

Evaluating Escalation: Conceptualizing Escalation in an Era of Emerging Military Technologies

Short Title: Evaluating Escalation

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Abstract: Escalation is central to many international relations theories. Despite its cornerstone role, conceptualizing and measuring escalation has become increasingly complicated as technologies like cyber and drone warfare proliferate. Existing escalation research often fails to account for emerging technology, and studies that do are often technology-specific, comparing a single “new” technology to “traditional” forces. This siloed approach overlooks variation in the *means* by which states use force and their relative ordering on the escalation ladder. To address this shortcoming, I introduce a means-based framework for characterizing escalation based on the degree to which actions are physically present and visible. Drawing from an original survey fielded on a cross-national sample of foreign policy experts, I construct a more complete escalation ladder in which more physically present and visible actions fall at higher rungs. This ladder suggests the need for more precise coding schemes than those found in widely cited militarized dispute datasets.

Keywords: international crises, international relations, expert survey, drone warfare, cyber warfare

Supplementary material for this article is available in the appendix in the online edition.

Replication files are available in the JOP Data Archive on Dataverse (<https://dataverse.harvard.edu/dataverse/jop>). The empirical analysis has been successfully replicated by the JOP replication analyst.

This study was deemed exempt by MIT’s Committee on the Use of Human Experimental Subjects (E-3315).

How have emerging military technologies affected the conceptualization of escalation? Advances in military technology and tactics have increased the tools leaders can use during disputes, but the Cold War-era “escalation ladder” at the core of much existing research does not account for increasingly used national security instruments like drones, covert action, and cyber operations (Kahn 1965). Drawing from an original survey fielded on a cross-national sample of foreign policy experts, I construct a more complete and modern escalation ladder in which actions that are more physically present and visible on the battlefield fall at higher rungs.

Escalation—the expansion in scope or intensity of interactions between states—is a central concept in international relations (IR) research (Morgan et al. 2008) that informs debates on crisis signaling (Schelling 1966), deterrence (Reiter and Poast 2021), and conflict initiation and outcomes (Leng 2004). Recent scholarship has extended this line of inquiry, exploring the effects of emerging technologies and tactics on escalation (Carson 2018; Valeriano, Jensen, and Maness 2018; Kreps and Schneider 2019; Talmadge 2019; Lin-Greenberg 2022). These studies suggest that certain military instruments—or *means*—of confronting rivals are less escalatory than others, and that the means a state employs can lead to variation in crisis or policy outcomes.

Existing work, however, is often technology specific and compares operations involving a single new technology to “traditional” military operations. Such siloed approaches fail to identify where different means fall relative to each other on the escalation ladder and unrealistically simplify the large menu of tools that policymakers choose from. Widely used datasets also overlook variation in means, introducing imprecision into empirical studies. This lack of conceptual and measurement clarity makes it difficult to study how emerging technology and tactics affect core IR concepts (e.g., deterrence) that are informed, in part, by escalation.

I first introduce a means-based conceptual framework for escalation. I suggest perceptions of escalation are based, in part, on the degree to which military actions are physically present and visible on the battlefield. I then explore this framework using data from surveys fielded on a sample of over 200 foreign policy experts in India, Singapore, and the United States that asks respondents to rank a set of military actions from least to most escalatory.

This note makes two contributions to theory and policy. First, it advances understanding of escalation by introducing a ladder that more fully assesses the range of tools at policymakers' disposal. The findings demonstrate cross-national similarities, suggesting shared conceptions of escalation. Second, the means-based ladder advances empirical research by providing a foundation scholars can use to develop more nuanced coding schemes for escalation and militarized disputes.

Escalation: Conceptualization and Measurement

Escalation features heavily in IR research, with over 120 articles engaging the topic in leading political science and international relations journals between 2010 and 2021.¹ Some studies include escalation as the key dependent variable, assessing whether certain actions lead to de-escalation or escalation (Carson 2018; Reddie et al. 2018; Kreps and Schneider 2019). Other projects incorporate escalation as an independent variable, exploring the degree to which escalation affects outcomes including deterrence and audience costs (Tomz 2007).

In much existing work, escalation is conceptualized as the crossing of effects-based thresholds: the increased frequency and intensity of attacks or the expanded geographic locations where force is used. As actors generate more severe battlefield effects or conduct operations in

¹ Based on a search for “escalation” in the title, keywords, or abstract of articles. See appendix.

new or politically sensitive areas, they climb Kahn’s (1965) proverbial escalation ladder.² The focus on effects extends to widely cited datasets. The Militarized Interstate Dispute (MID) dataset, for instance, classifies attacks as a “use of force” regardless of the means involved. Yet, not all uses of force are equally escalatory; using different means could lead to variation in the outcomes scholars are studying.

To address this issue, a growing body of scholarship suggests that it is not just the *effects* of military activity that shapes escalation, but also the *means* that states employ when confronting rivals (Kostyuk, Powell, and Skach 2018; Kreps and Schneider 2019). According to these logics, decision-makers perceive certain technologies or tactics as more escalatory than others, even when their use yields similar effects. These studies, however, typically analyze just one technology.

While several factors might cause means-based variation in perceptions of escalation, I focus on one set of potential drivers—the physical presence and visibility of a state’s actions. I choose this focus because emerging technologies and tactics are often intended to decrease the physical presence of a state’s personnel on the battlefield and, relatedly, often allow policymakers to conduct operations in ways that are less visible to the public in the sending and targeted states.

Operations that physically deploy troops or assets into a rival’s territory may be seen as more escalatory not because they pose a greater threat or generate more damage, but because they demonstrate a state’s willingness to incur risk and may represent a greater affront to a rival’s sovereignty. Physical deployments incur sunk and potential costs that involve human, financial, and political risks that decision-makers are likely to accept only when they are committed and

² Some scholars suggest a linear ladder fails to capture “lattice” dynamics (Libicki and Tkacheva 2021); yet there remains a hierarchy where some actions are perceived as more escalatory.

willing to take additional action (Fearon 1997). Moreover, the physical presence of forces on a rival's territory may be considered a challenge to national honor that is perceived as a more significant—and escalatory—hostile act (O'Neill 1999). To underscore, physicality refers to whether forces are present in a rival's territory, and not an action's effects. To be sure, the same type of means could generate physical or non-physical effects (i.e., a cyberattack that destroys infrastructure vs. one that defaces a website), but this note focuses on means rather than effects.

More physically present actions are typically more visible to the public and likely to be viewed as more escalatory than actions like special forces raids or drone strikes that tend to be less observable. Studies on visibility suggest that the degree to which the public can observe threatening actions, either directly or indirectly (e.g., via media), informs how conflict is understood, shaping threat perceptions (Friis 2015). More visible actions, like large ground force deployments, are seen as more intense and likely to trigger further escalation (Braithwaite 2015).

Visible actions may also be harder for leaders to ignore than actions that remain out of public view—potentially sparking demands for escalatory responses. As Carson (2018) argues, rival actions that remain hidden in the “backstage” are less likely to trigger public calls for hawkish reactions that can set off escalation spirals. Since activity like drone or cyber operations may be easier to keep hidden from the public or plausibly deny, they may be considered less escalatory.

In sum, I expect actions that physically place personnel in rival territory to be perceived, on average, as more escalatory than actions like drone strikes and cyberattacks conducted by personnel stationed remotely. Similarly, I expect more visible actions such as large-scale troop deployments to be more escalatory than less visible operations such as special forces deployments.

Research Design

To assess how advances in technologies and tactics affect perceptions of escalation, I build a more comprehensive means-based escalation ladder. To make this intervention, I use data from an original survey of experts from the foreign and defense ministries and leading foreign policy think tanks in the United States, India, and Singapore. The survey asks respondents to rate eight actions their state could take against another country from least to most escalatory.

Table 1: Military Actions

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| <ul style="list-style-type: none">• Special forces (SOF) raid on rival country military base• Special forces (SOF) raid on rival country’s naval ship in international waters• Drone attack on rival country military base• Manned bomber attack on rival country military base• Missile strike on rival country military base• Cyberattack on rival country military base• Provide support to a rebel group to attack rival country military base• Large conventional ground force attack on rival country military base |
|--|

States could take many actions during a crisis, but the survey includes activities that states have taken in recent years, features “traditional” operations alongside operations conducted using emerging technologies, and incorporates increasingly studied topics—like drones and cyber (Table 1). To focus on means rather than effects, I hold casualties constant and tell respondents that all attacks kill 30 troops from the rival country, regardless of what type of forces are employed. I also hold constant the attack target (i.e., a military base) with the exception of one action that features a raid on a rival country’s naval ship to assess how variation in targets affects perceptions of escalation. Respondents are told the events take place as part of a crisis because acts of escalation may be more salient during crises than those that occur once a conflict is underway.³

Since escalation frequently results from the choices of national security policymakers, I restrict my sample to government and think tank employees who work for the institutions that

³ See appendix for information on survey design, recruitment, demographics, and survey text.

make or advise on national security policy. Following Clark (2021), I recruit the expert sample using targeted LinkedIn advertisements. While relying on expert respondents results in a small sample, it potentially bolsters the external validity of findings. The sample, however, is unlikely to be fully representative of foreign and defense ministries. It is young, liberal, primarily male, and omits senior officials not active on LinkedIn. Despite these limitations, respondents can leverage their foreign policy and national security expertise to provide valuable insights. I field the survey in the United States, Singapore, and India because these states feature professional foreign policy bureaucracies and think tanks that actively engage in policy debates. Moreover, the three countries offer variation in their military posture, capabilities, and strategic environment.

Results and Discussion

To construct the escalation ladder, I calculate the mean perceived escalation for each action (on an 8-point scale from least (1) to most (8) escalatory). Table 2 orders the actions from most to least escalatory across the full sample, and because escalation is context dependent, also presents the escalation ladder for each of the three countries.

	Full Sample (<i>n</i>=206)	United States (<i>n</i>=109)	India (<i>n</i>=72)	Singapore (<i>n</i>=25)
<i>More Escalatory</i>	Ground attack (6.69)	Ground attack (7.06)	Ground attack (6.03)	Ground attack (6.96)
	Bomber attack (5.64)	Bomber attack (5.65)	Bomber attack (5.56)	Bomber attack (5.84)
	Missile strike (5.11)	SOF raid (5.54)	Missile strike (5.19)	Missile strike (5.36)
	SOF raid (4.96)	Missile strike (4.99)	SOF raid (4.20)	SOF raid (4.60)
	SOF raid on ship (4.17)	SOF raid on ship (4.31)	SOF raid on ship (4.10)	Drone strike (4.12)
<i>Less Escalatory</i>	Drone strike (3.66)	Drone strike (3.53)	Support to proxies (3.97)	SOF raid on ship (3.76)
	Support to proxies (3.18)	Support to proxies (2.69)	Drone strike (3.69)	Support to proxies (3.08)
	Cyberattack (2.59)	Cyberattack (2.22)	Cyberattack (3.25)	Cyberattack (2.28)

Experts in all three countries, on average, agreed on the highest and lowest ends of the escalation ladder. Conventional ground force and manned bomber attacks were ranked as the most escalatory actions. In contrast, cyber operations were considered the least escalatory, lending support to scholarship that finds cyberattacks need not lead to escalation (Kreps and Schneider 2019). Drone strikes fall between these two extremes, and are seen as less escalatory than a missile strike or SOF raid that yield the same effects. Given that missiles and drones are similar in terms

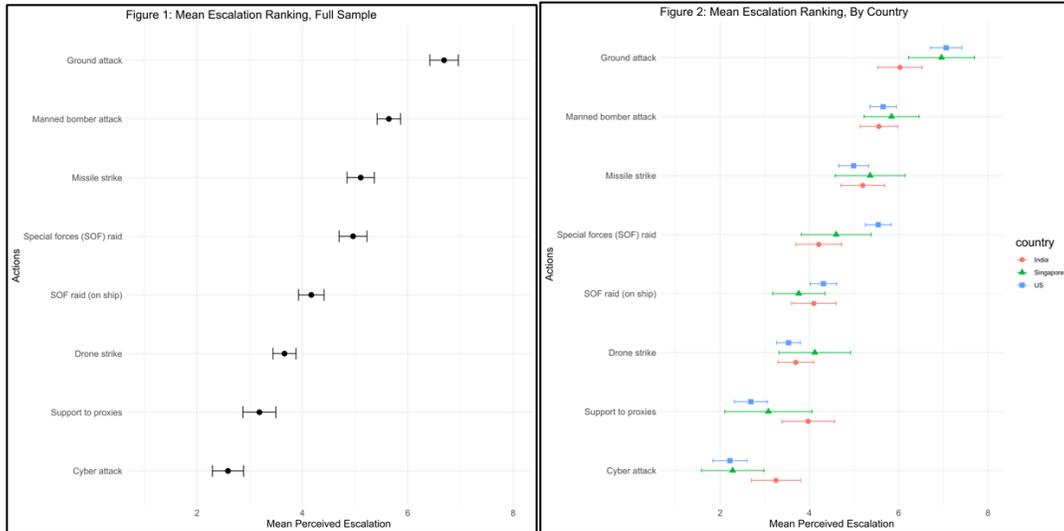
of physical presence and visibility, it is plausible that drones are perceived as less escalatory because of the surgical precision associated with their use during past counterterrorism operations. Missile strikes, on the other hand, might be viewed as the initial phase of a broader military operation. Future work could explore this empirically. Finally, a SOF raid on a rival's ship in international waters is seen as less escalatory than a special forces raid on a rival's military base. On one hand this suggests attacks on a rival's territory fall at a higher threshold than those that occur offshore. Yet, interestingly, special forces raids offshore are often seen as more escalatory than drone or cyberattacks on targets in a nation's homeland.⁴

These findings suggest the physical deployment of personnel and the visibility of operations shapes perceptions of escalation. Large troop formations and bomber missions put friendly forces and assets into a rival's territory or airspace; a SOF raid places personnel in harm's way, but these small and often covert units may be less visible to the public than conventional forces; drones place a physical asset but no personnel into rival airspace; and cyber operations place neither physical assets nor personnel in the rival country.

Cross-national differences in results reveal how context can affect perceptions of escalation. One notable difference is that, on average, Indian foreign policy experts viewed support to proxy groups as more escalatory than U.S. and Singaporean respondents did. This likely stems from India's long history of launching conventional military operations after attacks by Pakistan-backed proxies. Another interesting finding is that U.S. respondents consider a missile strike as,

⁴ For instance, in the full and U.S. samples, a SOF raid on a ship was seen as more escalatory than drone strikes or cyberattacks on a base. Similarly, among Singaporean respondents, a SOF raid on a ship was seen as more escalatory than cyberattacks.

on average, slightly less escalatory than a special forces raid on a base. The opposite is true among respondents from India and Singapore. This divergence is perhaps because U.S. respondents are accustomed to the Pentagon’s routine use of missiles against rivals. Despite the differences, the broad similarities suggest a conceptualization of a contemporary escalation ladder is shared across national borders, although the spacing of rungs may vary cross-nationally.



There are limits to what can be generalized from the findings since the survey provides little background, features hypothetical events, an unnamed rival, and relatively few casualties. Yet, escalation is context dependent: when and where an action is carried out and the actors involved can affect perceptions of escalation. Future research could vary geographic context, actors, and target types to assess generalizability.

Conclusion

This study introduces and tests a framework for assessing how variation in the means used in an attack affect perceptions of escalation. It provides scholars and policymakers with a more comprehensive assessment of the range of tools states can employ during disputes than the existing pairwise analyses that compare a single technology to traditional forces. Drawing data from a survey of foreign policy experts in the United States, India, and Singapore, I develop an escalation

ladder that more fully incorporates new technologies. The ladder appears to be informed by the physical presence and visibility of operations. Moreover, there is considerable consistency in escalation perceptions across respondents in three countries with distinct security environments, suggesting the existence of a shared conception of the escalation ladder.

The findings suggest several pathways for future work. Scholars might examine whether decision-makers in states beyond those studied here hold similar views. If not, what drives differences? Researchers could also assess whether means-based coding schemes yield different outcomes in studies than less nuanced, existing datasets. Lastly, scholars can study the interaction of means and effects. The note represents only a first step, but it helps advance understanding of escalation and yields substantive and empirical insights that inform future research.

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