risks when lives are at stake. As Fagley and Miller (1997:369-370) suggest this may be due to a shift in aspiration (the reference point may be stuck at saving everyone despite the standard framing manipulation stating that these individuals are “expected to die”) or to considerations of accountability (how can one justify allowing some to die so that others might live).

Kühberger (1998) and Mandel (2001) also focus on a number of other “risk” or “task” characteristics that affect the strength of framing effects. In particular, Kühberger noted that studies varied significantly in their manipulation of risk (reference to a risky event versus outcome salience), quality of risk (presenting subjects with a sure and a risky option versus only risky options), number of risky events (single versus multiple), framing manipulation (gain/loss semantic manipulation versus task-responsive wording), response mode (choices versus judgments/ratings), and unit of analysis (individual versus group) (1998:28). Mandel examined the classic Asian disease problem found in Tversky and Kahneman (1981) and explained why subjects might reasonably dispute the complementarity of the “sure thing” prospects, given the fact that these prospects are under specified (2001:59). In the gains frame subjects are told that

"If Program A is adopted, 200 people will be saved", yet are not reminded that this means 400 people will not be saved/will die. In the losses frame subjects are told that "If Program C is adopted, 400 people will die", but are not reminded that this means 200 people will not die/will be saved. Kühberger demonstrated that adding the missing information diluted the framing effect (1995). Mandel expanded on this previous research by discussing "descriptor" versus "outcome" formulations and experimentally exploring the impact of manipulating these features. Descriptor formulations "refer to whether the root label used to describe an expected outcome is intrinsically positive or negative in evaluative terms" (Mandel 2001:61). The use of the description saved/not saved is intrinsically positive, the use of die/not die is intrinsically negative. Outcome formulations "refer to whether the expected outcome explicitly described in a prospect is of positive or negative valence" (Mandel 2001:61). People dying/not being saved is a negative outcome regardless of the description, people being saved/not dying is a positive outcome regardless of the description.[6] Mandel was able to experimentally demonstrate fluctuations in framing effects due to the congruence/incongruence of descriptor and outcome formulations. Clearly the "state of the art" in research on prospect theory in psychology is far beyond the simple understanding of gain/loss framing and loss aversion leading to risk-taking that is found in much of the political science literature.

Prospect Theory in International Relations

Despite the earlier publication of Quattrone and Tversky's (1988) "Contrasting Rational and Psychological Analyses of Political Choice", the study of prospect theory in international

[6]This fits nicely with "hedonic tone" notion of Levin, Schneider and Gaeth (1998) that certain problems in and of themselves have an inherent positive or negative connotation (i.e., debt versus gambling versus economic transactions).

relations did not surge until the publication of the 1992 special issue of *Political Psychology* and Stein and Pauly's (1993) *Choosing to Cooperate: How States Avoid Loss*. Much of this early work included a general introduction to prospect theory and a case study that demonstrated the persuasiveness of an explanation of risk-taking (seldom risk-averse) behavior based in gain/loss framing and loss aversion (see McDermott 1992; McInerney 1992; Pauly 1993; Richardson 1993; Welch 1993). Early critiques focused on problems with importing prospect theory across disciplinary boundaries, but these critiques rarely moved empirically beyond providing anecdotal counterexamples (see Jervis 1992; Levy 1992b). The second generation of research in this area involved theoretical critiques and adaptations backed up by experimental and case study work based on recent innovations in psychology (see Boettcher 1995; Kowert and Hermann 1997; Taliaferro 1998; and Vertzberger 1997, 1998). The latest work in this area has included thoughtful theoretical adaptation (O'Neill 2001), more extensive and advanced empirical explorations (Boettcher 2004a&b; Bueno de Mesquita, McDermott and Cope 2001) and indigenous theory-building (Berejikian 2002).

The most significant problem with prospect theory research in political science to date has been an inability to operationalize the key variables of concern in order to meet the data requirements of the theory (I have struggled with this in my own work as well, see Boettcher 1997). Initially this problem mainly affected our ability to demonstrate the superiority of prospect theory-based explanations over standard subjective expected-utility models of behavior. It was especially difficult to isolate and measure the impact of the problem frame outside of the laboratory setting (see Levy 1992b and Boettcher 1995 for a critique of McDermott 1992). More recent efforts have been more systematic and convincing, but still fall short of the

methodological ideal (see Bueno de Mesquita, McDermott and Cope 2001; McDermott and Kugler 2001). Unfortunately our problems are magnified by the work of Kühberger (1998) and Mandel (2001). We can no longer assert that measurement error in political science is acceptable when we observe that minor and subtle differences in experimental design produce major fluctuations in the strength of framing effects. Our initial methodological laxity was justified by the apparent pervasiveness of the phenomena identified by Kahneman and Tversky, this stance is no longer tenable given the limitations exposed by recent work in behavioral decision theory. Of course, the situation is not so dire as to require the abandonment of prospect theory. Instead we need to retrench and redouble our efforts, engaging in the same painstaking empirical work that is being conducted in other disciplines.

Hypotheses

The above discussion of the work by Kühberger (1998) and Mandel (2001) yields the following hypotheses regarding the impact of problem design on the strength of framing effects.

H1- We should observe weaker framing effects when the problem domain shifts to foreign policy decision making.

H2- We should observe more risk-acceptance across problem frames when the stakes of a decision involve human lives instead of monetary outcomes.

H3- We should observe weaker framing effects when subjects are allowed to select a "neither alternative" option.

H4- We should observe weaker framing effects when subjects are allowed to choose from an expanded set of alternatives.

H5- We should observe weaker framing effects when we increase the number of value

dimensions included in the problem.

Overview of the Experiment

In order to test the hypotheses presented above a carefully controlled experiment was conducted in February of 2004. The one hundred and ninety-eight subjects that participated in this experiment were volunteers from the North Carolina State University Political Science Research Subject Pool (NCSU-PSRSP). This subject pool is composed of all undergraduate students enrolled in our American Politics and Government sections. The PSRSP has existed since 1999 and includes approximately six hundred students in an average semester. The students that participated in this experiment answered a series of demographic questions at the end of the questionnaire. The results for this sample closely match the demographics of the broader subject pool and student population (with the exception of sex). Despite that fact that males outnumber females at NCSU and in our subject pool, 52.3% of the subjects in this sample were female. In terms of the race/ethnicity of the subjects in the sample, 80.2% were white, 14.7% black, .5% Native American, 3.6% Asian or Pacific Islander and 1% checked “other”. As usual the sample was skewed to the conservative end of the ideological spectrum with 32.5% identifying themselves as “conservative”, 36% “moderate”, 19.8% “liberal” and 11.7% “don’t know”. In terms of partisanship the moderates tend to identify with the democratic party by a two-to-one margin, but the Republicans (40.6%) are still slightly more numerous than the Democrats (34%) while a number of individuals remain as Independents (15.2%).

As is common in most prospect theory experiments, subjects were initially divided randomly into a “gains” and a “losses” group. The gains group only received prospects framed as

gains, while the losses group only received prospects framed as losses.[7] Both the gains and the losses groups were further subdivided according to the other manipulations in the study. For Problems A and B the subjects were divided into either "forced choice" or "neither alternative" groups. For Problems C and D the subjects were divided between "two alternatives", "four alternatives" and "six alternatives" groups. For Problems E and F the subjects were split between "one value dimension", "two value dimensions" and "three value dimensions" groups. Problems A, C, E and F involved human lives at stake, while Problems B and D involved monetary outcomes. Each subject received an introductory paragraph with instructions, Problems A-F and a series of demographic questions. In order to protect against order effects the prospects were reversed one-half of the time and the Problems were ordered A-F one-half of the time and F-A the other half of the time. The subjects spent between ten and fifteen minutes completing the questionnaire.

The scenarios were constructed following the classic "Asian disease" design, conformed to the "strict" definition of framing and involved "risk manipulation by reference to a risky event" (see Kühberger 1998:24, 26). The "Asian disease" design (Tversky and Kahneman 1981:453) differs from the "mirrored gambling" design (Kahneman and Tversky 1979:273; see also Boettcher 2004b) in the amount of information provided to the subjects and the fact that the problem is not identical across domains. In the "mirrored gambling" design, subjects in the gains frame receive information regarding positive outcomes and the probability of success, while

[7]Please note that this is a "between-subjects" comparison. Unlike a "within-subjects" design, we do not observe changes as one individual is exposed to gain and loss frames. Instead we observe differences between individuals exposed to the gain frame and individuals exposed to the loss frame. Intuitively we expect "between-subjects" designs to produce stronger effect sizes, but empirically that does not seem to be the case (see Kühberger 1998:36).

subjects in the losses frame receive information regarding negative outcomes and the probability of failure. In the "Asian disease" design, subjects in the gains frame receive information regarding positive outcomes and the probability of success for the sure thing option and full information for the risky option, while subjects in the losses frame receive information regarding negative outcomes and the probability of failure for the sure thing option and full information for the risky option. The "Asian disease" design generally involves a single scenario applicable across domains and two prospects that are semantically framed to alternatively describe the exact same situation– meeting the "strict" definition of framing. The "mirrored gambling" design deals with winning money or losing money and does not describe the same situation. The "Asian disease" design also involves "risk manipulation by reference to a risky event" (Kühberger 1998:26). The "risk" involves the probability of a future event occurring rather than the probability of an unknown, but current state of affairs. Each of these design features tends to produce stronger framing effects, taken together they should bias this study in favor of prospect theory.

<<<Insert Figures 1-3 About Here>>>

Results of the Experiment

The first concern expressed above focused on moving from medical or gambling decisions to foreign policy decisions regarding human lives and state treasure. At a general level the move to the foreign policy milieu appears to result in weaker framing effects. We do not observe the powerful preference reversals (80/20 to 20/80, 70/30 to 30/70) found in the initial Kahneman and Tversky studies (1979; Tversky and Kahneman 1981). Indeed, despite 10 opportunities to observe a preference reversal (among dichotomous choices), only 4 occur and

only one was statistically significant. Problem C (Two Alternatives) produces a 65/35 to 27/73 preference reversal that is strongly significant. Unfortunately the other three preference reversals are of the 59/41 to 44/56 variety (at best) and fail to achieve statistical significance. These results, along with previous results from other experiments (see Boettcher 2004a&b), suggest that at a minimum the domain of foreign policy decision making diminishes the strength of prospect framing. Instead of observing powerful preference reversals, we tend to observe "choice shifts" as a strong majority favoring risk-aversion in the domain of gains shifts to a weak majority favoring risk-aversion in the domain of losses; or, more often for scenarios involving human life, a weak majority favoring risk-acceptance in the domain of gains shifts to a strong majority favoring risk-acceptance in the domain of losses.

<<<Insert Tables 1-3 About Here>>>

The second issue discussed above offered an alternative twist on the differences among problem domains, suggesting that different stakes produce different patterns of risk behavior. This hypothesis was strongly supported by the data. Much higher overall levels of risk-aversion were observed for the economic scenarios. Problems B and D (the economic scenarios) both elicited strong majorities favoring risk-aversion in the domain of gains (60.8% and 73.5% respectively) and weak majorities favoring risk-aversion in the domain of losses (52% and 58.8% respectively). Problems A, C, E and F (all military scenarios) tended to produce preference reversals or choice shifts from a majority (sometimes weak/sometimes strong) favoring risk-acceptance in the domain of gains to an even bigger majority favoring risk-acceptance in the domain of loss. Subjects are much more likely to select the risk-averse alternative in the losses domain (accepting a certain loss to avoid the possibility of greater losses) when money is at

stake. As argued above, subjects may be more likely to view these small certain losses as acceptable/regular, as they would in gambling and possibly even medical scenarios.

The third concern raised above dealt with the problem of forced choice. Forced choice does not adequately reflect real world decision making where procrastination, decision avoidance and/or incrementalism are strategies that are often employed to reduce risk or uncertainty. The inclusion of a “neither alternative” option more accurately reflects the opportunities available to most decision makers and presumably offers more accurate insights into their risk behavior. As expected, the addition of a “neither alternative” option provided an “out” for subjects that probably would be risk-averse in the domain of gains, but would end up in the risk-acceptant cell in the domain of losses. As Table 1 shows, Problems A and B produce similar effects as the design shifts from “forced choice” to “neither alternative”. For each scenario the number of subjects favoring the risk-averse alternative declines as we move from gains to losses (as predicted by prospect theory), but the “neither alternative” design allows the bulk of these subjects to wind up in the neither alternative cell. This shift is statistically significant for Problem B and approaches significance for Problem A ($p=.077$). Of course, the choice of “neither alternative” has its own risks which are not clearly stated and thus are not made salient to the decision makers. The status quo is never a truly riskless proposition, indeed decisions are often contemplated because of dissatisfaction with a given state of affairs. These subjects are grasping for a “thin reed”, but their willingness to do so provides a more accurate portrayal of their risk behavior. They are more willing to select an option that exposes them to uncertainty and potentially great risk, than they are willing to “cut their losses” or take the all or nothing gamble. This data clearly demonstrates that adding a “neither alternative” option provides a more

complete picture of subject preferences.

The fourth point discussed above involves the number of alternatives that are offered in the experiments. Just as it is unrealistic to prevent subjects from selecting the status quo, it is also unrealistic to think that foreign policy decision makers would be limited to two options. I do not presume that policymakers consider all possible alternatives. My own research reveals that options are often discarded before they reach the pinnacle of decision making (see Boettcher 1997), but a choice between four or six alternatives is not out of the question for a well staffed out and complex decision process. As Table 2 reveals, the addition of alternatives tends to muddy the framing effect that is more easily observed in the dichotomous design. Problem C produces the strongest preference reversal in this experiment when the subjects are presented with just two choices. However, the four and six alternatives designs show that there is a great deal of additional diversity in subject preferences. Only 51% of subjects in the domain of gains and 49% of subjects in the domain of losses in the four alternatives design end up in the extreme risk-averse or risk-acceptant cells that match the dichotomous choices. Only 29% of subjects in the domain of gains and 50% of subjects in the domain of losses in the six alternatives design end up in the extreme cells. We do observe a shift to risk acceptance in the six alternatives design, but that shift is not statistically significant. Problem D produces a weak and non-significant choice shift in the two alternatives design. Only 35% of subjects in the domain of gains and 36% of subjects in the domain of losses in the four alternatives design end up in the extreme cells. Only 22.6% of subjects in the domain of gains and 53% of subjects in the domain of losses in the six alternatives design end up in the extreme cells. We do observe a bidirectional shift to the extremes in the domain of losses in the six alternatives design however, and that shift

approaches statistical significance (p=.073). This demonstrates that the prospect frames are still having an impact, but that impact is more complex than in the two alternatives design. Indeed we could argue that the four and six alternatives designs allow for a simplified trichotomous decision process in the domain of losses. Choose from the risk-averse extreme which is a sure thing or the risk-acceptant extreme which offers the only possibility of avoiding loss altogether or choose a risky prospect in between that offers a greater hope of preventing death balanced by an increased risk of disaster.

The fifth and final concern expressed above focused on the limited number of value dimensions employed in the early work on prospect theory. In foreign policy decision making any problem is likely to involve a portfolio of national interests that are often disproportionately affected by the potential choices. Table 3 details the results of expanding the foreign policy scenarios to include two or three value dimensions. For Problem E the traditional unidimensional scenario produces a statistically significant choice shift towards risk-acceptance in the domain of losses. However, as the number of value dimensions is increased to two and then three, the choice shift becomes less pronounced. Despite consistency in the probabilities and ratios of utilities, the two value dimensions design produces a slight decline in risk-acceptance in the domain of losses while the three value dimensions design produces a pretty substantial increase in risk-acceptance in the domain of gains. For Problem F the traditional unidimensional scenario produces a mild preference reversal that does not achieve statistical significance. The three value dimensions design produces a slightly weaker preference reversal, but the two value dimensions design produces a slight choice shift to risk acceptance in the domain of losses. While the results for Problem F are mixed and weak, the results for Problem E suggest that increasingly complex

scenarios that include multiple value dimensions may produce weaker framing effects. It may be that the more complex scenarios have a stronger “hedonic” tone– a frame implicit in the problem– that can only be nudged by traditional attempts at semantic manipulation.

Conclusion

The above results, taken together, begin to illuminate the unrealistic elements of the original experimental version of prospect theory that, when modified, yield more complex and subtle patterns of risk behavior. The literature on framing in other fields suggests relevant avenues of experimental research that should cumulate in an adapted version of prospect theory that is applicable to the study of puzzles relevant to international relations theorists. Clearly, further experimental work is needed to provide the empirical foundation for this “indigenous” theory of framing in international relations. At a minimum we must consider the five issues raised here– the importance of problem domain, the stakes involved, forced choice, the number of alternatives and the number of value dimensions. Future research must consider the other factors that mitigate or aggravate framing effects identified by Fagley and Miller (1997); Kühberger (1998); Mandel (2001); Levin, Schneider and Gaeth (1998) and Druckman (2001a&c). Once we have identified the scope conditions that limit the applicability of theories of framing in international relations, we can then build on this experimental foundation with case studies and quantitative research the reveal the real-world explanatory power of framing models.

Figure 1
Forced Choice Design vs. Neither Alternative Design

Problem A-

(*Forced Choice Design Scenario*)- You are the president of a country named Algo. Last week, 300 of your citizens sought refuge in the Algonian embassy in a nearby country that is disintegrating in civil war. The situation is deteriorating and their lives are now at risk. You have decided to launch an evacuation operation. Your military advisers have provided you with the following options-

(*Neither Alternative Design Scenario*)- You are the president of a country named Algo. Last week, 300 of your citizens sought refuge in the Algonian embassy in a nearby country that is disintegrating in civil war. The situation is deteriorating and their lives are now at risk. You are considering the launch of an evacuation operation. Your military advisers have provided you with the following options-

(*Forced Choice Design Gains Alternatives*)-
If option A is selected 100 of your citizens will be saved.

If option B is selected there is a 33.3% chance that 300 of your citizens will be saved, and a 66.6% chance that none of your citizens will be saved.

(*Forced Choice Design Losses Alternatives*)-
If option A is selected 200 of your citizens will die.

If option B is selected there is a 33.3% chance that none of your citizens will die, and a 66.6% chance that 300 of your citizens will die.

(*Neither Alternative Design Gains Alternatives*)-
If option A is selected 100 of your citizens will be saved.

If option B is selected there is a 33.3% chance that 300 of your citizens will be saved, and a 66.6% chance that none of your citizens will be saved.

If option C is selected your country will not attempt an evacuation operation.

(*Neither Alternative Design Losses Alternatives*)-
If option A is selected 200 of your citizens will die.

If option B is selected there is a 33.3% chance that none of your citizens will die, and a 66.6% chance that 300 of your citizens will die.

If option C is selected your country will not attempt an evacuation operation.

Figure 1 (continued)
Forced Choice Design vs. Neither Alternative Design

Problem B-

(*Forced Choice Design Scenario*)- You are the president of a country named Algo. Next week you will attend economic negotiations with Utland (your primary trading partner) in an effort to reduce tariffs and promote trade. 100,000 Algonian jobs are at risk. Your economic advisers have provided you with the following options-

(*Neither Alternative Design Scenario*)- You are the president of a country named Algo. You are considering whether you will attend economic negotiations with Utland (your primary trading partner) next week in an effort to reduce tariffs and promote trade. 100,000 Algonian jobs are at risk. Your economic advisers have provided you with the following options-

(*Forced Choice Design Gains Alternatives*)-
If option A is selected 60,000 Algonian jobs will be saved.

If option B is selected there is a 60% chance that 100,000 Algonian jobs will be saved, and a 40% chance that no Algonian jobs will be saved.

(*Forced Choice Design Losses Alternatives*)-
If option A is selected 40,000 Algonian jobs will be lost.

If option B is selected there is a 60% chance that no Algonian jobs will be lost, and a 40% chance that 100,000 Algonian jobs will be lost.

(*Neither Alternative Design Gains Alternatives*)-
If option A is selected 60,000 Algonian jobs will be saved.

If option B is selected there is a 60% chance that 100,000 Algonian jobs will be saved, and a 40% chance that no Algonian jobs will be saved.

If option C is selected your country will not attend the economic negotiations.

(*Neither Alternative Design Losses Alternatives*)-
If option A is selected 40,000 Algonian jobs will be lost.

If option B is selected there is a 60% chance that no Algonian jobs will be lost, and a 40% chance that 100,000 Algonian jobs will be lost.

If option C is selected your country will not attend the economic negotiations.

Figure 2
Two Alternatives Design vs. Four Alternatives Design vs. Six Alternatives Design

Problem C-

(*Scenario*)- You are the president of a country named Algo. Algo is currently at war with a neighboring country. During a recent battle 1,000 Algonian troops were encircled by the enemy and their base is currently under siege. Your military advisers have provided you with the following rescue options-

(*Two Alternatives Design Gains Alternatives*)-
If option A is selected 500 of your troops will be saved.

If option B is selected there is a 50% chance that 1,000 of your troops will be saved, and a 50% chance that none of your troops will be saved.

(*Two Alternatives Design Losses Alternatives*)-
If option A is selected 500 of your troops will die.

If option B is selected there is a 50% chance that none of your troops will die, and a 50% chance that 1,000 of your troops will die.

(*Four Alternatives Design Gains Alternatives*)-
If option A is selected 500 of your troops will be saved.

If option B is selected there is a 90% chance that 556 of your troops will be saved, and a 10% chance that none of your troops will be saved.

If option C is selected there is a 60% chance that 833 of your troops will be saved, and a 40% chance that none of your troops will be saved.

If option D is selected there is a 50% chance that 1,000 of your troops will be saved, and a 50% chance that none of your troops will be saved.

(*Four Alternatives Design Losses Alternatives*)-
If option A is selected 500 of your troops will die.

If option B is selected there is a 90% chance that 444 of your troops will die, and a 10% chance that 1,000 of your troops will die.

If option C is selected there is a 60% chance that 167 of your troops will die, and a 40% chance that 1,000 of your troops will die.

If option D is selected there is a 50% chance that none of your troops will die, and a 50% chance that 1,000 of your troops will die.

Figure 2 (continued)
Two Alternatives Design vs. Four Alternatives Design vs. Six Alternatives Design

Problem C (continued)-

(*Six Alternatives Design Gains Alternatives*)-
If option A is selected 500 of your troops will be saved.

If option B is selected there is a 90% chance that 556 of your troops will be saved, and a 10% chance that none of your troops will be saved.

If option C is selected there is an 80% chance that 625 of your troops will be saved, and a 20% chance that none of your troops will be saved

If option D is selected there is a 70% chance that 714 of your troops will be saved, and a 30% chance that none of your troops will be saved.

If option E is selected there is a 60% chance that 833 of your troops will be saved, and a 40% chance that none of your troops will be saved.

If option F is selected there is a 50% chance that 1,000 of your troops will be saved, and a 50% chance that none of your troops will be saved.

(*Six Alternatives Design Losses Alternatives*)-
If option A is selected 500 of your troops will die.

If option B is selected there is a 90% chance that 444 of your troops will die, and a 10% chance that 1,000 of your troops will die.

If option C is selected there is an 80% chance that 375 of your troops will die, and a 20% chance that 1,000 of your troops will die.

If option D is selected there is a 70% chance that 286 of your troops will die, and a 30% chance that 1,000 of your troops will die.

If option E is selected there is a 60% chance that 167 of your troops will die, and a 40% chance that 1,000 of your troops will die.

If option F is selected there is a 50% chance that none of your troops will die, and a 50% chance that 1,000 of your troops will die.

Figure 2 (continued)
Two Alternatives Design vs. Four Alternatives Design vs. Six Alternatives Design

Problem D-

(*Scenario*)- You are the president of a country named Algo. Your country currently owes a consortium of lender nations $10 billion. You are about to enter into debt forgiveness negotiations with the lender nations. Your economic advisers have provided you with the following options-

(*Two Alternatives Design Gains Alternatives*)-
If option A is selected $4 billion of your debt will be forgiven.

If option B is selected there is a 40% chance that $10 billion of your debt will be forgiven, and a 60% chance that none of your debt will be forgiven.

(*Two Alternatives Design Losses Alternatives*)-
If option A is selected $6 billion of your debt will remain.

If option B is selected there is a 40% chance that none of your debt will remain, and a 60% chance that $10 billion of your debt will remain.

(*Four Alternatives Design Gains Alternatives*)-
If option A is selected $4 billion of your debt will be forgiven.

If option B is selected there is a 90% chance that $4.4 billion of your debt will be forgiven, and a 10% chance that none of your debt will be forgiven.

If option C is selected there is a 50% chance that $8 billion of your debt will be forgiven, and a 50% chance that none of your debt will be forgiven.

If option D is selected there is a 40% chance that $10 billion of your debt will be forgiven, and a 60% chance that none of your debt will be forgiven.

(*Four Alternatives Design Losses Alternatives*)-
If option A is selected $6 billion of your debt will remain.

If option B is selected there is a 90% chance that $5.6 billion of your debt will remain, and a 10% chance that $10 billion of your debt will remain.

If option C is selected there is a 50% chance that $2 billion of your debt will remain, and a 50% chance that $10 billion of your debt will remain.

If option D is selected there is a 40% chance that none of your debt will remain, and a 60% chance that $10 billion of your debt will remain.

Figure 2 (continued)
Two Alternatives Design vs. Four Alternatives Design vs. Six Alternatives Design

Problem D (continued)-

(*Six Alternatives Design Gains Alternatives*)-
If option A is selected $4 billion of your debt will be forgiven.

If option B is selected there is a 90% chance that $4.4 billion of your debt will be forgiven, and a 10% chance that none of your debt will be forgiven.

If option C is selected there is an 80% chance that $5 billion of your debt will be forgiven, and a 20% chance that none of your debt will be forgiven.

If option D is selected there is a 60% chance that $6.6 billion of your debt will be forgiven, and a 40% chance that none of your debt will be forgiven.

If option E is selected there is a 50% chance that $8 billion of your debt will be forgiven, and a 50% chance that none of your debt will be forgiven.

If option F is selected there is a 40% chance that $10 billion of your debt will be forgiven, and a 60% chance that none of your debt will be forgiven.

(*Six Alternatives Design Losses Alternatives*)-
If option A is selected $6 billion of your debt will remain.

If option B is selected there is a 90% chance that $5.6 billion of your debt will remain, and a 10% chance that $10 billion of your debt will remain.

If option C is selected there is an 80% chance that $5 billion of your debt will remain, and a 20% chance that $10 billion of your debt will remain.

If option D is selected there is a 60% chance that $3.4 billion of your debt will remain, and a 40% chance that $10 billion of your debt will remain.

If option E is selected there is a 50% chance that $2 billion of your debt will remain, and a 50% chance that $10 billion of your debt will remain.

If option F is selected there is a 40% chance that none of your debt will remain, and a 60% chance that $10 billion of your debt will remain.

Figure 3
One Value Dimension Design vs. Two Value Dimensions Design vs. Three Value Dimensions Design

Problem E-

(*One Value Dimension Design Scenario*)- You are the president of a country named Algo. A neighboring country, Alland, is controlled by an authoritarian ruler. For the last ten years a province of Alland (Dinara) has been pushing for independence. The Dinars have recently expanded their political struggle to include small-scale attacks on the paramilitary forces that Alland has employed to suppress the independence movement. Last week a paramilitary unit killed 56 women and children in a village that occasionally provides aid and comfort to the Dinar rebels. The leader of Alland has proposed a "Spring Offensive" to pacify Dinara. Your military advisers have provided you with the following options (each involves the deployment of 5,000 Algonian troops)-

(*Two Value Dimensions Design Scenario*)- You are the president of a country named Algo. A neighboring country, Alland, is controlled by an authoritarian ruler. For the last ten years a province of Alland (Dinara) has been pushing for independence. The Dinars have recently expanded their political struggle to include small-scale attacks on the paramilitary forces that Alland has employed to suppress the independence movement. Last week a paramilitary unit killed 56 women and children in a village that occasionally provides aid and comfort to the Dinar rebels. The leader of Alland has proposed a "Spring Offensive" to pacify Dinara. Your intelligence agencies predict that this offensive puts 10,000 civilian lives at risk. Your military advisers have provided you with the following options (each involves the deployment of 5,000 Algonian troops)-

(*Three Value Dimensions Design Scenario*)- You are the president of a country named Algo. A neighboring country, Alland, is controlled by an authoritarian ruler. For the last ten years a province of Alland (Dinara) has been pushing for independence. The Dinars have recently expanded their political struggle to include small-scale attacks on the paramilitary forces that Alland has employed to suppress the independence movement. Last week a paramilitary unit killed 56 women and children in a village that occasionally provides aid and comfort to the Dinar rebels. The leader of Alland has proposed a "Spring Offensive" to pacify Dinara. Your intelligence agencies predict that this offensive puts 10,000 civilian lives at risk. They also note that an Algonian military intervention would put 500 Allandian lives at risk because the paramilitary bases are very close to Allandian neighborhoods. Your military advisers have provided you with the following options (each involves the deployment of 5,000 Algonian troops)-

(*One Value Dimension Design Gains Alternatives*)-
If option A is selected 4,750 Algonian troops will survive the intervention.

If option B is selected there is a 95% chance that 5,000 Algonian troops will survive the intervention, and a 5% chance that no Algonian troops will survive the intervention.

Figure 3 (continued)
One Value Dimension Design vs. Two Value Dimensions Design vs. Three Value Dimensions Design

Problem E (continued)-

(*One Value Dimension Design Losses Alternatives*)-
If option A is selected 250 Algonian troops will die in the intervention.

If option B is selected there is a 95% chance that no Algonian troops will die in the intervention, and a 5% chance that 5,000 Algonian troops will die in the intervention.

(*Two Value Dimensions Design Gains Alternatives*)-
If option A is selected 4,750 Algonian troops will survive the intervention and 9500 Dinar lives will be saved.

If option B is selected there is a 95% chance that 5,000 Algonian troops will survive the intervention and 10,000 Dinar lives will be saved, and a 5% chance that no Algonian troops will survive the intervention and no Dinar lives will be saved.

(*Two Value Dimensions Design Losses Alternatives*)-
If option A is selected 250 Algonian troops will die in the intervention and 500 Dinar lives will be lost.

If option B is selected there is a 95% chance that no Algonian troops will die in the intervention and no Dinar lives will be lost, and a 5% chance that 5,000 Algonian troops will die in the intervention and 10,000 Dinar lives will be lost.

(*Three Value Dimensions Design Gains Alternatives*)-
If option A is selected 4,750 Algonian troops will survive the intervention, 9500 Dinar lives will be saved and 475 Allandian lives will be saved.

If option B is selected there is a 95% chance that 5,000 Algonian troops will survive the intervention, 10,000 Dinar lives will be saved and 500 Allandian lives will be saved; and a 5% chance that no Algonian troops will survive the intervention, no Dinar lives will be saved and no Allandian lives will be saved.

(*Three Value Dimensions Design Losses Alternatives*)-
If option A is selected 250 Algonian troops will die in the intervention, 500 Dinar lives will be lost and 25 Allandian lives will be lost.

If option B is selected there is a 95% chance that no Algonian troops will die in the intervention, no Dinar lives will be lost and no Allandian lives will be lost; and a 5% chance that 5,000 Algonian troops will die in the intervention, 10,000 Dinar lives will be lost and 500 Allandian lives will be lost.

Figure 3 (continued)
One Value Dimension Design vs. Two Value Dimensions Design vs. Three Value Dimensions Design

Problem F-

(*One Value Dimension Design Scenario*)- You are the president of a country named Algo. A neighboring country named Canjo is ethnically divided between two groups: the Basha and the Udur. While Bashas make up approximately 90% of Canjo's population, Udurs control most of the positions of power within Canjo's government. The President of Canjo (an Udur) was recently assassinated by Basha militants. The Udur-dominated Canjo military has begun to engage in reprisals against Basha villages. Your military advisers have provided you with the following options (each involves the deployment of 500 Algonian troops)-

(*Two Value Dimensions Design Scenario*)- You are the president of a country named Algo. A neighboring country named Canjo is ethnically divided between two groups: the Basha and the Udur. While Bashas make up approximately 90% of Canjo's population, Udurs control most of the positions of power within Canjo's government. The President of Canjo (an Udur) was recently assassinated by Basha militants. The Udur-dominated Canjo military has begun to engage in reprisals against Basha villages. Your intelligence agencies indicate that 300,000 Basha civilians are at risk. Your military advisers have provided you with the following options (each involves the deployment of 500 Algonian troops)-

(*Three Value Dimensions Design Scenario*)- You are the president of a country named Algo. A neighboring country named Canjo is ethnically divided between two groups: the Basha and the Udur. While Bashas make up approximately 90% of Canjo's population, Udurs control most of the positions of power within Canjo's government. The President of Canjo (an Udur) was recently assassinated by Basha militants. The Udur-dominated Canjo military has begun to engage in reprisals against Basha villages. Your intelligence agencies indicate that 300,000 Basha civilians are at risk. They also note that an Algonian military intervention would put 30,000 Udur lives at risk because the Bashas, once liberated, might seek revenge against Udur villages. Your military advisers have provided you with the following options (each involves the deployment of 500 Algonian troops)-

(*One Value Dimension Design Gains Alternatives*)-
If option A is selected 335 Algonian troops will survive the intervention.

If option B is selected there is a 67% chance that 500 Algonian troops will survive the intervention, and a 33% chance that no Algonian troops will survive the intervention.

(*One Value Dimension Design Losses Alternatives*)-
If option A is selected 165 Algonian troops will die in the intervention.

If option B is selected there is a 67% chance that no Algonian troops will die in the intervention, and a 33% chance that 500 Algonian troops will die in the intervention.

Figure 3 (continued)
One Value Dimension Design vs. Two Value Dimensions Design vs. Three Value Dimensions Design

Problem F (continued)-

(*Two Value Dimensions Design Gains Alternatives*)-
If option A is selected 335 Algonian troops will survive the intervention and 201,000 Basha lives will be saved.

If option B is selected there is a 67% chance that 500 Algonian troops will survive the intervention and 300,000 Basha lives will be saved, and a 33% chance that no Algonian troops will survive the intervention and no Basha lives will be saved.

(*Two Value Dimensions Design Losses Alternatives*)-
If option A is selected 165 Algonian troops will die in the intervention and 99,000 Basha lives will be lost.

If option B is selected there is a 67% chance that no Algonian troops will die in the intervention and no Basha lives will be lost, and a 33% chance that 500 Algonian troops will die in the intervention and 300,000 Basha lives will be lost.

(*Three Value Dimensions Design Gains Alternatives*)-
If option A is selected 335 Algonian troops will survive the intervention, 201,000 Basha lives will be saved and 20,100 Udur lives will be saved.

If option B is selected there is a 67% chance that 500 Algonian troops will survive the intervention, 300,000 Basha lives will be saved and 30,000 Udur lives will be saved; and a 33% chance that no Algonian troops will survive the intervention, no Basha lives will be saved and no Udur lives will be saved.

(*Three Value Dimensions Design Losses Alternatives*)-
If option A is selected 165 Algonian troops will die in the intervention, 99,000 Basha lives will be lost and 9,900 Udur lives will be lost.

If option B is selected there is a 67% chance that no Algonian troops will die in the intervention, no Basha lives will be lost and no Udur lives will be lost; and a 33% chance that 500 Algonian troops will die in the intervention, 300,000 Basha lives will be lost and 30,000 Udur lives will be lost.

Table 1
Cross-Tabulations: Forced Choice Design vs. Neither Alternative Design

Problem	Design	Frame	Risk-Averse	Risk-Acceptant	Neither	χ^2	N
Problem A							
		Gains	30 (58.8)	21 (41.2)			
	Forced Choice					2.221	101
		Losses	22 (44)	28 (56)			
		Gains	21 (43.8)	25 (52.1)	2 (4.2)		
	Neither Alternative					5.141	97
		Losses	16 (32.7)	24 (49)	9 (18.4)		
Problem B							
		Gains	31 (60.8)	20 (39.2)			
	Forced Choice					.792	101
		Losses	26 (52)	24 (48)			
		Gains	27 (56.3)	18 (37.5)	3 (6.3)		
	Neither Alternative					7.776*	97
		Losses	16 (32.7)	22 (44.9)	11 (22.4)		

*p<.05
Note: Numbers in parentheses are row percentages.

Table 2
Cross-Tabulations: Two Alternatives Design vs. Four Alternatives Design vs. Six Alternatives Design

Problem	Design	Frame	Risk-Averse	Risk-Acceptant	χ^2	N
Problem C						
		Gains	22 (64.7)	12 (35.3)		
	Two Alternatives				10.019**	68
		Losses	9 (26.5)	25 (73.5)		

**p<.01

Problem	Design	Frame	R-Av[a]	LR-Av	LR-Ac	R-Ac	χ^2	N
Problem C								
		Gains	7 (20.6)	7 (20.6)	9 (26.5)	11 (32.4)		
	Four Alternatives						.900	67
		Losses	4 (12.1)	7 (21.2)	10 (30.3)	12 (36.4)		

[a]R-Av= Risk-Averse, LR-Av= Less Risk-Averse, LR-Ac= Less Risk-Acceptant, R-Ac= Risk-Acceptant

Problem	Design	Frame	R-Av[a]	SR-Av	LR-Av	LR-Ac	SR-Ac	R-Ac	χ^2	N
Problem C										
		Gains	1 (3.2)	4 (12.9)	6 (19.4)	10 (32.3)	2 (6.5)	8 (25.8)		
	Six Alternatives								4.949	63
		Losses	3 (9.4)	5 (15.6)	5 (15.6)	4 (12.5)	2 (6.3)	13 (40.6)		

Ar.-Av= Risk-Averse, SR-Av= Somewhat Risk-Averse, LR-Av= Less Risk-Averse, LR-Ac= Less Risk-Acceptant, SR-Ac= Somewhat Risk-Acceptant, R-Ac= Risk-Acceptant
Note: Numbers in parentheses are row percentages.

Table 2 (continued)
Cross-Tabulations: Two Alternatives Design vs. Four Alternatives Design vs. Six Alternatives Design

Problem	Design	Frame	Risk-Averse	Risk-Acceptant	χ^2	N
Problem D						
		Gains	25 (73.5)	9 (26.5)		
	Two Alternatives				1.643	68
		Losses	20 (58.8)	14 (41.2)		

Problem	Design	Frame	R-Av[a]	LR-Av	LR-Ac	R-Ac	χ^2	N
Problem D								
		Gains	8 (23.5)	9 (26.5)	13 (38.2)	4 (11.8)		
	Four Alternatives						2.444	67
		Losses	9 (27.3)	11 (33.3)	7 (21.2)	6 (18.2)		

[a]R-Av= Risk-Averse, LR-Av= Less Risk-Averse, LR-Ac= Less Risk-Acceptant, R-Ac= Risk-Acceptant

Problem	Design	Frame	R-Av[a]	SR-Av	LR-Av	LR-Ac	SR-Ac	R-Ac	χ^2	N
Problem D										
		Gains	7 (22.6)	6 (19.4)	11 (35.5)	6 (19.4)	1 (3.2)	0 (0)		
	Six Alternatives								10.078	63
		Losses	10 (31.3)	5 (15.6)	6 (18.8)	3 (9.4)	1 (3.1)	7 (21.9)		

[a]R-Av= Risk-Averse, SR-Av= Somewhat Risk-Averse, LR-Av= Less Risk-Averse, LR-Ac= Less Risk-Acceptant, SR-Ac= Somewhat Risk-Acceptant, R-Ac= Risk-Acceptant
Note: Numbers in parentheses are row percentages.

Table 3
Cross-Tabulations: One Value Dimension Design vs. Two Value Dimensions Design vs. Three Value Dimensions Design

Problem	Design	Frame	Risk-Averse	Risk-Acceptant	χ^2	N
Problem E						
		Gains	14 (41.2)	20 (58.8)		
	One Value Dimension				5.916*	68
		Losses	5 (14.7)	29 (85.3)		
		Gains	14 (41.2)	20 (58.8)		
	Two Value Dimensions				2.177	67
		Losses	8 (24.2)	25 (75.8)		
		Gains	9 (29)	22 (71)		
	Three Value Dimensions				.426	63
		Losses	7 (21.9)	25 (78.1)		
Problem F						
		Gains	19 (55.9)	15 (44.1)		
	One Value Dimension				1.214	67
		Losses	14 (42.4)	19 (57.6)		
		Gains	17 (50)	17 (50)		
	Two Value Dimensions				.762	67
		Losses	13 (39.4)	20 (60.6)		
		Gains	17 (54.8)	14 (45.2)		
	Three Value Dimensions				.775	63
		Losses	14 (43.8)	18 (56.3)		

*p<.05
Note: Numbers in parentheses are row percentages.

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