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Is the Pursuit of Nukes Driven by Leaders or Systems?

Ellen Park

Summary

Nuclear weapons are widely regarded as one of the most lethal aspects of military arsenals ever created. As such, international relations and security experts have long been concerned about their proliferation. To prevent the spread of nuclear weapons, both policymakers and academic researchers have focused on what are commonly thought to be the primary drivers of proliferation: security concerns and domestic politics and economies. This brief examines another important driver: the role of national leaders themselves. Based on a study of 1,400 leaders in office between 1945 and 2000, author Ellen Park shows that leader personality and experience drive decisions about whether—or not—to pursue nuclear weapons, a finding that holds true across countries (rather than being limited to a few unique cases). Put simply, the pursuit of nuclear weapons is systematically influenced by certain attributes of leaders, such as college major, socioeconomic background, and military and international experience. To predict when and where the spread of nuclear and other emerging technologies will emerge next, policymakers should promote interdisciplinary dialogue to cultivate leader profiles and expand their use.

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Leaders and Nuclear Proliferation

Between 2006 and 2017, North Korea conducted six nuclear tests. The most recent, in 2017, was the largest in magnitude and produced the most explosive yield. With tensions heightened on the Korean Peninsula, North Korea then launched a ballistic missile equipped with a mock nuclear warhead designed for nuclear counterattacks at any time.¹ At every key moment during North Korea's nuclear and missile tests over the past nearly two decades, the country's supreme leader has always featured in state-run media images associated with nuclear tests and has expressed his praise.

Press accounts of nuclear proliferators such as North Korea, India, and Iraq often place state leaders at the center of these activities. Indeed, it would be difficult to imagine any complete explanation of these countries' nuclear programs without an understanding of the considered decision-making of Kim Il-sung, Indira Gandhi, and Saddam Hussein. Former U.S. President Bill Clinton expressed his belief that Iraq would be better served if it had a different leader other than Hussein, who was believed to be the driving force behind Iraq's purported proliferation of nuclear weapons.²

Similarly, concerns have been raised about China's modernization of its military capabilities under the leadership of Xi Jinping. In recent times, China has significantly increased the size of its nuclear arsenal, with expectations of further substantial growth. In 2017, Xi delivered a report stating that China's mission is to have its military



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modernization basically completed by 2035 and become a world-class military power by the mid-century.³ The international community has grown increasingly concerned about Xi's role in overseeing these developments and shaping China's nuclear strategy, which has sparked discussions regarding the implications of his leadership on global nuclear dynamics.⁴

The focus on the role of leaders in nuclear proliferation is important. Although countries are influenced by external threats and international norms, it is individual leaders who must balance these pressures and make the decision to develop or use nuclear weapons. These decisions are themselves influenced by individual characteristics.

¹ Kelsey Davenport, "North Korea Tests Missiles in Response to Military Exercises," *Arms Control Association* (April, 2023). <https://www.armscontrol.org/act/2023-04/news/north-korea-tests-missiles-response-military-exercises>

² William Clinton, "Joint News Conference with U.K. Prime Minister Tony Blair," *The Public Papers of the Presidents of the United States* (February 6, 1998). <http://quod.lib.umich.edu/p/ppotpus/4733229.1998.001/213?rgn=full+text;view=image>

³ Xi Jinping, "Full Text of Xi Jinping's Report at 19th CPC National Congress," *China Daily* (October 18, 2017). https://www.chinadaily.com.cn/china/19thcpcnationalcongress/2017-11/04/content_34115212.htm

⁴ To learn more see [China's Emergence As A Second Nuclear Peer](#). Talking Policy Podcast featuring Brad Roberts.

TABLE 1**Leaders and Nuclear Weapons Pursuit**

Current Nine Nuclear States			
Country	Current Leader	Year Nuclear Pursuit Began	Nuclear Stage
China	Xi Jinping	1956	Advanced: Expanding nuclear fuel cycle capabilities and missile silos
France	Emmanuel Macron	1954	Advanced: Smaller arsenal and does not have capabilities to build up
India	Narendra Modi	1964	Advanced or Intermediate: Believed to be capable of producing more
Israel	Benjamin Netanyahu	1955	Advanced or Intermediate: Does not confirm its status as nuclear weapons
North Korea	Kim Jong Un	1980	Advanced or Intermediate: Attempting to expand nuclear program
Pakistan	Arif Alvi	1972	Advanced or Intermediate: Believed to be capable of producing more
Russia	Vladimir Putin	1945	Advanced: Largest nuclear arsenal
UK	Rishi Sunak	1945	Advanced: Limited weapons capacity
U.S.	Joe Biden	1945	Advanced: Second largest nuclear arsenal

TABLE 1, CONTINUED**Leaders and Nuclear Weapons Pursuit**

Current Non-Nuclear States			
Country	Current Leader	Year Nuclear Pursuit Began	Nuclear Stage
Brazil	Luiz Inácio Lula Da Silva	1975	Latency : Developed bilateral nuclear non-proliferation organization with Argentina
Iran	Ali Khamenei	1989	Latency ⁵ : Considered nuclear latent and building up latency
Iraq	Abdul Latif Rashid	1976	Latency: Dismantled under UN supervision following the 1991 Gulf War
Libya	Fayez al-Sarraj	1970	Dismantled under UN supervision in 2003
South Africa	Cyril Ramaphosa	1974	Only country to develop and abandon nuclear weapons
South Korea	Yoon Suk Yeol	1970	Latency: Potentially nuclear latent, or just posturing for nuclear latency

Despite the importance of this pattern, across countries, contexts, and leaders, little attention has been devoted to examining the role of leaders in a systematic manner. Most academic research has focused on system- and state-level factors that influence states' decisions related to nuclear weapons, paying particular attention to international security threats, domestic politics, and norms.⁶ However, in view of the importance of a state's leadership, a growing literature has devoted its attention to individual leaders.

While these studies highlight the important role of individual leaders in explaining nuclear proliferation in certain contexts, the authors have not tested their theories cross-nationally or on a large set of cases. Although recent research has begun to include the systematic examination of leaders in empirical analyses, much more remains to be done.⁷

⁵ Nuclear latency refers to the condition of a country has the technological capability to quickly build nuclear weapons.

⁶ Scott Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb." *International Security* 21, no.3 (1996): 54-86.

⁷ Matthew Fuhrmann and Michael C. Horowitz, "When Leaders Matter: Rebel Experience and Nuclear Proliferation 77, no 1. (2015): 73-87.

TABLE 2

Size of Nuclear Arsenal By Country

Country	Approximate Number of Nuclear Warheads ⁸
Russia	5,889
United States	5,244
China	410
France	290
United Kingdom	225
Pakistan	170
India	164
Israel	90
North Korea	30

Political science lacks a theory that takes individual leaders seriously by identifying the characteristics they exhibit that might make the proliferation of nuclear weapons more or less likely. By contrast, scholars in psychology and business management have long highlighted how individual risk propensities influence decision-making. Therefore, by connecting knowledge from other fields of scholarship to the critically important issue of nuclear weapons proliferation, my research presents a leader risk propensity index to examine how a leader's risk propensity correlates with their probability of pursuing nuclear weapons.

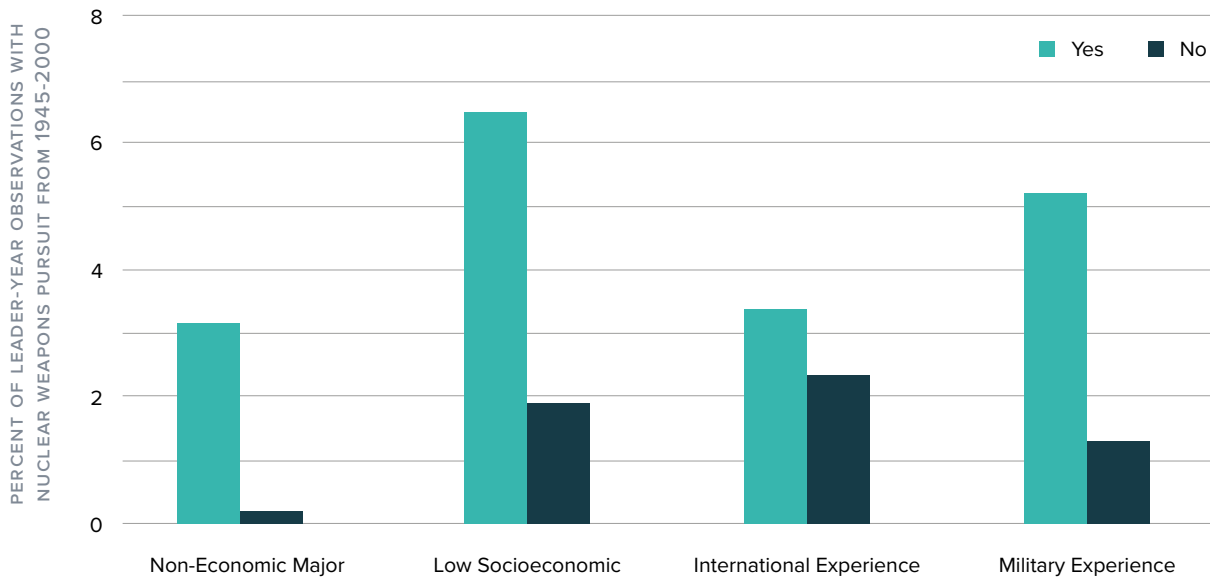
⁸ Hans M. Kristensen, Matt Korda, and Eliana Reynolds, "Status of World Nuclear Forces," *Federation of American Scientists* (March 31, 2023). <https://fas.org/initiative/status-world-nuclear-forces/>

The risk propensity index suggests that leaders' college major, socioeconomic backgrounds, military experience, and international experience influence their risk tolerance. To create the index, I supplemented the Leader Experience and Attribute Descriptions (LEAD) dataset with my own in-depth coding of the demographic backgrounds of leaders.⁹ Drawing on this new dataset on leader risk propensity, I examined approximately 1,400 leaders in office between 1945 and 2000. The findings indicate that certain demographic characteristics, which can be used as proxies for risk propensity, are significantly correlated with the pursuit of nuclear weapons.

Figure 1 illustrates that leaders with non-economic majors¹⁰, low socioeconomic backgrounds, and international and military experiences pursue nuclear weapons to a higher degree compared to leaders who do not possess these characteristics. These findings remain true even when confounders, such as external threats and domestic politics, are accounted for. The results in other words strongly suggest that leaders with relatively higher risk propensities are more prone to pursue nuclear weapons compared to leaders with lower levels of risk propensity.

⁹ Michael C. Horowitz, Allan C. Stam and Cali M. Ellis, *Why Leaders Fight?* (NY: Cambridge University, 2015).

¹⁰ Among people who have majored in economics, there is broad consensus that learning this subject enhances deductive reasoning and problem-solving in combination with simplified models, such as cost-benefit and supply-demand analyses. Consequently, many studies demonstrate that the study of economics is associated with a lower level of risk propensity. This leads to my hypothesis: that leaders who major in economics in college are less likely to pursue nuclear weapons than leaders who majored in other fields in college.

FIGURE 1**Risk Propensity Indicators and the Pursuit of Nuclear Weapons**

The case of South Korea is revealing. Many scholars agree that South Korea pursued nuclear weapons in the 1970s due to uncertainty about the U.S. security commitment and the provocative actions undertaken by North Korea. But this explanation is incomplete, given that South Korea has consistently confronted acts of aggression from North Korea—including before the 1970s—while the United States withdrew its troops from South Korea during the 1950s and the early 1990s. Yet throughout South Korea’s history, only President Park Chung-hee pursued nuclear weapons. Therefore, when considering the question of why President Park specifically pursued nuclear weapons, the explanation of security concerns alone proves inadequate.

A close analysis of memoirs, government documents, journals, and other primary sources reveals that President Park Chung-hee had a relatively high level of risk propensity. Among his demographic characteristics considered to be proxies for risk propensity, Park experienced childhood poverty, possessed international and military experience, and completed military training focused on fostering fearlessness, bravery, and decisiveness. Beyond that, historical evidence demonstrates that Park had an audacious and impulsive personality and often engaged in risk-taking behaviors throughout his life. Unsurprisingly, Park Chung-hee made a risk-taking decision in pursuing nuclear weapons during his presidency, even if this attempt was considered an almost impossible mission given South Korea’s poor economic conditions and limited scientific technology.

Policy Implications

As the findings show, certain characteristics of leaders systematically influence their decisions to pursue nuclear weapons. This suggests that analysts should assess leaders themselves—who they are, where they come from—more thoroughly to predict where these deadliest weapons will next emerge. Adding leader-level information to the traditional political analysis enriches our understanding of how each state behaves regarding nuclear proliferation.

The following policy implications offer a pathway for capturing the behaviors of world leaders to develop more accurate nuclear-related policies and international strategies.

1. Create and Use Leader Profiles

Because individual leaders can disproportionately influence the course of international politics, specifically nuclear proliferation, we should view individual leaders as actors rather than objects whose decision-making is fully determined by international or domestic systems. The U.S. intelligence community, which includes the Central Intelligence Agency, National Security Agency, and Defense Intelligence Agency, should cultivate profile data on world leaders and potential leaders. Risk propensity and LEAD data are starting points for creating world leader profiles that can help the international and policy predict emerging risks. Because it is impossible to truly understand leaders without considering the external environment, it may be worthwhile to further incorporate structural and domestic factors into leader profiles.

2. Promote Interdisciplinary Dialogue

To develop more comprehensive profiles of leaders and their risk propensities, organizations should promote interdisciplinary dialogue. Cognitive and behavioral psychologists have long demonstrated that past traumatic events shape individuals' propensities for taking risk. No individual leader is an exception to this rule. Therefore, integrating the diverse perspectives on leadership across the disciplines of political science, psychology, history, and business management will better capture information about leaders.

3. Apply Leader Profile Information to Predict Risk Beyond Nuclear Proliferation

The systematic inclusion of individual leaders in empirical analyses on nuclear proliferation can provide important insights for understanding the proliferation of other destructive weapons and emerging technologies. Countries vary in their willingness to develop not only nuclear weapons but also autonomous weapons, artificial intelligence, additive manufacturing, and other new and emerging technologies. While some predict that due to autonomous systems, national leaders will play a limited role in future military and battlefield decision-making, history shows that national leaders have played important roles in determining whether their countries pursue or use such new technologies. For example, despite the availability of cutting-edge weaponry, such as laser-guided bombs, U.S. President Lyndon Johnson initiated and then ended Operation Rolling Thunder, an aerial bombing mission designed to disrupt North Vietnamese transportation during the Vietnam War. Therefore, policymakers should consider using leader profiles, including information about their risk propensity, to predict not only nuclear policies but also policies related to emerging technologies.

Conclusion

For many years, international relations research on nuclear proliferation has emphasized the global geopolitical system and national politics. Even when scholars recognize the crucial role of leaders, they tend to view individual leaders in the context of international or domestic systems. These approaches, however, cannot account for the personal dimension of state interactions. By considering leaders as active agents rather than passive entities, we can gain insights into international politics that existing approaches are unable to offer.

Attention to leaders shows that the pursuit of nuclear weapons is systematically influenced by certain leader attributes, such as college major, socioeconomic background, and military and international experience. Leader profiles that include risk propensity are a tool for predicting when and where the spread of nuclear and other emerging technologies will emerge next.

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Author

So Yeon (Ellen) Park is a Postdoctoral Fellow in Technology and International Security at the UC Institute on Global Conflict and Cooperation (IGCC) based in Washington, D.C. She received her Ph.D. in political science from the University of California, Santa Barbara. Prior to beginning her Ph.D. at UC Santa Barbara, So Yeon developed a broad set of research skills in both political science and psychology in South Korea. She received her M.A. in criminal psychology and participated in a large-scale project led by the Korean National Police Agency. She also worked as a commissioned officer in the Republic of Korea Army and held various positions, including a Chemical, Biological, Radiological, and Nuclear (CBRN) training instructor and a platoon leader at the 25th Infantry Division.

So Yeon's research focuses on the intersection of security studies and political psychology. Her research suggests an alternative theoretical framework of an interdisciplinary approach focused on individual leaders, which has largely been neglected in international relations scholarship. Incorporating theories and empirical studies from psychology and leadership studies in business management, her research introduces an individual's risk propensity index that can screen and identify potential leaders inclined to making risk-taking decisions, such as pursuing nuclear weapons.

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