

## The Strategist's Curse: A Theory of False Optimism as a Cause of War

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*This article proposes a new theory of false optimism as a cause of war. Named for its similarity to the winner's curse in auctions, this theory explains how and why established sources of misperception (cognitive, psychological, bureaucratic, and organizational) interact with the selection of one military strategy from a set of alternatives to produce a surprising amount of additional false optimism. Even if a state's general perceptions of how well it will fare in a potential war are not biased toward optimism, this theory explains why its perceptions of the particular strategy on which it will base its plans for fighting that war will be systematically biased toward optimism. Simulations and formal modeling confirm the logic of the theory and suggest that the strategist's curse can sharply increase the probability of war due to false optimism.*

False optimism has long been thought to rank among the most important causes of war.<sup>1</sup> At least one side, and all too often both, commonly expects to fare better from war than it actually does. Remarking on the puzzling fact that so many states have chosen to start wars only to then lose them, Geoffrey Blainey famously concluded, "The start of war is—almost by the definition of war itself—marked by conflicting expectations of what that

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<sup>1</sup> Geoffrey Blainey, *The Causes of War* (New York: Free Press, 1988); Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976); Robert Jervis, "War and Misperception," *Journal of Interdisciplinary History* 18, no. 4 (Spring 1988): 675–700; Dominic D. P. Johnson, *Overconfidence and War: The Havoc and Glory of Positive Illusions* (Cambridge: Harvard University Press, 2004); Jack S. Levy, "Misperception and the Causes of War: Theoretical Linkages and Analytical Problems," *World Politics* 36, no. 1 (October 1983): 76–99; John G. Stoessinger, *Why Nations Go to War* (New York: St. Martin's Press, 1974); Stephen Van Evera, *Causes of War: Power and the Roots of Conflict* (Ithaca, NY: Cornell University Press, 1999); Ralph K. White, *Nobody Wanted War: Misperception in Vietnam and Other Wars* (Garden City, NY: Anchor Books, 1970).

war will be like . . . . Whatever causes that contradictory optimism must be classified as a cause of war.”<sup>2</sup> If the two sides could foresee the outcome of a war accurately, why would they not agree to something like it without enduring the costs of fighting?<sup>3</sup> In the tradition of trying to understand the causes of war by investigating the sources of false optimism, this article proposes a new theory of false optimism as a cause of war.

Suppose that policymakers perceive the results of going to war with an element of error. Sometimes they are falsely optimistic, but equally often they are falsely pessimistic. Even though the perceptions are accurate on average, levels of optimism sufficient to cause war occur some of the time. Under this condition alone, simply choosing to be more pessimistic would reduce the accuracy of perceptions, on average. Now suppose also that policymakers choose not just between war and peace but also among several potential strategies with which a war could be fought. This paper shows why the addition of this second, seemingly innocuous condition—selection among multiple possible military strategies—interacts with the first in a subtle but powerful way to produce a systematic bias toward false optimism that would not otherwise exist. When policymakers consider multiple war strategies as part of deciding between war and peace, simply being more pessimistic about how well a war would go by an optimal amount can increase the accuracy of these perceptions, on average. This is true even if underlying perceptions have no bias toward optimism.

This “strategist’s curse” draws its name from its close relation to the winner’s curse in auctions and has been identified as a source of false optimism in the field of management.<sup>4</sup> The winner’s curse exists in auctions in which bidders have only their own imperfect estimates of the worth of the prize. In this situation, the bidder who happens to most exaggerate the prize’s value will tend to bid the most, to win the prize, and to regret it afterward. This process, it turns out, is not so different from strategy selection.

When policymakers pick from multiple ways of fighting a potential war, they will generally be optimistic about some strategies and pessimistic about others. But what happens next? The underestimated strategies tend to fall out of consideration. Plans and decisions are based on the “best” available strategy, which is disproportionately likely to be a strategy whose effectiveness has been exaggerated. It is certainly reasonable to base expectations for a war on perceptions of what appears to be the most effective strategy,

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<sup>2</sup> Blainey, *Causes of War*, 56.

<sup>3</sup> James D. Fearon, “Rationalist Explanations for War,” *International Organization* 49, no. 3 (Summer 1995): 379–414.

<sup>4</sup> J. Richard Harrison and James G. March, “Decision Making and Postdecision Surprises,” *Administrative Science Quarterly* 29, no. 1 (March 1984): 26–42; James E. Smith and Robert L. Winkler, “The Optimizer’s Curse: Skepticism and Postdecision Surprise in Decision Analysis,” *Management Science* 52, no. 3 (March 2006): 311–22; Eric Van den Steen, “Rational Overoptimism (and Other Biases),” *American Economic Review* 94, no. 4 (September 2004): 1141–51.

but it is important to ask why that strategy looks so promising. A strategy is more likely to appear to be the best available because (1) its effectiveness is greater than the alternatives or because (2) its effectiveness has been exaggerated more than the alternatives. This second possibility is the linchpin of the strategist's curse. It implies that the more a policymaker is falsely optimistic about a strategy, the more likely that strategy is to be selected. When picking from several strategies, the odds are that at least one will have its effectiveness exaggerated. As a result, policymaker perceptions need not be biased toward optimism in general for their perceptions of how well a war would go using the "best" available strategy to be systematically biased toward optimism.

Due to the strategist's curse, the number of available strategies emerges as a potent cause of false optimism and war. All else equal, war is more likely when more strategies are available, because additional strategies increase the chances that at least one strategy will have its effectiveness exaggerated enough to make war with that strategy appear preferable to peace. This variable has not previously been identified in the literature on misperception and war.

The purpose of this article is to fully develop and explain the strategist's curse as a theory of war due to false optimism. Central claims are illustrated with Monte Carlo simulations, but the priority is presenting the theory in the clearest manner possible. The corresponding formal model is also provided in the appendix. The formal model and the simulations yield identical results without relying on each other.<sup>5</sup>

I begin by reviewing the field's current understanding of false optimism as a cause of war and the nature of the winner's curse in auctions. I then walk through the core logic of the strategist's curse and summarize the procedure used in the simulations. Next, I explicitly define the variables that collectively cause the strategist's curse and provide results showing how each contributes to the level of false optimism and the probability of war. Subsequently, I discuss what may be the most constraining limitation on the strategist's curse as a cause of war: the assumptions about strategy selection among multiple peaceful policy options. I then review two plausible historical examples of the strategist's curse: Japan's decision to attack the United States in 1941 and the decision of the United States to invade Iraq in 2003. I conclude by underscoring the central lesson: even if perceptions are, in general, no more prone to optimism than pessimism, perceptions of the strategy upon which states are basing the decision between war and peace are likely to be systematically biased toward false optimism.

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<sup>5</sup> The replication code will be made available at the author's website, including supplementary files for each "results not shown" claim in the text.

## THE BASE RATE OF WAR DUE TO FALSE OPTIMISM

In order to explain the strategist's curse, it is useful to begin with the standard theory of war due to false optimism, which I refer to as the "base rate." The level of false optimism is the extent to which a state's perception of how well it will fare in a war exceeds the reality. The theory of war underlying the base rate is simple: every so often the traditional sources of misperception combine to produce enough false optimism that the two sides cannot find any war-avoiding agreement from which both expect to fare better than they would from war.

These traditional sources are the extensive array of biases that afflict strategic assessments: cognitive, psychological, organizational, bureaucratic, etc. The literature on psychological and cognitive sources of misperception is extensive.<sup>6</sup> For instance, policymakers may repeat the mistakes of past wars by failing to learn from history, or they may overlearn from history and falsely assume the strategy that worked best in the past remains equally effective despite changed circumstances.<sup>7</sup> The concept of bounded rationality encapsulates many individual cognitive limitations on human reasoning that may lead to misperceptions, especially for complex decisions.<sup>8</sup> Similarly, the organizations that analyze foreign policy options can contribute to misperception. Military autonomy in war planning can lead to the neglect of critical political repercussions of an otherwise well-conceived war plan.<sup>9</sup> Service branches within militaries may exaggerate the effectiveness of strategies that justify their budgets, just as they may mislead policymakers into devaluing the effectiveness of strategies that benefit rival services.<sup>10</sup> The traditional sources of misperception are not limited to these categories. Risa A. Brooks explains how civil-military relations can exacerbate misperception, and Jack Snyder finds an ideological preference for offensive strategies rooted in part

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<sup>6</sup> For example, Jervis, *Perception and Misperception*; Robert Jervis, Richard Ned Lebow, and Janice Gross Stein, *Psychology and Deterrence* (Baltimore: Johns Hopkins University Press, 1985); Rose McDermott, *Political Psychology in International Relations* (Ann Arbor: University of Michigan Press, 2004); Dominic D. P. Johnson and Dominic Tierney, "The Rubicon Theory of War: How the Path to Conflict Reaches the Point of No Return," *International Security* 36, no. 1 (Summer 2011): 7–40.

<sup>7</sup> Jervis, "War and Misperception"; Yuen Foong Khong, *Analogies at War: Korea, Munich, Dien Bien Phu, and the Vietnam Decisions of 1965* (Princeton, NJ: Princeton University Press, 1992).

<sup>8</sup> Jerel A. Rosati, "The Power of Human Cognition in the Study of World Politics," *International Studies Review* 2, no. 3 (Autumn 2000): 45–75; Herbert A. Simon, "Human Nature in Politics: The Dialogue of Psychology with Political Science," *American Political Science Review* 79, no. 2 (June 1985): 293–304; Glenn H. Snyder and Paul Diesing, *Conflict among Nations: Bargaining, Decision Making, and System Structure in International Crises* (Princeton, NJ: Princeton University Press, 1977), 340–418.

<sup>9</sup> Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany between the World Wars* (Ithaca, NY: Cornell University Press, 1984): 58; Jack S. Levy, "Organizational Routines and the Causes of War," *International Studies Quarterly* 30, no. 2 (June 1986): 208.

<sup>10</sup> Morton H. Halperin and Priscilla Clapp, *Bureaucratic Politics and Foreign Policy* (Washington, DC: Brookings Institution Press, 2006); Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis* (New York: Longman, 1999).

in the historic prestige from rapid offensive victories.<sup>11</sup> The base rate of war due to false optimism is the frequency with which these traditional sources of misperception combine to produce sufficient false optimism to start a war.

Two types of misperception are thought to be most prone to causing wars: false optimism about the prospects for victory and false pessimism about other states' intentions.<sup>12</sup> This article deals with the first of these and explains how selecting from multiple possible military strategies exacerbates it.<sup>13</sup>

### THE WINNER'S CURSE

The strategist's curse is so named because of its close similarity to the winner's curse in auctions. The winner's curse applies most strongly to common-value auctions in which multiple bidders compete for a prize that is worth the same amount to each. The bidders each have their own (imperfect) estimate of the worth of the prize. If each bids based on his or her best estimate of the prize's value, the winner will be the one who most exaggerates its worth. The disappointment these winners will experience gives rise to the name "winner's curse."<sup>14</sup>

The classic example is a scenario in which oil companies bid for mineral rights to a piece of land. Experts from each company take samples, but depending on the luck of where exactly these samples are taken, some companies will receive overestimates and others will receive underestimates. If these valuations are taken at face value, the company with the most false optimism about the amount of oil will win the bid and regret it afterward.<sup>15</sup>

The winner's curse has been the subject of controversy and interest in economics for the last forty years. Much of this debate arises because perfectly rational actors would not fall victim to the winner's curse. The value of the bid matters only if that bid wins. When a bid wins, false optimism is

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<sup>11</sup> Risa A. Brooks, *Shaping Strategy: The Civil-Military Politics of Strategic Assessment* (Princeton, NJ: Princeton University Press 2008); Jack Snyder, *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914* (Ithaca, NY: Cornell University Press 1984).

<sup>12</sup> Levy, "Misperception and the Causes of War," 99; Jervis, "War and Misperception," 676.

<sup>13</sup> The strategist's curse is, however, consistent with both false optimism due to uncertainty and false optimism due to false certainty. See Jennifer Mitzen and Randall L. Schweller, "Knowing the Unknown Unknowns: Misplaced Certainty and the Onset of War," *Security Studies* 20, no. 1 (January 2011): 2–35.

<sup>14</sup> John H. Kagel and Dan Levin, *Common Value Auctions and the Winner's Curse* (Princeton, NJ: Princeton University Press, 2002); Richard H. Thaler, *The Winner's Curse: Paradoxes and Anomalies of Economic Life* (New York: Free Press, 1991).

<sup>15</sup> E. C. Capen, R. V. Clapp, and W. M. Campbell, "Competitive Bidding in High-Risk Situations," *Journal of Petroleum Technology* 23 (June 1971): 641–53.

likely present. Therefore, perfectly rational actors would downwardly adjust their bids in equilibrium, compensating for the winner's curse.<sup>16</sup>

Nonetheless, experimental economists have provided convincing empirical support for the existence of the winner's curse. Max H. Bazerman and William F. Samuelson find that increasing the number of bidders and the uncertainty as to the value of the prize exacerbates the winner's curse.<sup>17</sup> Even experienced and informed bidders fall victim to the winner's curse.<sup>18</sup> Gary Charness and Dan Levin conclude that the strongest explanation for the winner's curse is bounded rationality, specifically the difficulties many have with contingent reasoning.<sup>19</sup> In part because states may behave differently from individuals in lab experiments, evidence for the winner's curse does not easily translate into evidence for the strategist's curse, but it does at least suggest that the failure to intuitively grasp and compensate for this source of optimism may be pervasive.

This phenomenon is more general than bidding in auctions. In statistics, various techniques address the problem that as the number of hypotheses tested increases, the probability that at least one meets a level of significance due to chance also increases. If a researcher focuses on this significant result as if that hypothesis alone had been tested, this researcher will often attribute statistical significance to random error.<sup>20</sup> The methodological problem of regression to the mean offers another example of this larger phenomenon.<sup>21</sup> Selecting one extreme from a set of items with random error as part of their perceived values results in systematic bias.

## THE STRATEGIST'S CURSE

This section provides an overview of the logic and effects of the strategist's curse. Many of the main points are illustrated graphically, in part with

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<sup>16</sup> James C. Cox and R. Mark Isaac, "In Search of the Winner's Curse," *Economic Inquiry* 22, no. 4 (October 1984): 579–92; James L. Smith, "Non-Aggressive Bidding Behavior and the 'Winner's Curse,'" *Economic Inquiry* 19, no. 3 (July 1981): 380–88.

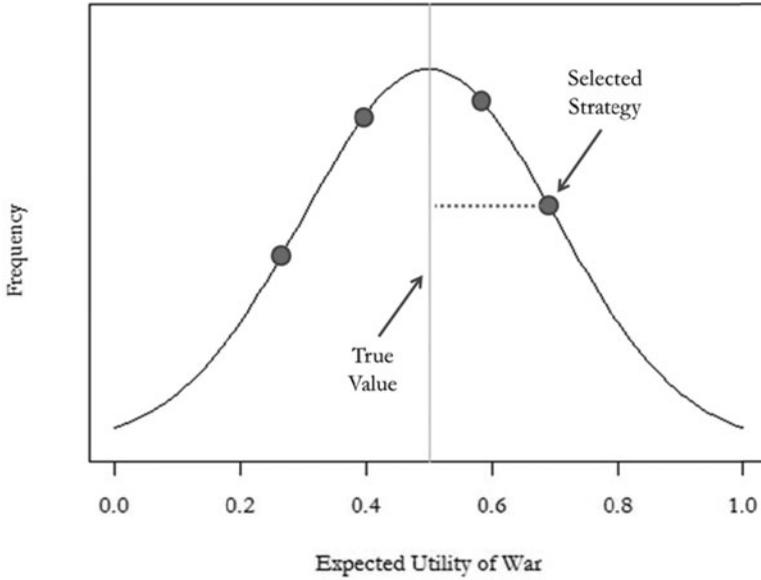
<sup>17</sup> Max H. Bazerman and William F. Samuelson, "I Won the Auction but Don't Want the Prize," *Journal of Conflict Resolution* 27, no. 4 (December 1983): 618–34.

<sup>18</sup> Colin M. Campbell, John H. Kagel, and Dan Levin, "The Winner's Curse and Public Information in Common Value Auctions: Reply," *American Economic Review* 89, no. 1 (March 1999): 325–34; Peter Foreman and J. Keith Murnigan, "Learning to Avoid the Winner's Curse," *Organizational Behavior and Human Decision Processes* 67, no. 2 (August 1996): 170–80; John H. Kagel and Dan Levin, "The Winner's Curse and Public Information in Common Value Auctions," *American Economic Review* 76, no. 5 (December 1986): 894–920; Barry Lind and Charles R. Plott, "The Winner's Curse: Experiments with Buyers and with Sellers," *American Economic Review* 81, no. 1 (March 1991): 335–46.

<sup>19</sup> Gary Charness and Dan Levin, "The Origin of the Winner's Curse: A Laboratory Study," *American Economic Journal: Microeconomics* 1, no. 1 (February 2009): 207–36.

<sup>20</sup> Yosef Hochberg and Ajit C. Tamhane, *Multiple Comparison Procedures* (New York: John Wiley and Sons, 1987).

<sup>21</sup> Donald T. Campbell and Julian C. Stanley, *Experimental and Quasi-Experimental Designs for Research* (Chicago: Rand McNally, 1973), 10–12.



**FIGURE 1** Perceiving four equal strategies.<sup>22</sup>

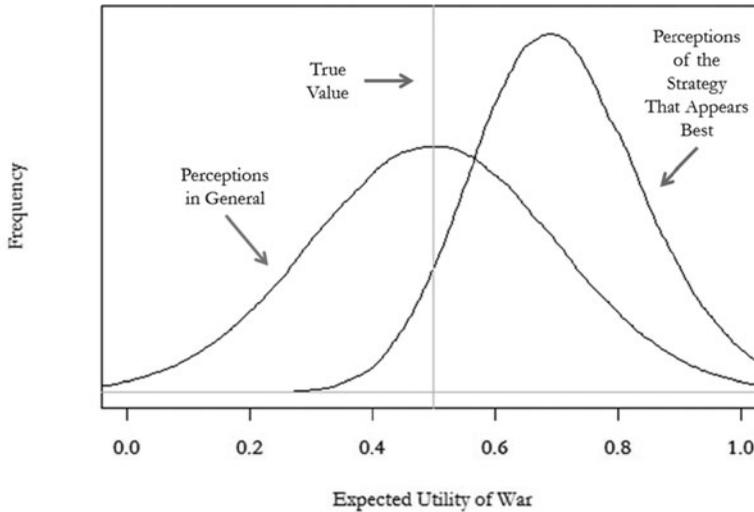
simulation results. I defer an explanation of the simulation methods to the next section. Some readers may wish to refer to that section as they read this one, while others should find the remainder of the article comprehensible if they pass over it.

Figure 1 helps to illustrate the logic of the strategist's curse. Suppose, as in Figure 1, that a state has to choose among four strategies that are actually equally effective. But, the traditional sources of misperception create an element of error in this state's perceptions of each of these strategies, which can be modeled as a normal distribution centered on the true level of effectiveness.<sup>23</sup> The curve in Figure 1 indicates how common each possible perception will be. The four dots represent the state's perceptions of each strategy in one hypothetical instance. In this instance, the state perceives two of its strategies fairly accurately, underestimates another, and overestimates the fourth. Overall, the state is slightly pessimistic about the four strategies.

However, the state will not see it that way. Instead, the options will appear to consist of one poor strategy, two moderately effective strategies,

<sup>22</sup> Some readers may find it more intuitive to think of the expected utility of war as the probability of victory. The numerical values are assigned with that heuristic in mind.

<sup>23</sup> The variance of this distribution represents the magnitude of the traditional sources of misperception. The standard deviation in Figure 1 is .2. Using a normal distribution requires the assumption that misperception from the traditional sources sometimes takes the form of false optimism, sometimes false pessimism. This would seem to raise a problem. The literature on the causes of war features numerous cases of false optimism about the prospects for victory, but few corresponding cases of false pessimism. However, this disparity is to be expected. False pessimism cases would tend to result in peace and, consequently, fade into obscurity.



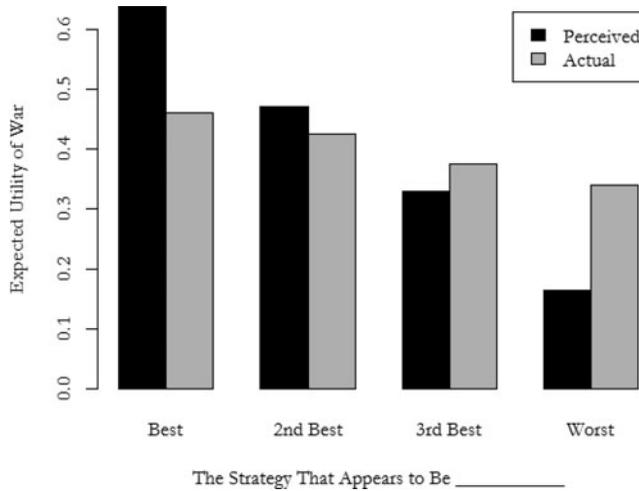
**FIGURE 2** Distributions of perceptions.<sup>24</sup>

and one promising strategy. Naturally enough, this state will pick the strategy with which it expects to fare best, and therefore this state will select the strategy whose effectiveness it has most exaggerated. Just as the auctioneer selects the highest bid, the strategist selects the strategy that appears best. The dotted line shows the false optimism this induces. Even though false optimism is not more common than false pessimism overall, this state will still be falsely optimistic about the strategy on which it will base its plans. Selecting the strategy that appears best amounts to selecting on false optimism.

Figure 2 provides simulation results indicating that the example in Figure 1 is quite general. It shows the distribution of perceptions for the strategy that appears best in comparison to the underlying distribution for the state's perceptions in general. The centered curve represents the distribution of perceptions one would expect from the traditional sources of misperception without taking the strategist's curse into account (as in Figure 1). The curve to its right shows the distribution of perceptions created by the strategist's curse. Figure 2 confirms that with four strategies available, perceptions of the strategy that appears best are significantly more prone to false optimism than perceptions in general. The average amount of false optimism created by the strategist's curse corresponds approximately to the horizontal distance between the peaks of the curves.<sup>25</sup>

<sup>24</sup> Simulation Parameters—Number of Strategies: 4; True Effectiveness of the Strategies: .5; Magnitude of Misperception from the Traditional Sources (units of standard deviation): .2; Relatedness of the Misperceptions (covariance): 0%.

<sup>25</sup> I say “approximately” because the distribution for the strategy that appears best has a rightward skew. Consequently, its mean is slightly greater than its mode (results not shown).



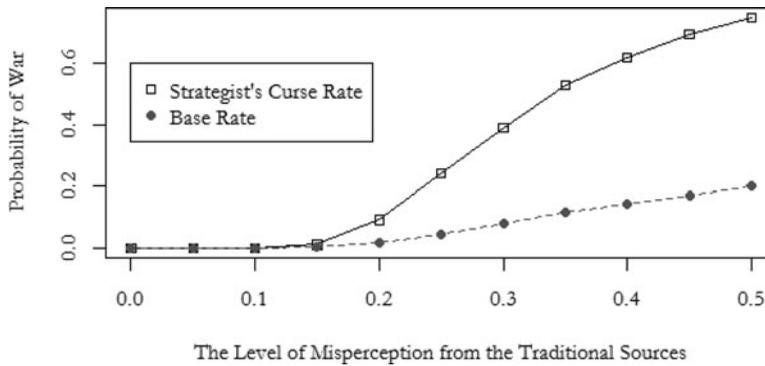
**FIGURE 3** Perception versus reality.<sup>26</sup>

These results verify that even if in general false optimism is no more common than false pessimism, perceptions of the strategy that appears best are systematically biased toward optimism. The right-side region between the two curves represents the extra false optimism created by the strategist's curse. The strategist's curse redistributes this probability density from the left-side region between the two curves, which falls almost entirely on the pessimism side of the true value. Most instances of false pessimism cease to exist and are replaced with additional instances of false optimism. Of particular importance is the large proportion of high-level false optimism generated by the strategist's curse (the far right of Figure 2), because severe false optimism is most prone to causing war.

When a state selects the strategy it sees as best, it tends to pick a strategy whose effectiveness it has exaggerated. As I will examine further, this still occurs when some strategies are more effective than others. The true best strategy is selected more often than alternative strategies, but it tends to be selected when its effectiveness is exaggerated. When the effectiveness of the true best strategy is underestimated, states are more likely to select an inferior strategy, especially one whose effectiveness has been exaggerated. Nonetheless, the true best strategy will be perceived accurately and selected in some cases. In others, the state will be falsely pessimistic about the strategy it adopts. The strategist's curse does not eliminate these possibilities, but the central tendency is toward false optimism.

Figure 3 provides simulation results breaking down how well a state with four strategies will expect to fare in war on average. The four

<sup>26</sup> Simulation Parameters—Number of Strategies: 4; True Effectiveness of the Strategies: .5 (two strategies) and .3 (two strategies); Magnitude of Misperception from the Traditional Sources (units of standard deviation): .2; Relatedness of the Misperceptions (covariance): 0%.



**FIGURE 4** The strategist's curse and the probability of war.<sup>27</sup>

perceptions, one per strategy, are ranked from the one perceived as best (but not necessarily the actual best) to the one perceived as worst. Unlike Figures 1 and 2, two of the four strategies now have a true effectiveness of .3, while the other two remain at .5.

The chart shows that the strategy that appears best is better on average than the alternatives, but it has also generally been exaggerated more than the alternatives. The gap between the two bars indicating perception and reality for the strategy that appears best is the average level of false optimism. Figure 3 also suggests that the strategy that initially appears best, although exaggerated, does have the greatest true effectiveness on average. This implies that after states downwardly adjust their expectations, they should decide between war and peace based on that revised estimate of the strategy that initially looked best.<sup>28</sup>

Although the traditional sources of misperception can suffice to cause war, they interact with strategy selection to cause war more often. Figure 4 shows the difference, illustrating the strategist's curse as a magnifying effect on the probability of war over the base rate. The base rate (as discussed earlier) is the false optimism that would exist from the traditional sources of misperception alone. It is calculated by neglecting the strategist's curse and simply giving states the singular option to go to war or not, with the same underlying distribution of misperceptions. This is equivalent to only one war strategy being available. To be conservative, this strategy is always assigned a true effectiveness equal to that of the best available war strategy (.5). Unless

<sup>27</sup> Simulation Parameters—Two symmetric Actors; Number of Strategies: 4; True Effectiveness of the Strategies: .5 (two strategies) and .4 (two strategies); Magnitude of Misperception from the Traditional Sources (units of standard deviation): X Axis; Relatedness of the Misperceptions (covariance): 0%; Expected Utility of Peace: .8.

<sup>28</sup> An important exception: it can be optimal to switch to another strategy if that strategy is less likely to be misperceived than both the strategy that appears best and at least one additional strategy. As I will discuss, the choice for peace over war can be understood in these terms.

there is no misperception at all, the probability of war due to false optimism is consistently greater when the strategist's curse is taken into account. Even toward the left end of Figure 4, the strategist's curse rate remains several times the base rate (results not shown).

Although it has yet to be introduced to political science, the decision-making pathology that I label the strategist's curse has been recognized in the field of management. Building on J. Richard Harrison and James G. March's model of "postdecision surprises," James E. Smith and Robert L. Winkler describe an "optimizer's curse" that shares the same core logic.<sup>29</sup> The strategist's curse is the extension of this theory of false optimism to a theory of war. It adapts the theory of false optimism to better fit the context of international relations, then builds on that foundation to explore the extent to which this false optimism translates into war. As I discuss, this relationship cannot be taken for granted. It requires an additional set of consequential assumptions and modeling decisions. Even in the field of management, the optimizer's curse (by whatever name) has received surprisingly little attention.<sup>30</sup> Given the complexity of the decision to go to war and the strong historical pattern of false optimism on the eve of war, there are compelling reasons to suspect that the strategist's curse is particularly salient in the international context.

## THE SIMULATIONS

Like most of the results in this article, Figures 2, 3, and 4 were generated using Monte Carlo simulations. In these simulations, there are two actors that, for simplicity's sake, are assigned the same characteristics. Each state is assigned a number of strategies; each strategy has a true level of expected utility that it would produce if a war were fought with it. The general magnitude of the traditional sources of misperception is also assigned, modeled as the standard deviation of a normal distribution centered on these true values (as in Figure 1). Some of the simulations also allow for each state's misperceptions of its strategies to be related to one another. This is modeled as covariance in a multivariate normal distribution. In order to produce comprehensible charts illustrating the effect of each variable in isolation, other parameters are held constant at assigned but arbitrary values in the results shown. These values are provided below each figure. Each of these variables will be discussed in more detail over the course of the article.

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<sup>29</sup> Harrison and March, "Decision Making and Postdecision Surprises"; Smith and Winkler, "The Optimizer's Curse." For similar models, also see Keith C. Brown, "A Note on the Apparent Bias of Net Revenue Estimates for Capital Investment Projects," *Journal of Finance* 29, no. 4 (September 1974): 1215–16; Van den Steen, "Rational Overoptimism."

<sup>30</sup> Smith and Winkler, "Optimizer's Curse," 311.

Is it reasonable to model perceptions of strategies as separate draws from normal distributions centered on the true levels of effectiveness for each strategy? It is useful to break this down into its parts. First, using a probability distribution to model misperception matches the intuition that misperceptions are *ex ante* unpredictable errors in perceptions. It accords with the winner's-curse literature's treatment of bidders' misperceptions of the worth of the prize.<sup>31</sup> It is also similar to the treatment of beliefs over the set of possible adversary types in existing International Relations bargaining and signaling models that incorporate uncertainty.<sup>32</sup>

Second, it would be a problem to model each perception as an independent draw if these perceptions are in fact tied together. For instance, an innately optimistic leader might exaggerate all strategies to a similar extent. Rather than justify separate draws by making an assumption that perceptions are unrelated, the model instead incorporates this relatedness among the perceptions of strategies as one of its four core variables. Later sections define this variable and illustrate the extent to which high relatedness in the perceptions of strategies can reduce false optimism from the strategist's curse.

Third, although I model perceptions with a normal distribution for convenience and simplicity, it is not necessary that this distribution be normal or symmetrical. Aside from changes in notation, the formal model (see Appendix) and simulations would be the same for other distributions.

Fourth, the distribution of perceptions also need not center on the true level of effectiveness. If perceptions are already biased toward optimism before strategy selection, the strategist's curse simply adds yet more false optimism. Two downward adjustments would be in order: one to compensate for the net bias in the traditional sources and a second for the strategist's curse. This flexibility is important, because neither this assumption nor the normality assumption is likely to be met perfectly in reality. Daniel Kahneman and Jonathan Renshon, for example, posit a "directionality hypothesis" that the net effect of cognitive biases is hawkish, though their focus is on overestimating hostility.<sup>33</sup> Dominic D. P. Johnson argues that evolutionary incentives created a predisposition for false optimism in human nature, which causes war.<sup>34</sup> Nationalism offers a clear theory of false optimism about

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<sup>31</sup> Smith, "Non-Aggressive Bidding Behavior," 380–81.

<sup>32</sup> For example, Alastair Smith and Allan C. Stam, "Bargaining and the Nature of War," *Journal of Conflict Resolution* 48, no. 6 (December 2004): 790; Erik Gartzke, "War is in the Error Term," *International Organization* 53, no. 3 (Summer 1999): 579.

<sup>33</sup> Daniel Kahneman and Jonathan Renshon, "Hawkish Biases" in *American Foreign Policy and the Politics of Fear: Threat Inflation since 9/11*, ed. A. Trevor Thrall and Jane K. Cramer (New York: Routledge, 2009), 79–96.

<sup>34</sup> Johnson, *Overconfidence and War*. Also see Tali Sharot, "The Optimism Bias," *Current Biology* 21, no. 23 (June 2011): R941–45.

war outcomes through self-glorifying myths, but not false pessimism.<sup>35</sup> In contrast, the organizational incentives to “worst-case” estimates would seem to push exclusively toward false pessimism.<sup>36</sup>

The simulations begin with the states perceiving their strategies imperfectly due to the traditional sources of misperception. These errors in the perceptions of each strategy are drawn from the pertinent normal or multivariate normal distributions. This yields a set of perceptions of the expected utility of war for each strategy, an umbrella term that includes perceptions of the probability of victory, the benefits of victory, the costs of defeat, and the costs of fighting:

$$U_W = P_V B_V - (1 - P_V) C_D - C_F$$

$U_W$  Expected Utility of War

$P_V$  Probability of Victory

$B_V$  Benefits of Victory

$C_D$  Costs of Defeat

$C_F$  Costs of Fighting

Both states then pick the strategy that appears best by selecting the maximum from the set of perceptions. Comparing this to the true expected utility for that strategy yields the level of false optimism. Next, the simulation determines whether the two states' perceptions of their best strategies are sufficiently optimistic to overcome the expected utility of peace ( $U_P$ ), always .8 for each state in the results shown. If false optimism about war prospects exceeds the greater true utility of peace, war results. In a later section, I explore adding uncertainty about the utility of peace.

The simulations assume a specific functional form to the cost-benefit calculation that leads to war, but results are robust to reasonable alternatives. The assumption is that two states fight when the total expected utility from war exceeds that from peace.<sup>37</sup> The situation leads to war if and only if:

$$U_{W1} + U_{W2} > U_{P1} + U_{P2}$$

This functional form for the cost-benefit equation offers a reasonable compromise between parsimony and plausibility. The two simplest alternatives

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<sup>35</sup> Stephen Van Evera, “Hypotheses on Nationalism and War,” *International Security* 18, no. 4 (Spring 1994): 28.

<sup>36</sup> Richard K. Betts, “Analysis, War, and Decision: Why Intelligence Failures Are Inevitable,” *World Politics* 31, no. 1 (October 1978): 73–75.

<sup>37</sup> The simulations do not generate utilities as an output or claim that an optimistic actor always suffers for it. This is significant in part because recent literature has argued for the advantages of optimism, for instance, that it can improve morale or encourage states to stand firm and thus prevail in crises. Johnson, *Overconfidence and War*; Dominic D. P. Johnson and James H. Fowler, “The Evolution of Overconfidence,” *Nature* 477, no. 7364 (September 2011): 317–20.

are (1) war if the expected utility of war exceeds that of peace for at least one side and (2) war if the expected utilities of war exceed those of peace for both sides. The problem with the former is that it excludes the possibility of a war-avoiding coercive bargain.<sup>38</sup> The problem with the latter is that one side can start a war even if the other side does not wish to do so.<sup>39</sup> In contrast, the function form used is the most parsimonious option that solves both problems. When one state strongly wishes to avoid war and the other weakly expects to benefit from it, this equation concludes that a war-avoiding bargain is reached. When one state weakly wishes to avoid war and the other strongly expects to benefit from it, war ensues. The strategist's curse multiplier effect over the base rate increases marginally if only one side must prefer war, and it decreases slightly if both must prefer war (results not shown). These modest differences do not change the overall conclusions.<sup>40</sup>

This procedure is repeated a sufficient number of times so that the simulation results converge to those from the corresponding formal model, with the exact number varying as needed. The simulations are a simpler and more flexible method of solving that formal model. These results are theoretical expectations and should not be treated as empirical evidence. Explanatory power cannot be deduced, even as it is important to derive the expected explanatory power of a theory so that it can then be subjected to empirical tests.

## THE CAUSES OF THE STRATEGIST'S CURSE

Four variables determine the extent to which the strategist's curse amplifies the level of false optimism. These are (1) the number of strategies available, (2) the competitiveness of these strategies with each other, (3) the relatedness of misperceptions among these strategies, and (4) the magnitude of the traditional sources of misperception. The level of false optimism is a complex function of all of these together (see Appendix). However, it is easier to think about this with a heuristic that combines the first three of these into one main cause: the number of *viable strategies* available. A viable strategy is one that is reasonably competitive with the others and one that can be misperceived differently from the others.

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<sup>38</sup> Fearon, "Rationalist Explanations for War."

<sup>39</sup> Branislav L. Slantchev and Ahmer Tarar, "Mutual Optimism as a Rationalist Explanation of War," *American Journal of Political Science* 55, no. 1 (January 2011): 135–48.

<sup>40</sup> For simplicity, the simulations assume that the effectiveness of a strategy does not depend on which strategy is used by the other side. However, this is not a necessary condition, as I explore with an additional simulation in which misperception surrounds strategy pairs instead of strategies. Each side has its own perception of how well it will fare in war if it uses a particular strategy and the adversary uses a particular strategy. If each side has four strategies, each side must evaluate sixteen strategy pairs. War ensues if the states' collective optimism about one or more strategy pairs exceeds the expected utility of peace. The results (not shown) were nearly identical to the results without this strategic interaction.

First, a greater number of available strategies acts as a cause of false optimism and war because it increases the chances that at least one strategy will have its effectiveness exaggerated enough for war to appear preferable to peace.<sup>41</sup> What qualifies as a strategy? Economists generally define strategies as alternative courses of action, whereas in military strategy it can be defined as “the art of distributing and applying military means to fulfill the ends of policy.”<sup>42</sup> This definition sees strategy as a theory of victory. The two definitions are closely related, but the second is preferable here. When two or more distinct theories of victory call for the same (or similar) actions, each theory of victory can be misperceived differently. The pertinent typology of strategies might be context-specific, or it might fit one of the usual molds, that is, blitzkrieg versus attrition, offense versus defense versus deterrent war-fighting, punishment versus denial, or land power versus sea power versus air power.<sup>43</sup> More generally, strategies can be distinguished by differences in force structure, force employment, force levels, geographic location, or any other factor important enough to associate a set of actions with a separate theory of victory. Importantly, the analysis focuses on the perceptions of war strategies. Perceptions of multiple peace strategies are considered in a later section.

How can one determine the number of strategies available to a state contemplating its options for fighting a war?<sup>44</sup> This question would seem to point to a problem for the theory. If small differences between strategies suffice to distinguish two strategies, then there are always a great many strategies available. For example, after President Gamal Abdel Nasser of Egypt nationalized the Suez Canal in 1956, Britain and France perceived two basic military options: a limited intervention to take control of the canal or a full occupation

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<sup>41</sup> The logic behind this cause is unrelated to the finding that an overabundance of options can strain human mental capacities and produce suboptimal choices. See Sheena S. Iyengar and Mark R. Lepper, “When Choice is Demotivating: Can One Desire Too Much of a Good Thing?” *Journal of Personality and Social Psychology* 79, no. 6 (December 2000): 995–1006.

<sup>42</sup> Basil H. Liddell Hart, *Strategy*, 2nd ed. rev. (New York: Meridian Press, 1991), 321.

<sup>43</sup> For blitzkrieg versus attrition, see John J. Mearsheimer, *Conventional Deterrence* (Ithaca, NY: Cornell University Press, 1983). For offense versus defense versus deterrent war-fighting, see Posen, *Sources of Military Doctrine*. For punishment versus denial, see Glenn H. Snyder, *Deterrence and Defense: Toward a Theory of National Security* (Princeton, NJ: Princeton University Press, 1961); Robert Pape, *Bombing to Win: Airpower and Coercion in War* (Ithaca, NY: Cornell University Press, 1996).

<sup>44</sup> Strategy sets are not strictly exogenous in practice. In some cases, policy planners might choose to conceal a strategy’s existence from a decision maker in order to influence the decision. Time constraints might limit the number of options that can be considered, or decision makers under great pressure to find a solution might innovate a new strategy that they would otherwise have neglected. For all these reasons, the number of options presented to (or by) the decision maker is not exogenous, and only strategies that receive enough consideration to have the potential for selection matter for the strategist’s curse. Nonetheless, a strategy that never enters a formal option menu in an official document can influence the predicted amount of optimism. It stands to reason that strategies whose effectiveness levels happen to be particularly underestimated often never receive more than initial informal consideration. But, if these strategies had been perceived more favorably, they often would have entered a formal menu of options and sometimes—with enough optimism—have been selected.

of Egypt to remove the continuing threats posed by Nasser.<sup>45</sup> They chose the former. But, within those two options were further choices. Amphibious assault, airborne assault, or both? Land the invasion forces at Alexandria or Port Said? Covertly cooperate with Israel? March on Cairo? Occupy it? Most British and French leaders saw the full occupation option as overly costly, but they underestimated both the resilience of Nasser's government to a limited degree of pressure and the diplomatic backlash following even a limited intervention to secure the canal. In consequence, and in line with the strategist's curse, they went to war based on a strategy whose effectiveness they had particularly exaggerated.<sup>46</sup> The result was abandoning the operation and enduring a humiliating withdrawal. So, how many strategies were available? The number of strategies available to Britain and France could plausibly be seen as two or many more depending on how loosely strategy is defined.

However, loosening the definition of strategy to the point of including strategies with only minor differences from each other has only a small—and potentially negligible—effect on the strategist's curse. The reason for this is that adding these not-so-different strategies has two offsetting effects within the theory. The increased number of strategies in itself increases the expected level of false optimism. However, when the additional strategy is similar in most respects to one or more others, the perceptions and misperceptions of these two strategies will be closely related. Relatedness among misperceptions of the strategies reduces the strategist's curse effect (more on this below and in the section on relatedness). In the Suez example, most of the reasons why a limited intervention would succeed or fail did not depend on whether the initial invasion was amphibious or included a large airborne force. There was scant reason to expect the diplomatic repercussions or the effect on Egyptian domestic politics to change on that basis. Even many of the military considerations would have been quite similar given the weakness of the Egyptian Army near Port Said. Because relatedness was so high, distinguishing strategies on this basis would not significantly change the expected level of false optimism.

At the extreme, dividing one strategy into multiple strategies based on purely trivial differences would have no effect on either the level of false optimism or the probability of war. Figures 10 and 11 will show that additional strategies have no impact when the relatedness among the perceptions of these strategies is 100 percent. Overall, what matters is that the set of strategies includes all those different enough (that is, with relatedness sufficiently

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<sup>45</sup> Nasser's rule was seen as threatening the Suez Canal, French rule in Algeria, and the stability of pro-British Arab monarchies. Keith Kyle, *Suez* (New York: St. Martin's Press, 1991).

<sup>46</sup> *Ibid.*, 167–79, 233–55.

below 100 percent) that their inclusion can affect the results to a substantively meaningful extent.<sup>47</sup> It is important to take all of these strategies into account and to properly incorporate relatedness among the perceptions of these strategies. Having done so, including further strategies that are closely related variants of the main options is unnecessary and will not meaningfully affect the size of the strategist's curse.

Second, the competitiveness of the strategies with each other is important because even a large exaggeration of the effectiveness of a lousy strategy may not make it the strategy perceived as best. Competitiveness is the difference in the true levels of effectiveness among the strategies. The pertinent comparison is usually to the true best strategy. Strategies that are extremely uncompetitive are effectively irrelevant. Because it is a function of the true effectiveness of the strategies and not the perceived effectiveness, the level of competitiveness is quite difficult to observe. For instance, the fact that one strategy appears to be much more effective than all others does not confirm that there is one strategy that is actually so.

Third, the relatedness of the misperceptions of the strategies to each other is a deceptively important variable. This is modeled as the positive covariance in the misperceptions of these strategies. As the covariance (relatedness) among the misperceptions increases, the strategist's curse-effect shrinks. This would happen when there is some source of optimism (or pessimism) that affects the strategies as a group. For example, a state that overestimates the competence of its officer corps might exaggerate the effectiveness of all of its military strategies to a similar extent. In contrast, decision makers often misperceive a strategy separately from its alternatives (low relatedness) when they misperceive some aspect of the world that affects one strategy more than others. Take, as an example, Germany's strategy in World War I to use a massive flanking offensive through Belgium to drive France out of the war before Russia could mobilize (the Schlieffen Plan). More than most other strategies, perceptions of this strategy's effectiveness hinged on perceptions of Britain's commitment to defend Belgian neutrality, Belgium's willingness to fight rather than capitulate, the military significance of Russian mobilization, the feasibility of a decisive first strike on France, etc.<sup>48</sup>

This conclusion that high relatedness reduces the probability of war is, perhaps, counterintuitive. High relatedness implies that when a state is falsely optimistic about one strategy, it is likely to be falsely optimistic about the others. One might think that increasing the odds of such across-the-board false-optimism cases would be particularly dangerous. However, only

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<sup>47</sup> The definition of "substantively meaningful" can vary with the degree of predictive accuracy sought for the particular application. More is better, but returns on including additional strategies diminish rapidly once the main options are taken into account.

<sup>48</sup> Stephen Van Evera, "The Cult of the Offensive and the Origins of the First World War," *International Security* 9, no. 1 (Summer 1984): 58–107.

the strategy perceived as best matters, so exaggerating even one strategy is sufficient. A cluster of strategies misperceived similarly (high relatedness) will fall entirely on the pessimism side some of the time, but widely dispersed perceptions (low relatedness) will almost always have at least one strategy far on the optimism side. Therefore, low relatedness maximizes the chances of a perception on the positive extreme.

Finally, as the amount of traditional misperception increases, so too does the amount of false optimism generated by the strategist's curse, as befits a multiplier effect. The normal distribution used to model this is one of net misperception. Given the number of sources of misperception, it is likely that both optimism and pessimism afflict most perceptions. However, to the extent that these offset each other, they remain impotent.

The strategist's curse also relies on some assumptions about the decision maker. The main assumption is that decision makers evaluate strategies on their own merits. They come to their best estimate about how well they will fare with each strategy based on past experience and other relevant information. However, they do not condition their perceptions based on knowing which strategy is perceived as best. The assumption, in essence, is that decision makers are unaware they should make the downward adjustment.<sup>49</sup> For perfectly rational actors, the strategist's curse would offer a theory explaining the otherwise-puzzling existence of the downward adjustment. It is also assumed that decision makers pick the strategy they perceive as best. Taken with the previous assumption, the overall assumption is of an actor subject to bounded rationality that is endeavoring to optimize but is not aware of the need to compensate for the strategist's curse.

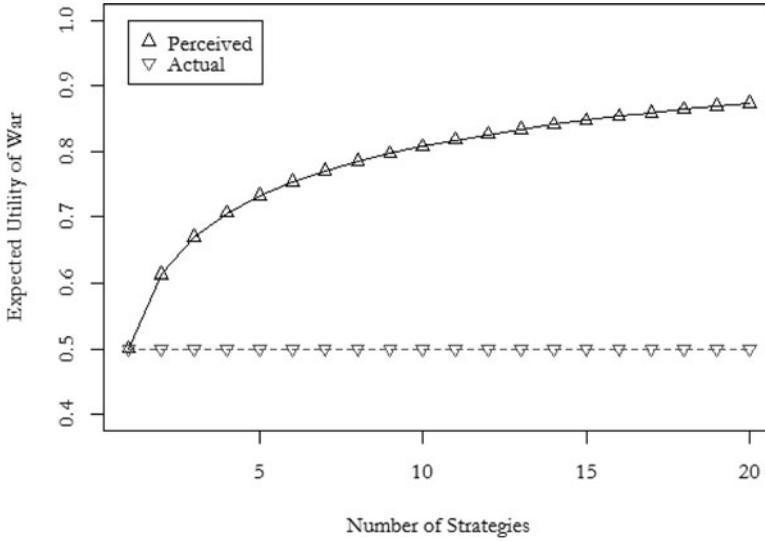
## THE PERNICIOUS EFFECT OF MORE STRATEGIES

Due to the strategist's curse, the number of strategies available emerges as a significant cause of war. This claim is not present in the current literature on the causes of war. Figures 5–7 show the effect of increasing the number of strategies on the average perception of the strategy that appears best. This is the perception of how well a war would go.

Figure 5 presents results from the formal model (see Appendix) showing how additional strategies increase the average level of false optimism. The average level of false optimism is the gap between the upper line, representing the perceived effectiveness of what appears to be the best strategy,

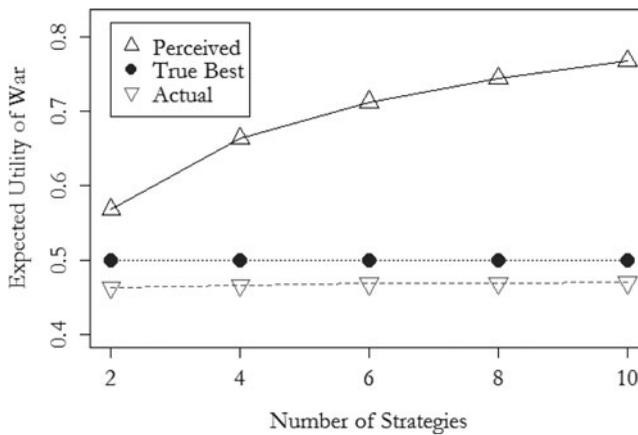
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<sup>49</sup> Mark Fey and Kristopher W. Ramsay argue that on the brink of war, rational actors should downwardly adjust their expectations because the willingness of their adversary to fight reveals that they likely have fallen victim to false optimism. It can be argued that this first assumption must extend to assuming this adjustment is also not made; see Fey and Ramsay, "Mutual Optimism and War," *American Journal of Political Science* 51, no. 4 (October 2007): 738–54. However, see Slantchev and Tarar, "Mutual Optimism as a Rationalist Explanation."

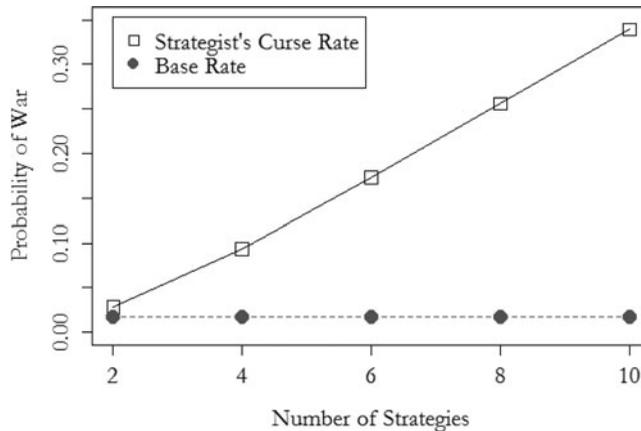


**FIGURE 5** The number of strategies and the level of false optimism.<sup>50</sup>

and the lower line, which represents that strategy's actual effectiveness: .5. These results indicate that the effect of adding strategies is quite strong for low numbers of strategies, but it then diminishes. Moving from one to two available strategies suffices to significantly increase the level of false optimism. The strategist's curse does require at least two strategies; on average there is no false optimism if only one is available. This does not mean that there is no false optimism with one strategy, but rather just that it is no more common than false pessimism.



**FIGURE 6** The number of strategies and the level of false optimism.<sup>51</sup>



**FIGURE 7** The number of strategies and the probability of war.<sup>52</sup>

Figure 6 provides simulation results showing the effect of additional strategies, but unlike Figure 5 it allows for states to inadvertently select suboptimal strategies. Half of the strategies now have a true effectiveness of .5 and the other half of .4. The X axis increases in increments of two because it is composed of strategy pairs containing one of each type. Every so often, one of the .4 strategies will appear best and be selected.

Figure 7 presents simulation results confirming that this pernicious effect of the number of strategies also holds for the probability of war. The effect is nonlinear and diminishing. The lower line indicates the probability of war. This probability is not zero; for this set of parameters it is approximately 1.7 percent. As mentioned previously, it is calculated as if states have only one strategy available (true effectiveness .5), which is the assumption inherent in neglecting the strategist's curse. The conclusion to draw from Figure 7 is not that six strategies elevate the probability of war to 17 percent, but rather that with six viable strategies the strategist's curse can sharply increase the probability of war.

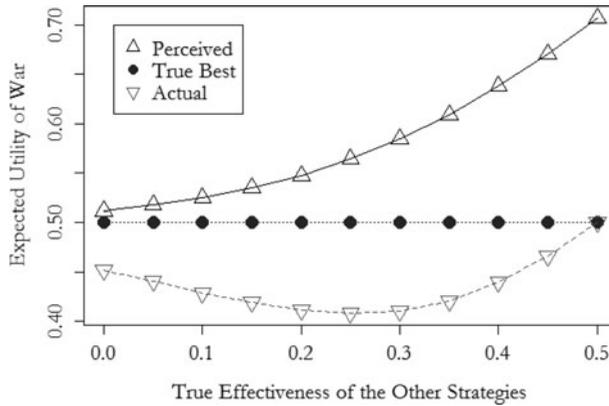
<sup>50</sup> Formal Model Parameters—Number of Strategies: X Axis; True Effectiveness of the Strategies: .5; Magnitude of Misperception from the Traditional Sources (units of standard deviation): .2; Relatedness of the Misperceptions (covariance): 0%.

<sup>51</sup> Simulation Parameters—Two Symmetric Actors; Number of Strategies: X Axis; True Effectiveness of the Strategies: .5 (half the strategies) and .4 (half the strategies); Magnitude of Misperception from the Traditional Sources (units of standard deviation): .2; Relatedness of the Misperceptions (covariance): 0%; Expected Utility of Peace: .8.

<sup>52</sup> Simulation Parameters—See Parameters for Figure 6.

## WHAT IF SOME STRATEGIES ARE MORE EFFECTIVE THAN OTHERS?

Does the strategist's curse effect hold up if some of the strategies are considerably more effective than others? In other words, can it survive low competitiveness? Figure 8 examines the marginal effects of different levels of competitiveness on the magnitude of false optimism. One strategy is set to a true effectiveness of .5, and the other three strategies each have true levels of effectiveness that vary from 0 to .5 along the X axis.

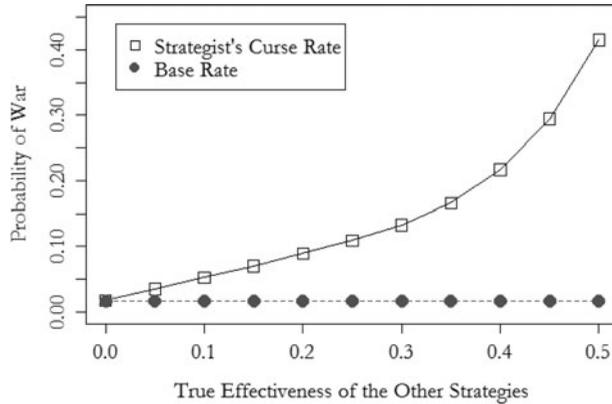


**FIGURE 8** Competitiveness and the level of false optimism.<sup>53</sup>

Figure 8 reveals that surprisingly low levels of competitiveness still generate considerable false optimism. However, most of this false optimism occurs from states picking one of the inferior strategies and doing worse than the true best. For example, suppose that one of the three poor strategies happens to be greatly exaggerated, say from .1 to .35, and the true best strategy is underestimated, say from .5 to .32. If so, the decision maker would select the inferior strategy and receive an effectiveness of .1 instead of the .5 that was attainable. Increased competitiveness makes selecting inferior strategies less detrimental, but it also makes their selection more likely. Actual effectiveness initially decreases with increased competitiveness because the latter dominates, then rises as the former becomes larger.

Figure 9 shows that low competitiveness curbs the probability of war more strongly than the level of false optimism. This difference exists because false optimism from selecting a suboptimal strategy is somewhat less prone to causing war. In such cases, the state often expects to fare worse from a

<sup>53</sup> Simulation Parameters—Two Symmetric Actors; Number of Strategies: 4; True Effectiveness of the Strategies: .5 (one strategy) and X Axis (the other three strategies); Magnitude of Misperception from the Traditional Sources (units of standard deviation): .2; Relatedness of the Misperceptions (covariance): 0%; Expected Utility of Peace: .8.



**FIGURE 9** Competitiveness and the probability of war.<sup>54</sup>

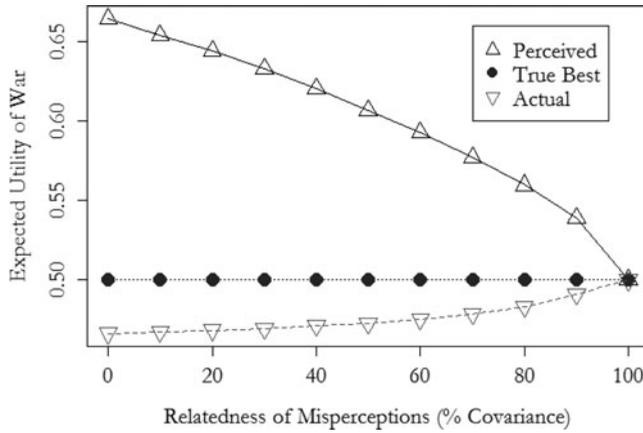
war than it actually could with an available strategy. These are less likely to be cases in which the state expects to fare well enough from a war to choose to start it despite its costs. Nonetheless, even at low levels of competitiveness, the strategist's curse can remain an important cause of war.

#### WHAT IF MISPERCEPTIONS OF THE STRATEGIES ARE RELATED?

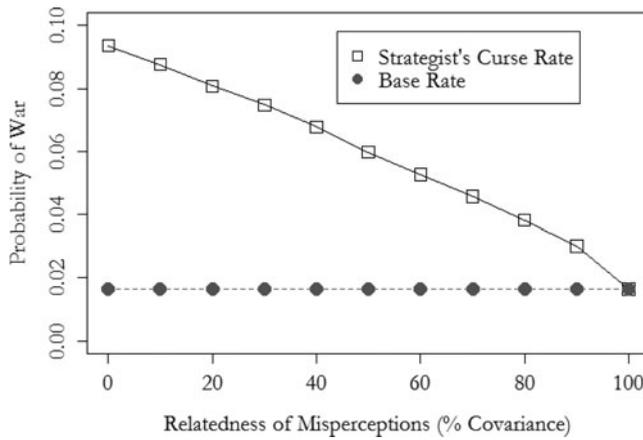
The results presented so far have set the relatedness (covariance) among misperceptions to zero, assuming that misperceptions of the strategies are independent of one another. But, what if these misperceptions are not independent? With the same decision maker perceiving each strategy, this concern is far from trivial. Many of the counterarguments to the strategist's curse translate to the claim that relatedness is high. For example, one might imagine that a state's perception of the distribution of power determines its expectations for all its strategies. When a state is falsely optimistic about its relative power, it is falsely optimistic about all strategies. This implies high relatedness among the misperceptions of each strategy, which would reduce the size of the strategist's curse effect. So, how much relatedness is needed to negate the strategist's curse?

Figures 10 and 11 present simulation results showing that a surprisingly high level of relatedness, modeled as covariance, is necessary to render the strategist's curse irrelevant. It is clear that increasing relatedness curbs the level of false optimism and the probability of war, but the strategist's curse remains substantively important despite high levels of covariance. Figure 10 also reveals a secondary effect: increasing relatedness reduces the frequency with which decision makers select a suboptimal strategy. In short, the degree

<sup>54</sup> Simulation Parameters. See Parameters for Figure 8.



**FIGURE 10** Relatedness and the level of false optimism.<sup>55</sup>



**FIGURE 11** Relatedness and the probability of war.<sup>56</sup>

of relatedness among misperceptions is an important determinant of the size of the strategist's curse, but it seems unlikely that relatedness will be so high among clearly distinct strategies that it will consistently eliminate the strategist's curse.

<sup>55</sup> Simulation Parameters—Two Symmetric Actors; Number of Strategies: 4; True Effectiveness of the Strategies: .5 (two strategies) and .4 (two strategies); Magnitude of Misperception from the Traditional Sources (units of standard deviation): .2; Relatedness of the Misperceptions (covariance): X Axis; Expected Utility of Peace: .8.

<sup>56</sup> Simulation Parameters. See Parameters for Figure 10.

PEACE, MULTIPLE PEACE STRATEGIES,  
AND THE STRATEGIST'S CURSE

The most limiting assumption in translating false optimism from the strategist's curse into war lies in how peace is conceived. Is the expected utility of peace a known value, a single value that can be misperceived, or is there a set of peace strategies that can be misperceived individually? What about a strategist's curse effect among multiple peace strategies? Can this offset the strategist's curse's effect on the probability of war?

For simplicity, peace has been treated as if it is a known. Doing so assumes that war happens when the two sides' false optimism exceeds a threshold: the expected utility of peace. Treating peace as a single option that can be misperceived makes little difference. Doing so slightly increases the probability of war for both the base rate and the strategist's curse rate (results not shown).<sup>57</sup> The same cannot be said for the existence of multiple peace strategies.

If peace is a set of strategies and each can be misperceived, a strategist's curse effect can also exist among the peace strategies. States may, consequently, tend to select a peace strategy whose effectiveness they have exaggerated, creating a general tendency toward false optimism about peace. If states are as falsely optimistic about peace as they are about war, the strategist's curse would remain a cause of false optimism without causing war. If the strategist's curse effect is larger among the peace strategies, it could even be a force for peace. More generally, intense false optimism about military prospects can exist without causing war if and when states are simultaneously falsely optimistic about both war and peace such that the two offset each other. Whether in peace or in war, perhaps states are just consistently disappointed?

There are two reasons to expect the strategist's curse to cause war despite the possibility of a strategist's curse effect among peace strategies causing offsetting false optimism about peace. First, the strategist's curse still increases the likelihood of war if the general level of misperception from the traditional sources is greater for war strategies than peace strategies (results not shown). It seems reasonable to assume that misperception of war strategies is usually greater than misperception of peace strategies. The more this is the case, the stronger the strategist's curse is as a cause of war. Although the traditional sources of misperception would seem to apply similarly to peace and war strategies, it is likely that the potency of these traditional sources is magnified by the uncertainty of war. How accurately can a state

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<sup>57</sup> This happens because the added instances of false pessimism about peace result in a war strategy seeming to be the best option more often than the added instances of false optimism about peace result in peace seeming the best option. This result reverses if the probability of war is greater than .5.

predict how well it will fare during and after a war begun with each particular strategy? States in the midst of a war often find it extraordinarily difficult to evaluate the performance of the strategy they have been using even after that war is well underway.<sup>58</sup> According to Carl von Clausewitz, “War is the province of chance. In no sphere of human activity is such a margin to be left for this intruder . . . . [It] increases the uncertainty of every circumstance and deranges the course of events.”<sup>59</sup> In comparison, the ramifications of continuing to remain at peace may tend to be easier to anticipate. Still, this assumption would stand stronger on an empirical foundation, and it is likely the main limiting factor on the size of the strategist’s curse beyond the variables themselves. An appropriate question for future research is whether states are as falsely optimistic about peace as they are about war.

Second, false optimism among peace strategies that offsets the strategist’s curse would frequently offer nothing more than a temporary reprieve from war. Over time, the true performance of the exaggerated peace strategy would be revealed. The state might then decide among its strategies again after discarding the exaggerated peace strategy.

#### HISTORICAL EXAMPLES: PEARL HARBOR AND THE IRAQ WAR

The Japanese attack on Pearl Harbor in 1941 and the decision by the United States to invade Iraq in 2003 offer plausible examples of the strategist’s curse. These examples serve here only as illustrations, not conclusive evidence.

Japan’s decision to attack the United States is widely regarded as an instance of false optimism leading to war, in this case war against a country with nearly ten times its military potential.<sup>60</sup> Japan did not expect to march on Washington but certainly hoped to fare better than it did. Even after the decision to ally with Germany, Japan confronted a plethora of options for using force to achieve the aims of economic self-reliance and imperial expansion. In contrast to the offensive strategy it selected, Japan’s longstanding military strategy for war with the United States had been to draw the US fleet into East Asia, where it would be ambushed far from home using submarines, land and sea-based aircraft, and ultimately the Japanese fleet itself.<sup>61</sup> Japanese war

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<sup>58</sup> Scott S. Gartner, *Strategic Assessment in War* (New Haven, CT: Yale University Press, 1997); Jeffrey A. Friedman, “Breakthrough Problems and the American Indian Wars” (paper presented at the International Studies Association Annual Conference, San Diego, 2012).

<sup>59</sup> Carl von Clausewitz, *On War*, trans. J. J. Graham (Radford: Wilder Publications, 2008), 61.

<sup>60</sup> For example, Jack Snyder, *Myths of Empire: Domestic Politics and International Ambition* (Ithaca, NY: Cornell University Press, 1991), 113; Iguchi Takeo, *Demystifying Pearl Harbor: A New Perspective from Japan* (Tokyo: International House of Japan, 2010), 62–63.

<sup>61</sup> H. P. Willmott, *The Barrier and the Javelin: Japanese and Allied Strategies, February to June 1942* (Annapolis, MD: Naval Institute Press, 1983).

games shortly prior to the war envisioned a campaign of surprise attacks limited to the Philippines and Southeast Asia, excluding Hawaii.<sup>62</sup> Japan also could have focused its efforts on prevailing on the Chinese front or the Indian Ocean theater. More daring options were also available, such as invasions of Hawaii, Australia, or India. Alternatively, Japan could have designed its war plan to seize its territorial objectives in Southeast Asia while minimizing American casualties in the hopes of facilitating an eventual political settlement. Japan also contemplated an invasion of the Soviet Union as Germany's campaign appeared to be faring well, both in conjunction with or instead of an attack on the United States.<sup>63</sup> Aiding Germany in knocking the Soviet Union out of the war could have been thought to improve Japan's chances against the Western powers in the Pacific War. The multiplicity of potential adversaries complicates this example, as tends to happen when theory meets reality, but a strategist's curse effect remains quite plausible even if limited to the US-Japan dyad. Among all of these options, there was a great deal of latitude for one to be misperceived into appearing far more effective than was actually the case.

Several beliefs conspired to cause Japanese leaders to exaggerate the effectiveness of a combined surprise attack on the United States, Britain, and the Netherlands. Most important was the expectation that the United States would eventually accept Japanese control of Southeast Asia rather than endure the costs of defeating Japan militarily. Others included the belief that Germany would prevail in Europe, the exaggerated perception of the damage that a surprise attack on Pearl Harbor would inflict on the US Navy, and the conviction that fighting the Europeans without fighting the United States was infeasible.<sup>64</sup>

The gravity of Japan's miscalculation is puzzling in light of the acuity that characterized Japan's operational planning, tactical execution, and even many strategic assessments. Japanese perceptions of American force levels, deployments, and relative economic potential were largely accurate.<sup>65</sup> Japan's war plan achieved the element of surprise and resulted in the rapid conquest of Southeast Asia at minimal cost. There was no across-the-board false optimism afflicting Japanese perceptions. Japanese leaders' misperceptions of the strategy they adopted exceeded their general level of misperception. These leaders chose a strategy whose effectiveness they had disproportionately exaggerated, in line with the strategist's curse.

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<sup>62</sup> Roberta Wohlstetter, *Pearl Harbor: Warning and Decision* (Stanford, CA: Stanford University Press, 1962), 356.

<sup>63</sup> Fujiwara Akira, "The Road to Pearl Harbor" in *Pearl Harbor Reexamined: Prologue to the Pacific War*, ed. Hilary Conroy and Harry Wray (Honolulu: University of Hawaii Press, 1990), 152; Nicholas Tarling, *A Sudden Rampage: The Japanese Occupation of Southeast Asia, 1941-1945* (Honolulu: University of Hawaii Press, 2001), 69.

<sup>64</sup> Takeo, *Demystifying Pearl Harbor*, 68; Wohlstetter, *Pearl Harbor*, 348.

<sup>65</sup> Wohlstetter, *Pearl Harbor*, 349-52; Akira, "The Road to Pearl Harbor," 154.

The 2003 Iraq War offers another plausible example of the strategist's curse. It offers a clear case of false optimism about war outcomes, in particular the costs that the postwar insurgency would exact and the obstacles to a stable political order. Whether or not this was a necessary condition for the war, it was likely at least a contributing factor. Multiple strategies were available. The most important distinguishing factor among these was troop levels. The existing contingency plan for an invasion of Iraq, drafted in 1998, envisioned troop levels of 380,000 to 500,000.<sup>66</sup> Although they continued to receive attention and support, these troop levels were rejected by Secretary of Defense Donald Rumsfeld, who sought a more transformative strategy making use of technology to reduce force requirements. Proposals often ranged between 100,000 and 150,000 American ground forces, including the plan ultimately selected. A third war plan modeled on the Afghanistan victory and making use of only ten thousand to twenty thousand ground forces, perhaps in conjunction with a popular uprising, also received some consideration.<sup>67</sup> The set of proposed war plans differed not just on troop levels, but also on the length of prewar deployments, the need for preparatory airstrikes, and the possibility of a northern front through Turkey.<sup>68</sup> False optimism in the Iraq case appears to stem primarily from the failure to anticipate the size and nature of the insurgency. If one accepts the conventional wisdom that higher troop levels are necessary for effective stability operations, this belief resulted in a much greater exaggeration of the quality of options with smaller troop levels, creating the illusion of a cheap victory.<sup>69</sup> Therefore, the Iraq case offers a plausible instance in which the effectiveness of one strategy was disproportionately exaggerated relative to another and was selected as a result.

Full validation of these or other examples has at least four requirements: (1) a high level of false optimism about the selected strategy was present, (2) this false optimism contributed to the start of the war, (3) multiple strategies were available, and (4) the level of false optimism about the selected

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<sup>66</sup> Michael R. Gordon and Bernard E. Trainor, *Cobra II: The Inside Story of the Invasion and Occupation of Iraq* (New York: Pantheon Books, 2006), 4, 26; Keith L. Shimko, *The Iraq Wars and America's Military Revolution* (New York: Cambridge University Press, 2010), 143–44.

<sup>67</sup> Gordon and Trainor, *Cobra II*, 34; Richard N. Haass, *War of Necessity, War of Choice: A Memoir of Two Iraq Wars* (New York: Simon and Schuster, 2009), 255; Thomas E. Ricks, *Fiasco: The American Military Adventure in Iraq* (New York: Penguin Books, 2007), 75.

<sup>68</sup> Gordon and Trainor, *Cobra II*; Shimko, *Iraq Wars*, 146; Isaiah Wilson, "America's Anabasis," in *War in Iraq: Planning and Execution*, ed. Thomas G. Mahnken and Thomas A. Keaney (New York: Routledge, 2007), 15–17.

<sup>69</sup> U.S. Department of the Army, *The U.S. Army/Marine Corps Counterinsurgency Field Manual* (Chicago: University of Chicago Press, 2007); James T. Quinlivan, "Force Requirements in Stability Operations," *Parameters* 25, no. 4 (Winter 1995): 59–69. Also see Jeffrey A. Friedman, "Manpower and Counterinsurgency: Empirical Foundations for Theory and Doctrine," *Security Studies* 20, no. 4 (December 2011): 556–91.

strategy was high relative to perceptions of the alternatives. These requirements pose several challenges. First is the inherent difficulty of establishing the presence or absence of false optimism.<sup>70</sup> Second, motivated bias offers a challenging alternative explanation for chains of events suggestive of the strategist's curse like those in the above examples. It is possible that the minds of decision makers under enormous pressure to go to war will find a way to exaggerate the effectiveness of at least one military strategy until they have an option consistent with their psychological need to go to war.<sup>71</sup> If so, strategy selection might effectively follow the decision to go to war rather than contribute to causing it.<sup>72</sup> Third, the final requirement above poses grave challenges because it necessarily implies a claim about how well the state would have fared in a war begun with a different strategy. This is a daunting counterfactual.<sup>73</sup> Without it, however, there is no compelling reason to attribute explanatory power to the strategist's curse rather than the traditional sources of misperception alone.<sup>74</sup> For these reasons, one can claim only that particular examples are suggestive of the validity of the strategist's curse.

## THEORETICAL AND PRACTICAL IMPLICATIONS

This article proposes a new theory meant to explain the origins and prevalence of false optimism as a cause of war. This theory introduces new variables that act as causes of war, most notably the number of strategies available, and shows how strategy selection amplifies the amount of false optimism from the traditional sources of misperception. Due to the strategist's curse, the strategy that appears most attractive is one whose effectiveness is particularly likely to have been exaggerated. False pessimism may be common, but it will be effectively irrelevant when states promptly disregard the strategies about which they are pessimistic and instead base their plans around strategies whose effectiveness they have exaggerated.

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<sup>70</sup> Levy, "Misperception and the Causes of War."

<sup>71</sup> For example, Richard Ned Lebow, *Between Peace and War: The Nature of International Crisis* (Baltimore: Johns Hopkins University Press, 1981).

<sup>72</sup> I would like to thank an anonymous reviewer for calling my attention to this possibility. Although motivated bias and the strategist's curse are probably best viewed as rival explanations for war with troublesomely similar observable implications, the two could also operate in conjunction with each other. Suppose that there are strategy-specific constraints on the degree to which decision makers can respond to motivated bias by convincing themselves of a strategy's effectiveness. If so, it is important to recognize that the strategies that are most susceptible to exaggeration matter more than the general degree to which decision makers can fulfill a psychological need by overestimating a strategy's effectiveness. In this way, strategy selection could amplify the effect of motivated bias.

<sup>73</sup> Jervis, "War and Misperception," 681.

<sup>74</sup> This may explain why the strategist's curse has gone unnoticed; absent this evidence, war-causing false optimism can simply be attributed to the traditional source(s) that caused the exaggeration of the selected strategy's effectiveness.

When choosing from several distinct options, a perfectly rational actor would reason as follows: Based on everything he (or she) knows, these are his estimates of how well he would fare in war with each available strategy. He identifies the strategy that appears best. Should he choose to fight a war, he would use this strategy. But, conditional on that strategy seeming to be the best strategy, it is likely that he has exaggerated its effectiveness. Therefore, he reduces his expectations of how well he would fare in a war fought with that strategy. If war no longer appears preferable to peace, he chooses peace.

The strategist's curse offers an argument for caution and even pessimism in making the decision to go to war. Even if misperceptions from cognitive, bureaucratic, and other traditional sources are no more prone to optimism than to pessimism, the best estimate of what appears to be the best strategy is systematically biased toward false optimism. A downward adjustment in expectations about how well this strategy will perform can be justified not by pacifism, but rather by the pragmatic objective of predicting policy outcomes as accurately as possible in a complex, error-prone world. This downward adjustment would be particularly salient for so-called wars of choice in which it can tip the scales in favor of peace. Future research is needed to establish the existence of the strategist's curse empirically, but the conditions and assumptions required for the effect are surprisingly minimal. Policymakers charged with the fateful decision between war and peace should pause for a moment to ask themselves whether they are basing their war plan on a strategy whose effectiveness they happen to have particularly exaggerated.

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#### APPENDIX

This appendix formally derives the average amount of false optimism caused by the strategist's curse. I first derive it in a simplified independent and

identically distributed (i.i.d.) case, then relax the identical distributions condition in an intermediate case, and finally relax the independence condition to derive the full solution. Solving the model requires numerical integration. The replication code for this numerical integration will be made available at the author's website.

The model first solves for the expected utility of the strategy that appears best, that is, the maximum of the set of perceptions. Let  $(x)$  denote each possible perception,  $(x_i)$  the perceived utility of strategy  $i$ , and  $(x_j)$  the perceived utility of each alternative strategy. The probability that the perceived utility of any single strategy at any single value will be the maximum of the set of perceptions is equal to the probability that this strategy takes on that value multiplied by the probabilities that the perceived values of the alternative strategies fall below that point. If each of the  $(k)$  strategies is independently and identically distributed with the same true effectiveness, this implies:

$$p(x_i = \max) = p(x_i = x) * p(x_j < x)^{k-1}$$

The probability that any particular potential perception is the max is the sum of the probabilities that each strategy is the max at that value:

$$p(x = \max) = \sum_{i=1}^k p(x_i = x) * p(x_j < x)^{k-1}$$

$$p(x = \max) = k p(x_i = x) * p(x_j < x)^{k-1}$$

In terms of probability density functions ( $\phi(x)$ ) and cumulative density functions ( $\Phi(x)$ ), this is equivalent to the following, with  $(\mu)$  the true level of effectiveness and  $(\sigma^2)$  its variance. I notate the distributions as if they are normal, but the model easily extends to other distributions.

$$p(x = \max) = k \phi(x|\mu, \sigma^2) * \Phi(x|\mu, \sigma^2)^{k-1}$$

This allows the calculation of the expected value of the max:

$$E[x_{\max}] = \int_{-\infty}^{\infty} x * k * \phi(x|\mu, \sigma^2) * \Phi(x|\mu, \sigma^2)^{k-1} dx$$

The average amount of false optimism is calculated by subtracting the true value  $(\mu)$  from the expected value for how well a state will expect to fare

with the strategy it perceives as best.

$$E [FalseOpt] = \int_{-\infty}^{\infty} x^* k^* \phi(x|\mu, \sigma^2)^* \Phi(x|\mu, \sigma^2)^{k-1} dx - \mu$$

The intermediate case relaxes the assumptions that the true performance levels and their distributions are constant among the strategies, but otherwise follows the same logic:

$$p(x_i = max) = p(x_i = x) \prod_{j \neq i} p(x_j < x)$$

$$p(x = max) = \sum_{i=1}^k \left[ p(x_i = x) \prod_{j \neq i} p(x_j < x) \right]$$

$$p(x = max) = \sum_{i=1}^k \left[ \phi(x|\mu_i, \sigma_i^2) \prod_{j \neq i} \Phi(x|\mu_j, \sigma_j^2) \right]$$

The expected value is:

$$E [x_{max}] = \sum_{i=1}^k \int_{-\infty}^{\infty} x^* \phi(x|\mu_i, \sigma_i^2)^* \prod_{j \neq i} \Phi(x|\mu_j, \sigma_j^2) dx$$

To arrive at the expected magnitude of the false optimism for a set of parameters, it is also necessary to calculate the true performance of the strategy that is picked. For each strategy, this equals its true performance level multiplied by its probability of being picked. The sum of these is the overall expected value for the actual performance of the picked strategy.

$$E [x_{actual}] = \sum_{i=1}^k \int_{-\infty}^{\infty} \mu_i^* \phi(x|\mu_i, \sigma_i^2)^* \prod_{j \neq i} \Phi(x|\mu_j, \sigma_j^2) dx$$

Simplifying the difference between these yields the expression below, which is both the average amount of false optimism and the size of the adjustment needed to correct it.

$$E [FalseOpt] = \sum_{i=1}^k \int_{-\infty}^{\infty} (x - \mu_i)^* \phi(x|\mu_i, \sigma_i^2)^* \prod_{j \neq i} \Phi(x|\mu_j, \sigma_j^2) dx$$

The full solution below again solves for the perceived value of the strategy that appears best, taking into account the probability that the strategy takes

on that value and the condition that all other strategies fall below that value.  $\phi_{MVN}$  represents the probability density function of a multivariate normal distribution, which allows for covariance.

$$E [x_{max}] = \sum_{i=1}^k \int_{-\infty}^{\infty} \int_{-\infty}^{x_i} \int_{-\infty}^{x_i} \dots \int_{-\infty}^{x_i} x_i^* \phi_{MVN} (X|mu, \Sigma) dx_{j_{k-1}} \dots dx_{j_2} dx_{j_1} dx_i$$

$$X = (x_i, x_{j_1}, x_{j_2} \dots x_{j_{k-1}})$$

$$mu = (\mu_i, \mu_{j_1}, \mu_{j_2} \dots \mu_{j_{k-1}})$$

$$\Sigma = \begin{bmatrix} \sigma_i^2 & \sigma_{i,j_1} & \sigma_{i,j_2} & \dots & \sigma_{i,j_{k-1}} \\ \sigma_{j_1,i} & \sigma_{j_1}^2 & \sigma_{j_1,j_2} & \dots & \sigma_{j_1,j_{k-1}} \\ \sigma_{j_2,i} & \sigma_{j_2,j_1} & \sigma_{j_2}^2 & \dots & \sigma_{j_2,j_{k-1}} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ \sigma_{j_{k-1},i} & \sigma_{j_{k-1},j_1} & \sigma_{j_{k-1},j_2} & \dots & \sigma_{j_{k-1}}^2 \end{bmatrix}$$

As in the intermediate case, the expected value of what the decision maker actually gets is:

$$E [x_{actual}] = \sum_{i=1}^k \int_{-\infty}^{\infty} \int_{-\infty}^{x_i} \int_{-\infty}^{x_i} \dots \int_{-\infty}^{x_i} \mu_i \phi_{MVN} (X|mu, \Sigma) dx_{j_{k-1}} \dots dx_{j_2} dx_{j_1} dx_i$$

The expected value of the amount of false optimism is the difference between these:

$$E [FalseOpt] = \sum_{i=1}^k \int_{-\infty}^{\infty} \int_{-\infty}^{x_i} \int_{-\infty}^{x_i} \dots \int_{-\infty}^{x_i} (x_i - \mu_i) \phi_{MVN} (X|mu, \Sigma) dx_{j_{k-1}} \dots dx_{j_2} dx_{j_1} dx_i$$

This is the full solution to the model, in which all four constituent variables of the strategist's curse can take on any value that might exist in a real-world situation.

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