The Cognitive Revolution and the Political Psychology of Elite Decision Making

Emilie M. Hafner-Burton, D. Alex Hughes, and David G. Victor

Experimental evidence in cognitive psychology and behavioral economics is transforming the way political science scholars think about how humans make decisions in areas of high complexity, uncertainty, and risk. Nearly all those studies utilize convenience samples of university students, but in the real world political elites actually make most pivotal political decisions such as threatening war or changing the course of economic policy. Highly experienced elites are more likely to exhibit the attributes of rational decision-making; and over the last fifteen years a wealth of studies suggest that such elites are likely to be more skilled in strategic bargaining than samples with less germane experience. However, elites are also more likely to suffer overconfidence, which degrades decision-making skills. We illustrate implications for political science with a case study of crisis bargaining between the US and North Korea. Variations in the experience of US elite decision-makers between 2002 and 2006 plausibly explain the large shift in US crisis signaling better than other rival hypotheses such as "Iraq fatigue." Beyond crisis bargaining other major political science theories might benefit from attention to the attributes of individual decision-makers.

For decades, a cognitive revolution has been sweeping across the many fields of social science. The key insight from this revolution is that human decision-making is far from perfectly rational yet follows certain patterns that are relevant for economic and political behavior. Most of the evidence about human behavior has come from experimental studies on students and other subjects that are readily available to university professors in large numbers, at little cost.[1] Such studies have immediate relevance for understanding some kinds of political behavior, such as voting, that involves analogous populations.[2] Much of politics, however, hinges on the behavior of senior politicians and bureaucrats who run national governments and international organizations. Unfortunately, experienced elites are difficult to obtain as subjects because they are generally busy, wary of clinical poking, and skittish about revealing information about their decision-making processes and particular choices.[3] When elites do consent to such research, sample sizes are exceptionally small, making it hard to draw general inferences. While many political scientists do acknowledge that there are differences between how elites and novices reason, the literature generally downplays such differences.

A small but growing number of experimental studies done mainly in the last two decades suggests that experienced elites act differently from the population of less experienced university students who have been the mainstay of research in political psychology, behavioral economics and related scholarship on the psychology of decision-making.[4]

We make two arguments about the importance of this cognitive revolution for political science. First, on methods, when studying elite decision making it is important to use elite subjects in experimental studies, where possible, rather than relying on undergraduate convenience samples. When inexperienced subjects are utilized, it is necessary to make extrapolations based on known

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Emilie M. Hafner-Burton is Professor at the School of International Relations and Pacific Studies (IR/PS) at the University of California–San Diego (UCSD) where she co-leads the Laboratory on International Law and Regulation (ILAR); D. Alex Hughes is a PhD Candidate in the UCSD Department of Political Science and a research fellow at ILAR; David G. Victor is Professor at IR/PS and also co-leader of ILAR. *The authors thank Brad LeVeck, James Fowler, and David Lake for extensive conversations. Steph Haggard offered invaluable advice on the Korea case study. The authors also thank Jim Andreoni, Astrid Daanenberg, Ernst Fehr, Joshua Gubler, Bob Jervis, John List, Dustin Tingley, Arild Underdal, the Burkle Center for International Relations, and the EPRI Advisory Council for helpful comments and guidance. Thanks to Jeff Isaac, James Moskowitz and several reviewers for their extensive guidance, to Linda Wong for excellent research assistance and Laura Bucci for help in production. ILAR is funded by IR/PS, the Electric Power Research Institute, The Norwegian Research Foundation, and BP, plc.*

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differences of experienced elites.[5] In the pages that follow we summarize some of those known differences. Second, we argue that many political science theories are based on assumptions about individual behavior that actually vary with the domain-specific experience of the individual elite decision makers. Modifying those theories to reflect these known variations could lead to more powerful theories—a point we illustrate using theories of crisis bargaining to explain two major episodes of conflict between the US and North Korea.

We develop our arguments in three steps. First, we investigate the concept of an "elite." Following the literature, we adopt the working definition that elites are individuals with considerable influence within their domains. We argue that experience is the driving force in explaining why elites have different decision-making skills and so throughout this essay we refer to "experienced elites."

Second, we investigate literature in behavioral economics and cognitive psychology on human reasoning and decision-making. This work includes classic concepts—such as bounded rationality and prospect theory—that long ago diffused into political science.[6] We focus on more recent research that remains much less familiar to political scientists yet potentially powerful in explaining political choices and outcomes.[7] For six traits, in particular, there is evidence demonstrating the effects of experience on decision-making. To preview our synthesis, experience leads elites to be less averse to losses, in part because they may have higher levels of trust and could be more prone to cooperate.[8] Experienced elites make different and better use of heuristics when making decisions in complex situations.[9] There is also suggestive evidence that experienced elites are more aware of how to bargain strategically when they are interacting with other elites and with non-elites.[10] Experience also leads decision makers to evaluate time with time-consistent discount rates.[11] Much of this evidence suggests that decision making by experienced elites more closely approximates the canonical rational actor assumption; however, there is suggestive evidence that in some ways elites are less rational, such as being prone to over-confidence.[12] Focusing on these differences between experienced and less experienced decision-makers is important because it helps explain how results from convenience samples might be extrapolated to highly experienced elite decision makers; it also matters because it lays a foundation for how political science theories might be refined to reflect how individuals make decisions and how those choices vary with experience.[13]

Finally, we offer a case study based on a decade of bargaining over nuclear weapons and missiles crises between North Korea and the United States to illustrate the implications of the cognitive revolution for the field of political science.[14] Crisis bargaining theories, widely used in political science, hinge on the ability of elite decision-makers such as heads of state to credibly signal their resolve to settle a crisis on their terms. This signaling process occurs under the shadow of a mutual understanding that failure to avert a crisis has unknown but potentially catastrophic consequences for both sides. Since the early 2000s, North Korea has maintained a team of highly experienced elites while political turnover in the United States varied the level of relevant experience among key US policy makers. We argue that experienced elites are likely to use decision heuristics for processing the complex, uncertain information typical of crises in ways that are more effective at signaling credibility than inexperienced decision makers in the same role. We suggest that awareness of these factors can help explain why, in the early years, the George W. Bush administration adopted a more muscular strategy towards North Korea yet was less effective in signaling resolve than the later, more experienced, Bush team comprised of key decision makers who had gained important practical experience.

What Is an Elite?

Elites are broadly defined as the small number of decision makers who occupy the top positions in social and political structures; those who "have the highest indices in their branch of authority"[15] and "exercise significant influence over social and political change."[16] By this operational definition, elites are found in a wide array of activities including business, religious institutions, public interest groups and, of course, elected officials and bureaucrats.[17] Elites are primed and selected for service in many ways—through the schools they attend, their connections to existing elites, performance on the job, and other factors.[18] Through these priming and selection mechanisms, elites gain the means to exercise significant influence over resources. Political elites control political resources (e.g., regulation and public budgets); media elites control access to sanctioned information sources that can influence public opinion; Hollywood elites control access to the silver screen and the imprimaturs of celebrity. These different types of resources can, in turn, affect the many different faces of political power, from the setting of agendas and patterns of thought to control over material resources.[19]

Elites differ from non-elites in many ways, but two dimensions capture much of the variation. First, through endowments, priming and selection, elites come to control the deployment of resources—such as money and political power—that non-elites do not enjoy.[20] A growing literature has looked at selection mechanisms that put elites into power in public institutions from corporate boards to governments.[21]

A second major difference between elites and non-elites concerns sophistication. Elites tend to have large amounts of context-specific experience, and this experience plausibly affects how they make decisions.[22] Recent experimental work involving brain imaging finds that, when compared with novices, experienced decision-makers acquire skills

that allow them to deploy heuristics and other simplified representations of complex tasks, allowing for highly efficient decision-making on complicated matters.[23] Subjects activate distinct brain regions for familiar and novel tasks; subjects with experience at a task more readily utilize portions of the brain associated with efficient, routine decision-making whereas subjects with little task experience utilize high-load brain regions.[24] Brain imaging research also suggests that the human brain developed features expressly designed to identify and react to coalitions, which is particularly interesting for political science since much of political behavior requires the ability to sort people and decisions into groups of allies and opponents.[25] In totality, this research suggests that all people are generally equipped with the hardware needed for politically sophisticated tasks but that experience mediates the ability of decision-makers to make efficient use of these hard-wired capabilities.[26]

Scholarship on the role of experience also suggests that it is difficult to translate experience in one domain to another. A telling example comes from studies that pit world-class players of the board game *GO!* against novice opponents. When playing *GO!* the experts win handily, but when they play a closely related game—*Gokomu,* which uses the same board with similar (but not identical) scoring rules—the expert *GO!* players only slightly outperform the novices.[27] A host of other studies arrive at similar conclusions about the portability of experience.[28]

While the tenor of scholarship suggests that experienced decision-makers outperform inexperienced decision-makers on most domain-specific tasks, we note that there are some ways that elite experience could be a liability in decision-making, in particular through the over-abstraction of details. While experienced elites may understand deep logic that undergirds decision circumstances, they may focus on this deep logic at the expense of surface features that are crucial to understanding and explaining the context of a decision. When asked to describe a simple programming task, computer programmers were less successful than were recreational computer users.[29]

The Science of Strategic Decision Making: Elites and non-Elites

The questions surrounding how people process information and make decisions are durable ones in western political thought, but since the 1950s they have been the subject of systematic scientific research rooted in cognitive psychology.[30] In the social sciences, particularly notable is the work of Herbert Simon who showed that in complex information environments humans do not make choices through optimization. Instead, humans "satisfice"—they use simple heuristics to capture the important contours of a decision and keep those heuristics so long as they perform adequately.[31] Also notable is Kahneman and Tversky's widely known prospect theory.[32] Based on the observation that people value gains and losses by assessing changes from the status quo, Kahneman and Tversky argue that individuals dislike negative movements from the status quo more than they cherish an identical gain.[33] Recent work has theorized possible evolutionary mechanisms.[34] In addition to this loss aversion, individuals also respond to uncertainty in different ways depending on whether decisions are in the domain of gains or losses. When compared with actuarial values, decision makers place heavy emphasis on certain gains while under-valuing certain losses.[35]

The loosely connected fields of cognitive psychology, neurophysiology, and experimental economics have elaborated and tested new theories that move far beyond the classics of bounded rationality and prospect theory. These fields of research have, in diverse ways, reaffirmed the conclusion that humans are far from perfectly rational. For political scientists, what is perhaps most interesting is that these new branches of research include studies that focus more squarely on the factors that are of paramount importance to political behavior—attributes such as strategic behavior, processing of complex information, confidence, and cooperativeness.

We have surveyed these fields and found 18 traits that could plausibly have important effects on political decision-making, which we list in the supplemental information for this article. Here we focus on a subset of six traits for which there is some evidence that experienced elites and inexperienced decision-makers are likely to differ in ways that affect important political behavior. Thus, we exclude from further discussion traits such as altruism that surely have effects on decision-making generally but for which there is limited evidence that experience alters decisions. We are mindful that for most traits that cognitive psychology and related fields have examined there is simply no evidence—one way or the other—that experienced and inexperienced samples behave differently. Filling out the assessment of experience is a topic for future research.

Risk Management: Experienced Elites Are Less Prone to Loss Aversion

One of the central findings from prospect theory is that people are asymmetrical in how they perceive and manage risks. Experience leads to more symmetrical decision-making; experienced elites, for example, are less prone to loss aversion, which makes them better gamblers.[36] Much of politics—such as managing international crises—is about the calculus of risk, and experienced elites might manage those risks differently from decision makers selected randomly from the phone book.[37] Prospect theory explains why people are averse to losses when they are in the "realm of gains"—that is, when they have in hand something they value, it also explains behavior in the "realm of losses"—that is, when people face the certainty of a loss, they tend to select riskier options on the hope that big bets will return them to parity.

Strategic Interaction: Experienced Elites May Be Better at Playing Iterated Games

Experimental research suggests individuals vary in the sophistication with which they approach strategic games. Here we focus on those variations as they apply to iterated games; later we look at how individuals vary in assessing the decisions that other players in the game are likely to adopt.

Individuals differ on the number of rounds they consider when presented a decision situation—known in the behavioral economics literature as "d-times backward induction." The score "d," which is measurable in experimental settings, reflects the number of rounds of iterated choices over which the individual reasons before making his own choice for the first round; it thus holds the meaning of "differential" backward induction.[38] The scholarship has centered on three explanations for variation in people's "d" scores.

One explanation is rooted in variations in time preferences.[39] Even when individuals are aware of the full extent of game iterations, their time preferences may vary. Countries considering signing an agreement to limit emissions may be fully cognizant of the long-term benefits of reducing carbon-emissions yet vary in how they weight present-value benefits against the costs of policy action. A second perspective is rooted in differences in perception about the structure of a game. For example, one player may imagine the emissions reduction game to be iterated annually ten times—as in a typical long-term treaty—while others think that rounds of iteration are much shorter before the game is restructured. In effect, the two players' revealed preferences suggest they are playing different games.[40] A third perspective focuses on the variations in individuals' abilities to comprehend, learn and apply concepts of iterated dominance and identify the best strategy for a particular strategic situation.[41] Experiments suggest that, on first impression, about one-fifth of players in an iterated game play the optimal equilibrium strategy, implying that the vast majority are unable to work through chains of decisions to eliminate the least rewarding strategies.[42] However, in repeated play about two-thirds learn their way to the equilibrium by repeatedly eliminating inferior strategies.[43]

Strategic Interaction: Experienced Elites May Be More Aware of Other Players

People also vary in the extent to which they are aware of how *other* players are likely to behave in strategic games, known as "k-level awareness." Although the idea that perceptions of others are an important part of strategic decision making was originally raised by Keynes in his famous "beauty contest" game,[44] the idea has been modernized and rooted in experimental research by a host of recent scholars.[45] Keynes's formulation had a group of subjects seated at a table perusing a series of six photographs of college students. Their task was to select two photographs from the six that the majority of the group will identify as the most beautiful. The optimal strategy, as Keynes demonstrated, depends critically on beliefs about modes of reasoning of the other players. If all players are fully rational, and know that all other players are equally rational, then the beauty contest game becomes a focal-outcomes game.[46]

In a flurry of articles starting in the 1990s economists undertook the first serious treatment of the reasoning underlying the original beauty contest game.[47] The measure they adopted, "k-level," is an indicator of the number of rounds of interaction that a player thinks ahead in a strategic interaction. Players with high k-level reasoning are able to evaluate how other players are likely to reason and also think that other players are also responding in comparable ways. High k-level awareness is a necessary component of Common Knowledge Rationality (CKR), which, in turn, is a necessary component of the rational actor often assumed in political science theories. Stahl and Wilson, who developed this indicator, found that just 27 percent played the equilibrium associated with CKR, meaning nearly three-quarters of subjects played a strategy based on a strategically simple view of the world.[48] Some recent research has linked k-level reasoning to brain regions associated with complex decision-making.[49]

K-level analysis could find a home, especially, in political theories about strategic interactions. For example, long ago, international relations scholars focused on misperception as one explanation for international politics, including misperception of the decision-making systems and goals of adversaries in strategic situations. K-level analysis offers the prospect of measuring and explaining this type of misperception systematically.[50] Indeed, a few studies that look at elite populations suggest that elite status, experience and training could affect k-level reasoning. Comparing undergraduates at the California Institute of Technology (Caltech) with economics Ph.D students, members of the Caltech board of trustees, and a sample of 20 CEOs, corporate presidents, and board chairmen, one study found that subjects highly skilled and trained in game theory scored about one k-level closer to the equilibrium.[51] Our own research suggests that elite populations of US business and political decision makers have higher k-levels than non-elite convenience samples and that most of the rise is due to the near absence in the elite population of players who make no effort at strategic reasoning.[52]

Experienced Elites Use Heuristics More Effectively When Processing Complex Information

There is also growing evidence related to how individuals process complex information. Although the conceptual details vary, many of these studies point to dual process modes of reasoning: relatively low-cost processing and more

taxing cognitive functions.[53] To simplify the discussion, here we elaborate just one of the models whose terminology is the most accessible—known as the "Heuristic-Systematic" dual process model. This work suggests people vary in how much they think systematically;[54] they also vary in the types of heuristics they select for making complex decisions.[55]

"Systematic" processing is the making of decisions through close and thorough analysis of information.[56] It is most akin to the decision-maker who is fully informed and responds to new facts with full, new analysis. It requires a full devotion of cognitive ability and capacity—resources that decision-makers devote, especially, when they face a novel environment with few constraints on resources such as time—driving a new route on an unfamiliar road at night. By contrast, heuristic processing is the activation and application of judgment rules—heuristics—that are learned and stored in memory and tested through experience—driving a familiar road home from campus. This mode of decision-making, typical when subjects encounter familiar situations, relies on easily processed judgment cues rather than a full-blown analysis.[57] Experiments suggest that even when subjects face relatively complex, novel judgments under binding time constraints they rely on this low-cost mode of processing by identifying some applicable heuristic.[58]

The insight from this research is that nearly all individuals are cognitive misers who seek the highest cognitive task rewards for the lowest cognitive effort, and efficiency depends on the availability of adequate heuristics. Novices who face unfamiliar circumstances hunt for the right heuristic; individuals with more experience can select much more quickly a reasonably well-functioning heuristic.[59] For political scientists this strong incentive for cognitive efficiency may help explain how historical models become selected as heuristics—a topic that was popular long ago among historians of foreign policy—and may also explain detailed decision-making, especially during crises when resources such as time and information are scarce.[60]

Heuristics play a central role in the simplifying effort as people search for low-cost ways to make decisions, and some evidence suggests that experienced elites are better at selecting the "right" heuristics. Studies of medical clinicians have shown that when confronted with routine cases, expert clinicians make data-driven diagnoses by applying a small set of rules to the data and sorting for the right decision pattern. By contrast, novice clinicians tend to use hypothesis-driven approaches that keep open a wide range of possible diagnoses, and are therefore less efficient in processing information and fail to deliver superior results to patients.[61] Additionally, in a series of economic planning game experiments in China, Cooper et al. compared the performance of novice and seasoned Chinese Community Party members with the performance of a group of university students. In a game designed to replicate the dynamics between firms and central planners experienced managers performed more strategically in all cases than the students, but, notably, the managers performed especially better when making decisions most akin to the functions they performed in the real world.[62] A key asset that experienced experts bring to tasks is the ability to make choices with greater automaticity.[63] Slow and serial decision-making processes require sustained, conscious attention; with experience these tasks can become faster and less deliberate, allowing for parallel processing with other decisions so decision makers can focus cognitive resources on aspects of performance where control is desirable.[64]

In addition to relying more on heuristics and choosing the "right" heuristics at the outset, experimental research suggests that experienced elites also revise (or even jettison) their heuristics more efficiently than non-elites. This metacognition—cognition about cognition—helps condition the mechanisms for efficient retraining or even restarting when an individual learns that lines of reasoning and heuristics are not performing satisfactorily.[65] In novice populations, this metacognition is possible, but requires deliberate consideration; for experts this metacognition is more likely to be automatic—a skill learned from years of awareness of their own performance.[66]

Experienced Elites Are More Prone to Overconfidence

Experienced elites may also be more confident than less experienced individuals, which can alter decision-making behavior. While research on other traits suggests that experience leads to more rational decision-making, overconfidence appears to work in the opposite direction. Massey and Thaler find that top-level American football executives routinely overestimate the abilities of their draft-picks and pay above a talent-adjusted market wage.[67] Similarly, chess grandmasters more frequently overestimated the number of moves they could recall compared to novices who were generally more accurate.[68] Lin and Bier analyze the responses of nearly 5,000 experts across a diverse set of fields and find that across a range of question structures and experimental contexts, experts tend to be overly confident in the precision of estimates regarding domain-relevant estimates.[69] As noted earlier, in an influential book, Philip Tetlock argues that political experts are no better at predicting future political events than political novices.[70] Even when there are financial incentives to manage risks neutrally, overconfidence is evident among experienced actors.[71] What looks like bombastic nationalistic pride—for example, the refusal of a leader to back down in the face of overwhelming odds of failure—might simply be the result of improper self-assessment.

The costs of overconfidence, however, might be offset by benefits of improved willpower and motivation.[72] Indeed, overconfident behavior may have developed through evolutionary motivation to encourage otherwise

risk-averse actors to pursue risky strategies.[73] For example, Johnson and Fowler find that overconfident beliefs may be evolutionarily stable across a broad range of circumstances provided the benefits from winning contested resources are sufficiently large compared to the risks and costs of competition.[74] They suggest that simple overconfident beliefs may outperform more complete decision rules if the overconfident beliefs are sufficiently more "economical, available or faster."[75] This insight may apply more generally since incentive structures that reward overconfidence are omnipresent in the global system. Retaining power, as an economic or military hegemon, might be incentive enough to motivate overconfident behavior in a State.

Experienced Elites May Be More Cooperative

Many tasks in politics require cooperation, such as building and sustaining governing coalitions or forging alliances with other countries.[76] Experienced elites, perhaps because they are less averse to losses, also appear to be more cooperative than less experienced decision makers. In a variant of the trust game, Hedinger and Goette ran a series of experiments that asked participants to divide an endowment into two: one parcel for keeping and another that is "passed" to a game partner who then, in turn, divides the endowment and returns a portion back to the original player. At each exchange the amount passed was multiplied, creating the prospect for gains if the players trusted each other. Comparing the outcomes from a pool of highly-trained Swiss airline pilots and a group of university students, researchers found that pilots were significantly more trusting when they knew that other participants in the game were fellow pilots—they passed forward a larger portion of the original endowment and also received a larger share in return.[77] When pilots played these games with students, or students among students trust was lower; evidence that cooperation-prone decisions may be a result of shared, expert experience.[78]

Implications for Theories of Decision Making: An Application

We now turn to exploring how these insights from cognitive psychology and behavioral economics might affect theories of political decision making that implicate elites. This is not a new dialogue between these fields,[79] although new cognitive science and elite psychology research offer especially interesting possibilities for application in political science. We use crisis bargaining to demonstrate some testable implications of our argument. While crisis bargaining theories are hardly the only theories that might be affected by new understandings of individuals and elites behaviors, they are a good place to start because elite decision making is central and the consequences of failed bargaining are often substantial.

Crisis Bargaining: Signaling and Commitment

Crisis bargaining models characterize the strategic interactions of state-actors bargaining over how to allocate scarce assets such as territory and prestige when the failure to reach agreements leads to costly outcomes. Frequently used to study pre-conflict behavior like signaling, the standard construction is zero sum—a gain for one party is necessarily a loss for the other.[80] Real-world crises often occur quickly and engage secretive policy processes that vitally affect national security and economic prosperity, and thus typically the key choices are made by only small groups or even individual elite decision-makers at the highest levels of political power. Crisis bargaining is emblematic of elite decision making.

Bargaining in crisis settings depends on two closely related attributes: uncertainty and communication. Knowledge of the preferences of other players is imperfect, and final outcomes are uncertain—if the parties fail to agree on an outcome then the exact consequences are drawn from a lottery that is populated mainly with costly outcomes. In the standard motivation, two commanders each want to intimidate the other to gain a concession. To do so, he and she must demonstrate just how serious each is about going to war. Actually going to war is an outcome that both want to avoid, for it is probably costly. To signal his preferences he must move troops to the border of the territory in question, but how many should he send? The equilibrium, which depends on common knowledge rationality, makes demands on the skills of the bargainers.

In addition to uncertainty, the outcomes of crisis bargaining models usually hinge on the credibility of communications between players. Both sides listen and watch the other, trying to discern true preferences from bluffing. Successful bluffs force the other player to back down earlier and may create rents that the skilled bluffer can appropriate. Usually these models focus on the cost of signaling and other forms of communication, and the standard conclusion is that communication must be costly to carry a credible message. If costless communication—"cheap talk"—could affect the actions of the other, each would misrepresent his position and signal he was stronger than in actuality to elicit concession from the other. Critically, just what level of cost sends this signal is unknown to both parties before bargaining begins.

Variations in Crisis Bargaining Behavior Due to Experience

The insights from behavioral economics and cognitive psychology suggest that experience may affect decision makers in at least six different ways. First are the predictions of prospect theory, which are perhaps most important because one of the central motivations in crisis bargaining is the shared understanding that failure to resolve the crisis will lead to (uncertain) costly outcomes. According to prospect theory, if a player already has achieved a tangible

gain, the player will be particularly wary of losses. Conversely, if the player is in the "domain of losses"—where every outcome seems likely to entail some kind of loss—then prospect theory maintains that people are likely to make especially risky decisions. This asymmetrical tolerance of risk is the essence of prospect theory, and empirical evidence suggests it declines with experience.

Applied to crisis bargaining, prospect theory suggests that if both agents are highly experienced then both are likely to view the uncertain but highly costly outcome with equal aversion, and it won't matter if one player operates in the realm of gains or losses. But if one agent is less experienced and has already obtained some gain—for example, a swath of territory or a decision by an adversary to stop building dangerous missiles—then he will be loss averse in how he tries to end the crisis and will pursue strategies that prefer protecting his already held gains. If instead he sees the outcomes as entirely costly then he might do the exact opposite—willing to take massive risks such as by sending extreme signals about the costs he is willing to bear. The difficulty in understanding the situation in this way, and the major criticism levied, is that the scholar needs to *ex ante* identify the domain in which the agent is reasoning.

Second are the insights from iterated strategic bargaining. The insight from experimental work on d-times backward induction suggests that experienced decision makers better reason through long chains of iterated strategic decisions than less experienced players who have a "horizon" beyond which they are unable to reason. Put differently, in strategic situations that involve both experienced and inexperienced decision makers, the two types of players are playing different games—the former sees a highly iterated interaction with long time horizons and the latter faces a truncated decision tree. These differences can affect signaling and tacit bargaining. In the real world, signals often aren't single events but a string of interactions—a signal is sent, a response is observed, and the signal adjusted. If both players are highly experienced they may be able to interpret the meaning of ambiguous signals, but if one or both of the players is inexperienced visible signals may need to be much larger and riskier.

Third are the insights from k-level research, which concerns the awareness that players have of how other players in a game will make decisions. The experimental research suggests that more experienced players have higher k-levels on average and that poor strategic reasoning is rare.[81] One observable implication could be in the kind of signals that players send during crisis bargaining. In a crisis that involves a large number of players, a highly experienced player might send signals that are differentiated according to the experience of the other players. Signals sent to other highly experienced players might assume that those players are able to calculate response and counter-response; signals sent to less experienced players might need to be more blunt and cannot assume that the inexperienced player will be able to interpret and calculate a proper counter-response. The predictions in this realm are similar to those of d-times iteration but the underlying logic is different because the essential insight of k-level theory is that changes in behavior stem from an actor's awareness of the other actors and their strategic skills.

Fourth is the role of heuristics in managing complex decisions—such as those that are typical of decision-making under bounded rationality. Crisis bargaining models are marked by uncertainty of many types—the real cost of signals, how signals will be interpreted, the consequences of failure to resolve the crisis and so on. These uncertainties, compounded by the need to make decisions in strategic settings where there may be variations in the strategic skills of multiple players leads to high levels of complexity. In a crisis where players vary in their experience, the most experienced decision-makers are likely to adopt heuristics most effective for the setting while other decision makers adopt improper heuristics or use slower, more taxing fundamental reasoning. The experienced player should perform better and make decisions more rapidly, which could also affect the credibility of the signals they send.

Fifth is overconfidence—the unjustified positive evaluation of one's own performance. The implications of most of the decision-making traits discussed above are that experienced elites tend to more approximate the assumptions of rationality. Overconfidence works in the opposite direction, leading experienced decision makers to behave inconsistently with their preferences. Experienced leaders may make any of a number of erroneous assessments, such as excess optimism about their own endowments or unwarranted disdain for the skills of their opponents.

Sixth is cooperativeness. Unlike the five earlier decision-making traits, which have an impact principally on how individuals weigh the factors that lead to decisions, the trait of cooperativeness more directly implicates joint action. Regardless of the payoffs and risks, more cooperative players are more likely to reach joint agreement to resolve a crisis. One observable implication of this is that crises managed by highly experienced players are likely to be resolved earlier than might be expected, and with more reciprocal gains, but the appearance of a novice decision maker might reduce the odds of early agreement.

To this point, we have motivated our discussion primarily as a synthesis of the findings based on experimental research in behavioral economics and cognitive psychology. We have argued that information processing systematically changes as decision makers move across an experience dimension; specifically, the accumulation of experience shifts the modes of reasoning. Now we turn to an empirical illustration of how these choices could alter the outcomes expected from crisis bargaining theory. This alteration, we suggest, could readily allow the basic

Table 1
Experience level of Bush Administration officials during 2002 and 2006 North Korean crises

Official	2002	2006
George W. Bush	**Novice** Experience as Texas Governor but new to President and little focus on North Korea	**Experienced** 2002 North Korea crisis
Richard Cheney	**Mixed** Experience in Congress, as Secretary of Defense during era when North Korea was not a prominent issue; new to Vice President and little engagement with North Korea	**Experienced** 2002 North Korea crisis
Donald Rumsfeld	**Novice** Career in Congress and analyst of weapons of mass destruction; >1 year on job as Secretary of Defense but little experience with North Korea; his 818 page memoir barely mentions the country	**Experienced** 2002 North Korea crisis
Condoleezza Rice	**Novice** Earlier career at NSA focused on Soviet Union; >1 year as National Security Adviser with few key decisions on North Korea beyond a 2001 policy review	**Experienced** 2002 North Korea crisis; new to Secretary of State since January 2005
Colin Powell	**Novice** Extensive military career; >1 year at Secretary of State but little attention to North Korea	Replaced as Secretary of State by Condoleezza Rice
John Bolton	**Mixed** Numerous government and private foreign policy positions and long-time critic of Clinton North Korea policy; undersecretary of State for Arms Control from 2001 and worked North Korea policy review but prior to 2002 crisis faced no major North Korea decisions	**Experienced** 2002 North Korea crisis; but new to role of UN Ambassador since August 2005

insights from the behavioral revolution to be grafted onto crisis bargaining—or other leading theories in political science—to yield more powerful theoretical predictions and insights.

An Illustration: US–North Korea[82]

It is beyond our scope here to systematically test the implications that variations in elite sophistication have for real crisis-bargaining situations, and we do not attempt to do so here. Instead, we suggest that widely-used theories of political science might yield different predictions if they reflected how behavioral traits influence elite decision-making.

North Korea is a perennial provider of foreign policy crises. We look at two in particular where the experience of US decision makers has varied markedly even as many other key variables remain constant. In 2001–2002, evidence mounted in the US intelligence community that North Korea had drawn on the Pakistani A.Q. Kahn network to covertly explore a uranium enrichment option in violation of its commitments under the 1994 Agreed Framework. That evidence led the US to confront North Korea in a 2002 crisis that saw the country exit the Nuclear Non-Proliferation Treaty (NPT). Four years later, in October 2006, North Korea tested its first nuclear weapon. While the North Korean regime remained constant over this time period, run by a leadership highly experienced in crisis bargaining and brinksmanship, there were considerable changes in experience among US policy makers who responded to these two crises. Our point is not to disparage the early years of the inexperienced George W. Bush administration—similar comparisons might be made between crises in the early and later years of the Clinton administration—but the 2002 and 2006 crises allow for semi-controlled observations, holding roughly constant the magnitude of the crisis and the key decision-makers while observing the effects of experience. Table 1 summarizes the context-specific experience level of Bush administration officials during both crises.

The US team was highly aware of North Korea's importance but had little experience working on North Korean issues when the George W. Bush administration first took power. Questions about North Korea arose during confirmation hearings for the new Bush national security team, but they did not figure prominently for any of the most senior appointees. Shortly after taking office, President Bush hosted South Korean president Kim Dae Jung, and while North Korea was on the agenda, no major positions were adopted. In 2001 the administration launched a policy review, but the review itself led to no significant actions. Indeed, North Korea did not figure prominently in the administration's foreign policy until the 2002 crisis forced new responses. Of the incoming US team only one senior member, John Bolton, had given extensive attention to North Korea in writings and analysis before joining the administration.[83]

These two crises in North Korea are a useful test because they allow for a partially-controlled comparison between inexperienced and more experienced decision-makers. The variation in experience affects decision-making, and that allows for a modified crisis bargaining theory that explains actual signaling and response during these crises. This modified theory may also perform better than rival explanations. To explain the softening position toward North Korea the popular and academic press identified "Iraq fatigue": a reluctance of the administration to continue belligerent posturing.[84] Iraq fatigue might explain a decrease in outright belligerence of the administration, but it does not predict the increased negotiation activity.[85]

Earlier in this article we identified six behavioral traits for which experience leads to changes in decision-making in materially important ways. Here we examine the four on that list for which the evidence is strongest.

Prospect theory and risk management. Although unrelated to North Korea, the September 11, 2001 al-Qaeda attacks affected how the Bush administration perceived gains and losses from events on the Korean peninsula. The mindset of the new administration was encapsulated in what journalist Ron Suskind called "the One Percent Doctrine." Suskind quoting Dick Cheney: "If there's a 1% chance that Pakistani scientists are helping al-Qaeda build or develop a nuclear weapon, we have to treat it as a certainty in terms of our response. It's not about our analysis . . . It's about our response."[86] While this approach to extreme risks was most fully evident in Iraq and in the 2002 National Security Strategy that embraced the doctrine of pre-emption, it also encapsulates the mindset of the leadership on the geostrategic risks involving weapons of mass destruction elsewhere. Prior to September 11, the Bush team thought negotiation with the North Koreans was undesirable; after that watershed it was much more toxic because negotiated outcomes were laden with risk and in the realm of losses. In his January 2002 State of the Union speech, President Bush devoted just 17 words to North Korea, but he prominently included the country as a member of that speech's memorable "axis of evil" countries that posed the most severe risks to US national security.[87] Unlike the Clinton administration—which sought to use the Agreed Framework to contain North Korea until the regime changed—the Bush administration saw few gains and mainly losses from engaging with Pyongyang.

If the inexperienced new administration saw decisions on North Korea within the realm of losses, as we suggest, one would expect the administration's behavior to be more aggressive, confrontational, and risky. This is largely the picture that emerges. Rather than engaging North Korea over the new intelligence on its enrichment program, the Bush administration confronted the regime and cut off heavy oil shipments under the Agreed Framework, a crucial policy decision that set in train North Korean escalation and eventual withdrawal from the NPT. Notably, the administration's official response was comparably reserved; within the White House, key decision-makers—notably on Cheney's staff and among the few others such as Bolton who were more experienced with North Korea and thus perhaps more prone to overconfidence in their proposed solutions—were seeking even more aggressive responses that sought outright regime change.[88]

By 2006 the administration's confrontational strategies had shifted. While rival perspectives see the sources of that shift in fatigue, we suggest it stems from experience which led the Bush team to manage risks more symmetrically. Even if the dangers posed by North Korea were seen by the Bush team in the realm of losses, the US responses in 2006 and onward involved less risky moves aimed at lower, but more reliably obtained, stakes. While hawks remained in the administration, their responses were rooted in the idea of containment and cautious engagement. Six-party talks that had been started years earlier in the wake of the 2002 crisis were reinvigorated in 2005 despite the Bush administration's earlier claims that diplomacy merely "pandered" to North Korean interests. Moreover, when the October 2006 test created a fresh crisis with an egregious challenge to the status quo, one of the earliest responses from the Bush administration was to revive these talks to even more seriously pursue the diplomatic option. Faith in the six-party talks was so resolute that even when, in 2007, evidence emerged that the North Koreans were behind construction of a Syrian nuclear reactor (which the Israelis soon bombed) the talks continued. In some senses the 2006 crisis posed much graver threats to US national security than the 2002 events; despite that, the signaling responses by the now more-experienced Bush team were less aggressive and confrontational.

Strategic awareness in iterated games. When responding to the 2002 crisis the Bush administration did not appear to think much about the likely counter-moves by North Korea. Indeed, when the Bush administration confronted North Korea with evidence of its uranium enrichment program and then ended the fuel oil shipments under the Agreed Framework, the North Koreans responded by ejecting inspectors from the International Atomic Energy Agency (IAEA) and threatening to restart the Yongbyon reactor.[89] These outcomes were among the worst for US interests; rather than facing a preliminary and probably rudimentary enrichment program, the US subsequently was forced to bargain with a North Korea willing and able to extract plutonium from spent fuel rods (in addition to a nascent source of fissile uranium), putting it on the road to earlier (and more reliable) construction of a nuclear device. Experts readily saw that such responses by North Korea were likely outcomes of Bush administration actions and puzzled that they had not been foreseen by members

of the administration. Even more puzzling to the experts was that none of the egregious North Korean actions yielded any further response from the Bush administration that such moves would be costly for the North Korean regime.[90] The Bush administration made its most aggressive move first and seemed to have no strategy for the next iterations. Such a confrontational strategy not only encouraged the North Koreans to adopt aggressive signaling, but it also made the US more dependent on assistance from China (which maintained working relations with North Korea) to achieve its foreign policy objectives on the Korean peninsula.

In short, when framing the key policy choices in 2002, US policy makers did not focus much on the knock-on consequences of a more robust and aggressive stance toward the North Korean regime. Instead, the justification was rooted in immediate (often moral) claims, such as North Korea's membership in the "axis of evil" and the need to avoid the moral hazards of appeasement. President Bush begins his first substantive discussion of North Korea in his memoirs with the reminiscence that one of the most influential books he read in his presidency was the account of a North Korean dissident, later invited to the Oval Office, that documented the horrors and inequities of the North Korean regime. Bush compared America's options for dealing with the North Korean regime and Kim Jong-il to parents dealing with children who sought attention by throwing their food on the floor. At a national security briefing early in 2001, shortly after he was sworn in, Bush said to his foreign policy team: "The United States is through picking up [Kim's] food."[91] Cheney called the North Koreans "masters of brinksmanship—creating problems, threatening their neighbors, and expecting to be bribed back into cooperation."[92]

In the wake of the 2006 nuclear test, the second Bush administration would shift to a longer-term strategy based on incremental responses and counter-responses. Even though North Korea had crossed a bright line by testing nuclear weapons missile technology, the Bush administration quickly sought to revive the six-party talks by resolving a financial sanction that had frozen North Korean assets in a Macau bank.[93] The six-party talks subsequently generated two roadmap agreements in February and October 2007 that sought a step-by-step approach that traded concessions for progress on freezing and ultimately dismantling the Yongbyon nuclear facilities. It must be emphasized that this approach did not ultimately succeed—something that no observer could reliably predict at the time—but nonetheless the strategy reflected a much more nuanced and incentive-compatible approach. The US deployed carrots as well as sticks, of many different types, and enticed other members of the six-party talks—most notably the Chinese—to play a more constructive and active role in the six-party process.[94]

Strategic awareness of opponents. Finally, we briefly consider a third decision-making trait: whether a strategic player understands the skills and interests of his opponent. Evidence from the North Korean case is suggestive that early in the first Bush administration, key foreign policy decision-makers knew little or nothing about North Korean decision-makers nor how they would respond to threats. The President's views on North Korea were anchored in simplifying images that cast the North Koreans as a childish group of food throwers. Others in the administration also saw the North Koreans as interested principally in causing trouble, masters of brinksmanship, and insatiable in their demands. These images may have clouded the ability of the US side to comprehend fully how North Korea saw the strategic interaction and calculated its responses. Even John Bolton's memoir, with its analysis of why North Korea was untrustworthy as a nation and as the most detailed assessment of that country by any of the most senior Bush team, has barely any analysis of why North Korea responded to the 2002 ultimatum in the fashion it did.[95] Rather than seeking to restart negotiations and engagement in order to allay a fear of military action, Donald Rumsfeld commented in a memo to a wide array of US foreign policy principals: "Getting to the table is what Pyongyang seeks; for us to grant it in response to the latest nuclear provocations would only reinforce Pyongyang's weak hand and prove that bad behavior pays."[96] Yet, North Korea's crisis bargaining perspective—rather than a bias toward childish, brinksmanship behavior—easily explains its response to the 2002 ultimatum. The very substantial changes in US foreign policy, and nuclear posture in particular, no doubt increased North Korea's perception that the US constituted a serious threat.

There is some evidence that by 2006 all the key foreign policy decision-makers knew more about North Korea and its likely responses than they did at the outset of the administration. Some of this shift is the effect of experience on the principals. Some is bureaucratic as the president had shifted decision-making on North Korea to those actors likely to have the highest strategic awareness of the regime. The State Department, under Condoleezza Rice, had largely taken control of the issue and vested authority in senior diplomats, such as Christopher Hill, who were expert on crisis bargaining of this type. Rice herself seems to have shifted in her awareness of how North Korea would respond. Her memoirs provide scant discussion of what North Korea did in response to the 2002 ultimatum and yet are extensively detailed on how the US reacted to the 2006 crisis and anticipations of how North Korea would counter-react.[97]

Heuristics. Of course, the interactions we describe here using the concepts from prospect theory, iterated bargaining, and strategic awareness of opponents are not, in the

real world, singular causes for complex outcomes. There are other, overlapping explanations but some of those also comport with the literature on experience and decision-making. For example, the shifts described here might also be interpreted in terms of the heuristics that policy makers used to make decisions. In 2002 the heuristics were drawn from how parents deal with children throwing tantrums whereas in 2006 the heuristics might be more aligned with this as a game of strategic containment where the best moves start with low cost signals and then send costlier signals (and punishments) over time in response to actions.

The illustration we are offering here is suggestive rather than definitive, but it demonstrates what stands to be gained. We have used a single case—US crisis bargaining with North Korea—to probe conclusions derived from experimental studies. Here we have relied heavily on memoirs—with the requisite discounting for truthfulness and self-interested retelling—to reconstruct what actors in the first and second Bush administrations thought they were doing. This illustration allows for a quasi-controlled comparison between decision-makers whose experience varied over time in the face of two similar situations—the 2002 and 2006 crises. In doing so, we refine a theory that would have a hard time explaining US behavior in these two crises and make it more powerful. Because the 2006 crisis had potentially greater implications for US security, crisis bargaining theory suggests that the Americans would send clearer and more costly signals during that event when compared with 2002. Yet the opposite happened, which has led others to look for alternative explanations such as the fatigue of overseas entanglements or shifts in bureaucratic control over foreign policy. Adding experience and its experimentally grounded insights into human decision making, however, suggests that perhaps crisis bargaining theory, suitably modified, is a powerful explanation for these events.

Conclusions

For a long time, political scientists have noted the findings from behavioral economics and cognitive psychology that people are not fully equilibrium reasoners—often with a string of citations but not much more. In this article, we offer two ways that political science can build upon these rich fields.

First, a growing body of literature has led to testable propositions about how experience influences decision-making. Those effects are large enough and of potentially great enough relevance for political scientists that they suggest the need for a new empirical research strategy. To date, most experimental research on decision-making has utilized samples drawn from undergraduate populations. We suggest that, in tandem, it is important to include experienced decision makers in experimental research if the relevant political behavior is dominated by elite decision-making. Of course, gaining access to those experienced elites is notoriously difficult because elites are busy and discrete. Thus we argue this kind of two-population research is vital to carefully map the dimensions on which elites and non-elites differ or are similar.

In this essay we have focused on six decision-making traits such as risk aversion and strategic reasoning. With future empirical evidence we anticipate that this mapping will also be possible for other traits as well. Better understanding the similarities and differences between elite and non-elite decision-making may make it possible to utilize non-elite samples with much greater external validity. It could also make it easier for scholars to identify the kinds of decision-making phenomena for which elite populations are essential, allowing experimental researchers to focus their energies on the difficult work of obtaining elite subjects in those areas where the value of that sample is greatest.

Second, political scientists can also include the qualities of individual-level decision-making in their theories that seek to explain real-world political behavior. Here we have illustrated this point using crisis bargaining theory and the two US–North Korea crises of 2002 and 2006. However, that work is just a start. Scholars working in international relations might apply the insights of the behavioral revolution to existing theories such as on the design of international legal agreements and how the law affects behavior—topics where we are now active.[98] Scholars might also expand the illustrations to other forms of signaling games, such as partisan coordination.[99] In American and comparative politics, scholars could apply the insights from the cognitive revolution to activities in which a handful of elite policy makers guide important political behavior. Indeed, some research has suggested that there may be large differences in politically relevant decision-making across societies; refining those insights and applying them in the field of comparative politics may prove quite fruitful.

Long ago the cognitive revolution exploded in economics and psychology. With a few exceptions, most of political science hasn't done much with these important insights. With new thinking in theory and also some new empirical strategies, including a much larger role for experimental research, political science can put itself into the middle of this social science revolution as well.

Notes

1 For examples of experimental studies, see a recent review of experimental research in *International Studies Quarterly,* especially McDermott 2011. See also Tomz 2007 and Tingley and Walter 2011.
2 See for example Gerber et al. 2011.
3 Notable exceptions studying images and perception include Herrmann and Shannon 2001, 651; and Herrmann, Tetlock, and Diascro 2001. Holsti and

Rosenau 1984 and 1993 study opinion elites' influence on foreign policy.

4 Herrnstein and Murray 1996; For best solutions see de Groot 1965. For pattern detection see Lesgold et al. 1988. For monitoring and self-awareness see Chi and Glaser 1978 and Alevy, Haigh, and List 2007. For strategy and heuristic choice see Larkin et al. 1980.

5 Sears 1986.

6 For bounded rationality, see Simon 1955 and 1956; March 1978; Axelrod and Hamilton 1981; Beer et al. 1995; Popkin and Dimock 2000; Alvarez and Brehm 2002; Tingley 2011. For prospect theory, see Kahneman and Tversky 1979; McDermott 1992; Farnham 1992; Weyland 1996; Levy 1997; Farnham 2004; McDermott 2004b.

7 Stahl and Wilson 1994 and 1995; Costa-Gomes, Crawford, and Broseta 2001; Camerer, Ho, and Chong 2003; Costa-Gomes and Crawford 2006; Rothman and Hardin 1997; Burdein, Lodge, and Taber 2006; Blavatskyy 2009; Camerer and Lovallo 1999; Gervais and Goldstein 2003; Massey and Thaler 2010; Gneezy and List 2006; Druckman 2001.

8 Plott and Zeiler 2005; Haigh and List 2005.

9 Glaser and Chi 1988; Zimmerman and Campillo 2003; Feltovich, Prietula, and Ericsson 2006, 55; Mintz 2004.

10 Camerer 1997.

11 Laibson 1997.

12 Chi and Glaser 1978; Neale and Bazerman 1985.

13 DeNardo 1995.

14 Jervis 1978; Rubinstein 1982; Fearon 1995.

15 Pareto 1935, vol. 3, 1423.

16 Pakulski 2008.

17 Mills 2000; Robbins 2002; Pašeta 1999.

18 Besley and Reynal-Querol 2011; Galasso and Nannicini 2011.

19 Lukes 1974; cf. Isaac 1987.

20 Hoppe 2001.

21 Zahra and Pearce 1989; Johnson, Daily, and Ellstrand 1996; Withers, Hillman, and Cannella 2012; Cheng and White 1990; Graham 1994; Shih 2008, Rubin 2009, Zhang and Liu 2010.

22 Chin, Bond, and Geva 2000.

23 Feltovich, Prietula, and Ericsson 2006.

24 Oxley et al. 2008; Camerer, Loewenstein, and Prelec 2005, 24.

25 Lieberman, Schreiber, and Ochsner 2003; Schreiber 2007; Fowler and Schreiber 2008.

26 Schreiber 2007.

27 Eisenstadt and Kareev 1975.

28 Fitts and Posner 1967. Studies on particular skills include Voss, Vesonder, and Spilich 1980 along with Voss, Tyler, and Yengo 1983 and Tetlock 2005 (on expertise in economic planning); Petrusa 2002 (medical training); Hodges, Starkes, and MacMahon 2006 (sports); Lehmann and Gruber 2006 and Sloboda 1976 (music); Egan and Schwartz 1979 (electronic technicians); Chiesi, Spilich, and Voss 1979 (architects' ability to recall building plans).

29 Adelson 1984. See also Voss, Vesonder, and Spilich 1980.

30 Simon 1955; 1956.

31 Simon 1956, p. 129.

32 Kahneman and Tversky 1979. In political science, see especially McDermott 1992, Applications and elaborations include Koopman et al. 1995 and McDermott, Cowden and Koopman 2002.

33 On loss aversion, status quo and endowment effects see Kahneman, Knetsch and Thaler 1991 and Andreoni and Sprenger 2010. On determining the minimul levels of attachment needed to motivate loss averse behavior see Knetsch 1989.

34 McDermott 2004a; McDermott, Fowler and Smirnov 2008.

35 For experimental work see Knetsch 1989.

36 Haigh and List 2005.

37 List 2003; List and Mason 2009; Engelmann and Hollard 2010. See also Harbaugh, Krause, and Vesterlund 2001. John List pitted experienced traders against amateurs in a real-world market by randomly assigning each an initial endowment of cards and letting them trade. He found experienced traders to act at roughly twice the rate (44 percent) of novice traders (22–25 percent), a difference resulting from their lessened loss-aversion rather than knowledge, skill, or recall ability.

38 Johnson et al. 2002; Levitt, List, and Sadoff 2011.

39 Notably, see Laibson 1997. See also Rubinstein 2003; Thaler and Sunstein 2008.

40 Reny 1988; McKelvey and Palfrey 1992; Binmore et al. 2002; Costa-Gomes and Crawford 2006.

41 Stahl and Wilson 1995; Costa-Gomes, Crawford, and Broseta 2001; Costa-Gomes and Crawford 2006.

42 Costa-Gomes, Crawford, and Broseta 2001.

43 Stahl and Wilson 1995.

44 Keynes 1936.

45 Crawford 2008; cf. Stahl and Wilson 1994; 1995; Duffy and Nagel 1997.

46 Schelling 1960, 57; and 1966.

47 Nagel 1993; Stahl and Wilson 1994; 1995.

48 Stahl and Wilson 1994; 1995; Wilson et al. 2006. In confirmatory experimentation, Costa-Gomes and Crawford repeated a similar experiment, and found an upper bound on the levels individuals reasoned: L3. Costa-Gomes and Crawford 2006, 1767.

49 Bhatt and Camerer 2005; Coricelli and Nagel 2009, 9164–5.

50 Jervis 1968.
51 Camerer, Ho, and Chong 2003, 217.
52 Hafner-Burton, LeVeck, and Victor, 2012.
53 For an overview see Kahneman 2011; cf. Schneider and Shiffrin 1977; Shiffrin and Schneider 1977; Bargh 1984; Lieberman, Jarcho, and Satpute 2004; Cokely, Parpart, and Schooler 2009.
54 Cacioppo et al. 1996.
55 Bullock 2011.
56 Heuristic/Analytic: Evans 1989; Chen and Chaiken 1999.
57 Chen and Chaiken 1999, 83.
58 Gick and Holyoak 1980; Rothman and Hardin 1997; Hardin and Rothman 1997. Lieberman, Jarcho, and Satpute 2004 further demonstrate using fMRI studies.
59 Gick and Holyoak 1983.
60 Neustadt and May 1988; Tetlock and Goldgeier 2000. See also the edited volume by Suedfeld and Tetlock 1991.
61 Patel, Kaufman, and Arocha 1995.
62 Cooper et al. 1999, 799.
63 Ackerman and Schneider 1985.
64 Schneider and Shiffrin 1977; Adelson 1984; Ericsson 2006; Feltovich, Prietula, and Ericsson 2006.
65 Glaser and Chi 1988; Feltovich, Petrulia, and Ericsson 2006; Alevy, Haigh, and List 2007.
66 Reder and Schunn 1996.
67 Massey and Thaler 2010.
68 Chase and Simon 1973; Chi and Glaser 1978.
69 Lin and Bier 2008.
70 Tetlock 2005.
71 McKay and Dennett 2009; Trivers 2011.
72 Bénabou and Tirole 2002.
73 Johnson 2004; Jouini, Napp, and Viossat 2013.
74 Johnson and Fowler 2011.
75 Ibid., 317.
76 Lopez, McDermott, and Peterson 2011.
77 Hedinger and Goëtte 2006.
78 Pilots may be cooperative due to special piloting attributes—namely the need to cooperate in multi-pilot cockpit settings. Work in other settings suggests that social distance plays a large role—as social distance decreases trustworthy behavior rises—see La Porta et al. 1997; Ruffle and Sosis 2006; Bernhard, Fischbacher, and Fehr 2006; Goette, Huffman, and Meier 2006.
79 Simon 1985.
80 Jervis 1978; Rubinstein 1982; Fearon 1995.
81 E.g., random players with k-levels of 0.
82 We are extremely grateful to Stephan Haggard for guiding our analysis in this section.
83 Prior to 2002 most top foreign policy decision-makers in the Bush administration had nonetheless identified North Korea as one of many areas for likely policy change. During the 1999–2000 presidential campaign, the Bush foreign policy team identified the 1994 Agreed Framework as a policy to be reversed. See Rice 2011, 34–35, and Wit, Poneman, and Gallucci 2004. In his memoirs, John Bolton—who served in the State Department and from 2005 as US Ambassador to the United Nations—approvingly cited former Secretary of State Jim Baker's observation that the Agreed Framework was a form of "appeasement" (101) and added his own view that North Korea could never be trusted to comply; see Bolton 2007, ch. 4, which includes a section heading entitled "Driving a Stake through the Agreed Framework." In March 2001, on the day of his first meeting with South Korea's president, President Bush quietly reprimanded Colin Powell when a reporter quoted Powell's assertion that US policy toward North Korea would continue in the spirit of the Agreed Framework; Bush, through his national security adviser Condoleezza Rice, told Powell that the policy would end. See Bush 2010, 90–91.
84 King and Wells 2009, 212.
85 Pritchard 2007.
86 Suskind 2006, p. 62.
87 Bush 2002.
88 See Rice 2011 for a summary of these extreme options (and her dismissal of them as impractical).
89 In March 2002 the Bush Administration notified Congress that North Korea was not in compliance with the Agreed Framework, but it had continued fuel oil shipments under a waiver that it issued, partly due to the lack of any other viable policy. The last fuel shipments under that waiver arrived in November 2002. See Rice 2011, 159–162.
90 See Pritchard 2007, 44.
91 Bush 2010, 423.
92 Cheney 2011, 473.
93 Ibid., 475–476.
94 See generally Haggard and Noland 2011.
95 Indeed, Bolton notes that 2003, the year after the ultimatum, saw a string of setbacks—most of which Bolton attributed to the US government bureaucracy's efforts to stymie his favored course of action. He points to one bright note, a 2003 speech in which Bolton criticized North Korea as a "grotesque police state" and North Korea branded him "human scum." See Bolton 2007, 118.
96 Rumsfeld 2011, 641–642.
97 See seven lines of text in Rice 2011, 163.
98 Hafner-Burton, et al. 2012; Hafner-Burton, LeVeck, and Victor 2012.
99 LeVeck 2012.

Supplementary Materials

Explanatory File
http://journals.cambridge.org/pps2013002

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