RELATIONSHIPS MATTER: THE ROLE OF LEADERS IN NUCLEAR COOPERATION, EXTENDED DETERRENCE, AND ALLIANCE FORMATION

A Dissertation

by

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ABSTRACT

How do relationships between leaders influence world politics? I argue that shared identity between leaders makes cooperation more likely by increasing interpersonal trust. Leaders who share more similar social identities are more likely to trust each other, while leaders who have divergent social identities find it more difficult to trust. I test this theory in the three contexts of nuclear cooperation agreements, nuclear proliferation under extended deterrence, and alliance formation. I use data on nuclear cooperation agreements, nuclear pursuit, alliances, and leader background characteristics in the period from 1840-2002. Statistical analysis shows that leaders who share similar social identities are more likely to engage in nuclear cooperation, less likely to pursue independent nuclear acquisition under extended deterrence, and more likely to form alliances with one another, indicating that shared background experiences contribute to leaders trusting one another. This study provides evidence that interpersonal relationships among leaders shape international relations in three important contexts, thereby contributing to our understanding of how leaders matter in world politics.

DEDICATION

To Oma, for instilling in me a love for words and knowledge. To my parents, for providing me with every opportunity and encouragement to succeed. And to Al, for supporting and inspiring me every day. This would not have been possible without you.

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NOMENCLATURE

ABACC	Brazil-Argentine Agency for Accounting & Control of Nuclear Materials
ANZUS	Australia, New Zealand, United States Security Treaty
ATOP	Alliance Treaty Obligations and Provisions
CIS	Commonwealth of Independent States
CSTO	Collective Security Treaty
DPRK	Democratic People's Republic of Korea
ENR	Enrichment and Reprocessing
FE	Fixed Effects
GDP	Gross Domestic Product
IAEA	International Atomic Energy Agency
IGO	Inter-Governmental Organization
LPM	Linear Probability Model
MID	Militarized Interstate Dispute
NATO	North Atlantic Treaty Organization
NCA	Nuclear Cooperation Agreement
NPT	Non-Proliferation Treaty
NW	Nuclear Weapon
NWS	Nuclear Weapon State
OAS	Organization of American States
PNE	Peaceful Nuclear Explosion
RE	Random Effects

RGDP	Real Gross Domestic Product
ROK	Republic of Korea
SEATO	Southeast Asian Treaty Organization
SIT	Social Identity Theory
UK	United Kingdom
US	United States
USSR	Soviet Union

TABLE OF CONTENTS

Page

LIST OF FIGURES

FIGURE Page

LIST OF TABLES

TABLE Page

1. INTRODUCTION

What is the role of trust between leaders in world politics? It is true that there are often strategic incentives for states to cooperate. In other words, states often cooperate when it is in their best interest to do so. However, states cooperate even when cooperation may not be in their best interest, or when strategic imperatives alone would not strictly suggest cooperation. What explains cooperation between countries on issues related to international security?

Rationalist literature would suggest that cooperation is made difficult by information and commitment problems (Fearon, 1995). In other words, cooperation fails when there is insufficient information about others (and because others have incentives to misrepresent information), and because there are incentives to renege on promises. A solution for these problems in the rationalist framework is signaling. Signaling can provide information about the type of actor, and can demonstrate the credibility of a commitment through hand-tying or sunk cost mechanisms (Fearon, 1997). Rationalist solutions to the issues of insufficient information and commitment problems address the issues of how it is impossible to know the intentions of other actors and how it is hard to count on others to keep their word, especially in an uncertain future. Within the field of political science rationalist solutions are broadly accepted and are considered to be one of the most robust explanations for patterns of conflict and cooperation.

I argue that turning to psychological and emotional understandings of political actors can provide further insight into the problems of low information about the interests and intentions of others and the inability to believe the promises of other actors. By considering psychology and emotions alongside traditional rationalist explanations it is possible to better understand cooperation in world politics. In particular, looking at leaders, and how leaders feel about one another, relate to one another, and trust or distrust one another, can allow for a better understanding of when cooperation is likely to occur.[1]

[1] I am not first to argue that personal impressions between leaders influence international politics. Hall and Yarhi-Milo (2012, 561) for example argue that "on issues of high politics and in the midst of crises, personal impressions played a significant role as — and arguably even a greater role than — costly signals in shaping key decisions." While

Let's address the two barriers to cooperation separately. First, it may be difficult to cooperate in world politics because other actors have incentives to renege on commitments and back out of agreements. When can leaders believe that other heads of state will keep their word?

Others will keep their word or do what they say when the costs of reneging are large. Prior scholars recognize this, leading to the discussion of sinking costs and tying hands (Fearon, 1997). The extant rationalist literature however fails to recognize that costs may take on forms besides material and reputational costs, and that leaders in particular may be subject to additional costs compared to the nation-state. Leaders may also pay emotional costs, or suffer feelings of doubt, upset, and self-hate when betraying trusted partners.

The emotional costs of reneging or lying will be high when lying, backing out of an agreement, or betraying another actor hurts a leader's own image of self or identity, or when a leader's action hurts someone with whom a leader trusts. This is likely to take place when a leader empathizes with or understands another and sees other leaders as similar to the self. These negative emotions are implicitly costly to a leader, and cause leaders to prefer not to injure those that they are similar to. These costs cause leaders to prefer to keep their commitments to friends and in-group members, and other leaders know this because they go through the same process of empathization. Simply, it is more difficult or costly to betray a partner when there is a shared identity or connection.

The second barrier to cooperation in world politics is the inability to truly know the intentions of another actor. In other words, there will always be insufficient information about the interests and intentions of political actors, and actors also have incentives to misrepresent information. Given this reality, how can leaders be confident that another leader does not want to cause harm? In other words, how is it possible to know what other leaders think, feel, and want? I argue that social identities provide information that helps leaders to understand the preferences, intentions, emotions, and world views of other leaders. In particular, leaders with more similar social identities have more points on which to try to understand one another, and are more likely to trust one

the authors do not focus on personal-level variables about leaders, they do acknowledge that individual characteristics could contribute to the type of relationship formed between leaders. For more on the relationship between face-to-face interactions and my theory, see Chapter 5.

another.[2]

$$Identity \Rightarrow Trust \Rightarrow Cooperation$$

There are many examples of how trust between political leaders may contribute to improved relations among countries. In the 1980's for example, the relationship between the former Argentinian President Raúl Alfonsín and the former Brazilian President José Sarney contributed to rapprochement on nuclear issues after decades of tension. The personal relationship between American President Reagan and Soviet General Secretary Gorbachev contributed to the easing of Cold War tensions. Secretary Gorbachev himself argued that "personal 'compatibility' and understanding of your partners' motives" is important in world politics and that, "many difficult issues are far more easily and quickly resolved if there is trust between political leaders, without unnecessary diplomatic moves and formalities"(Forsberg, 1999, 617-618).

The role of trust in world politics is important to understand both because trust can make cooperation easier and cheaper, and because there is relatively little understanding of how leaders' psychologies and emotions contribute to political outcomes. State leaders, the politicians and bureaucrats who govern both the domestic and foreign policies of individual states, are subject to emotions and implicit judgments about others just as other humans are. Political leaders are constantly assessing the trustworthiness of political actors, both within their own county, and outside national borders.

In Chapter 2 I discuss my theory of how shared background identities between leaders influence international cooperation in more detail. Prior to this discussion however, it is useful to have an understanding of what trust is and how it has been previously studied in social science literature.

1.1 Political Trust

There are generally three schools of thought on the role of trust in international politics. The first school refrains from offering a definition of trust, holding instead that while trust may be

[2]For more on my theory of leadership similarity, See Chapter 2.

possible among individuals, trust is unimportant for interactions among states. Perhaps the most prominent statement in this regard is from John Mearsheimer (1990, 12), who argues, there is "little room for trust among states because a state may be unable to recover if its trust is betrayed." In other words, in a state of anarchy nations must constantly be concerned for their own survival, and therefore are unlikely to rely on trust to dictate behavior. According to many realists then, trust is largely irrelevant in world politics.

A second school of thought, which I term the cognitive school of trust, links trust to interests and intentions. Rationalist scholars focus on the role of incentives for shaping cooperative relationships and on signals for indicating behavioral types. While scholars in this area give trust a more central role for explaining relationships compared to the realist framework, trust is often considered epiphenominal for cognitivist scholars.

A third school of thought, which I call the affective school of trust, holds that in environments of uncertainty, trust can precede intentions and independently influence political behavior and international politics. Scholars in this school refer to trust in a variety of ways, including moralistic, behavioral, psychological, binding, normative, and generalized. Regardless of different terminology, scholars in this third area are unified by their understanding of trust as an independent phenomenon that arises in individual actors and can influence political behavior. The affective understanding of trust is also more similar to definitions of trust in other social science fields including psychology and sociology (e.g. Wilson and Eckel, 2010; Maddux and Brewer, 2005; Rousseau et al., 1998; Luhmann, 1995).

In the following section I distinguish between the cognitive and affective understandings of trust in greater detail before providing a definition of trust which links both frameworks. Letting trust stem from either a cognitive or from an affective source allows for an examination of the degree to which there is a role for emotions and feelings in world politics compared to preferences and interest-based calculations.

1.1.1 Cognitive Trust

Within the field of international relations, trust is typically defined and discussed through a rationalist framework in which assessments of trustworthiness are based on rationalist calculations about the interests of others. In this framework actors are considered to be rational utility-maximizers who trust based on expectations of largely self-interested behavior. The focus on interests over emotions and psychology makes sense in a field that has been so heavily influenced by rationalist theory in the past several decades (e.g. Morrow, 1999; Kahler, 1998; Fearon, 1997, 1995). Both Hardin (2006) and Kydd (2005) are each heavily indebted to rationalism in their development of arguably two of the most important theories of trust in political science to date.

Hardin (2006, 19) defines trust as encapsulated interests, or the idea that trust depends on "whether my own interests are encapsulated in the interests of the Trusted, that is, on whether the Trusted counts my interests as partly his or her own interests just because they are my interests." For Hardin, actors trust others because they believe it is in the interest of other actors to take their own interests seriously, and there is a mutual belief that both actors have an interest in maintaining a relationship through time. For Hardin, love, friendship, or emotions between individuals are less likely to explain why political actors trust (Hardin, 2006, 20, and see also Hoffman (2006)).

A related understanding is trust as the expectation of reciprocity. This definition is espoused most clearly by Andrew Kydd, who notes that trust is the belief that another actor is willing to reciprocate cooperation, or the "belief that the other side prefers mutual cooperation to exploiting one's own cooperation" (Kydd, 2005, 3). This definition makes sense in the context of Kydd's theory, which is explicitly focused on how trust affects cooperation and how actors demonstrate credible commitments to a relationship by sending costly signals (see also Kydd, 2000). Kydd is not alone in emphasizing the importance of reciprocity for cooperation, Axelrod (1984) famously links reciprocity to cooperation and notes that reciprocity led to trusting relationships across the trenches in World War II.

1.1.2 Affective Trust

A growing number of scholars in political science have begun to diverge from the rationalist conception of trust to discuss the importance of psychological, moral, and normative explanations for how trust is formed and maintained for individuals. In many ways, these studies are part of a broader debate about the role of identity and psychology in international relations (see for example Choi, 2015; Moravcsik, 1997). Rathbun (2011) for example discusses a concept of 'generalized trust', or the idea that by and large, others are trustworthy. For Rathbun, generalized trust arises as an attribute of individuals, and is moral in nature because it is about the "inherent integrity of others rather than their interests" (Rathbun, 2011, 244).

Ruzicka and Wheeler (2010) lay out a similar definition of trust, which they term 'binding trust'. Binding trust is based on the idea that actors will honor their promises: "It puts emphasis on the normative meaning that the relationship has for those who establish it" (Ruzicka and Wheeler, 2010, 73). Other scholars have developed similar definitions based on social or moral conceptions of trust (e.g. Mercer, 2014; Booth and Wheeler, 2008). This sort of trust is also visible in scholars' accounts of American and Soviet leaders at the end of the Cold War (e.g. Forsberg, 1999; Larson, 1997*b*). Key for all of these authors is the idea that trust is viewed "in terms of identification and not as an epiphenomenon of material changes or their perception" (Forsberg, 1999, 605).

Other social science fields tend to think of trust as being more in line with the affective definition of trust than with the cognitive definition. A group of sociologists and business management scholars for example define trust as "a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or behavior of another" (Rousseau et al., 1998, 395).

1.1.3 Comparing Cognitive and Affective Trust

Is the cognitive or the affective conception of trust more important in the context of international politics? While the cognitive focus on interests and structure is certainly important, rationalist theories miss a fundamental aspect of trust: the interpersonal, psychological level which

underlies human interaction. A number of scholars who emphasize the role of psychology and emotions have been highly critical of the rationalist approach to trust. Mercer (2014, 519) for example argues that "rational choice theorists eviscerate the concept [of trust], turning trust into nothing but incentive-driven behavior."

Personal characteristics likely influence relationships among political actors. Previous political scientists have focused on the characteristics of individuals for shaping relationships: Jervis (1970) for example argues, "when an actor is able to directly observe one of his adversaries he will not only try to understand the other's general outlook, but also scrutinize those presumably uncontrolled aspects of personal behavior that are indices to the adversary's goals, estimate of the situation, and resolve" (Jervis, 1970, 32-33). Relatedly, Robert Putnam and co-authors argue that actors' perceptions of the common underlying values of others encourage cooperation (Putnam, Leonardi, and Nanetti, 1994, 171).

The affective understanding of trust is weakened however by the failure to comprehensively account for context, or who trusts whom, and when. Rathbun's conception of generalized trust for example rests on the idea that some people trust more than others (see also Dietz, Gillespie, and Chao, 2010). Other scholars focus on trustworthiness as a trait (e.g. Sztompka, 1999), or on the idea that people in general are trustworthy (e.g. Uslaner, 2002). While it may be true that some individuals innately have higher trust 'levels' compared to others, it does not seem fair to assume that actors trust equally across time and space. Rather, who trusts who and when, is likely based on assessments of a partner as well as the specific context.

The understanding of trust as relational and situational is something that rationalist scholars capture more clearly: "To say that I trust you in some context is to say that I think you are or will be trustworthy toward me in that context. You might not be trustworthy toward others and you might not be trustworthy toward me in other contexts" (Hardin, 2006, 1). Kydd (2005, 6) echoes this concern for context: "To be trustworthy, with respect to a certain person in a certain context, is to prefer to return their cooperation rather than exploit them."[3]

[3]An exception among those in the affective group are Booth and Wheeler (2008), who define trust as existing "when two or more actors, based on the mutual interpretation of each other's attitudes and behavior, believe that the

While understandings of trust differ across the cognitive and affective accounts of trust, two common components can be identified that are partly shared by each framework: confident positive expectations about future conduct and the willingness to be vulnerable and accept risk. These similarities, discussed in more detail below, allow me to arrive at a definition of trust that links the cognitive and affective ways of thinking about trust.

1.1.3.1 Confident Positive Expectations About Future Conduct

The first component of trust which most scholars agree upon is the expectation that other actors will behave benevolently towards them in the future (see for example Dietz, Gillespie, and Chao, 2010; Hardin, 2006; Larson, 1997*b*). This concept can be unpacked into three distinct parts. First, actor A must be reasonably certain that actor B has good intentions towards her, and is inclined to behave in a positive way. Minimally, benevolence implies actors not acting in ways that would hurt the interests or values of a partner. Maximally, the expectation of positive behavior implies another promoting or advancing the interests and values of partners (Wheeler, 2009, 428, and see also Booth and Wheeler (2008)). Second, actor A must be reasonably certain that actor B's positive intentions are unlikely to change in the future. In other words, intentions should be relatively predictable and time-invariant. Dietz, Gillespie, and Chao (2010, 11) note that after actors make initial judgments about the motives, character, and reliability of potential partners, they then make a calculation or prediction about how future conduct will align with current behavior.[4] Third, actor A must be reasonably certain that in addition to positive intentions, actor B is also able to follow through on her intentions, or can do what she says or promises. In other words, how confident can one be that another actor can follow through on her promises?[5]

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other(s) now and in the future, can be relied upon to desist from acting in ways that will be injurious to their interests and values."

[4]The extent to which political leaders value or discount the future is an outstanding question I address in Chapter 5.

[5]See Larson (1997*b*, 714) and Hardin (2006, 36,70) for more on this point.

1.1.3.2 Vulnerability and Risk

The second key component in defining trust is the willingness to accept vulnerability, or equivalently the willingness to put oneself at risk. Both Larson (1997*a*) and Dietz, Gillespie, and Chao (2010) note that accepting risk is key in addition to establishing positive expectations: "Trust goes beyond expectation because it entails placing one's fate or welfare in another's hands" (Larson, 1997*a*, 19). Other authors likewise note that the willingness to accept risk is intimately tied to judgments about the benevolent intentions of other actors. Actors choose to place their fate partially in the hands of another actor based on the expectation that others will protect their interests (Rathbun, 2011; Hoffman, 2006; Rousseau et al., 1998).

Actors accept risk because they calculate that the probability of negative consequences are sufficiently low. While the likelihood of injury may be low, there is always the possibility of miscalculation or changes through time which could lead to a betrayal of trust. Thus, Hardin (2006, 28) notes, "it is pointless to say you trust someone unless there is some risk of your suffering a loss if that someone does not fulfill your trust," and Wheeler (2009, 437) similarly notes that "to trust to any degree is always to risk betrayal."[6] At the same time, trust and risk should be considered analytically separate categories since risk-taking usually occurs in response to a calculation of a low-probability event, while trust occurs due to the expectation of an event perceived to be relatively likely (Deutsch, 1958, 266).[7]

1.1.4 Defining Trust

Should the cognitive or affective definition of trust then be preferred for thinking about politics? The discussion above illuminates significant similarities between the two understandings. Trust involves accepting a certain amount of risk, which in the political context stems from prevalent uncertainty about the intentions and beliefs of others. Trust also involves believing in the

[6] A crucial distinction needs to be made about the relationship between trust and risk. While trust by definition involves the willingness to assume risk, taking risks does not necessarily imply the presence of trust. There are a number of reasons actors may choose to take risks in the absence of trust, including coercion (see also Hoffman, 2006, 25).

[7] Deutsch also points out that trust and risk are separate due to different ratios of expected positive and negative emotional consequences.

benevolent intentions of other actors. These two components remain constant in both the rationalist and non-rationalist framework. Thus a consistent definition of trust is:

Definition: *Believing*, despite uncertainty, that another will not act in a way that hurts me.[8]

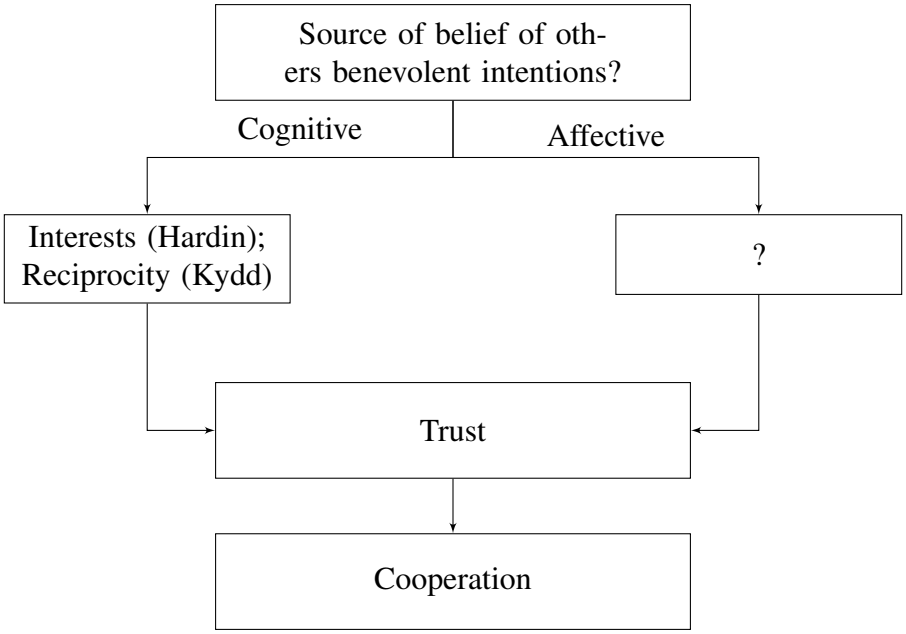
What differs between the cognitive and affective accounts is the source of the belief about intentions, or the mechanism through which actors form beliefs about others. When do actors believe that others will act in a way that will not injure them? Cognitivists hold that the source of belief about intentions arises from a rational calculation about the interests of another actor, either focusing on encapsulated interests or expected reciprocation. In other words, information about the trustworthiness of others is generated through an assessment of encapsulated interests (according to Hardin), or through the expectation of reciprocity (according to Kydd).

Affectivists by contrast hold that the belief in another's benevolence is due to some sort of emotional or psychological feeling about the intentions of others. While there is a consensus understanding about the source of the cognitive belief in trust, the precise mechanism that underlies affective trust is less obvious. From where does a feeling or an emotion about the intentions of others arise from? Answering this question is key to understanding the affective pathway through which information about another's trustworthiness is determined (See Figure 1.1).

To address this gap I focus on developing a theory of how and when individual leaders are more likely to trust one another, based on theories from social psychology and neuroscience. Before turning to theory in the next chapter however, it is important to clarify how trust relates to two other concepts: cooperation and reputation. Reputation and cooperation have both received broad attention in the field of international relations, and are often connected to the idea of trust. It is important however to understand how and why these concepts differ.

[8]This definition is most similar to one offered by Adler and Barnett (1998, 46) in their discussion of security communities. Adler and Barnett define trust as "believing despite uncertainty." While this definition captures the component of trust which is tied to risk, it does not identify what is being believed. Adler and Barrett go on to argue that trust depends on assesments about whether others will act in ways consistent with normative expectations, though this understanding fails to address whether normative expectations are directed in a positive or negative manner.

Figure 1.1: Mechanisms generating trust under cognitive and affective frameworks.



1.1.4.1 Cooperation

Trust is often thought to explain cooperation, since actors that trust each other may be more willing to cooperate (e.g. Hardin, 2006, 35). Along these lines, Larson (1997*b*, 704) argues that trust "is usually a necessary (though not sufficient) condition for states to cooperate." While trust and cooperation are linked then, they differ in that while cooperation is an overt behavior that may be caused by trust, trust is an underlying condition, and neither a behavior nor a choice (Rousseau et al., 1998, 395). If trusting relationships are visible indicators of trust, then trusting relationships are "special forms of cooperation that combine delegation with trusting attitudes, two elements other forms of cooperation lack in tandem" (Hoffman, 2006, 25).

In addition to separating trust from cooperation, it is also important to acknowledge that trust does not always lead to cooperation, and cooperation is not always based on trust. Axelrod (1984, 174) identified the ability to garner cooperation absent trust early on, noting that when players can expect reciprocity, trust is not needed. Others, including Hoffman (2002, 376) have argued that defining cooperation as a visible indicator of trust is problematic, since cooperation can occur

without trust, for example if an actor is coerced into engaging in cooperative behavior. Thus, while trust has been thought of and measured as cooperation, trust and cooperation are theoretically and analytically distinct concepts.

1.1.4.2 Reputation

In addition to cooperation, reputation is a term which is often conflated with trust. Mercer (1996, 6) defines reputation as "a judgment of someone's character (or disposition) that is then used to predict or explain future behavior." Reputation has been an important concept for several centuries, with David Hume tying concern for reputation to self-interested individuals helping each other as early as 1792. Discussing two corn farmers, one whose crops need harvesting today and the other tomorrow, Hume (1994, 37) argues the farmers may help each other "because I foresee that he will return my service, in expectation of another of the same kind, and in order to maintain the same correspondence of good offices with me or with others. And accordingly, after I have served him, and he is in possession of the advantage arising from my action, *he is induced to perform his part, as foreseeing the consequences of his refusal*" (emphasis added). The concept of reputation has enjoyed a rigorous revival in the field of international security in recent years, especially in the area of alliance politics (e.g. Narang and LeVeck, 2017; Crescenzi et al., 2012; Gibler, 2008). As Hardin (2006, 24) points out, reputation is not solely important for predicting how others will behave, but also because actors likely feel incentives to maintain a good reputation: "Once you have a good reputation, you are likely to want to maintain it and that fact gives me confidence to undertake dealings with you."

While cooperation and reputation are thus intimately connected to the concept of trust, they are unique concepts. Reputation is one factor that contributes to trust. In Chapter 4 for example I include measures of reputation to help explain why states form alliances. Cooperation by contrast can be built on trust, and cooperation can also potentially lead to changing levels of trust if it allows for leaders to recognize or develop shared identities.[9]

[9] See Chapter 5 for more on this point.

$$Reputation \Rightarrow Trust \Leftrightarrow Cooperation$$

Scholars have separated these three concepts by viewing trust, an underlying latent condition, separately from trusting behavior or trusting relationships (e.g. Hoffman, 2002, 377, and see also Keating and Ruzicka (2014); Ruzicka and Wheeler (2010)). Separating these concepts allows for the recognition that observable, trusting relationships are not the same as trust, rather they are produced when individuals act on the belief that others are trustworthy and place control over interests into the hands of another. Rationalist accounts of trust are more prone to conflating trust and cooperation; affective accounts of trust avoid confusion by focusing on sociological and psychological examinations of personality and background to assess behavior.

1.1.5 Why Is Trust Important?

Trust is important and valuable in both social and political relations. In the social context, Larson (1997*a*, 19) notes, "being able to trust others is essential for personal and social relationships. Without the capacity for trust, we would be paranoid, unable to confide in friends, suspicious of the government, even unable to eat our food." Of course, even political relations are composed of social beings, and as such, "the question of whom to trust and how far is as central a question of political life as it is of personal life" (John Dunn quoted in Booth and Wheeler, 2008, 229).

Within the sphere of politics, trust is arguably the most important, and also the most ignored in the area of international conflict and security.[10] In international politics, trusting another leader or country can lead to deleterious consequences, including annihilation or war. And yet these are the contexts in which the role of trust could potentially be the largest. When actors need to cooperate in comparatively low trust environments, the cost of cooperation is higher, because for cooperation to be successful, structures and procedures need to be built and established to take the place of

[10]By comparison, the concept of trust has been given extensive attention in discussion of public opinion and domestic political support for government (e.g. Van de Walle and Six, 2014; Brewer et al., 2004; Mishler and Rose, 2001; Levi and Stoker, 2000), though scholars have been critical of this research. Hardin (2006, 43-4) for example argues,"the point of such research is to go no further than to show that people ostensibly do trust."

trust. On the other hand, when actors find it easier to trust each other, they are more likely to cooperate, even in situations in which cooperation is not expected (e.g. Dion, 1973).

Keating and Ruzicka (2014), drawing on work from Niklas Luhmann, argue that trust can be thought of as "the ideational structure that *cognitively reduces the residual risk and uncertainty* that is part of any decision." Trust then can simplify many of the complexities inherent under anarchy, making it easier and cheaper to form long-lasting agreements and understanding. Similarly, Uslaner (2002, 2) argues that trust makes cooperation both cheaper and easier: "when we trust other people, we don't have to face every opportunity to cooperate as a new decision." Some scholars go so far as to argue that by establishing trust, states can "transcend the security dilemma," suggesting "the potential for transformation in political relations even under the conditions of international anarchy" (Keating and Ruzicka, 2014, 755).

History also demonstrates the need for more comprehensive treaties and agreements when trust is low. During the Cold War for example, President Reagan became well known for his "*Doveryai, no proveryai*," or "trust but verify" ideology (Wilson, 2014). Since states can get around most verification systems with enough effort, crafting effective verification systems depends on the degree to which states trust each other not to cheat. In other words, "what states demand of an enforcement system depends in part on their beliefs about the likelihood that the other will cheat – that is, on levels of trust. Without some trust, a system of monitoring and inspection for an arms control agreement might have to meet such stringent requirements as to be infeasible or prohibitively expensive" (Larson, 1997*a*, 706). While perhaps hyperbolic, President Reagan also reportedly told Secretary Gorbachev that if the two nations could learn to trust one another, "then those mountains of weapons will disappear quickly as we will be confident that they are not needed" (Yarhi-Milo, 2014, 196).

The role of trust in international politics then is important to study and understand, both because trust can lead to cheaper, simpler cooperation between nations, and because trust is still an under-studied concept in international relations. As the previous discussion elucidates, far too little attention has been afforded to the examination of affective trust *between* political actors. This

omission is especially notable in light of the increased attention on the role of leaders and individuals in international politics (e.g. Fuhrmann and Horowitz, 2015; Chiozza and Goemans, 2011; Debs and Goemans, 2010; Hymans, 2006). While political science as a field recognizes the importance of the third image for explaining broad patterns of conflict and cooperation, relatively little is known about what causes positive and negative interactions between leaders, and the implications of interpersonal relationships between political leaders for international politics. This dissertation contributes to the renewed interest in microfoundations in political science, and particularly to the role of leaders in influencing international political relations.

1.2 Identity

In the previous section I defined trust as *believing, despite uncertainty, that another will not act in a way that hurts me*. The mechanism through which an individual comes to trust another differs according to the cognitive and the affective pathways. For cognitivists, individuals gather information about the trustworthiness of others through an understanding of encapsulated interests or through the expectation of reciprocity. Affectivist scholars by contrast attribute the formation of trust to emotional or psychological sources, but are not clear about how trust between individuals forms based on these factors. To understand the role of trust between leaders, I focus on developing this missing mechanism, both because the affective understanding of trust is less well understood within the field of political science, and because leaders are individuals who are prone to psychological biases, just like other humans.

It seems likely that leaders rely on both affective and cognitive processes for decision-making. Thus it is important to understand and evaluate the role of both. To what extent does each type of trust matter in international politics. What is the role of feelings and emotions compared to the role of rationalist processes in politics? In my empirical chapters on nuclear cooperation agreements, nuclear proliferation under extended deterrence, and alliance formation, I account for strategic factors as well as my measure designed to capture the interpersonal relationship between leaders.

The first step for understanding the source of affective trust is to ask the question of what causes an actor to believe that another will not hurt them? To answer this question I turn to theories

and discussions in other social science fields about shared identity, as well as to evidence from neuroscience (see Chapter 2). The basis of my theory of trust in social identity is not new: scholars in sociology, psychology, and other fields have long focused on the role of identity in interpersonal relationships. What is new is the translation of these concepts to the political realm, and the application of these theories to international politics.

Despite the tendency in much of the literature in political science to marginalize the study of trust by claiming trust cannot occur between political actors in environments of uncertainty, there are vibrant examinations of trust in many fields, including psychology (e.g. Maddux and Brewer, 2005; Brewer, 1979; Schlenker, Helm, and Tedeschi, 1973; Rotter, 1967), sociology (e.g. Mollering, 2001; Luhmann, 1995; Shapiro, 1987), economics (e.g. Wilson and Eckel, 2010; Cox, 2004; Eckel and Wilson, 2004), philosophy (e.g. Becker, 1996; Jones, 1996), biology and neuroscience (e.g. Zak, Kurzban, and Matzner, 2005; Rilling et al., 2004; DeBruine, 2002) and business management (e.g. Saunders et al., 2010; Zaheer and Zaheer, 2006; Nyhan, 1999; Parkhe, 1998; Rousseau et al., 1998).

There is also a growing literature in political science that draws from these diverse traditions. Indeed, some political scientists recognize that realists' primary critique for why trust cannot exist, uncertainty, is the primary reason why political trust needs to be understood in greater detail. Rather than trust and uncertainty being antithetical, "if humans had certainty about the motives and intentions of others, they would not need trust. Trust is one of the mechanisms by which humans try to cope with life's risks and uncertainties" (Wheeler, 2009, 435).[11]

1.2.1 Defining Identity

Identity is defined as "role-specific understandings ... about self" in relation to others (Choi, 2015, 114). This definition makes clear that identity is inherently relational and based on social

[11] Hoffman (2006, 18-19) makes a similar argument, noting that in the field of international relations, it is common for scholars to "presume that trusting interstate relationships emerge when potential trustee states "commit" themselves to particular outcomes." For these scholars, the logic goes that commitments make the future behavior of others more certain by making it more difficult for others to renege on commitments, making it easier to trust (see Fearon, 1995). By creating certainty about future behavior however, commitments replace the need for trust in relationships: "it is a mistake to describe commitments as fostering trust on particular issues because binding commitments make exploitation impossible."

interaction, and that every actor can have, and likely has, multiple identities. The degree to which actors are tied to particular identities may differ depending on both time and context, but "each identity is an inherently social definition of the actor grounded in the theories which actors collectively hold about themselves and one another" (Wendt, 1992, 398). Adler and Barnett (1998, 47) emphasize the point that identities are formed based on interaction with others. Identities are "not only personal and psychological, but are social, defined by the actor's interaction with and relationship to others." In political science, many argue that identities form the basis of interests (see for example Hopf, 2002; Cronin, 1999; Wendt, 1992).

The concept of identity relates to a large literature about how individuals structure, simplify, and give meaning to the space around them. In discussing social identity, or how an individual is defined within a social context, Tajfel (1978, 63) states that individuals engage in the categorization of themselves and others to systemize and simplify their environment. In other words, social categorization can be thought of as a "system of orientation which helps to create and define the individual's place in society." Thus identity is created in part by continually defining the self in relation to others across all possible categories of identity.

It is relatively easy to see how self-identity, as formed in relation to others, can translate into a shared group identity, since identity is formed by comparing traits among different people. Indeed, it is common to define identity in relation to groups. Cronin (1999, 5) for example defines identities as "a set of behavioral or personal characteristics by which an individual is recognizable as a member of a group." The idea of group identity, or the ability and desire to discriminate between those with similar traits and those that are dissimilar from the self, is the basis of my understanding of interpersonal political trust. In the following section I discuss theories about ingroup and outgroup bias, then link these theories to what I call embedded identity and the creation of interpersonal political trust.

1.2.2 Identity, Interpersonal Relationships, and Trust

The origins of theories about ingroup outgroup bias are linked to sociologist William Sumner. In 1906, Sumner developed a theory of ethnocentrism, or the differentiation of people into ethnic

groups for the "struggle of existence" (Brewer, 1979, 307). According to Sumner (1906, 12), "the insiders in a we-group are in a relation of peace, order, law, government, and industry to each other. Their relation to all outsiders, or others-groups, is one of war and plunder . . . Loyalty to the group, sacrifice for it, hatred and contempt for outsiders, brotherhood within, warlikeness without – all grow together, common products of the same situation." More recently, Hammond and Axelrod (2006, 926) have defined the characteristics of ethnocentrism as including seeing one's own group as "virtuous and superior, one's own standards of value as universal, and out-groups as contemptible and inferior."

The paradigmatic theory that addresses this phenomenon is Tajfel's Social Identity Theory (SIT), which Tajfel developed to explain why individuals consistently prefer members of their own self-identified group to others. Tajfel (1978) argues that individuals engage in categorization of the identities of others to systemize and simplify their environment. In the process of categorization, though, it is common to make value judgments about others, especially when the categories are important to the individual. Moreover, "these value differentials tend to enhance still further the subjective differences on certain dimensions between the categories" (Tajfel, 1978, 62). Thus the unconscious categorization of others' identities can lead to the perception of difference between the self and others. Discrimination against others may be magnified by the subconscious desire to feel good about one's own group or identity. This argument is supported by Wilson and Eckel (2010, 12), who argue that "stereotyping is the result of a natural human tendency to categorize, and often operates as a heuristic shortcut," and that, "judgments of others often exaggerate underlying differences among populations."

There have been several attempts in political science to incorporate sociological and psychological conceptions about how perceptions of others' identity leads to ingroup favoritism and trust, especially in the nuclear context. Larson (1997*a*,*b*) for example advances a psychological theory of mistrust to explain why policymakers fail to agree. She argues that American and Soviet leaders failed to cooperate on arms control because of mistrust driven by ideological differences, historical baggage, and mental biases. Larson (1997*a*, 22) makes the point that how individuals interpret

behavior depends on how they view others, and what they believe about the character of others: "Whether we describe Jane's silence in the elevator this morning as aloof, pre-occupied, cold, or hostile depends on whether Jane is a friend, casual acquaintance, stranger, or rival."

Booth and Wheeler (2008) define trust as "two or more actors, based on the mutual interpretation of each other's attitudes and behavior, believ[ing] that the other(s) now and in the future, can be relied upon to desist from acting in ways that will be injurious to their interests and values." The mutual identification of trusting relationships for Booth and Wheeler is made possible by several properties: a risky leap into the dark, empathy or bonding, dependence and vulnerability, and integrity, meaning confidence that another will honor their promises. While Booth and Wheeler offer some examples of each of these processes at work, the lack of a broad systematic analysis makes it difficult to understand which of these many mechanisms is most important for generating trust.

1.2.3 Trust and Embedded Identity

Evidence across the social sciences suggests that people are more likely to trust those they are similar to. In the United States for example, surveys indicate that people are more likely to trust their family, fellow Americans, neighbors, and those who attend the same church or club (Uslaner, 2002, 19–30). Likewise, experiments show that trust decreases as social distance increases (Buchan, Croson, and Dawes, 2002). Indeed, Macy and Skvoretz (1998, 651) go so far as to argue that "the earliest trust rule is based on social distance – trust neighbors, but not outsiders" (see also Ellison, 1993). What causes people to trust those with similar identities?

Some scholars hold that the mere establishment of a group or a sense of shared identity can lead to ingroup favoritism (see for example Tyler and Dawes, 1998; Dawes, Van de Kragt, and Orbell, 1988). In other words, "simply knowing that an otherwise unknown person is a member of a salient ingroup may be sufficient to engender trust as a default assumption" (Maddux and Brewer, 2005, 161, and see also Kramer, Brewer, and Hanna (1996)). Shared category membership then becomes a basis for trust because of the shared identity (e.g. Buchan, Croson, and Dawes, 2002; Yamagashi and Kiyonari, 2000; Macy and Skvoretz, 1998). This occurs because people internalize

the identities that are important to them, then relate to others with the same identities as part of an "us", meaning "those whom we trust, toward whom we are okay, and for whose problems we care in the spirit of solidarity" (Sztompka, 1999, 5). Discussing how trust can arise between strangers, Uslaner (2002, 18) argues that "each side sees something that binds it to the other." People with shared identities may also calculate that trusting is less risky (see for example Wilson and Eckel, 2010; Bohnet, Herrmann, and Zeckhauser, 2008; Bohnet and Zeckhauser, 2004). Despite the numerous claims and wealth of evidence from across many fields that shared identity leads to trust however, there is not a strong theoretical reason why this might be the case.

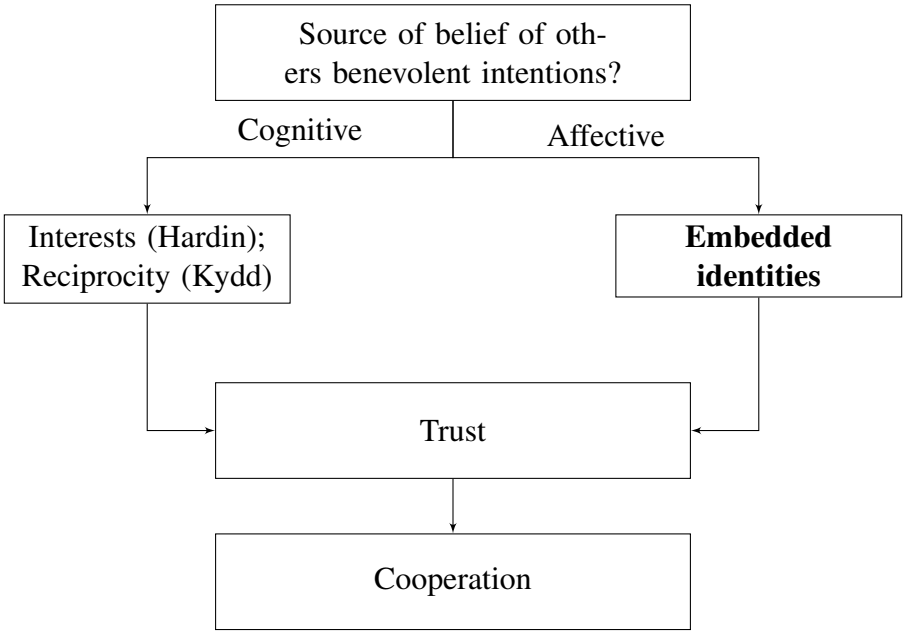
Consider two individuals, called A and B. For A to trust B on a particular issue, A needs to consider both how she views the issue and the extent to which she prefers cooperating with B over competing with B, and how B likely views the issue and ranks cooperation in comparison to competition. Since it is impossible for A to have complete information about B's thoughts, beliefs, and intentions, A needs some way to make assessments about what is likely to be true for B. While rationalists would turn to costly signals as an indicator of intentions, I argue that under the affective pathway, actors may determine the intentions and trustworthiness of others based at least in part on identity. When two actors share more similar identities, it is easier to understand what the other's position might be, easier to empathize, and easier to understand how the other views the world. This process is likely unconscious most of the time, such that shared identity acts as an internal mental shortcut which contributes to an individual's decision about the likelihood that another can be trusted. When individuals do not share identities, especially if they have identities that are opposed in such a way to be threatening, it is not as easy to understand the other, and the threatening identity may even provide negative information about the intentions of the other.

Evidence from neuroscience suggests that people act on similar mental shortcuts in everyday life. Todorov, Pakrashi, and Oosterhof (2009) for example show that people automatically make judgments about the trustworthiness of others based on facial appearances: "personal impressions are often formed rapidly and spontaneously from minimal information." There is evidence that the brain makes a judgment about how trustworthy someone is in as little as 100 milliseconds based on

characteristics of other people (Engell, Haxby, and Todorov, 2007, 1515). Not only does the brain make a nearly instantaneous judgment, but when someone senses that another is untrustworthy, the amygdala, or the brain's fear center, is activated to produce an emotional response. Observable, knowable characteristics then are thought to be a source of information that allows for a mental shortcut to judge the trustworthiness of others.

If identities are a source of information which reduce uncertainty about the intentions of others, then the cognitive and affective understandings of trust are further linked. Through each pathway, individuals use information to make judgements about unknown intentions of others. Rationalists argue that individuals look to past behavior, signals of intention, and interest alignment to determine how trustworthy someone is. I argue that in addition to these factors, individuals also use identities as a heuristic shortcut to form opinions about the trustworthiness of others (See Figure 1.2).

Figure 1.2: Mechanisms generating trust under cognitive and affective frameworks, revised.



Based on investigations of trust and identity in other fields then, I argue that individuals gauge

whether or not they can trust another actor based on how embedded their identities are, or how much of their social identity they share. Trust will be easier when individuals have a high degree of embedded identity, defined as the degree of social closeness between two actors. There are of course many different factors that can contribute to identity, including gender, religion, and ethnicity. An important question is what sort of identities can trigger trusting relationships. While there is evidence of "a strong individual *predisposition* toward bias in favor of in-groups" even when group distinctions are very arbitrary (for example groups formed around appreciating either Klein or Kandinsky paintings), it may also be the case that identity needs to be salient to generate a feeling of trust (Hammond and Axelrod, 2006, 926). Kramer (1989, 90) for example argues that "when the salience of a social category is too low, individuals perceive themselves to be in an *aggregate* of strangers rather than part of a group" (see also Brewer and Kramer, 1985).

On the other hand, many scholars hold that very little in the way of categorization is needed in order for individuals to align themselves with others as an identifiable group. Tajfel et al. (1971, 235) for example argue that "the mere perception by subjects that they belong to two distinct social categories is alone sufficient for intergroup discrimination," while Doise and Sinclair (1973) argue that simply the awareness of an out-group leads to ingroup bias. This group of scholars usually holds that "any categorization rule that provides a basis for classifying an individual as belonging to one social grouping as distinct from another can be sufficient to produce differentiation of attitudes toward the two groups" (Brewer, 1979, 308).

Experimental evidence shows that the types of identities that are salient are quite diverse: for example in a trust game in which Stanford undergraduates and Stanford MBA students were told to allocate resources to their own security, much more money was spent on security when undergraduates were told the opposing player was an MBA student, and vice versa, compared to when the opponent was from the same group. Even more telling, when asked to identify the reason for increased allocation of funds, participants stated that the opponent was more threatening when they were not from the same educational group. Kramer (1989, 82) argues that the need for greater security when intergroup distinctions are salient is because "social differentiation increases

competitive orientations."

Research also demonstrates that in conflictual environments, the barrier for ingroup favoritism and outgroup negativity is much lower, meaning that in political environments, a tendency for negativity towards others who do not share common identities would be likely to exist: "whether actual or imagined, the perception that an outgroup constitutes a threat to ingroup interests or survival creates a circumstance in which identification and interdependence with the ingroup is directly associated with fear and hostility toward the threatening outgroup and vice versa ..." (Brewer, 1999, 435-436).[12] Others have found that ingroup bias arises due to hostility (Sherif, 1966) and competition (Blake and Mouton, 1962). Since international politics is perpetually competitive, it is reasonable to assume that many forms of identity could contribute to the perception of similarities and dissimilarities between leaders. In Chapter 2 I continue this discussion, focusing on important, formative identities that are likely to shape how an actor views herself and others.

1.2.4 Previous Literature on Leaders, Identity, and Trust

The transformation of relationships between Soviet and American leaders on nuclear issues at the end of the Cold War is perhaps the area in which scholars have focused the most on the role of trust and mistrust in international politics (e.g. Booth and Wheeler, 2008; Forsberg, 1999; Larson, 1997*a*). Before taking office, President Reagan wrote in a letter to a friend, "I don't really trust the Soviets ... and I don't really believe that they will really join us in a legitimate limitation of arms agreement" (Wilson, 2014, 17). Reagan even announced publicly in 1983 that the Soviet Union was an "evil empire" (Prados, 2011, 31). In response to a question later in his presidency however about whether he could have previously imagined going to Moscow for a summit, Reagan answered, "probably not, because very frankly, I have to say I think there is a difference between this General Secretary [Gorbachev] and other leaders of your country that I had met in the past ... And no, I could not have foreseen your present leader" (Hall and Yarhi-Milo, 2012, 570).

[12] Brewer (1999) is concerned with the assumption that love for members of ingroups corresponds to hatred for members of outgroups. With the exception of Allport (1954/1988), she notes that many scholars assume that preferential bias to ingroups implies negativity to outgroups. By contrast, Brewer argues that social identification may not always lead to negative bias towards outgroup members (but see also LeVine and Campbell, 1972; Sherif and Sherif, 1953, for a discussion of realistic conflict theory of inter-group relations).

President Reagan's belief that Secretary Gorbachev was a "different type of leader" is clear from many accounts of the end of the Cold War. Lebow and Herrmann (2004, 183) for example argue that "confronted with a different General Secretary, who had neither Secretary Gorbachev's personality nor his commitment to reduce the nuclear threat, President Reagan might have remained an anti-Soviet ideologue," implying that the chemistry between Secretary Gorbachev and President Reagan as well as their personal rapport allowed for a more trusting relationship. There are a number of things Secretary Gorbachev and President Reagan seem to have identified over. For one, Secretary Gorbachev was less entrenched in Communist ideology and Marxist theory compared to previous Soviet leaders, and had attended University for a law degree (in contrast, previous Soviet leaders had mostly technical educations). Secretary Gorbachev and President Reagan also reportedly connected over their families, and the importance of family values to both of them.

These two leaders were able to trust each other in part because they were able to identify with each other more closely compared to their previous counterparts. President Reagan's own statements about Secretary Gorbachev highlight this view. The President noted for example that improved relations were largely due to "Mr. Gorbachev as a leader", rather than to having new or increased information about the Soviet Union or any other factors. President Reagan also said he found Secretary Gorbachev "completely different than others that I had dealt with" (Hall and Yarhi-Milo, 2012, 570,569). In part due to this relationship, "the overwhelming suspicion characteristic of the Cold War was gradually replaced by trust – not blind trust, but trust," according to US diplomat Jack Matlock (Matlock, 2004, 319).

For his part, Secretary Gorbachev recognized the importance of individual leaders and their personalities and characteristics for diplomacy. Anatoly Chernyaev, one of Secretary Gorbachev's closest advisers, recalled that after returning from Washington DC in 1987, Secretary Gorbachev addressed the Politburo by saying the summit demonstrated "how much the human factor means in international politics ...it turns out that politicians, including leaders of governments if they are really responsible people, represent purely human concerns, interests, and the hope of ordinary

people . . . In our age, it turns out, this has the biggest impact on political decisions" (Booth and Wheeler, 2008, 156).

While the arrival of Secretary Gorbachev into office allowed for at least the partial transformation of US-Soviet relations on nuclear issues, Soviet relations did not improve with every country in the same way. While I would expect this to be the case, since I argue that trust depends on the dyadic interaction between particular leaders, it is useful to look at a comparison of Soviet relations with other countries. Forsberg (1999) does this by comparing Secretary Gorbachev's acquiescence of German reunification to continued conflict with Japan over the Kurile Islands. Despite the German issue being arguably much more important to the Soviet Union compared to the island dispute, Germany and the USSR were able to come to a resolution while Japan and the USSR were not.

Forsberg (1999, 616) ties this to the personal understanding between Secretary Gorbachev and German Chancellor Kohl: "as leaders of their states, Secretary Gorbachev and Chancellor Kohl were the key players who mediated the trust between the two states." Once again, Secretary Gorbachev's own statements highlight the role of trust between leaders for international relations. Referring to Chancellor Kohl, Secretary Gorbachev said: "we did not negotiate as partners but as people who trusted each other. All this enabled us to achieve a high degree of mutual understanding in all fields of politics" (Forsberg, 1999, 617-618). In contrast, there was no such understanding between Secretary Gorbachev and Japanese politicians at the time. Forsberg argues this distinction was due at least in part to both the Soviets and Germans viewing themselves as part of a new common European identity, while Soviets saw both a "historical and cultural gap" with Japan. Robertson (2010, 157) supports this view, arguing that "to the Soviets the Japanese [were] still very much an alien race with which they have had comparatively little contact and correspondingly little substantial experience." In Chapter 2 I continue the discussion of the role of shared identities between leaders for trusting relationships. Prior to this, I provide a brief overview of the dissertation.

1.3 Overview of Dissertation

In Chapter 2, I first discuss and develop my theory of how shared backgrounds between leaders can make trust and cooperation more likely. I then focus on the context of nuclear cooperation and argue that shared identity between leaders makes cooperation more likely by increasing interpersonal trust. Leaders who share more similar social identities are more likely to trust each other, while leaders who have divergent social identities find it more difficult to trust. To test this theory, I use data on nuclear cooperation agreements and leaders' social identities in the period from 1950-2002, including early and adult life identities, socio-economic status, and political ideology. Statistical analysis shows that leaders who share similar social identities are more likely to engage in nuclear cooperation, even while controlling for strategic factors known to influence cooperation. An examination of Argentine-Brazilian nuclear rapprochement illustrates these findings.

In Chapter 3 I examine the willingness of client states to rely on promises from their patron states for protection. In particular, I focus on when non-nuclear weapon states will pursue autonomous nuclear development versus refraining from nuclear pursuit, holding the defense commitment of a nuclear patron state constant. While previous scholars argue that extended deterrent guarantees are a key tool for limiting proliferation, the efficacy of these guarantees depends on the credibility of the commitment to both potential adversaries as well as to the client state. Prior literature points to specific signals patrons can send to try and make their commitments appear more credible – including basing conventional forces or foreign nuclear deployments in an ally's territory or sending interpersonal signals through speeches and visits by leaders. I argue that leaders who are protected through a nuclear umbrella are more likely to engage in nuclear restraint when they share more background characteristics with their patron state leader, since trust is easier when two individuals are more similar. To test my theory I use data on nuclear pursuit, defense alliances, and leadership backgrounds in the period from 1945–2000. Evidence suggests that client state leaders are less likely to engage in nuclear-related activity when they are protected by a nuclear weapon state with a more similar leader.

In Chapter 4, I turn to the question of whether interpersonal relationships between leaders in-

fluence the likelihood of two states entering into an international alliance. Prior literature is divided on the question of why states form alliances. Some scholars argue that security imperatives, most notably the presence of a joint enemy, lead to alliance formation. Others argue that ideological similarities between states, especially the presence of similar political regimes, makes alliance formation more likely. Still others claim that leaders judge whether or not to form alliances with other states based on the reputation of foreign leaders or governments for upholding prior commitments. Each of these explanations is surely important for understanding when and why states ally together, and are also linked in a key way. Each of these theories address a central concern of states when considering whether to form an alliance: the potential costliness of betrayal, and the inability to truly know and trust the intentions of another actor. I suggest an additional explanation for why states form alliances: the ability of leaders in potential allied states to empathize and understand their partner leader based on the similarity of their backgrounds. To test my theory I use data on alliance formation, reputation, and leaders' identities in the period from 1840–2000. My statistical analysis demonstrates that two states are more likely to form an alliance with each other when their leaders are more similar, even while accounting for the historical relationship between the two states, their reputation for reliability, and other factors thought to affect the probability of alliance formation.

The final chapter of the dissertation concludes by summarizing the central arguments and findings made in Chapters 2-4, discussing the major implications of this research, and suggesting areas for future study based on weaknesses of the current manuscript and questions that have arisen during the development of the dissertation.

2. LEADERS, SHARED IDENTITY, AND NUCLEAR COOPERATION

Do relationships between leaders influence cooperation in world politics? There is a growing recognition in scholarship that leaders play a key role in world politics (e.g. Kertzer, 2016; Fuhrmann and Horowitz, 2015; Horowitz and Stam, 2014; Colgan, 2013; Saunders, 2011). Most studies in the growing literature on leadership focus on individual leaders in isolation, theorizing about how individual leader backgrounds and characteristics influence a wide array of political outcomes. Politics are usually relational however, meaning that the interactions between leaders and the ways in which they view one another should be considered alongside monadic factors.[1] This chapter considers dyadic relationships between leaders, focusing on indicators that other leaders can easily observe or know about another. It links leader-level shared experiences to political outcomes, suggesting that relationships *between* leaders broadly influence international politics.

Everyday life experience as well as research in other disciplines make clear that identity contributes to relationships between people and influences whether individuals are willing to cooperate. At the same time, many political scientists have downplayed or ignored identity as an important factor for explaining cooperation, focusing instead on the role of political institutions (e.g. Martin, 2000; Leeds, 1999) and structural factors (e.g. Snidal, 1991; Grieco, 1988). This chapter provides evidence consistent with the view that identity politics are important for understanding the role of leaders in international politics.

In particular, I argue that shared identity between leaders makes cooperation easier by increasing trust in another. Leaders who share more similar backgrounds and experiences are more likely to trust each other, while leaders who have divergent social identities find it more difficult to trust. This argument is based on theories and evidence from social psychology and neuroscience, which indicate that trust increases as social distance decreases. I test this theory in the context of nuclear

[1] Wheeler (2018) and Holmes and Yarhi-Milo (2017) do much to advance our understanding of leader relationships, but they focus on face-to-face interactions based on the analysis of specific leader relationships. More often than not, however, leaders need to form at least their initial impression of others without in-person interaction. The intersection of interactive accounts with my Theory are discussed in Chapter 5.

cooperation agreements, finding that shared identities make nuclear cooperation more likely, even while accounting for strategic factors known to influence nuclear cooperation. Shared identities between leaders, including shared early life experiences, gender, social status, adult identities, and military background, increase the likelihood of nuclear cooperation across multiple model specifications, samples, and while accounting for domestic political constraints and leaders' political ideology. This finding is particularly strong in recipient countries with low levels of domestic political constraint, since leaders in these environments are more able to follow through on their promises to refrain from using nuclear assistance for military purposes.

This chapter proceeds in four main sections. In the next section I expand on the concept of identity and turn to theories and evidence from social psychology and neuroscience to motivate my theory for how shared identities between leaders make cooperation easier. In the second section I examine cooperation on nuclear issues in particular to understand how personal relationships between leaders can allow for cooperation, even in the most intractable of circumstances. In the third section I engage in an empirical analysis of shared leader identities and nuclear cooperation agreements. I then illustrate my findings with a discussion of nuclear rapprochement between Brazil and Argentina. The empirical analysis indicates the importance of shared identity for explaining nuclear cooperation, especially in countries with low levels of political constraint. In the final section I summarize my findings and identify opportunities for further research based on the nuclear context.

2.1 Leadership, Identity, and Cooperation

As noted in Chapter 1, the basis of my theory of cooperation based on shared social identity is not new: scholars in sociology, psychology, and neuroscience have long focused on the role of identity in interpersonal relationships. What is new is the translation of these concepts to the political realm, and the application of these theories to the realm of international security. In particular, I link the focus on identity and relationships between actors with the growing interest on leaders in international relations to explain cooperation in world politics. To do this, it is first important to have a clear understanding of what identity is.

Identity is defined as understanding the self and others (Jenkins, 2014, 19), and as a set of characteristics that allow a person to be recognizable as part of a group (Cronin, 1999, 5).[2] These definitions make clear that identity is inherently relational and based on social interaction, and that every actor can have, and likely has, multiple identities. The degree to which actors are tied to particular identities may differ depending on both time and context, but each identity is social and based on how actors view themselves in relation to others (Wendt (1992, 398) and Adler and Barnett (1998, 47)).

Prior research demonstrates that certain identities are more salient than others. While most identities are malleable, those that contribute to a person's conception of self are less so. The two most fundamental categories of identity are primary identities, which are established early in life, and interactive identities, which are formed by relationships with others (Jenkins, 2014, 41–48).[3] A person's primary identity includes their conception of gender, early kinship, and ethnicity. Since individuals identify themselves in relation to others, there are also important fundamental identities that arise later in life, including one's socio-economic status, career, and adult family life. Categorization of the self based on these fundamental identities allows for the recognition of similar others, even when there is not a pre-existing personal relationship (Jenkins, 2014, 110–111).

There is precedent for considering the role of leader identities in international relations. In his study of transnational security communities, Cronin (1999, 18) argues that "identities provide a frame of reference from which political leaders can initiate, maintain, and structure their relationships with other states." Even Morgenthau (1973, 235), who is known primarily for his contributions to realism, has pointed to the importance of identity, arguing that leaders in the 17th and 18th century trusted each other in large part because of a shared social identity: leaders across different countries "were joined together by family ties, a common language (French), common

[2] See also Wendt (1999), for a discussion of social identity.

[3] Jenkins (2014) also discusses a third major category of identity based on the interaction between individuals and institutions. While not the focus of this paper, understanding institutionalized identities is important for thinking about how shared participation in formal organizations can lead to the transformation of relationships based on shared understandings.

cultural values, a common style of life, and common moral convictions about what another gentleman was and was not allowed to do . . . ". In the policy world as well there is emphasis on leader backgrounds: the US government has historically made reports about foreign leadership based on personality profiles and characteristics (Krasno, 2015, 12). These reports on foreign leaders as well as open source reporting allow for leaders to gain information about others' identities and backgrounds.

Though it is true that political leaders are likely different from average citizens, leaders are not exempt from having conceptions of their own identity and from observing and making judgments about the identities of others. As Wundt (1998/1897, 92), one of the founders of modern psychology wrote in 1897, people (even leaders) are "never in a state entirely free from feeling." Leaders themselves reference their own humanity. Anatoly Chernyaev, one of Mikhail Gorbachev's closest advisers, recalled that after returning from a Washington D.C. summit in 1987, Gorbachev addressed the Politburo by remarking "how much the human factor means in international politics . . . it turns out that politicians, *including leaders of governments* if they are really responsible people, represent purely human concerns, interests, and the hope of ordinary people . . . In our age, it turns out, this has the biggest impact on political decisions" (Booth and Wheeler, 2008, 156, emphasis added).

2.1.1 Theories and Evidence from Social Psychology

To see how identity can lead to cooperation, it is helpful to first think through frameworks in other disciplines. In sociology, the paradigmatic theory that explains why individuals consistently prefer members of their own self-identified group to others is Social Identity Theory (SIT). Tajfel (1978) argues that individuals categorize identities to systemize and simplify their environment. During categorization, people make value judgments about others, especially when the identities are important to the individual. Moreover, value differentiation tends to increase perceived differences (Tajfel, 1978, 62). The unconscious categorization of others' identities leads to the perception of difference between the self and others when identities are disparate, and discrimination against others may be magnified by the subconscious desire to feel good about one's own group or

identity. This argument is supported by Wilson and Eckel (2010, 12), who argue that "stereotyping is the result of a natural human tendency to categorize, and often operates as a heuristic shortcut."

As Chapter 1 made clear, evidence abounds in support of SIT in sociology and psychology. As early as 1906 sociologist William Sumner argued that "the insiders in a we-group are in a relation of peace, order, law, government, and industry to each other. Their relation to all outsiders, or others-groups, is one of war and plunder .... Loyalty to the group, sacrifice for it, hatred and contempt for outsiders, brotherhood within, warlikeness without – all grow together" (Sumner, 1906, 12). More recent evidence also suggests that people trust those to whom they are similar. In the United States for example, surveys indicate people are more likely to trust their family, fellow Americans, neighbors, and those who attend the same church or club (Uslaner, 2002, 19–30). Likewise, experiments show that trust decreases as social distance increases (Buchan, Croson, and Dawes, 2002).

Shared identity and trust are linked in this research, since the mere establishment of a group or a sense of shared identity can lead to in-group favoritism (see for example Tyler and Dawes, 1998; Dawes, Van de Kragt, and Orbell, 1988). In other words, "simply knowing that an otherwise unknown person is a member of a salient in-group may be sufficient to engender trust as a default assumption" (Maddux and Brewer, 2005, 161, and see also Kramer, Brewer, and Hanna (1996)). Linkage occurs because actors internalize the identities that are important to them, then relate to others with the same identities as part of an "us", meaning "those whom we trust, toward whom we are okay, and for whose problems we care in the spirit of solidarity" (Sztompka, 1999, 5). Trust arises because actors see something in another that binds them together (Uslaner, 2002, 18), decreasing the risk of trusting (Wilson and Eckel, 2010; Bohnet, Herrmann, and Zeckhauser, 2008; Bohnet and Zeckhauser, 2004). Indeed, Macy and Skvoretz (1998, 651) go so far as to argue that "the earliest trust rule is based on social distance – trust neighbors, but not outsiders" (see also Ellison, 1993).

2.1.2 Theories and Evidence from Social Neuroscience

Theories and evidence from neuroscience suggest that people act on mental shortcuts or heuristics in everyday life to simplify and accelerate decision-making. One such complex decision is who to trust and when. Todorov, Pakrashi, and Oosterhof (2009) for example show that people automatically make judgments about the trustworthiness of others based on facial appearances, such that "personal impressions are often formed rapidly and spontaneously from minimal information." In-group status, or the recognition of similar identities is one such mental shortcut used to establish trust in another. There is evidence that the brain makes a judgment about how trustworthy someone is in as little as 100 milliseconds based on characteristics of others (Engell, Haxby, and Todorov, 2007, 1515). Not only does the brain make a nearly instantaneous judgment, but when someone senses that another is untrustworthy, the amygdala, or the brain's fear center, is activated to produce an emotional response. Observable, knowable characteristics then are a source of information that allows for a mental shortcut to judge the trustworthiness of others.

Since it is impossible to have complete information about the thoughts, beliefs, and intentions of others, leaders need to consider how to make assessments about what are likely to be the true preferences and intentions of other actors. Evidence from social psychology and social neuroscience indicates that when two actors share similar identities, it is easier to understand what another's position might be, easier to empathize, and easier to see how another views the world.[4] Empathy is key for assessing the trustworthiness of others; the more identities leaders share the more they are able to view a situation from another person's perspective and understand how they might think and feel, providing much-needed information to help judge whether the other should be trusted.

2.1.3 Trust, Identity, and Cooperation

The discussion thus far makes clear that in addition to identity, the concept of trust is important to understand. While there are countless definitions of trust in political science as well as in

[4]It is necessary to note that I distinguish between *empathy* and *sympathy*. The former involves the ability to put oneself in the shoes of the other, and does not necessarily involve a positive emotional response.

other fields, including in sociology, business management, and psychology, most definitions tend to share two commonalities, as Chapter 1 elucidates (e.g. Rathbun, 2011; Ruzicka and Wheeler, 2010; Booth and Wheeler, 2008; Hardin, 2006; Kydd, 2005). First, trust involves believing that another will behave benevolently towards the self in the future (Dietz, Gillespie, and Chao, 2010; Hardin, 2006; Larson, 1997*b*). Second, trust requires a willingness to accept vulnerability, or to put oneself at risk. Indeed, trust only occurs in environments of risk, since without risk trust would not be necessary (see Hardin (2006, 28) and Wheeler (2009, 437)). Actors accept risk because they believe that the probability of negative consequences is sufficiently low. The willingness to accept risk is intimately tied to judgments about the benevolent intentions of other actors. Individuals choose to place their fate partially in the hands of another actor based on the expectation that the other will cause no harm (Rathbun, 2011; Hoffman, 2006; Rousseau et al., 1998).

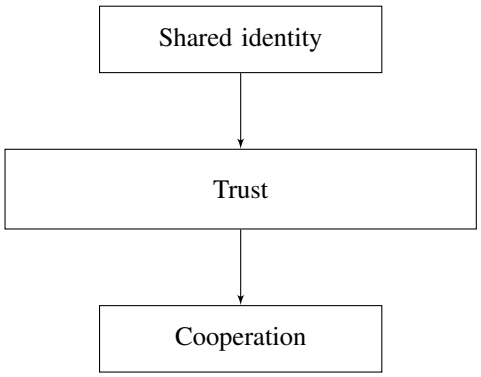
Believing in the benevolent intentions of other actors and a willingness to accept risk can be seen in most definitions of trust, both within political science and in other fields (e.g. Wheeler, 2018; Borum, 2010; Adler and Barnett, 1998). For the sake of this chapter, trust is defined as "a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or behavior of another," and equivalently, *Believing, despite uncertainty, that another will not act in a way that hurts me* (Rousseau et al., 1998, 395). Knowing whether to trust another in the political context provides crucial information that makes cooperation on a wide variety of issues easier. Everything from terminating rivalries to believing an ally will honor its commitment to an alliance is easier when leaders trust each other. In the nuclear context, for example, it is well-known that since states can get around most verification systems, crafting effective protocols depends on the degree to which states trust each other not to cheat (see Larson, 1997*a*, 706).

Even political leaders have recognized the importance of trust: During the Cold War, Ronald Reagan told Mikhail Gorbachev that if their two nations could learn to trust one another, "then those mountains of weapons will disappear quickly as we will be confident that they are not needed" (quoted in Yarhi-Milo, 2014, 196). General Secretary Gorbachev subscribed to this be-

lief as well, noting that "many difficult issues are far more easily and quickly resolved if there is trust between political leaders, without unnecessary diplomatic moves and formalities" (quoted in Forsberg, 1999, 617-618).

Based on investigations of trust and identity in other fields, individuals determine the intentions and trustworthiness of others based at least in part on identity. In other words, identities are heuristic shortcuts used to form opinions about the trustworthiness of others. People gauge whether or not to trust based at least in part based on the embeddedness of social identities, or how many social identities are shared. Trust is easier when individuals have a high degree of embedded identity, meaning a high degree of social closeness. The more social identities two people share, the more points there are on which to form a connection with another, making it more likely to lead to a feeling of trust, which makes it simpler and cheaper to cooperate with another.

Figure 2.1: Shared identity, trust, and cooperation.



Intuitively, it is easy to understand that if you trust someone you are more likely to believe what they say and feel that they mean you no harm. But how exactly is this belief and confidence in the benevolence of another created? Social identities provide information that help leaders to understand the preferences, intentions, emotions, and world view of other leaders. Leaders with more similar social identities have more points on which to try to understand the other. With more similarities, there are more opportunities to understand and empathize with others.

2.2 Identity and Trust in Nuclear Cooperation

Civilian nuclear cooperation, defined as the "state-authorized transfer of nuclear facilities, technology, materials, or know-how from one country to another for peaceful purposes" is a prototypical example for the potentially catastrophic effects of cooperation in world politics (Fuhrmann, 2009, 193). When a leader signs a nuclear cooperation agreement, she agrees to provide nuclear materials and assistance for civilian purposes, such as generating electricity at nuclear power plants or for researching medical isotopes. However, because all nuclear technology is dual-use in nature, a recipient country can also use this aid to build nuclear weapons in the future.

To demonstrate the potential pitfalls of civilian nuclear cooperation, consider the case of Canadian assistance to India. In 1956 Canada and India signed the CIRUS (Canada India Reactor Utility Services) deal for a 40 MW research reactor. The deal marked the beginning of 18 years of nuclear cooperation in which Canada provided nuclear assistance to India under the condition that all assistance would be used for explicitly peaceful purposes. Three years after the CIRUS reactor went critical in 1960, Canada and India agreed to a second deal to build the 100 MW Rajasthan Atomic Power Plant (RAPP-1). The deal allowed for the transfer of materials and knowledge to build the facility, as well as uranium to fuel the power plant. Additional Canadian assistance was provided on the larger RAPP-2 project three years later. Despite promising peaceful intentions and submitting to safeguards and verification, India carried out what it called a "peaceful" nuclear explosion (PNE) on May 18, 1974. India was able to build nuclear weapons because of the Canadian transfer of knowledge, expertise, and materials (see Fuhrmann, 2012). In particular, the CIRUS reactor provided by Canada gave India the means to produce the weapons grade plutonium that was used in India's PNE, and the repeated exchanges contributed to increased knowledge and training for Indian scientists.

This example demonstrates the high risks involved in engaging in nuclear cooperation. Since it is impossible to have complete information about the thoughts and intentions of others, leaders considering whether to provide nuclear assistance need to determine whether a partner can be trusted to keep their word to use civilian nuclear assistance solely for peaceful purposes. Evidence

from social psychology and social neuroscience indicates that when two actors share more similar identities, it is easier to understand what another's position might be, easier to empathize, and easier to see how another views the world.

Therefore, I expect countries with more similar leaders in terms of identity to be trusted more with nuclear technology compared to leaders with dissimilar identities.

Hypothesis 1. *Ceteris paribus, leaders with more similar identities are more likely to sign nuclear cooperation agreements.*

Even when two individuals trust each other, the position of the leader within her own government must also be considered. Leaders vary in the degree to which they have the capability to execute their wishes without constraint (Jervis, 2013). Some leaders, particularly leaders with little bureaucratic oversight, may be more able to execute their preferences without meddling from individuals or institutions within their own government. In other words, the *capability* of leaders to carry out what they promise to do must also be considered.[5] Leaders are often entrenched in complex bureaucracies with multiple veto-players responsible for ultimate policy decisions, meaning that a recipient leader's trustworthiness alone may not be enough to convince a supplier country to provide risky technology.

Suppose for example leader B and leader C are equally trustworthy. In other words, leader A believes both leaders' promises to refrain from using dual-use nuclear technology for illicit purposes. Leader B is more institutionally constrained than leader C, meaning there are more veto players with influence over domestic policy decisions. While both B and C are trusted equally, leader A may be more likely to supply leader C with nuclear technology because in addition to believing she can be trusted, her commitment to do as promised is more credible because there are fewer domestic actors able influence policy outcomes.[6]

In 1985 for example Argentine President Alfonsín proposed the negotiation of a bilateral sys-

[5]Wheeler (2018) makes a similar distinction by talking about the differences between trust and confidence. See as well my discussion of trust and capability in Chapter 1.

[6]See Appendix A for further discussion of why I focus on the recipient leader's constraint rather than on the supplier's constraint.

tem for control of nuclear materials. While these two leaders would later cooperate on nuclear issues, at the time, Brazilian President Sarney was not able to negotiate on the proposal because of strong opposition by the military, and because as a military-appointed civilian president, Sarney "lacked the legitimacy, or indeed the will, to exert presidential control over the Brazilian nuclear program" (Wrobel and Redick, 1998, 170). Leaders themselves are aware of their relative ability to carry out their own preferences. In 1988, after 29 largely unfettered years in office, Former President of Côte d'Ivoire Félix Houphouët-Boigny, said: "there is no number two, three, or four . . . In Côte d'Ivoire there is only a number one: that's me and I don't share my decisions" (Meredith, 2011). Therefore, I expect:

Hypothesis 2. *Ceteris paribus, leaders with more similar identities are more likely to sign nuclear cooperation agreements when there are fewer institutional constraints on recipient leader decision-making.*

2.3 Empirical Analysis of Nuclear Cooperation Agreements

The prior section makes clear that cooperation on nuclear issues carries some of the highest risk and greatest potential for harm compared to other forms of cooperation in world politics. While nuclear cooperation takes place for peaceful purposes, recipient countries can easily turn assistance towards nefarious ends. Many forms of nuclear assistance, including technology, facilities, and knowledge are dual-use in nature, meaning they can be used for both civilian and military purposes. Practically, this means that assistance provided for ostensibly civilian purposes can also be used to make the deadliest weapon known to man. Identifying the leaders who can be trusted to keep their promise to refrain from using nuclear assistance for military purposes is crucial. If shared identity matters in the nuclear context, where strategic considerations are known to be paramount, then it is likely that identity matters in other security contexts as well.[7]

My dependent variable, NCA, is the signing of a nuclear cooperation agreement in a particular year (Fuhrmann, 2009). Nuclear cooperation agreements (NCA's) are a prominent and observable

[7]I am not the only scholar focused on the link between trust and nuclear issues. Most recently Mehta, Mattiacci, and Whitlark (2018) examine the relationship between trust and nuclear latency and Bowen et al. (2018) focus on the role of trust in nuclear disarmament verification.

form of nuclear cooperation, making them well-suited for assessing the role of identity on cooperation in my empirical analysis. NCA's cover any material, technology, or knowledge that would allow a country to develop, run, or expand a civilian nuclear program. NCA's may include different categories of assistance including nuclear reactors, nuclear materials, fuel cycle facilities, nuclear safety, and intangible goods. In the analysis below I omit cooperation agreements that include only provisions for nuclear safety, because these agreements do not provide for the transfer of materials or knowledge that could lead to problematic dual-use activity. I also omit NCA's signed for distinctly military purposes. Military NCA's fall outside the bounds of my theory because they are not for purely civilian purposes, and therefore the concern that a country could illicitly use assistance for military purposes no longer applies.[8]

My unit of analysis is the leader-dyad, meaning I include all pairs of leaders in the period from 1950-2002. The primary independent variable is shared identity between leaders. Every person carries with them a multitude of identities, which may matter to different extents depending on context. While it is impossible to know precisely which social identities will be paramount for a leader at any given time, there are a set of fundamental identities that are both strong enough for a leader to be defined by regardless of context, and are visible or knowable to others (Jenkins, 2014). These major identities are formative, in that they help to shape how an individual views herself, defines herself in relation to others, and places herself in relation to the rest of the world. When leaders share a greater number of these formative identities they are more able to relate to the other, can more easily empathize, and are less likely to see the other as threatening. The major social identities below are based on Jenkins (2014), and are important for allowing leaders to identify with and trust one another. Unless otherwise noted, the leader identity variables are from the LEAD dataset (Ellis, Horowitz, and Stam, 2015).

- SHARED EARLY LIFE EXPERIENCES: Early life experiences, especially shared early kinship, is a key identity (Jenkins, 2014). Individuals who grew up with both parents present may be more likely to trust in general, and may also find it easier to trust other similar people

[8]When I include nuclear safety agreements and military NCA's the findings are similar.

(Uslaner, 2002, 92). In the analysis that follows, leaders are coded as having a shared early life experience if they shared the same number of parents growing up, were both orphans, or both illegitimate.

- SHARED GENDER: Jenkins (2014) argues that gender is one of the most important formative identities, since individuals carry their conception of their own gender with them throughout their life (see also Krause, 1996). Studies in political science have also shown the importance of accounting for gender when considering the role of leaders in international politics (e.g. Barnes and O'Brien, 2018; Lu and Breuning, 2014; Koch and Fulton, 2011).[9]

- SHARED SOCIAL STATUS: Leaders who share a similar perceived social status may identify with one another more compared to leaders from different social groups (Jenkins, 2014). Mao Zedong for example reportedly looked down on Nikita Khrushchev for being less educated. Mao notably tried to humiliate Khrushchev during a state visit by insisting they swim – giving Khrushchev giant arm floaties to wear in the pool and swimming laps around him – knowing Khrushchev had never been in a position as a child to learn (Dash, 2012). Leaders' socio-economic status, wealth, and degree of education allows for identification as part of a similar group (see also Bellemere and Kroger, 2007; Gachter, Herrmann, and Thoni, 2004). In the analysis that follows leaders are coded as having a shared social status if they shared a similar socio-economic background, wealth, or level of education.

- SHARED ADULT IDENTITIES: A leader's adult life likely influences their ability to identify with others (Jenkins, 2014). There is evidence for example, that Ronald Reagan and Mikhail Gorbachev identified with each other as family men (Wheeler, 2018, 155). Shared adult identities is coded 1 if both leaders were married during their time in power or had children.

- SHARED MILITARY BACKGROUND: While an individual's career or vocation could be a potentially important identity, both Deaux et al. (1995, 285) and Jenkins (2014) suggest it

[9]The historical scarcity of women leaders means jointly male dyads dominate the data. Only 0.06% of leader dyads are jointly female and 5.4% of leader dyads are mixed-gender. When shared gender is omitted from the analysis the results are consistent.

may be less definitive for a person's self-conception compared to other factors like gender and kinship. Vocations are likely to change throughout life, and depending on the career, may not be crucial to a leader's self conception, especially once she takes office and becomes a politician. Certain careers however, are more likely to form a lasting impact and be crucial to an individual's identity. Previous work by Fuhrmann and Horowitz (2015), Horowitz and Stam (2014), and Colgan and Lucas (2016) demonstrates that participation in the military or a rebel movement can impact leader decision-making while in office. Shared military background is coded 1 if both leaders participated in the military or in a rebel movement, and 0 otherwise.

My theory predicts that leaders with more similar social identities are better able to cooperate on issues in world politics. The primary independent variable, IDENTITY SCORE, is a count of the total number of shared identities ranging from zero to five, based on the typology above.[10] This variable captures the degree of shared identity, or how embedded the identities of the two leaders are.[11] While gender, shared early life experiences, socio-economic status, military background, and adult family life are not the only identities that can lead to trust, they are easily observable or knowable by other leaders and have been shown in both previous literature and in historical relationships to influence perceptions between individuals. Other major formative identities like ethnicity and ideology are discussed and accounted for shortly.

2.3.1 Bureaucratic Constraints

Domestic POLITICAL CONSTRAINT is measured based on whether a change in one actor's preferences leads to changes to government policy. Henisz (2002, 2017 update) derives a quantitative measure of institutional constraint using a spatial model of political interaction based on the number of independent branches of government with veto power over policy change in each coun-

[10]The inspiration for creating this scale of shared identities comes from Cronin (1999), who conceptualizes the measurement of identity on a scale from negative to positive, ranging from hostility, rivalry, indifference, cohesion, altruism, and symbiosis.

[11]Deschamps and Doise (1978) have shown that when there is partial identification across categories, or cross-cutting identification, group differentiation is smaller, meaning that with increased identification, individuals are more likely to view another person as similar to the self (see also Turner, 1978).

try.[12] The initial measure is altered to take into account the extent of alignment across branches of government and the extent of preference heterogeneity within each branch. Possible scores for the final measure of political constraint range from zero (least constrained) to one (most constrained), though in the estimation sample the highest level of political constraint in recipient countries is 0.719.

2.3.2 Strategic Considerations

Shared preferences are captured through common enemies, shared alliances, and dyadic conflict. Sharing an enemy and an alliance are two of the most important strategic reasons for why a leader might have shared interests and choose to cooperate in regards to nuclear matters, while dyadic conflict is expected to decrease cooperation. These three factors are used by previous scholars to test the strategic incentives for nuclear cooperation (e.g. Fuhrmann, 2009). SHARED RIVAL is coded 1 if two states share a rival in a particular year and 0 otherwise. SHARED ALLIANCE is coded 1 if two states share a defense alliance in year t and 0 otherwise. DYADIC CONFLICT is coded 1 if two states are engaged in a conflict with each other in year t, and 0 otherwise.

The goal of my statistical analysis is to assess whether shared identity is associated with nuclear cooperation after controlling for strategic factors that are salient in to prior studies. My theory expects that even while controlling for strategic reasons for cooperation, identity variables make cooperation more likely.[13] In addition to including rivalry, alliances, and conflict in my primary model, I also limit the sample based on known strategic factors, by looking only at cases in which there is either a shared defense pact or a shared rival. Limiting the sample in this way allows me to hold constant strategic factors known to increase the likelihood of cooperation and demonstrate that shared identity still influences cooperation in these contexts.

[12] Including executive, lower and upper legislative chambers, judiciary and sub-federal institutions. See also the POLCONIII Codebook. See Appendix A for more details on this variable.

[13] The strategic variables come from Fuhrmann (2009)'s analysis of strategic nuclear cooperation.

2.3.3 Potential Confounding Variables

What might influence both whether a NCA is signed, and whether a leader with a particular identity is likely to come into office in a particular country? Identities are not assigned randomly to individuals in different countries, and leaders are not randomly selected for office. If factors that influence the likelihood of a leader with a particular identity coming into office also influence the likelihood of a certain country engaging in nuclear cooperation, inference will be more difficult.

If certain types of governments are more likely to engage in nuclear cooperation agreements and also more likely to elect leaders with particular identities, then it is necessary to include regime type as a potential confounding variable. A substantial literature links regime type, and in particular democracy, to trust and cooperation. Larson (1997*b*, 713) for example argues that authoritarian states are distrusted because of their motives while democratic states are distrusted because of their resolution. Others point to democracies and democratic leaders as being more trustworthy and more trusting, in part because democracies have a more benign view of human nature (e.g. Rathbun, 2009; Owen, 1994; Doyle, 1986).[14] To control for regime type in my primary model, I include an indicator of whether or not two states are both democracies, JOINT DEMOCRACY.[15]

How wealthy a country is could also influence both the type of leader to come into office and whether certain countries are more likely to engage in nuclear cooperation. Countries with greater national wealth or economic development may tend to be led by individuals with different identities compared to countries with less wealth or development. The level of economic development in a country may also influence how likely a nuclear supplier is to provide nuclear assistance. To address this concern I include the per capita real GDP of both the supplier and the recipient country in constant 1996 dollars (Fuhrmann, 2009).

To control for possible temporal dependence, I include a variable that measures the number of years since a previous NCA was signed, as well as the squared and cubic terms of the variable in TIME, TIME^2, and TIME^3 (Carter and Signorino, 2010). The results of my primary model and

[14] See also Uslaner (2002, Chapter 8) for evidence of higher levels of generalized trust in democracies.

[15] This measure comes from Fuhrmann (2009) and is coded 1 if both states score a six or higher on the Polity IV scale (Marshall, Gurr, and Jaggers, 2009).

additional robustness checks including country fixed effects, time lags, and decade controls are discussed in the following section.[16]

2.3.4 Results and Discussion

The results of my primary logit model with standard errors clustered by country dyad are shown in Figure 2.2.[17] This model includes a single indicator of shared identity, IDENTITY SCORE, which measures the total number of shared identities, ranging from zero to five. The coefficient is positive and statistically significant at the $p < 0.001$ level, indicating that nuclear cooperation is more likely when leaders share more similar social identities, even while holding strategic considerations, like alliances, rivalry, and conflict constant. Each of the strategic predictors for nuclear cooperation are in the expected direction: sharing an alliance or a rival makes nuclear cooperation more likely, while being in a dyadic conflict with another state makes cooperation less likely, though this result is not significant.

It is also important to think about how substantively important shared identity is for influencing the probability of nuclear cooperation. Figure 2.3 demonstrates that when leaders share a greater number of social identities they are more likely to sign a nuclear cooperation agreement, based on the estimates from Model 1.[18] The more social identities leaders share, measured by the IDENTITY SCORE variable, the more likely leaders are to cooperate on nuclear issues.

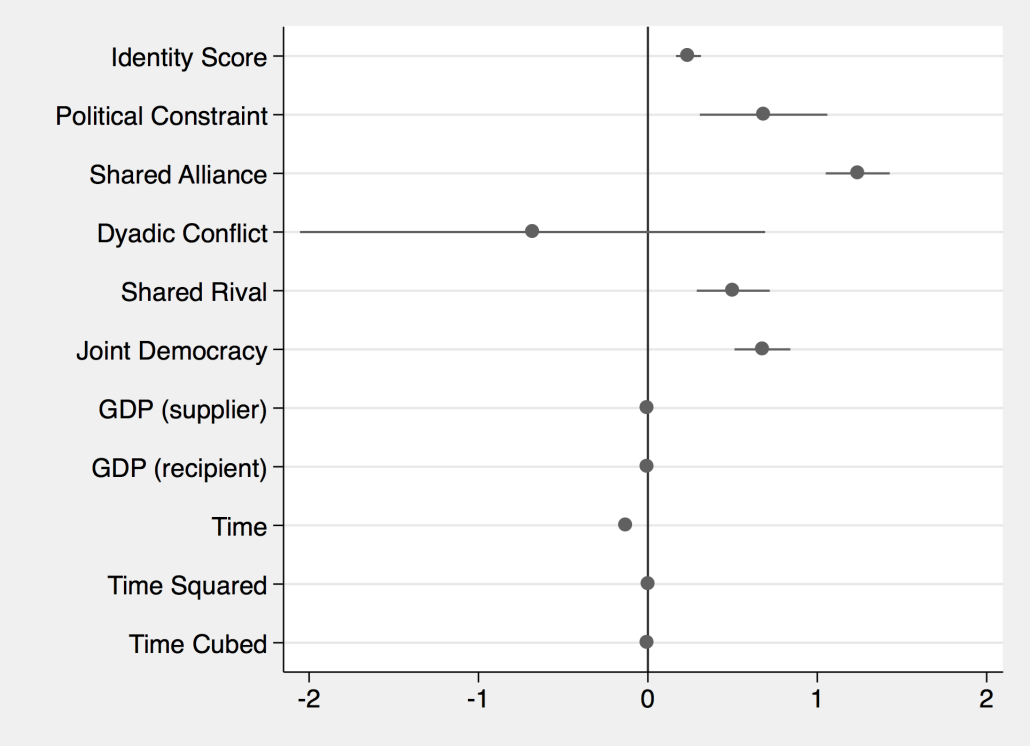
At first glance, the probabilities in Figure 2.3 appear to be relatively small: Leaders who share no social identities have a probability score of about 0.002 while leaders who share the highest number of social identities have a probability score of about 0.006. The low value of these probabilities is due to the rarity of nuclear cooperation agreements in general. The baseline probability of signing a nuclear cooperation agreement is small to begin with. Increasing the number of shared identities from zero to five increases the probability of nuclear cooperation by about 0.0045. As a time-series cross-sectional dataset, the reported probabilities are based on leader-dyad years,

[16] I also control for distance between countries, trade flows and exports, and country affinity in additional models (See Appendix A).

[17] All variables are lagged by one year unless otherwise noted. Full results available in Appendix A.

[18] I hold continuous and dichotomous variables constant at their mean and modal values, respectively.

Figure 2.2: Logit coefficient plot of Model 1 ($N = 141,025$).



meaning the effects will accumulate and become larger over time.

To assess Hypothesis 2, I examine the interaction of POLITICAL CONSTRAINT and IDENTITY SCORE. Figure 2.4 shows the average marginal effect and 95% confidence intervals of shared identity across different values of political constraint based on Model 2, which adds an interaction term to Model 1.[19] As political constraint increases, the effect of shared identity on nuclear cooperation decreases. Indeed, at the highest levels of political constraint (0.6-0.7), there is no statistical support for Hypothesis 1. The marginal effects of nuclear cooperation at the highest values of political constraint (at both 0.6 and 0.7 on the constraint index) are statistically different from the marginal effect at 0 at the 0.05 level.[20]

[19]Full results available in Appendix A.
[20]Calculated using a difference of means test.

Figure 2.3: Predicted probability of nuclear cooperation, Model 1 ($N = 141,025$).

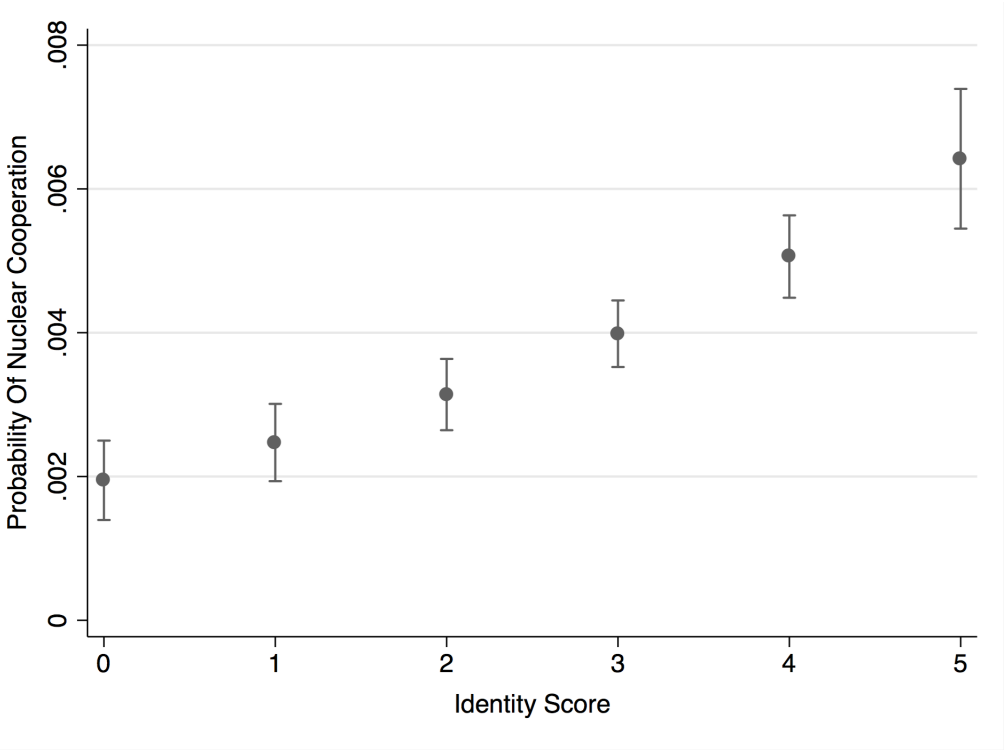
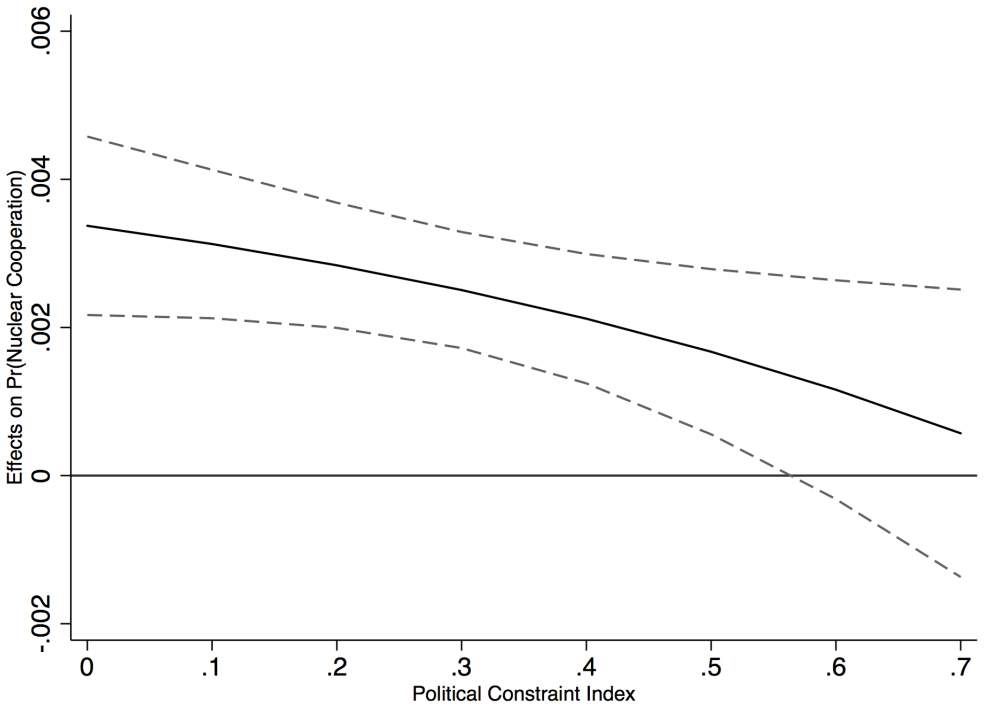


Figure 2.4: Average marginal effects of identity score (Model 2), 95% confidence intervals.



2.3.4.1 Addressing Potential Objections

There are two possible objections to my theory and findings: the model specification and the types of social identities examined in my primary model. I address each of these concerns in the additional models in Table 2.1 and in Appendix A. Model 3 is the same as my primary model, estimated in a limited sample in which countries have either a shared rival or a common defense pact. Examining dyads in which nuclear cooperation is already expected allows me to consider the role of identity when strategic conditions are held constant. Model 4 utilizes a five year lag of the predictors instead of a one year lag.[21] The coefficients on IDENTITY SCORE in Models 3 and 4 are both positive and statistically significant at the $p < 0.001$ level, indicating that shared identity leads to a higher likelihood of nuclear cooperation, even while controlling for strategic factors.

The objective of my analysis is to test if the relationship between individual political leaders influences whether their countries are more likely to engage in nuclear cooperation, while accounting for strategic factors already known to effect cooperation, and for observable confounders such as regime type. Some confounders however may be unobservable, meaning it is impossible to control for them directly. One way to address this is to use country dyadic fixed effects as I do in Model 5, which leads to consistent findings, with IDENTITY SCORE being positive and statistically significant. The inclusion of decade dummies in addition to country dyadic fixed effects in Model 6 also leads to consistent results.

While Models 5 and 6 are able to account for unobservable, country- and time-specific confounders, they do so at the cost of roughly 81% of the observations being lost.[22] The reduction in sample size occurs because any groups with zero within-group variance (meaning any countries with no history of nuclear cooperation) are dropped from the sample. A Hausman test indicates random effects (RE) would be inconsistent, so I turn to a Mundlak specification in Model 8 to ac-

[21] Time lags, or the time it takes for people to form opinions about and act on trustworthiness, may matter a lot (Larson, 1997*b*, 724–726). This might be both because it takes time to recognize similar identities in others, especially when there are limited shared identities on which to connect, and because engaging in substantive cooperation may require coordination on the part of both parties, which can take time.

[22] The estimation of a fixed effects linear probability model results in fewer lost observations and similar results with support for my primary hypothesis (see Table A.3 in Appendix A for full results).

Table 2.1: Additional analysis of nuclear cooperation agreements.

	(3) Limited Sample	(4) 5 Year Lag	(5) Country FE	(6) Country & Time FE	(7) Ideology Included	(8) Mundlak Model
IDENTITY SCORE	0.236***	0.183***	0.106**	0.096*		0.001**
	(0.054)	(0.042)	(0.040)	(0.041)		(0.000)
IDENTITY SCORE (6)					0.206***	
					(0.042)	
CONSTRAINT	-0.138	1.092***	-0.750**	-0.788**	0.601**	-0.007**
	(0.331)	(0.196)	(0.257)	(0.258)	(0.224)	(0.002)
SHARED ALLIANCE		1.379***	0.936***	0.929***	1.188***	0.019***
		(0.107)	(0.225)	(0.225)	(0.101)	(0.004)
SHARED RIVAL		0.782***	-0.360**	-0.368**	0.528***	-0.009***
		(0.108)	(0.117)	(0.117)	(0.116)	(0.002)
DYADIC CONFLICT	-1.558	0.423	-1.324+	-1.355+	-0.938	-0.012*
	(0.962)	(0.421)	(0.745)	(0.748)	(0.965)	(0.005)
JOINT DEMOCRACY	0.708***	0.392***	0.157	0.203+	0.739***	0.004***
	(0.138)	(0.0922)	(0.104)	(0.106)	(0.094)	(0.001)
$RGDP_1$	0.000	-0.000+	-0.000***	-0.000***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$RGDP_2$	0.000***	0.000***	0.000	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TIME	-0.134***	-0.125***	0.023	0.017	-0.120***	0.001**
	(0.024)	(0.017)	(0.018)	(0.018)	(0.018)	(0.000)
$TIME^2$	0.004**	0.005***	-0.001	-0.001	0.004***	0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
$TIME^3$	-0.000*	-0.000***	0.000***	0.000***	-0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CONSTANT	-3.888***	-5.367***			-5.278***	0.119***
	(0.241)	(0.169)			(0.187)	(0.005)
Observations	15632	131115	26677	26677	82934	141025

Standard errors in parentheses.

Decade dummies in Model 6 omitted for space.

Mean values in Model 8 omitted for space.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

count for possible unobservable confounders without the drop in sample size (Mundlak, 1978).[23] The Mundlak transformation adds one additional term to the model for each time-varying covariate to account for the between effect of that variable. This addition serves as a fix for the problem of correlation between the variables and residuals (Bell, 2015; Perales, 2015). The results from Model 8 are consistent and indicate that nuclear cooperation is more likely when leaders share more similar identities.[24]

An easy critique of my argument and findings is that I do not account for the correct identities, or that I fail to include some important social identities in my analysis. While it is surely the case that certain identities matter more depending on context, I argue based on prior scholarship that some identities are more fundamental to who a person is and how they relate to others in general. These formative identities, which include things like gender and social status, are likely to shape the way a person sees the world and views others, and to be salient regardless of context. My theory does not make the case that any one of these identities is likely to be more important than the other – rather, the more major identities leaders share, the easier it is to identify with and trust the other, and the more likely leaders are to cooperate with each other.

The five identities discussed and modeled in the prior section are not an exhaustive set of a person's fundamental identities. In particular, shared ideology, or whether leaders are more conservative or liberal, and shared ethnic background are likely to contribute to positive identification.[25] A weakness of this analysis is my inability to examine ethnicity in particular, due to data limitations.[26] I am however able to take a first cut at accounting for leader ideology, which I do in Model 7 in Table 2.1.

SHARED IDEOLOGY between leaders is coded based on the party orientation of the chief executive's political party based on data from the World Bank's Database of Political Institutions (Beck

[23]RE allow for both a universal constant and a unit-specific intercept drawn from a probability distribution estimated from the data. RE produces efficient estimates even when there is lower sample-to-sample variability, but can be biased if there is correlation between the unit-specific effects and the variables.

[24]I also examine a rare events logit model and look only at the first instance of a NCA being signed in a dyad in Appendix A.

[25]I use the word ethnicity here to broadly refer to a leader's language, race, religion, and culture as well as ethnic identity.

[26]For more of a discussion about data limitations and future work, see Chapter 5.

et al., 2001), expanded and updated by Brambor and Lindvall (2017). Brambor and Lindvall (2017) code the ideology of the chief executive in 33 mostly large, Western European or American countries in the period from 1870–2012, focusing on the ideology of the executive's party in regards to economic issues ("Left", "Center", or "Right"), and whether the executive had an explicitly Christian platform or not. While neither of these measures can accurately account for a leader's personal ideology, they are a close approximation since in most cases a leader's ideology at least broadly matches that of her party. In Model 7 I include whether or not both leaders are members of a "leftist" political party as a sixth possible identity in the IDENTITY SCORE variable.[27] The regional focus of the data leads to over 40% reduction in sample size, and limits the ability to make inferences about smaller or non-Western countries. Nonetheless, the results from Model 7 indicate further support for my primary hypothesis.

The above empirical analysis demonstrates that shared identity between leaders contributes to cooperation on nuclear issues. It is also useful however to consider these results in light of a real-world example. The rapprochement on nuclear issues between Brazil and Argentina in the second half of the 20th century helps to illustrate my empirical findings.

2.3.4.2 Rapprochement Between Brazil and Argentina

Prior to rapprochement, Argentina and Brazil had a long history of competition rooted in early colonial-era rivalries and reinforced through frequent disputes over territory and natural resources throughout the 19th and 20th centuries. The rivalry expanded into the nuclear realm as both states invested in nuclear technology, including enrichment and reprocessing capabilities, in an attempt to become the de facto nuclear leader of South America.

By the 1990's, the relationship between Argentina and Brazil on nuclear issues was starkly different. The countries had signed a series of joint declarations on nuclear cooperation, acceded to the Treaty of Tlatelelco for a nuclear weapon free zone, and established a bi-national inspection and verification regime under the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) and the Quadpartite Agreement with the International Atomic Energy

[27] Previous literature guides my focus on leftist ideology (Baturo and Gray, 2018).

Agency (IAEA). Additionally, leaders of both countries visited previously secret and highly classified nuclear installations of their former rival beginning with a bilateral presidential visit in May 1980 between Brazilian President João Figueiredo and Argentine President Jorge Rafael Videla.[28]

A key component of the improvement in relations between the two countries was the ability of Presidents Figueiredo and Videla to identify with each other, and see the other as similar to himself. Both leaders had similar upbringings: they attended military boarding schools for their education and were raised by fathers in the military. They were both military men themselves and rose through the ranks of government before leading. They were both married with families and of a similar socio-economic level (Ellis, Horowitz, and Stam, 2015). In other words, these two leaders would score 5 out of 5 in terms of my IDENTITY SCORE variable.

On top of this, both leaders identified at least in part as Argentine, with an appreciation for Argentine culture and society. Diplomats and official state memos indicate a major reason for rapprochement was Figueiredo's identification with Argentina, where he lived as a youth (Coutto, 2014, 314). Former diplomat Luiz Augusto de Castro Neves, speaking of the change of relations in 1980, points out: Figueiredo "had an innate sympathy toward Argentina, where he had lived when he was fifteen with his father who was a political exile in Buenos Aires. So he had an interesting relationship on the personal level, to say the least . . . I believe that his role was very important" (Mallea, Spektor, and Wheeler, 2012, 79–81). Figueiredo and Videla shared similar formative identities then, as well as similar interactive identities. This case illustrates how personal relationships between leaders, and the degree to which individual leaders are able to identify with each other, contributes to facilitating cooperation on nuclear issues.

2.4 Conclusion

In this chapter I argued that shared identity between leaders makes cooperation on nuclear issues more likely. I demonstrated this process by engaging in an empirical analysis of nuclear cooperation agreements, showing that shared identity between leaders contributes to cooperation

[28]From 1980 to 1991, Brazil and Argentina signed a total of ten joint nuclear cooperation agreements (Kutchesfahani, 2014).

on nuclear issues, even while controlling for strategic factors known to influence cooperation. This finding is robust across model specifications, and suggests that understanding the relationship between leaders is crucial for understanding cooperation in world politics.

Going forward, it will be important to think about the generalizability of this theory. I argue that identity should influence cooperation broadly in areas related to international security, but some scholars argue that the role of trust is completely contingent on both context and partner (e.g. Hardin, 2006; Hoffman, 2002). Future studies can also tackle the question of whether trust in one issue area can lead to trust in others, as some scholars hypothesize (e.g. Dietz, Gillespie, and Chao, 2010, 11-12). I make strides towards answering this question in Chapters 3 and 4 by examining the contexts of the credibility of promises under extended deterrence and alliance formation. It would be useful as well to know whether the same dynamics operate outside of the sphere of international security, for example in trade negotiations.

While there remain many avenues for future research, discussed in more detail in Chapter 5, this chapter demonstrates that shared identity between leaders increases cooperation on nuclear issues, especially in countries with low levels of domestic political constraint on leader decision-making. This finding lends evidence to the idea that identity matters in international politics: while accounting for the role of individual leaders is important, understanding leader relationships and the interaction of leader backgrounds and experiences also contributes to understanding cooperation in world politics. In the next chapter I turn to a related context to test my theory, examining the likelihood of proliferation for states under extended deterrent guarantees.

3. THE CREDIBILITY OF ASYMMETRIC ALLIANCES: LEADERS, PROLIFERATION, AND RESTRAINT

Political actors often make promises, but it is difficult to know whether actors will keep their promises in the future. These promises can range from making a commitment to defend an ally should another state attack, to promising to reduce arms stockpiles in the future, or to committing to the cessation of violence in a civil conflict. The problem with each of these promises is that they commit a leader to take an action in an uncertain future. In other words, while a leader might commit to a promise and intend to uphold it in time *t*, there is no guarantee that in time $t + 1...t + n, etc.$ that the leader will still prefer to uphold the promise.

A defense commitment may be strong when it is signed, but become weak in later years as priorities change (e.g. Fuhrmann and Sechser, 2014; Leeds, 2003; Morrow, 1991). A new threat may emerge making in undesirable to reduce weapons stockpiles. It may no longer be in the best interest of a leader or government to continue abiding by a peace treaty. In each of these circumstances it is possible that a leader truly intended to keep her promise when the commitment was made. In other words, while leaders may not lie about their willingness to uphold promises, it is possible that changes in the future may make it such that upholding a promise is no longer desirable. Regardless, this uncertainty necessarily leads to the question of under what conditions do leaders believe the promises and commitments of others?

This question is particularly relevant in the context of superpower promises of nuclear protection to protégé non-nuclear weapon states. Since the 1950's, the United States and Soviet Union, now Russia, have extended promises of protection and extended nuclear deterrence to allied states through formal defense alliances. Through these commitments, the superpowers pledged to extend their nuclear arsenals to non-nuclear allied states to deter aggression by rivals. The purpose of these alliances was twofold: protect key allies from shared rivals while also encouraging allied states to forgo independent nuclear pursuit.

Promises of defense however are only effective to the extent that they are credible and believed

by two distinct audiences. First, rivals have to believe that the superpower protector would be willing to sacrifice its own territory and population on behalf of another in order to successfully deter aggression against a client state. Second, the protégé state has to believe the patron's promises of protection in order to be willing to rely on a defense commitment for security, rather than pursuing a more independent security posture. The patron state then must signal both to potential enemies, as well as to its protégé, that it is able and willing to provide defense if needed.[1] This commitment should lead to less conflict in the presence of a defense pact, as well as reduced security self-reliance by a protégé, so long as potential challengers and the protégé believe the commitment of the patron state.

If nuclear guarantees are not credible, client states may have incentives to pursue an autonomous deterrent capability (see for example Lanoszka, 2018; Gerzhoy, 2015). Academics are not alone in recognizing this dynamic. Previous leaders have been transparent about how promises of extended deterrence can allay security fears and limit proliferation ambitions. Talking about the NATO alliance in 1992 for example, German Chancellor Helmut Kohl said, "Why should we have them [nuclear weapons]? ... It does not disturb my peace of mind to know that seven hours of flying time from me the US president has the decision-making power of nuclear weapons to protect us Germans and that 40 minutes from my home there is a French president who has the same powers. We must state the facts. We do not need them at all" (Cirincione, 2007, 45).

Leaders also explicitly link nuclear restraint to the continuation of security guarantees. In an interview with Rovert D. Novak in the *Washington Post* on June 12, 1975, South Korean President Park Chung-hee spoke about his concerns of the US pulling out of East Asia after Vietnam, and argued that South Korea would have to go nuclear if the US nuclear umbrella were weakened or removed: "We have the capability, but are not developing [nuclear weapons] and are honoring the Nuclear Non-Proliferation Treaty. If the US nuclear umbrella were to be removed, we would have to start developing our nuclear capability to save ourselves" (Choi, 2014).

Fears of abandonment by allies and the related belief in the need for self-sufficiency similarly

[1] In this chapter, I use the term patron state to signify the more powerful, nuclear-armed state in a defense alliance. I use the terms protégé and client interchangeably to refer to the less powerful, non-nuclear weapon state.

contributed to the acquisition of nuclear weapons in some countries. US President Dwight D. Eisenhower for example described the French as has having "an almost hysterical fear that we and the British will one day pull out of Western Europe" (Sloan, 2016, 39). The belief in the need for an independent deterrent, or *force de frappe*, and fear about possible American and British abandonment were major contributors to the French nuclear weapon program in the 1950's and acquisition in 1960 (see Kohl, 1971; Lieber, 1966). Similarly, the South Korean government considered developing a nuclear deterrent in the 1970's in response to US military disengagement in South Vietnam and in light of President Richard Nixon's Guam Doctrine. In 1971, President Park Chung He spoke with a member of the Blue House senior staff in charge of defense, saying: "Our national security is vulnerable because of the uncertainty surrounding continued US military presence on the Korean Peninsula. To become secure and independent, we need to free ourselves from dependence on US military protection . . . ," and asking of the staff, "Can we develop nuclear weapons?" (Hong, 2011, 483).

There is variation through time in the ability of superpowers to convince their allies that the promise of extended deterrence is credible and sufficient to discourage allied proliferation. The US for example has offered defense pacts to a number of states, including Britain, France, South Korea, Japan, and (West) Germany. Of these states, both Britain and France chose to pursue their own nuclear deterrent while South Korea, Japan, and Germany explored but refrained from acquiring a nuclear option.[2] What explains these different pathways, and in particular, under what conditions do allies find promises of extended deterrence credible enough to refrain from pursuing an autonomous nuclear weapon capability? While previous authors have suggested a number of factors that contribute to alliance credibility and ally assurance, I suggest a here-to-date unappreciated factor: specifically, the inherent belief in whether or not a fellow leader will keep their alliance promises, based on a perception of shared background identity and similarity.

In the following section I delve into more detail on prior arguments explaining proliferation restraint and extended nuclear deterrence. I then discuss my argument in greater detail, hypoth-

[2]Though the latter states maintain enrichment or reprocessing facilities. Note as well that even while Britain has nuclear weapons, it is dependent on the United States for maintenance and support.

esizing that similarities between leaders can make nuclear guarantees more credible and make proliferation by client states less likely. I then turn to a discussion of my research design and an interpretation of my findings. I conclude by summarizing my argument and findings and by suggesting interesting implications that arise from this chapter.

3.1 Background

Scholars have debated the sources of nuclear restraint for decades, focusing on both supply-side and demand-side restraints (e.g. Miller, 2018; Hymans, 2011; Rublee, 2009; Cirincione, 2007; Paul, 2000; Solingen, 1994). A key tool for limiting proliferation, some have argued, is the provision of a credible security commitment from a nuclear-armed state (see for example: Lanoszka, 2018; Bleek and Lorber, 2014). Under this logic, a formal guarantee of protection from a nuclear-armed patron state can reduce a client state's incentives to pursue nuclear weapons by providing a substitute for an independent nuclear deterrent.[3]

Possessing nuclear weapons may allow insecure states to deter enemies without fear of reprisal (Brodie, 1959). Building an autonomous nuclear arsenal however can be both costly and dangerous: weapons programs are expensive, require high levels of technical expertise, and can lead to regional security externalities motivating proliferation by rivals, rifts with allies interested in non-proliferation, and incentives by adversaries to engage in preemptive military strikes. A nuclear weapon state can mitigate a protégé's security concerns by credibly committing to provide protection, leading to lower incentives for the protégé to pursue nuclear weapons autonomously (see also Monteiro and Debs, 2014, 16).[4]

The (in)credibility of extended deterrence has been discussed throughout the nuclear age. In fact, it is more or less taken for granted that the promise of extended deterrence is less credible than

[3]The terms nuclear security commitment, nuclear umbrella, extended deterrence (type II deterrence), and defense alliance with a nuclear armed state are used interchangeably throughout this chapter. A defense alliance is defined as a written commitment between two or more states intended to formalize a promise of one or more states to come to the defense of another in the event of aggression. A defense alliance carries with it an implicit extended nuclear deterrence guarantee if one of the involved countries is known to possess nuclear weapons.

[4]Note however that some quantitative analyses have found little or no effect of having an allied nuclear superpower security guarantee and pursuing or acquiring nuclear weapons (e.g. Fuhrmann, 2009; Kroenig, 2009; Gartzke and Jo, 2007; Singh and Way, 2004).

general deterrence. While formalizing a commitment to protect another, usually as an agreed-upon defense pact, is thought to make promises more binding, the act of writing down a commitment is alone not enough to guarantee fulfillment (Morrow, 2000). This is epitomized by German Chancellor Theobald von Bethmann-Holweg's decision to ignore the treaty preserving Belgian neutrality in 1914, calling it a mere "scrap of paper" (Otte, 2007). Even in the presence of a formalized treaty then, client states have reason to worry about abandonment by their allies. Even if a commitment is written down, the absence of a higher universal enforcement system means patron states are not obligated to uphold commitments, and can abandon their protégés in the face of threats.

What makes a promise to protect another more or less credible has been the subject of much debate both within political science literature and in policy communities. States use both ex post and ex ante costly signals to make their commitments appear more credible (Fearon, 1997). Ex ante signals include offering conventional military deployments (Lanoszka, 2018), arms sales (Yarhi-Milo, Lanoszka, and Cooper, 2016), tactical nuclear deployments (Fuhrmann and Sechser, 2014), and visits and statements from leaders (McManus, 2018; Lebovic and Saunders, 2016), though there are debates about the efficacy of each of these signals for demonstrating reliability (see Reiter, 2014). The flip side of each of these provisions is that if they are removed or reduced, it can make a patron's commitment seem weaker, and lead to fears of abandonment and potential nuclear exploration in the client state (e.g. Lanoszka, 2018; Gerzhoy, 2015).

The most important ex post signal of commitment is the reputational consequences a patron state could endure upon abrogating a treaty. The act of writing an alliance down and publicly declaring a commitment to come to another state's aid in the event of an attack creates conditions that could lead to reputational damage should a patron state fail to follow through on its promise (Narang and LeVeck, 2017; Fuhrmann and Sechser, 2014; Crescenzi et al., 2012; Gibler, 2008; Fearon, 1997). Some scholars argue that certain types of states are more able to make credible commitments. In particular, democracies are thought by some to be particularly reliable allies since they may have more respect for international law, have transparent and public review and ratification of agreements, and have domestic political institutions that help maintain policy con-

sistency during leadership turnover (e.g. Leeds, Mattes, and Vogel, 2009; Leeds, 2003; Gaubatz, 1996, though see also Gartzke and Gleditsch (2004); Lai and Reiter (2000)). Democratic leaders may also be more susceptible to reputation-based audience costs if they fail to follow through on their promises.

Other characteristics including geographic proximity (Bak, 2018) and attributes of alliance treaty design (Johnson, Leeds, and Wu, 2015) may also make extended deterrence more credible. There are myriad tools then that patron states can use to convey the credibility of their commitments, and yet new research shows that military alliances are upheld much less often than conventional wisdom suggests (Berkemeier and Fuhrmann, 2018). If states uphold their military commitments only 50% of the time, there is significant enough uncertainty for client states to continue to question their patron's sincerity, potentially leading to nuclear exploration and acquisition when security commitments are in doubt.

While previous scholars suggest multiple tools through which leaders can attempt to make their promises more credible, these analyses do not acknowledge that certain leaders may be inherently more capable of credibly communicating resolve to uphold a commitment to a client state. In the next section, I explain the logic of how patron state leaders who are more similar to leaders in client states are more likely to be seen as credible providers of nuclear guarantees, making client states less likely to pursue independent nuclear weapon programs.

3.2 Identity and Trust in Extended Deterrent Relationships

The previous section highlights arguments made by scholars suggesting that security guarantees alone are insufficient to guarantee nuclear restraint in protégé states[5] Instead, the likelihood that a defense alliance will moderate a protégé's proliferation is conditional on the ability of the patron state to assure the client that the commitment is credible and robust (Lanoszka, 2018). To date, most literature has focused on the efficacy of particular signaling mechanisms – including conventional forces, foreign nuclear deployments, visits by leadership, etc. – for demonstrating the credibility of commitments. While these mechanisms have been shown to contribute to allied

[5]Some scholars argue that alliances are not particularly effective at restricting proliferation at all (e.g. Reiter, 2014).

assurance to different extents, I argue that some leaders may be inherently more capable of making credible promises to their protégés. In particular, leaders in patron states who share similar background characteristics with client-state leaders are able to more convincingly promise to be a reliable ally, making nuclear pursuit by client states less likely.

Whether a protégé believes a patron's commitment to assist depends in part on how much it trusts the patron.[6] In the context of a defense commitment understood to provide a nuclear security guarantee, a client state leader must believe that the patron state views the protégé as worth protecting, and that the patron state leader would be willing to sacrifice her own territory or citizens to extend nuclear protection on behalf of the client's territory and citizens. Only when a nuclear guarantee is believed to be steadfast and unwavering will a protégé be willing to rely on that guarantee, instead of pursuing autonomous security. When a leader's promise to extend deterrence to another state seems less credible, the protégé will have incentives to pursue its own nuclear development, as has been seen in the case of South Korea, and elsewhere (Choi, 2014; Hong, 2011).

What makes a promise of extended nuclear deterrence more believable? In other words, under what conditions would a German leader believe the US willing to sacrifice Boston for Bonn, or a Bulgarian leader believe the Soviet Union willing to sacrifice St. Petersburg for Sofia? While patrons can utilize overt signaling methods to try and make their promises appear more credible, leaders in client states also form perceptions about the reliability and trustworthiness of patron state leaders based on implicit psychological biases. Just as leaders in supplier countries judge the trustworthiness of recipient leaders to refrain from using peaceful nuclear assistance for nefarious purposes based on shared background experiences (see Chapter 2), leaders in protégé states determine whether a security guarantee from a nuclear superpower is credible based in part on common background identities with the patron state leader.

A small body of scholarship looks to personal evaluations of leaders to understand behavior. Hall and Yarhi-Milo (2012) for example argue that leaders use personal impressions from inter-

[6] See Chapters 1 and 2 for a discussion and definition of trust.

actions with other leaders as credible indicators of sincerity.[7] Personal impressions based on appearance, expression, behavior, and tone of partners observed during interactions allow for making subjective judgments about likelihood that a state will behave in a manner consistent with leaders' statements and promises. In the nuclear proliferation context, Fuhrmann and Horowitz (2015) argue that certain types of leaders, namely leaders who previously participated in a rebellion against the state, are more likely to pursue nuclear weapons since former rebels are more risk acceptant, more likely to distrust others, and more likely to see nuclear weapons as a way to bolster national independence.

While previous scholars have looked to dyadic interactions between leaders based on personal impressions formed through meetings *or* to monadic analyses of leader backgrounds, examining shared background characteristics between two leaders as a way to explain political phenomena is novel. And yet, it is not surprising that dyadic understandings between leaders should inform perceptions of trustworthiness and credibility. Why is this the case?

Actors are more likely to keep their promises when the costs of reneging are large. Prior scholars recognize this, leading to discussions of sunk costs and tying hands (e.g. Fearon, 1995, 1997). The extant rationalist literature however fails to recognize that non-material, non-reputational costs can also affect leaders. Lying, backing out of an agreement, or betraying another actor is more emotionally costly when doing so hurts someone a leader empathizes with, trusts, or sees as similar to the self. These emotional costs cause leaders to prefer to keep their commitments to friends and in-group members, and other leaders know this because they go through the same process of empathization.

On top of this, there is, and will always be, insufficient information about the interests of others. Moreover, actors have incentives to misrepresent information to get better deals for themselves. Given this reality, how can leaders be confident that another leader will do what they promise? In other words, how is it possible to know what other leaders think, feel, and want? Intuitively, it is easy to understand that if you trust someone you are more likely to believe what they say and feel

[7] For more on the role of interactions and face-to-face diplomacy, see Chapter 5.

that they mean you no harm. But how exactly is this belief and confidence in the benevolence of another created?

Social identities provide information that help leaders to understand the preferences, intentions, emotions, and world view of other leaders. Leaders with more similar social identities have more points on which to understand the other. With more similarities, there are more opportunities to build an understanding of another person's worldview and understand and empathize with others. Holding the written commitment of the patron to assist constant then, I expect to see variation in how comfortable the protege is with its protection, depending on the degree of shared identity between the leaders of each state:

Hypothesis 3. *Ceteris paribus, leaders protected through a bilateral nuclear umbrella are more likely to engage in nuclear restraint when they share more similar identities with their patron state leader.*

In other words, leaders in client states who share a bilateral defense agreement with a superpower guarantor will be less likely to pursue nuclear capabilities when they share more similar background identities with the superpower leader. When there is greater trust in a patron state leader to uphold promises of extended nuclear deterrence, the protégé will not feel the need to invest in it's own security as much. When it is not as easy to trust a patron, a protégé is more likely to continue to invest in its own security, since the alliance commitment does not appear credible. This means that nuclear exploration by client states is more likely when leaders are dissimilar, since the client state leader will judge the superpower leader protector as less likely to uphold a prior promise when they are less similar to the self.[8]

3.3 Research Design

Since I am interested in the bilateral relationship between pairs of leaders, my unit of analysis is the leader-dyad. My sample includes all leader-pair years in which there is a nuclear security guarantee from either the US or USSR/Russia to any other state in the period from 1945-2014.[9]

[8]For more on my general theory of identity, trust, and cooperation, see Chapter 2.

[9]In some of the models, the inclusion of key controls limits the sample to the period from 1950-2000.

Data for defense alliances are from Leeds et al. (2002, version 4.01 updated through 2018). When nuclear weapon states sign defense pacts with non-nuclear states, they are making explicit promises of general extended deterrence (Johnson, Leeds, and Wu, 2015). Therefore, I consider a protégé state to have a security guarantee when it has a formal defense pact with a nuclear armed ally. In particular, the United States and USSR/Russia are the two countries that have publicly indicated their intention to provide a nuclear umbrella to allies, and are the only two countries with nuclear arsenals sufficient to extend deterrence to other states (Bleek and Lorber, 2014, 434; see also Lanoszka (2018)). In the primary analysis I focus on formal, bilateral security guarantees between the US or USSR/Russia and all other countries. In a secondary analysis I include multilateral defense pacts as well, provided one of the signatories is either the US or USSR/Russia.[10] The alliances included in the analysis are discussed in Appendix B.[11]

The outcome of interest is nuclear proliferation. My binary dependent variable measures whether or not states engage in nuclear activity in a given year. While there are multiple ways this variable can be measured, I code this variable based on the presence of an operational enrichment or reprocessing (ENR) facility in a given year (Fuhrmann and Tkach, 2015, updated 2019). ENR activity signals significant interest in nuclear technology, since the acquisition of fissile materials is the biggest barrier for building nuclear weapons. Indeed, using the presence of operational ENR facilities as a measure of nuclear interest is a commonly accepted practice (e.g. Mehta and Whitlark, 2017).[12] In a supplemental robustness check, I also utilize Singh and Way (2004)'s updated measure of nuclear activity (Lanoszka, 2018, 12).[13] States exit the dataset when they develop

[10]When examining multilateral defense pacts, I exclude other nuclear states. For example, when looking at the NATO alliance, I include the relationship between Poland and the US, but not the relationship between France and the US after France acquired nuclear weapons in 1960.

[11]In the primary analysis I include all active bilateral defense alliances between the US (after 1945) or USSR (after 1949) and all other countries. In a secondary analysis I include only alliances signed after the patron gets nuclear weapons (1945 for US, 1949 for USSR). This results in the elimination of 12 bilateral alliances and one multilateral alliance that were signed prior to nuclear acquisition by the superpowers. See Appendix B for more details on this coding, Table B.9 for the 13 additional alliances included in the additional models, and Table B.4 for the supplemental model.

[12]While scholars generally accept that the largest barrier to building nuclear weapons is the production of fissile materials, previous authors failed to focus on this hurdle, potentially resulting in an upwardly biased estimate of the number of states with the capability to build nuclear weapons (Sagan, 2011).

[13]See Table B.4 in Appendix B.

nuclear weapons, and the independent variables are lagged by one year to reduce concerns about reverse causality.

The primary independent variable is shared identity between leaders. Every person carries with them a multitude of identities based on background characteristics, which may matter to different extents depending on context. While it is impossible to know precisely which social identities will be paramount for a leader at any given time, there are a set of fundamental identities that are both strong enough for a leader to be defined by regardless of context, and are visible or knowable to others (Jenkins, 2014). These major identities are formative, in that they help to shape how an individual views herself, defines herself in relation to others, and places herself in relation to the rest of the world. When leaders share a greater number of these formative identities they are more able to relate to the other, can more easily empathize, and are less likely to see the other as threatening. The major social identities below are based on Jenkins (2014), and are important for allowing leaders to identify with and trust one another. Unless otherwise noted, the leader identity variables are taken from the LEAD dataset (Ellis, Horowitz, and Stam, 2015).[14]

- SHARED EARLY LIFE EXPERIENCES: Leaders are coded as having a shared early life experience if they shared the same number of parents growing up, were both orphans, or both illegitimate.

- SHARED GENDER: Leaders are coded as having a shared gender if they are either both male or both female.[15]

- SHARED SOCIAL STATUS: Leaders are coded as having a shared social status if they shared a similar socio-economic background, wealth, or level of education.

- SHARED ADULT IDENTITIES: Leaders are coded as sharing adult identities if both leaders were married during their time in power or had children, and 0 otherwise.

[14]For more details on this coding see Chapter 2.

[15]As noted in the previous chapter, the historical scarcity of women leaders means jointly male dyads dominate the data.

- SHARED MILITARY BACKGROUND: Leaders are coded as sharing a military background if both leaders participated in the military or if both leaders participated in a rebel movement, and 0 otherwise.

My theory predicts that leaders in client states are more likely to believe the promises of patron state leaders with whom they share more similar identities. The primary independent variable, IDENTITY SCORE, is a count of the total number of shared identities ranging from zero to five, based on the typology above and discussed in more detail in Chapter 2. This variable captures how likely two leaders are to trust each other, based on the degree of shared identity, or how embedded the identities of the two leaders are. While gender, shared early life experiences, socio-economic status, military background, and adult family life are not the only identities that can lead to trust, they are easily observable or knowable by other leaders and have been shown in both previous literature and in historical relationships to influence perceptions between individuals.

In the following section I discuss my model choices in greater detail, as well as discussing potential confounding variables before presenting and interpreting the results of my empirical models.

3.4 Discussion and Analysis

The objective of my analysis is to test whether leaders in client states are more likely to believe promises of extended nuclear deterrence when patron state leaders are more similar, while accounting for potential observable confounders. Some confounders however may be unobservable, meaning it is impossible to control for them directly. To address this, my primary logit models use country dyadic fixed effects.[16]

Since my goal is to understand the relationship between proliferation and the perceived credibility of security guarantees, my primary models include a small number of potentially confounding control variables that could influence both a state's decision to proliferate and the perceived credibility of a patron state's leader to uphold a defense pact. Since the dependent variable of ENR

[16]In addition to using dyadic fixed effects, I also account for the possible influence of time by including year fixed effects (see Appendix B). A limitation of fixed effects models is they tend to lead to a drastic reduction in sample size, since any groups with zero within-group variance are dropped from the sample. In Appendix B I employ a logit model, rare events logit model, and linear probability model with fixed effects, resulting in similar substantive conclusions.

operations is relatively rare, I am cautious about over-fitting the model by including a lot of explanatory variables (Achen, 2005). Model 1 includes only the IDENTITY SCORE variable specified by my theory as likely to influence the probability of nuclear pursuit and a variable measuring the number of years since the last pursuit of nuclear weapons. This TIME variable, and the squared and cubic versions of the variable, are included to account for possible temporal dependence (Carter and Signorino, 2010).[17]

Model 2 includes an additional two variables which may influence both a leader's decision to pursue ENR as well as the type of leader that comes into office. First, wealthier countries have more financial resources to engage in proliferation, and previous studies have shown that the motivation and ability to engage in nuclear activity are due at least in part to economic resources (e.g. Meyer, 1984). At the same time, wealthier states may be systemically more likely to elect certain types of leaders to office. GDP represents the client state's GDP per capita in a particular year (Miller, 2018). Second, a state's regime type may influence the likelihood of engaging in nuclear activity as well as the type of leader that is elected. DEMOCRACY is coded 1 if the client state has a Polity IV score of six or greater, and 0 otherwise (Marshall, Gurr, and Jaggers, 2009).[18]

Model 3 adds an additional four potentially relevant variables to the model: NPT MEMBERSHIP, INDUSTRIAL CAPACITY, the TOTAL NUMBER OF NCA'S TO DATE, and a variable capturing a five year moving average of involvement in militarized interstate disputes (MIDS). Data on NCA's are from Fuhrmann (2012). Data on industrial capacity, NPT membership, and MID participation are from Miller (2018).

Across all three of these primary models, the coefficient on IDENTITY SCORE is negative and statistically significant, suggesting that the more similar a client state leader is with a patron state leader, the less likely she is to pursue enrichment and reprocessing capabilities. This means when two countries share a bilateral defense alliance, the client state is less likely to pursue nuclear activity when two leaders are more similar. Substantively, this indicates that for states under a

[17] TIME is coded as the number of years since a state previously had an operational ENR capability. In the models with alternate measures of pursuit, it is coded as the time since prior pursuit based on Singh and Way (2004).

[18] Including a measure of shared democracy between the client and patron does not alter the results.

nuclear umbrella, a unit increase in shared identity reduces the odds of ENR activity by 49% in Model 1, 76% in Model 2, and 71% in Model 3, holding all else constant. Overall, these results suggest that when leaders are more similar, there are higher odds of nuclear restraint under extended deterrence.

Table 3.1: Primary models.

	(1) Basic	(2) Key Controls	(3) Fully Specified
IDENTITY SCORE	-0.675*	-1.425***	-1.239*
	(0.276)	(0.420)	(0.512)
GDP		0.00202***	0.00295***
		(0.000382)	(0.000699)
DEMOCRACY		-18.53***	-22.35***
		(3.963)	(6.155)
NPT MEMBERSHIP			-0.985
			(1.285)
INDUSTRY			2.307*
			(1.133)
TOTAL NCA'S TO DATE			-0.00955
			(0.135)
MIDS: 5 YEAR MOVING AVERAGE			-1.284*
			(0.564)
TIME	3.581***	0.383	-1.024
	(0.402)	(0.481)	(0.665)
TIME^2	-0.952***	-0.399***	-0.243*
	(0.127)	(0.104)	(0.117)
TIME^3	0.0442***	0.0225***	0.0163**
	(0.00636)	(0.00512)	(0.00596)
Observations	391	348	346

Standard errors in parentheses.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

While I argue that leaders in client states who share a bilateral defense agreement with a superpower guarantor will be less likely to pursue nuclear capabilities when they share more similar identities with a patron state leader, this logic may not hold in multilateral alliances. In multilateral alliances, the superpower leader simultaneously has to commit to protect multiple countries at the

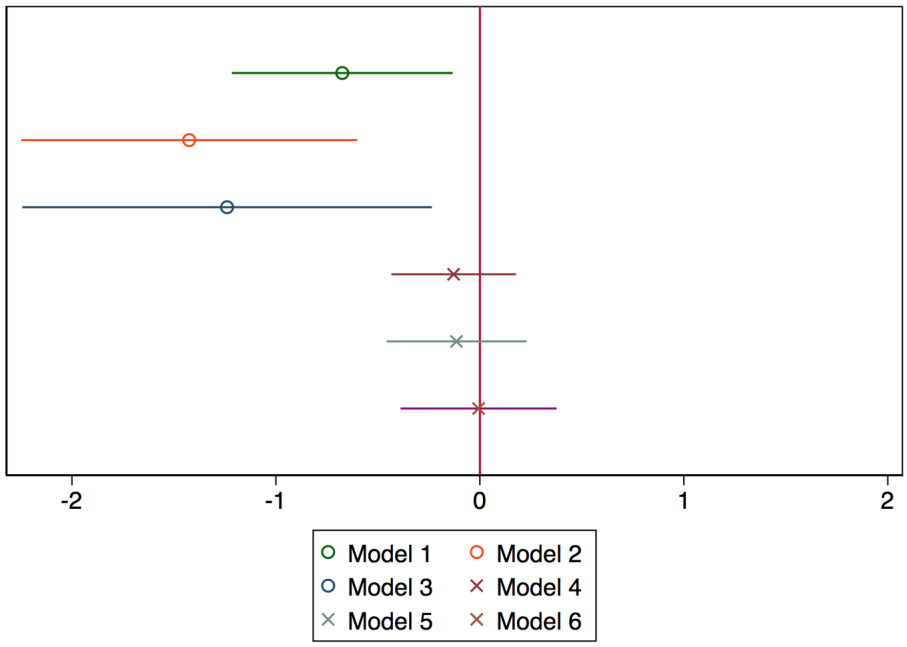
same time. Protection through these multilateral agreements may be understood as less binding than in bilateral agreements, or more contingent on context. As one example of this, there has been variation though time and across countries in terms of the extent to which European nations feel protected by NATO (e.g. Smith, 2017). Additionally, since these multilateral defense pacts usually call for multilateral defense commitments, the client-patron relationship is less clear. In NATO for example, non-nuclear weapon states could conceivably look to the US, UK, France, or a combination of all three of these countries as nuclear guarantors.

Indeed, there is a clear difference in the ability of shared leader identity to influence nuclear activity in client states when bilateral alliance relationships are compared to all alliance relationships. Figure 3.1 shows the logit coefficient point estimates and 95% confidence intervals for IDENTITY SCORE in six different models. The full results for Models 1-3 in the bilateral context are in Table 3.1. The coefficients for Models 1-3 are clearly negative and do not intersect the 0 line, indicating that nuclear restraint is more likely when a client state leader sees a patron state leader as similar to herself. These findings support my primary hypothesis that bilateral security guarantees are more credible when two leaders are similar. What can be said however for defense alliances in general, meaning both bilateral and multilateral alliances? Models 3-6 replicate Models 1-3 in a more complete sample of all defense alliances between the US or USSR and other countries. When multilateral alliances are included in the sample, the logit coefficients of IDENTITY SCORE are not statistically significant, suggesting that leadership similarity is not able to influence perceptions of a patron's credibility or trustworthiness in the multilateral context, as it is able to in the bilateral context.[19]

Two critiques of my empirical analysis may have to do with the choice of sample and modeling strategy. While the prior analysis privileges using a theoretically relevant sample and a robust modeling strategy, both result in the loss of potentially relevant observations. While the country dyadic fixed effect approach accounts for potential unobservable confounders, it does so at the loss of observations because only observations with within-group variance through time are included.

[19]Full results available in Appendix B.

Figure 3.1: Logit coefficients of identity score for bilateral (Models 1-3) and all alliances (Models 4-6).



To allay concerns about the small sample size and loss of observations through the fixed effect logit model specification, I re-run my primary models from Table 3.1 as linear probability models (LPMs), resulting in a roughly doubled sample size and consistent results. The coefficients on IDENTITY SCORE are negative and statistically significant ($p < 0.001$). The complete results from these models are available in Table B.3 in Appendix B.

In addition to using LPMs as an alternative modeling approach, I also broaden the sample to include all pairs of leaders regardless of whether there is a defense alliance, provided one of the leaders represents the US or the USSR/ Russia. I then include an interaction of IDENTITY SCORE and BILATERAL DEFENSE ALLIANCE. The full results for the interaction models are in Table B.2 in the Appendix. This method also doubles the sample size, while also allowing for the consideration of states both with and without bilateral defense agreements. Further, I analyze LPMs of the interaction models in Table B.3 in the Appendix, resulting in an over six-fold increase in the sample size.

The interaction models demonstrate that defense alliances alone tend to increase the likelihood of a client state pursuing ENR. Shared identity between a patron state leader and a client state leader may also incrementally increase the likelihood of ENR activity, though these results are not all statistically significant. Across all four interaction models however, the coefficient on the interaction term is negative and statistically significant ($p < 0.01$), and the magnitude of the interaction is larger than the coefficient of IDENTITY SCORE, supporting the findings of the primary analysis. When states share defense commitments, leaders with more similar identities are less likely to pursue nuclear technology. In other words, client state leaders tend to rely on their superpower patrons to greater extents for security when they share more similarities with the patron state leader. By contrast, less similar leaders have a more difficult time believing the promises of superpower guarantors, leading on average to more nuclear activity in client states when patron state leaders are dissimilar.

3.4.1 Signals and Credibility

Leaders employ both ex post costly and ex ante signals to make their commitments appear more credible (Fearon, 1997). Does shared identity contribute to beliefs about the credibility of commitments, even while accounting for other costly signals that have been previously shown to influence beliefs about the credibility of extended deterrent promises? Table 3.2 includes eight models accounting for costly signals that countries use to communicate commitment to an ally. Models 9-12 capture signals sent from both the US and USSR/Russia. Models 13-16 capture signals sent from the smaller sample of the US alone, due to data limitations for the predictors.

Model 9 includes the signal of NUCLEAR DEPLOYMENTS from Fuhrmann and Sechser (2014). Twenty countries housed foreign deployed nuclear weapons from either the US or USSR in the period from 1950 to 2000. Details on these deployments are in Appendix B. Model 10 includes ARMS SALES from either the US or from the USSR to all other countries, since patron states may use arms transfers as a signal of commitment (Yarhi-Milo, Lanoszka, and Cooper, 2016). Data on the transfer of conventional weapons are from Stockholm International Peace Research Institute (2019) and are measured in millions of USD in constant 1990 prices. Leaders themselves can also

Table 3.2: Signalling commitment and the effect of shared identity on nuclear pursuit (ENR).

	(9) Nuclear Deployments	(10) Arms Transfers	(11) Leader Visits	(12) All (US, USSR)	(13) Miller Signals (US)	(14) Miller Depend (US)	(15) Spoken Support (US)	(16) All (US Only)
IDENTITY SCORE	-1.523***	-1.395**	-1.581**	-1.511*	-1.511+	-1.764*	-1.982*	-1.479
	(0.445)	(0.424)	(0.580)	(0.592)	(0.819)	(0.751)	(0.831)	(0.903)
GDP	0.002***	0.002***	0.003***	0.003***	0.002***	0.002***	0.002***	0.003***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
DEMOCRACY	-17.24***	-18.48***	-26.87***	-26.81***	-26.06***	-22.52***	-22.41***	-28.06+
	(3.926)	(3.972)	(5.456)	(6.885)	(6.891)	(6.165)	(6.385)	(15.88)
NW DEPLOY	1.449			0.436				-2.332
	(1.584)			(3.815)				(13.39)
ARMS SALES		0.000		0.000				0.000
		(0.000)		(0.001)				(0.001)
US VISITS			0.576	0.690				2.266
			(1.224)	(1.250)				(1.689)
USSR VISITS			0.183	0.104				
			(1.346)	(1.331)				
US TROOPS					16.98			
					(3456.9)			
US MIL AID					-2.932			
					(2.135)			
US ECON AID					2.737+			
					(1.622)			
US TRADE					1.802			
					(2.535)			
US DEPENDENCE						0.542		1.442
						(0.876)		(1.098)
US ORAL SUPPORT							-0.827	-2.303
							(1.024)	(1.665)
Observations	348	347	313	313	173	173	173	172

Standard errors in parentheses. Time coefficients omitted for space.

+ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

send profound signals of support either through visits to their allies, or through public rhetoric voicing support for allies (e.g. McManus, 2018; Lebovic and Saunders, 2016). LEADER VISITS from either the US or USSR to their client states are from McManus (2018) and capture whether a US or Soviet leader visited their ally's territory in the previous year. Model 12 includes each of these measures simultaneously.

Other actions, including deploying conventional troops, providing military or economic aid, and giving speeches in support of allies can also send powerful signals of commitment for alliance relationships. Due to data limitations, Models 13-16 account for these signals in a sample of only dyads with an American guarantor. Model 13 includes four measures that Miller (2018) claims may stem proliferation: conventional TROOP DEPLOYMENTS, MILITARY AID, ECONOMIC AID, and TRADE DEPENDENCE.

In addition to prior studies suggesting that conventional troops can send a signal of support to client states, leaders dependent on promises of extended deterrence have also indicated the importance of US troops being deployed to make promises more credible. In an interview with the *Washington Post* in 1975, former President Park of South Korea said, "...If American ground troops were removed, the enemy will be inclined to make a miscalculation, and American promises would carry far less credibility" (Choi, 2014). US conventional TROOP DEPLOYMENTS is coded as 1 if there are 100 or more US troops deployed in a client state in a particular year, and 0 otherwise (Miller, 2018, and see also Fuhrmann and Sechser (2014)).

MILITARY AID and ECONOMIC AID are likewise from Miller (2018) and depend on whether the state received military or economic aid from the United States in a particular year. TRADE DEPENDENCE is coded as whether the US was a major trade partner for the client state.[20] While each of these variables are included individually in Model 13, in Model 14 they are combined as a single variable measuring a state's DEPENDENCE on the US. Model 15 accounts for ORAL SUPPORT from US leaders in speeches about allied countries while Model 16 combines the US-only signals in one model (McManus, 2018). Across all eight of these models, the coefficient on

[20]Defined as more than the median in the full sample, or 1.79 percent of the state's GDP involved in imports from or exports to the US.

IDENTITY SCORE is negative and statistically significant, indicating that even while controlling for observable signals of American support for allies, shared identity between leaders still contributes to making leaders in client states less likely to pursue nuclear proliferation.[21]

3.5 Conclusion

Leaders in patron states interested in curtailing potential proliferation by their allies have incentives to make their promises of protection appear as credible as possible. When a protégé believes a patron's promise of extended nuclear deterrence, that state will have fewer incentives to pursue independent proliferation. On the other hand, if there are doubts about a patron's promise of protection, protégé states will have incentives to attempt to make themselves secure through other means, including exploring a nuclear option. While signals of commitment – including stationing troops or nuclear weapons abroad – may make promises more believable to different extents, perceptions about the reliability and commitment of the patron state leader also influence a protégé's assessments about how credible a patron state's promises are.

An empirical analysis of the relationship between leaders in non nuclear weapon states and superpower leaders demonstrates that client states are more likely to pursue nuclear activity when their leader protector is less similar. When a leader in a client state perceives her superpower counterpart to be more similar to herself, it is easier to trust the patron's word that a defense pact will be honored, and easier to believe the credibility of the promise of extended nuclear deterrence. Under these conditions, leaders in client states will feel more secure, and will be less likely to pursue independent nuclear weapon programs.

This analysis highlights the importance of understanding how leader-level dynamics contribute to international politics. In particular, the interaction between two leaders, and understandings about whether another leader can be trusted to uphold prior promises influence perceptions of security environments and beliefs about the necessity of self-help security practices. Interestingly, while there is a clear relationship in the bilateral alliance context indicating that greater similarity between leaders increases perceptions of reliability, the same can not be said in general. When

[21] In Model 16, $p < 0.102$ for IDENTITY SCORE.

multilateral alliances are included in the analysis, there is no statistically significant relationship between shared leader backgrounds and nuclear pursuit, indicating that in multilateral contexts perceptions of other leaders may be moderated by the complexity of interactions with multiple actors. In the next chapter I look at alliance formation in both bilateral and multilateral contexts, but future work should consider how leaders consider their partners in other countries in multilateral environments in more detail.

An important implication of this research is that perceptions of similarity between leaders can contribute to nonproliferation. When leaders in protégé states see their superpower leader as sharing similar background characteristics to themselves, they are more likely to trust promises of protection making independent nuclear pursuit less likely. For states interested in nonproliferation, recognizing and understanding the role of implicit psychological biases between leaders will be important going forward. In particular, considering how to elevate and advertise similarities and shared backgrounds between leaders may be particularly important, especially in relationships where leaders see each other as very different.

While this chapter helps to answer the question of under what conditions states with extended nuclear protection guarantees will feel motivated to pursue independent nuclear activity, it is not able to answer broader questions related to alliance dynamics, including how shared leader backgrounds influence alliance formation. I turn to this in the Chapter 4.

4. BIRDS OF A FEATHER REDUX: THE IMPORTANCE OF SHARED LEADER BACKGROUNDS FOR ALLIANCE FORMATION

What leads two states to ally together? In other words, why do alliances, or formal commitments to cooperate among two or more states, form? When signing an alliance, states typically promise some sort of action or behavior to their partner that they may not have otherwise undertaken. In defense alliances for example, countries promise to come to their ally's aid in the event of war, while in neutrality agreements states promise to refrain from behaving aggressively towards each other in the future. While alliances can lead to many benefits, including guarantees that another state will refrain from violence, the aggregation of capabilities, and promises of assistance in the event of attack, alliances are also costly to form.

Previous scholars have suggested numerous explanations for why states form alliances, suggesting everything from shared security threats to ideological similarity and a partner's prior reputation for reliability. Each of these factors decreases the cost of forming an alliance by increasing the perceived likelihood that an ally will be a reliable partner. Two states that share a security threat for example are less likely to turn against each other because they face a common enemy. States that have a reputation for upholding their alliances may be presumed to continue to be a reliable ally in the future. I argue that an additional factor helps to explain alliance formation: shared similarities between state leaders. When two leaders are more similar, they are more likely to see the other as sincere in commitments to uphold promises and are more likely to implicitly believe the other to be a better and more worthwhile partner.

The chapter proceeds as follows. In the next section I discuss previous explanations for alliance formation, focusing in particular on the role of shared security threats, ideological similarity, and reputation for the formation of international political alliances. This discussion illuminates a debate about the role of leaders in influencing alliance formation, a topic I expand upon by distinguishing between the importance of a state's history for alliance reliability and its' leaders ability to connect with the leader of a potential ally state. In particular, I argue that the degree of similarity of

backgrounds between leaders in a dyad impacts the ability of their governments to form alliances. Leaders who see themselves as more similar to each other more easily empathize with the other and see the alliance as more beneficial. In the following sections I discuss my research design, present and discuss the results of my empirical analysis, and conclude by discussing the implications of this research and outstanding questions.

4.1 Why Do States Form Alliances?

A rich literature examines the evolution of alliances between states, with scholars focusing on the causes of alliance formation (e.g. Crescenzi et al., 2012; Walt, 1987, 1985), alliance reliability (e.g. Gartzke and Gleditsch, 2004; Leeds, 2003; Leeds, Long, and Mitchell, 2000), and alliance termination (e.g. Leeds and Savun, 2007; Walt, 1997), with some scholars arguing these are in fact, interconnected and related processes (Smith, 1995).

The question of alliance formation is interesting, because while there are benefits for forming an alliance, including capability aggregation and potential increased deterrent capabilities, there are also costs. Most notably, alliances may decrease autonomy by requiring coordination between partners (e.g. Morrow, 1991) and may be counter-productive if allies are unwilling to uphold their agreements. Military alliances for example signal a commitment to come to another state's aid in a conflict, which, if credible, should lead to decreased conflict initiation. Of course, sometimes allies fail to follow through on their promises, to the detriment of their partner.

A key word here is *credibility*. Alliances are only beneficial when alliance commitments are credible. Indeed, when there are concerns about the reliability of an alliance or an alliance partner, alliances can do more harm than good. Thus, states should form alliances in part based on a belief in the future solidity of an alliance agreement. Of course, in an anarchic international system, the assurances of potential allies to be reliable partners are not alone enough to convince potential allies. A lack of information about a potential partner's true intentions means states can not just evaluate a potential ally's promises before deciding whether or not to trust their commitments. The concern for forming reliable alliances can be seen not just in choice of who to ally with, but also how to design alliances (e.g. Chiba, Johnson, and Leeds, 2015; Mattes, 2012).

Deciding *who* to ally with is a complicated and weighty decision. Prior scholars suggest numerous explanations for why states ally together. States facing common security threats may ally together, judging that the common threat should be sufficient to keep the alliance strong. States may also seek to ally with ideologically similar countries. Alternatively, states may seek allies that have shown themselves to be reliable partners in the past, hoping that this history for reliability suggests they will uphold commitments in the future. Each of these explanations is explored in more detail below.[1]

Many scholars agree that a primary reason for the formation of an alliance has to do with perceptions of external threats (though see also Kimball, 2010). There are disagreements about whether states primarily balance against threats by allying with other states opposing a principal threat, or whether states bandwagon by allying with the primary threatening state (Walt, 1985). As Walt (1988, 278) notes, the answer to whether balancing or bandwagoning behavior is more common has important implications: if balancing behavior is more common then leaders can be more relaxed in the face of security threats since aggressive behavior is likely to be met with numerous opponents. If bandwagoning behavior is more prominent on the other hand, then allies are more likely to defect and major powers need to do more to closely bind allies and convince partners of the credibility and longevity of security guarantees. In an analysis of Southwest Asian countries during the Cold War, Walt (1988) finds that balancing is more likely.

A second explanation for the formation of international political alliances holds that alliances are more likely to form between states that are ideologically similar. According to the "Birds of a Feather Flocking Together" hypothesis, the more similar two or more states are, the more likely they are to ally (Siverson and Emmons, 1991). In particular, democracies may be more likely to ally together, though this may be contingent on era and context. Gartzke and Weisiger (2012) for example argue that the ability of state ideology to influence decisions about alliance formation depends on the composition of the international system: when democratic countries are

[1]Other explanations for alliance formation include the structure of alliance networks based on the structure of international political alignments (Cranmer, Desmaris, and Kirkland, 2012) and domestic policy, either the ability of a state to communicate potential reliability through domestic factors (Horowitz, Poast, and Stam, 2017), or the necessity for leaders to 'contract out' security when facing internal demands (Kimball, 2010).

scare, they are comparatively more likely to ally together than when democracy is widespread. While many scholars point to the importance of similar ideology between states for influencing cooperative behavior, Walt (1985) argues that in the alliance context similar political ideology is generally considered at best a secondary explanation for alliance formation. Indeed, the ideological similarity argument between states is challenged by many examples of ideologically similar states facing recurring and enduring rivalries instead of enduring alliances (e.g. Pan-Arabism).

Prior scholars have debated whether leaders or states are the deciding and influential actor for the formation of alliances. Gibler (2008) for example argues that a leader's prior reputation for upholding alliances contributes to other leaders' decisions about whether or not to form an alliance together. According to this argument, states are more likely to form alliances when their leaders have prior reputations for upholding alliance commitments since other countries will judge them as more reliable allies based on the leader's history for upholding commitments. By contrast, Crescenzi et al. (2012) argue that it is the state's reliability as a whole, rather than an individual leader's reliability, that is important for dictating patterns of alliance formation. For Crescenzi et al. (2012, 263-64), the state is the important unit of analysis for understanding the role of reputation for alliance formation since alliances are sticky, leadership turnover is relatively common, and decisions about alliance fulfillment are the result of of diverse domestic processes. While these arguments make sense in relation to the appropriate way to consider assessments about *reliability* for alliance formation decisions, leaders are nonetheless important in other ways. In the following section I discuss how leaders matter for the formation of international alliances, building on my theory and arguments from Chapters 2 and 3.

4.2 Identity and Trust in Alliance Formation

The previous discussion illuminates a debate about the role of leaders in influencing alliance formation. While Gibler (2008) argues that leaders assess the reliability of other leaders for upholding alliance commitments, and use this information in part to decide which states to ally with, Crescenzi et al. (2012) argue that leaders instead look to a state's history for reliability in the alliance context, rather than to individual leaders. While it makes sense that a leader would consider

a potential partner state's history for upholding commitments beyond the tenure of the current leader when deciding whether to form an alliance, this does not mean that leader relationships and perceptions of others are unimportant.

While leaders may assess the reliability of a state as a whole, the ability of leaders to connect with, understand, and empathize with one another is also important when deciding whether to form an alliance. Since forming an alliance is costly, leaders need as many incentives as possible when choosing alliance partners. While heads of state will consider their security environment and the past reliability of potential partners, I argue they will also look to the specific leaders in charge, and will be more inclined to ally with leaders they identify with. In particular, the degree of similarity of backgrounds between leaders in a dyad impacts the ability of governments to form alliances. Leaders who see themselves as more similar to each other leaders more easily empathize with the other and come to see an alliance as more beneficial. This leads to the hypothesis,

Hypothesis 4. *Ceteris paribus, leaders who share more similar backgrounds are more likely to form alliances.*

Of course, it may be the case that the *type* of alliance matters. While I have assumed thus far that leaders have relatively short time horizons, and when deciding whether or not to ally with another state privilege the current state of events and consider the current leader counterpart, this may not always be the case. In particular, leaders may be comparatively more likely to ally with similar leaders when looking for partners to face an imminent threat, rather than a far-off, possible future threat, since there is more certainty that the partner leader that signs the alliance will remain in office to uphold her commitment. This would suggest that the similarity of leader backgrounds should matter less for the formation of defense alliances, since defense alliances are often formed for the purpose of persisting through time to deter against far-off future threats. On the other hand, the ability to form a connection with a partner leader may be *more* important in the case of defense alliances, since these agreements may be seen as more costly to form, since they obligate a country to provide military assistance for many years. This would in turn suggest that similarity between leaders may be more important in the context of defense alliances compared to other alliance types.

It may also be the case that the number of alliance partners that are party to a potential alliance could influence decisions about whether to join or from an alliance. I assess each of these possibilities - the role of defense alliance and the role of bilateral alliances - separately in the following analysis, as well as considering whether shared leader backgrounds broadly influence alliance formation. In the following section I discuss my research design in more detail before turning to a discussion of the the results of my empirical analysis.

4.3 Research Design

Since I am interested in whether the bilateral relationship between pairs of leaders influences the likelihood of alliance formation, my unit of analysis is the leader-dyad. My sample includes all leader-pair years in the period from 1840–2000. The outcome of interest is alliance formation. My binary dependent variable measures whether or not two states sign an alliance in a given year. In other words, this variable measures the onset of an alliance and is coded 1 for the first year of an alliance and 0 otherwise based on alliance data from Leeds et al. (2002). In the primary model, this variable includes all alliance types and both bilateral and multilateral alliances. In secondary analyses I look at just the onset of defense alliances, as well as the onset of bilateral alliances alone.

The primary independent variable is shared identity between leaders. As discussed in prior chapters, individuals have myriad identities based on background characteristics, which may matter to different extents depending on context. Fundamental identities are characteristics that are both strong enough for a leader to be defined by regardless of context, and are visible or knowable to others (Jenkins, 2014). These major identities are formative, in that they help to shape how an individual views herself, defines herself in relation to others, and places herself in relation to the rest of the world. When leaders share a greater number of these formative identities they are more able to relate to the other, can more easily empathize, and are less likely to see the other as threatening. The major social identities below are based on Jenkins (2014), and are important for allowing leaders to identify with and trust one another. Unless otherwise noted, the leader identity variables are taken from the LEAD dataset (Ellis, Horowitz, and Stam, 2015).

- SHARED EARLY LIFE EXPERIENCES: Leaders are coded as having a shared early life ex-

perience if they shared the same number of parents growing up, were both orphans, or both illegitimate.

- SHARED GENDER: Leaders are coded as having a shared gender if they are either both male or both female.[2]

- SHARED SOCIAL STATUS: In the analysis that follows leaders are coded as having a shared social status if they shared a similar socio-economic background, wealth, or level of education.

- SHARED ADULT IDENTITIES: This is coded 1 if both leaders were married during their time in power or had children, and 0 otherwise.

- SHARED MILITARY BACKGROUND: This is coded 1 if both leaders participated in the military or if both leaders participated in a rebel movement, and 0 otherwise.

My theory predicts that leaders are more likely to form alliances with another state when they are more similar to that state's leader. The primary independent variable, IDENTITY SCORE, is a count of the total number of shared identities ranging from zero to five, based on the typology above, and described in more detail in Chapters 2 and 3. This variable captures how likely two leaders are to trust each other, based on the degree of shared identity, or how embedded the identities of the two leaders are. While gender, shared early life experiences, socio-economic status, military background, and adult family life are not the only identities that can lead to trust, they are easily observable or knowable by other leaders and have been shown in both previous literature and in historical relationships to influence perceptions between individuals.

4.3.1 Additional Predictors

The primary explanations previously identified as contributing to decisions about alliance formation are security, ideological similarity (particularly the presence of joint democracies), capability aggregation, and prior reputation as a good alliance partner. To account for each of these

[2]As noted in the Chapter 2, the historical scarcity of women leaders means jointly male dyads dominate the data.

possible explanations, as well as additional potential confounders, I turn to data from Crescenzi et al. (2012).[3] While the alliance reputation and alliance history variables are unique to Crescenzi et al. (2012), many of the other control variables are used in prior studies examining alliance formation and alliance behavior (e.g. Gibler, 2008; Gibler and Wolford, 2006; Lai and Reiter, 2000).

- ALLIANCE REPUTATION measures how states perceive the reliability of potential allies, based on the observed history of alliance reliability towards *other* states in the international system. When states uphold their commitments to allies they are seen as more reliable, while the violation of commitments makes states appear to be less reliable allies. This measure allows for past instances of (in)reliability to diminish through time such that more recent alliance history is privileged in determining a potential ally's reputation.[4] The variable theoretically ranges from -1 to 1, though in the full sample it ranges from -0.318 to 0.611.

- ALLIANCE HISTORY captures the historical relationship between two states in a dyad. In particular, if an ally becomes obligated to fulfill its agreement to a partner in a particular year and does so, this is coded as a positive change for the relationship between those two states. By contrast, if an ally becomes obligated to fulfill an agreement and does not, this results in a negative change for the relationship.[5] The difference between ALLIANCE HISTORY and ALLIANCE REPUTATION is that while *history* is based solely on information between two states in the dyad, *reputation* is based on extra-dyadic information, meaning how a potential partner has historically behaved towards other states. ALLIANCE HISTORY theoretically ranges from -1 to 1, though in the full sample it actually ranges from -0.33 to 0.68.

- PORTFOLIO SIMILARITY captures the level of similarity between the alliance portfolios of both countries, since states with more shared allies should be more likely to ally together as

[3] Unless otherwise notes, data are from this source. A full replication of Crescenzi et al. (2012) is available in Appendix C.

[4] For more details on how this variable is operationalized and constructed, see Crescenzi et al. (2012, 264–267). Note that since beliefs about reliability are directional, meaning that state "*i*'s reputation for reliability as viewed by country *j* is conceptually distinct from *j*'s reputation as perceived by *i*", the data in this chapter are in a directed dyad format (Crescenzi et al., 2012, 266).

[5] In the absence of challenged obligations, the variable decays towards zero, representing no information.

well (Signorino and Ritter, 1999).

- INTERACTION SCORE measures the broader tone of the relationship between two states, using MIDs to represent animosity and joint IGO memberships to represent cooperative behavior between states (see Crescenzi, Enterline, and Long, 2008, for more on this measure).

- JOINT ENEMY measures whether or not both states in a dyad have engaged in a militarized interstate dispute with the same country during the past ten years, since the presence of a joint enemy should suggest a security motivation to form an alliance (Jones, Bremer, and Singer, 1996).

- DISTANCE captures the number of miles between the capital cities of each state in the dyad, measured as the square root of the total distance.

- MAJOR POWER STATUS codes whether at least one of the states in the dyad is a global power, since states may choose alliance partners based at least in part on the level of capabilities and strength that a potential ally could contribute.

- POLITY DIFFERENCE measures the similarity of regime types in a particular dyad, based on the absolute value of the difference in regime scores between two states. At larger values, two states have more dissimilar regimes while at smaller values two states have more similar regimes. The traditional "Birds of a Feather" hypothesis expects more similar states to form alliances.

- JOINT DEMOCRACY is a dichotomous variable that measures whether or not both states in a dyad are democracies. This measure is based on the Polity IV data and requires both states to have a score of 5 or greater to be coded as 1, and is coded as 0 otherwise (Marshall and Gurr, 2014).

Finally, the variable TIME measures the number of years since the two states in a dyad last formed an alliance. This time variable, and the squared and cubic versions of the variable are

included in all the subsequent logit models to account for possible temporal dependence (Carter and Signorino, 2010).[6] In the following section I discuss my model choices in greater detail before presenting and interpreting the results of my empirical models.

4.4 Results and Discussion

The objective of my analysis is to test whether leaders are more likely to form alliances when they are more similar to each other, while accounting for potential observable confounders. Some confounders however may be unobservable, meaning it is impossible to control for them directly. To address this, my primary logit models employ country dyadic fixed effects.[7]

Table 4.1 contains the results of my primary logit models. Model 1 tests the role of shared leader backgrounds on the probability of alliance formation in a full sample of all alliances in the period from 1840–2000. Model 2 limits the sample to bilateral alliances only. It may be the case that the number of partners in an alliance influences whether leader similarity contributes to alliance formation. Some prior scholars have argued that countries may be less concerned about the trustworthiness of particular alliance partners in multilateral alliances, since unreliable allies are more likely to be pooled into multilateral alliances to dilute risk (Narang and LeVeck, 2019). Model 3 limits the sample to defense alliances only. It is important to examine defense pacts alone for two reasons. First, defense alliances are some of the most important alliances to consider in international relations because they are the type of alliance that obligates a state to militarily come to its' partner's assistance during war. Defense alliances thus carry the most risk for abrogation because abandoned allies would have counted on the support of their partners for survival. Second, defense alliances are often signed with a longer expected time span. While other types of alliances, such as offensive alliances, are often signed immediately prior to conflict and may be terminated after joint objectives are met, defense alliances are usually signed during peacetime to hedge against possible future threats, and often last for decades.

[6] TIME is coded as the number of years since the states in a dyad previously signed an alliance. The coding of this variable differs in the models examining just bilateral alliances and just defense alliances, and is adjusted accordingly.

[7] A limitation of fixed effects models is that they tend to lead to a drastic reduction in sample size, since any groups with zero within-group variance are dropped from the sample. In an additional model I utilize a fixed effect linear probability model to assuage this concern and come to a similar substantive conclusion (See Appendix C).

Table 4.1: Fixed effect logit analysis of alliance formation.

	(1) All Alliance Types	(2) Bilateral Alliances	(3) Defense Pacts
IDENTITY SCORE	0.0758**	0.0728**	0.159***
	(0.0231)	(0.0231)	(0.0292)
ALLIANCE REPUTATION	3.928***	3.971***	-0.308
	(0.756)	(0.673)	(0.983)
ALLIANCE HISTORY	-1.177	-1.111	-0.475
	(1.899)	(1.877)	(1.953)
PORTFOLIO SIMILARITY	-1.259***	-1.244***	-1.210***
	(0.129)	(0.129)	(0.148)
INTERACTION SCORE (IIS)	0.851***	0.840***	1.169***
	(0.185)	(0.185)	(0.268)
JOINT ENEMY	0.962***	0.966***	1.597***
	(0.0381)	(0.0380)	(0.0478)
DISTANCE	0.00545	0.00480	-0.000517
	(0.00657)	(0.00659)	(0.00825)
MAJOR POWER STATUS	0.274+	0.295+	-0.0142
	(0.154)	(0.154)	(0.181)
POLITY DIFFERENCE	-0.0105*	-0.0102*	0.00240
	(0.00447)	(0.00448)	(0.00574)
JOINT DEMOCRACY	0.292***	0.303***	0.704***
	(0.0724)	(0.0725)	(0.0984)
TIME	-0.132***	-0.133***	-0.181***
	(0.00567)	(0.00567)	(0.00711)
TIME ^{2}	0.00262***	0.00263***	0.00350***
	(0.000206)	(0.000206)	(0.000233)
TIME ^{3}	-0.0000130***	-0.0000132***	-0.0000157***
	(0.00000182)	(0.00000182)	(0.00000187)
Observations	166066	166066	124216

Standard errors in parentheses.

$^+$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

The time variables change for different DVs but are presented in the same line for the sake of space.

All predictors lagged by one year.

Across all three of these primary models, the coefficient on IDENTITY SCORE is positive and statistically significant, suggesting that the more similar two leaders are, the more likely they are to form an alliance (see Table 4.1). Substantively, this means that a unit increase in identity score expands the odds of forming an alliance by 7.9% for all alliances, holding all else constant (Model 1). Similarly, a unit increase in identity score expands the odds of forming a bilateral alliance by 7.6%, holding all else constant (Model 2). Most notably, a unit increase in identity score expands the odds of forming a defense pact by 17.3%, holding all else constant (Model 3). While these results suggest that overall more similar leaders are more likely to form alliances even while accounting for previous explanations for alliance formation, it may be the case that leader identification impacts defense pact formation to a greater extent.

It may also be helpful to visually assess the influence of shared identity on alliance formation. Figure 4.1 shows the logit coefficients for IDENTITY SCORE for Models 1, 2, and 3. Consistent with Table 4.1, the coefficients for all three models are positive and do not cross zero, indicating that more shared backgrounds between leaders make alliance formation between states more likely, even while controlling for factors known to influence the likelihood of alliance formation and potential confounding factors.

While the prior analysis privileges using a robust modeling strategy with the inclusion of dyadic fixed effects, it results in the loss of potentially relevant observations. While the dyadic fixed effect approach accounts for potential unobservable confounders, it does so at the loss of observations because only observations with within-group variance through time are included. To allay concerns about the loss of observations through the fixed effect logit model strategy, I re-run Model 1 from Table 4.1 as a linear probability model (LPM), resulting in an over four times larger sample and consistent results. The coefficient on IDENTITY SCORE is positive and statistically significant in Model 4 in Table 4.2 ($p < 0.01$). A second modeling-related objection might be that alliances are relatively rare events and a logit model may not be the best way to assess trends of alliance formation. To assuage concerns in this regard, Model 5 uses a rare events logit specification and reaches similar conclusions (see Table 4.2).

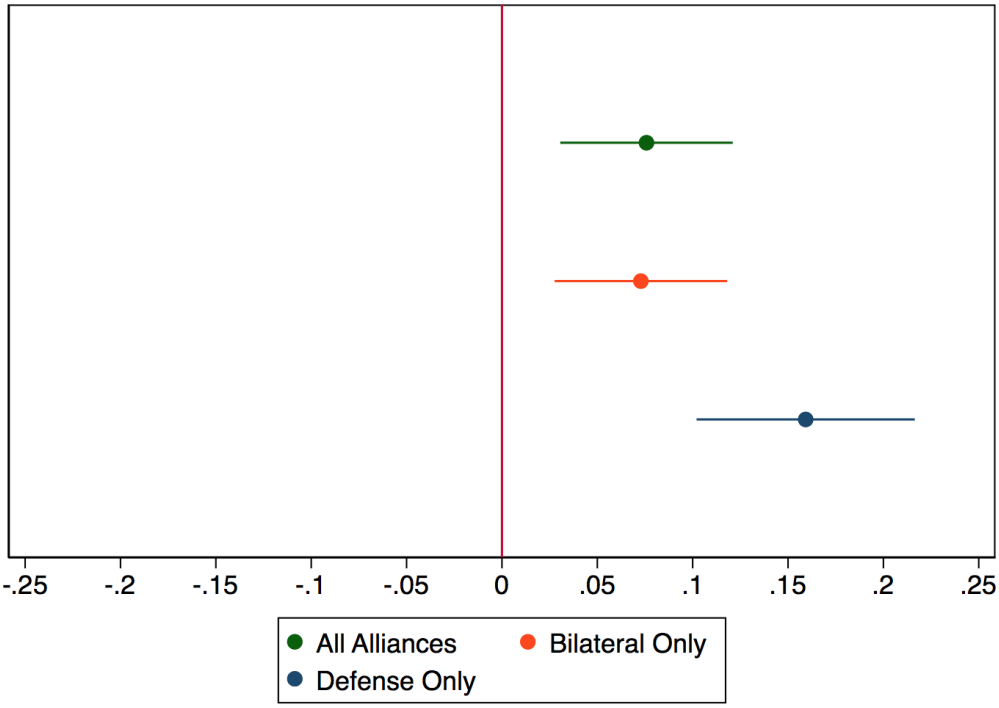
Table 4.2: Robustness tests for alliance formation.

	(4) Fixed Effect LPM	(5) Rare Events Logit
IDENTITY SCORE	0.000409**	0.155***
	(0.000144)	(0.0199)
ALLIANCE REPUTATION	0.0964***	4.722***
	(0.00859)	(0.579)
ALLIANCE HISTORY	-0.0135	-0.983
	(0.0325)	(1.952)
PORTFOLIO SIMILARITY	-0.00361***	0.476***
	(0.000894)	(0.108)
INTERACTION SCORE (IIS)	0.0134***	0.918***
	(0.00188)	(0.227)
JOINT ENEMY	0.0132***	1.105***
	(0.000334)	(0.0402)
DISTANCE	0.0000680	-0.0311***
	(0.0000534)	(0.000654)
MAJOR POWER STATUS	0.000447	0.343***
	(0.000875)	(0.0403)
POLITY DIFFERENCE	-0.000136***	-0.00690**
	(0.0000248)	(0.00264)
JOINT DEMOCRACY	-0.00196***	0.207***
	(0.000438)	(0.0427)
TIME		0.0338***
		(0.00535)
TIME^2		-0.00167***
		(0.000197)
TIME^3		0.0000132***
		(0.00000136)
CONSTANT	0.00297	-4.676***
	(0.00360)	(0.140)
Observations	753149	753149

Standard errors in parentheses.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

Figure 4.1: Coefficient plot of Models 1-3.



4.5 Conclusion

The previous section demonstrates that leaders who share more similar background identities are more likely to form international political alliances, even while controlling for potential confounding variables and factors that have been previously shown to influence patterns of alliance formation. These findings are robust to model specification including the use of rare events logit and a fixed effects probability model. The results also hold over different samples: alliances are more likely to form between more similar leaders regardless of alliance size and alliance type. Interestingly, the similarity of leaders may influence the process of alliance formation *more* in defense alliances. More precisely, a unit increase in identity score expands the odds of forming a defense pact by 17.3%, while a unit increase in identity score only expands the odds of forming an alliance in general by 7.6%. Why is this the case?

A characteristic unique to defense pacts is how potentially costly they are. While defense pacts

and offense pacts are both military alliances, meaning they both obligate their participants to be prepared to use military force on behalf of another, defense pacts are much longer lasting than offense pacts. Based on the ATOP data, defense pacts last on average 15 years, while offense pacts on average last only seven years (Leeds et al., 2002, 2016 update). The relative longevity of defensive alliances means they may obligate their participants to come to the aid of allies in future situations where interests have changed, and may lead to a greater likelihood of future entrapment. Leaders know the costs of signing defense pacts are high, and thus may seek more sources of valuable information to determine whether forming a defense alliance is worth it. Knowing that another leader is more similar to the self may increase the amount of information a head of state has about a potential partner, and may sway her to more positively consider an alliance.

A weakness of this analysis is that I cannot determine why particular alliance types may be affected to different extents by leadership similarity. Future work should consider this question, as well as turning to the broader question of how different types of alliances may have different sources of alliance formation motivations. In the next chapter I suggest other outstanding questions, as well as summarizing my conclusions and suggesting important implications of this research.

5. SUMMARY AND CONCLUSIONS

This dissertation addresses the questions of how relationships between leaders influence international politics, and to what extent interpersonal trust affects international cooperation. I argue that leaders who share more similar backgrounds and identities trust each other more easily, making cooperation more likely. This argument is based on theories and evidence from social psychology and neuroscience that suggest that trust is easier when individuals are more similar, and that cooperation is more likely when trust is present. Chapter 1 begins by discussing the history of research on trust, both within political science as well as in related social science disciplines. This discussion makes clear that definitions of trust rely on two key concepts: First, a belief in the benevolent intentions of other actors and second, a willingness to be vulnerable and accept risk.

The importance of risk for understanding trust contributes to the choice of contexts in which I test my theory. For trust to be important, there must be a real chance of betrayal or hurt. What area is better to study then, than international security, where scholars have long claimed that anarchy and self-help incentives make cooperation risky and trust irrelevant? Specifically, I examine three contexts to test my theory: nuclear cooperation, decisions by client states about whether to engage in nuclear activity under extended deterrent guarantees, and alliance formation. Each of these contexts carries risks for the actors involved. When signing a nuclear cooperation agreement, the supplier country faces the risk that the recipient state could break their promise to use cooperation for purely civilian purposes, and instead direct assistance towards weapons pursuit. Countries under guarantees of extended nuclear deterrence from superpower patron states face risks that the promise may not be sincere, resulting in the need to pursue a more independent security posture. States forming alliances together face risks that their partner might one day betray them or abrogate the alliance agreement.

In each of these circumstances then, leaders must consider ways to ameliorate the potential risk. What diminishes these possible threats and makes leaders more confident that cooperation with another state is worthwhile? Previous accounts of trust in international relations privilege

rationalist explanations for cooperation, including forming opinions about others based on the expectation of reciprocity or the belief that interests with another actor align. These explanations for cooperation relate to rationalist arguments about the role of signaling for demonstrating the credibility of promises. While these rationalist explanations are surely important, I argue that as human beings who feel, think, and form implicit biases and opinions about others, leaders also base their decisions off more personal and psychological factors.

In each substantive chapter then, I try to account for strategic factors that could contribute to decisions to cooperate, as well as including my own measure of shared background identities. In the context of nuclear cooperation, I account for shared defense alliances and rivals as well as dyadic conflict. In the chapter on extended deterrence I include signals of credibility – such as troop deployments and nuclear basing – as well as accounting for regime type, past conflict, and a host of other factors. When testing my theory in the context of alliance formation, I account for prior explanations including reputation, ideological similarity, and states' security environments. Prior work has shown these factors to be important. Moreover, I believe that strategic considerations surely contribute to leader decision-making. By examining my shared identity variable alongside previous factors that have been shown to affect the probability of cooperation in three contexts, I hope to show that affective attributes matter for decision-making as well.[1]

My theory predicts that leaders who share more similar social identities should be more likely to cooperate with one another, holding all else constant. This means that signing a nuclear cooperation agreement and forming an alliance should be more likely when two leaders are more similar to each other, all else equal. By contrast, proliferation should be less likely when there are more shared identities between client and patron state leaders, since the client state will more easily trust the promises of their patron for protection. Throughout the dissertation I find evidence consistent with my expectations based on my empirical analyses and historical illustrations and examples.[2]

[1] For a full elucidation of variables used and theories considered, see the research design sections of Chapters 2-4. In addition to accounting for observable confounders, I also utilize country dyadic fixed effects throughout the analyses to account for time-invariant unobservable considerations.

[2] As I continue this research going forward, it is my hope to turn to more case analyses to develop more qualitative evidence to support my theory.

In Chapter 2, I find that leaders are more likely to sign nuclear cooperation agreements when they are more similar. In Chapter 3, I find that client state leaders are less likely to engage in nuclear activity when they are protected by a patron state with a leader to whom they are more similar. In Chapter 4, I find that countries are more likely to sign alliances when leaders of potential ally states are more similar. While these findings are striking in and of themselves given past emphasis on rationalist explanations for cooperation, it is important to also consider the implications of this research for both academia and policy. In the following section I discuss what I think are some of the most important take-aways of this research. I then turn to outstanding questions for future research based on weaknesses of the current analysis and questions that have arisen during this research.

5.1 Implications

Throughout this dissertation I argue that relationships matter. In other words, the ways in which leaders view themselves and others influence decisions about whether or not to cooperate with other countries on a wide variety of issues. An important question though, is "so what"? Does this research suggest that only leaders who are similar to each other will be able to cooperate together? If so, what does this mean for future leaders who may not share similar identities?

Several points are important to make in this regard. First, cooperation can occur when interpersonal or affective trust is low but cognitive trust or an understanding of shared strategic incentives are strong. Second, my empirical evidence thus far suggests that leaders are more likely to cooperate *on average* when they are more similar, all else being equal. Third, while my measure of shared identity is constructed based on theories that point to important formative characteristics that lead to identification with others, it is not exhaustive. Individuals have myriad identities which can contribute to positive perceptions of another. Future work should consider when different identities are important, as well as working to collect data on and analyze unaccounted for factors, including religion, ethnicity, and language (this is discussed below in greater detail).

The most important take-away is that leaders matter, and more precisely that the relationships between leaders and the way leaders view one another contribute to decision-making and political

behavior in world politics. In particular this research suggests, counter to realist arguments, that there is a place for trust in the international system. This is important because when actors need to cooperate in comparatively low trust environments, the cost of cooperation is higher, since structures and procedures need to be built and established to take the place of trust. On the other hand, when actors find it easier to trust each other, they are more likely to cooperate, even in situations when cooperation is not expected.

An important implication that arises from this discussion is the possibility that shared identities can be built or made more important through time. Evidence from sociology suggests that in-group similarity and new identities may be able to be constructed through cooperation. Sherif et al. (1961/1988) advanced the study of intergroup relations through the now famous Boy's Summer Camp experiment. After arbitrarily dividing campers into two groups and keeping the groups in isolation for eight days, the campers were found to have pervasive biases in favor of members of their own group over members of the other group. The recognition that shared identity leads to positive opinions of similar individuals while dissimilar identities leads to negative views of others has led to a large research tradition in sociology, as discussed throughout Chapters 1 and 2. This experiment also points to the possibility of creating biases in favor of cooperation with others based on experienced similarities and designed shared characteristics. In the international context for example, it is possible that by repeatedly interacting with another leader in a particular forum, two leaders could build a shared understanding as part of the same organization. This remains an area that requires future attention, but is also related to the question of how interactions and face-to-face meetings between leaders contribute to interpersonal trust. I turn to this consideration and other outstanding questions in the next section.

5.2 Remaining Questions for Future Research

5.2.1 The Role of Face to Face Contact

I do not assume in this dissertation that leaders need to meet with one another to be able to form impressions (either positive or negative) about the other. Rather, due to the provision

of intelligence assessments and character briefs on other leaders, as well as open source media reporting that covers world leaders, I assume that heads of state have sufficient information to make initial judgments about others regardless of the degree of in-person interaction. In many ways, this is a fair assumption. After all, more often than not leaders need to form at least their initial impression of another without in-person interaction. Moreover, these biases in many ways contribute to the decision to interact in the first place, as was the case between Brazilian and Argentine leaders in 1980 (see Chapter 2).

While I do control for foreign visits by leaders in Chapter 3, an outstanding question is how face-to-face interactions with another leader influence impressions of another. This relates to literature on diplomacy and trust-building as a process. Wheeler (2018) and Holmes and Yarhi-Milo (2017) for example focus on face-to-face interactions between leaders and Yarhi-Milo (2014, 210) points to the process through which Reagan and Gorbachev increased their understanding of each other.

It is conceivable that meeting with a partner leader could positively or negatively influence perceptions of another, or have no impact at all. If a leader goes into a meeting inclined to trust another based on shared characteristics for example, but by meeting in person gets additional information about their partner leader that challenges their initial positive feeling, the prior belief about another person's implicit trustworthiness might be challenged or revised. Conversely, if a leader has a negative conception about another based on dissimilarity to the self, meeting in person could conceivably reveal other points on which there are similarities, leading to increased trust. Future research should turn to the question of whether interactions and face-to-face diplomacy interact with my understanding of trust, and if so how. Considering interactional accounts could also help to get leverage on the question of the extent to which advisers and adviser relationships contribute to decision-making.

5.2.2 Trust and Mistrust

Throughout the dissertation I have focused on the role of trust for contributing to decisions about cooperation. The flipside of trust is of course mistrust, and questions about what happens

when trust fails. History demonstrates the risk of trusting foreign leaders. When American President Eisenhower sent a U-2 spy plane over the Soviet Union prior to the Paris Summit, Soviet Premier Nikita Khrushchev was reportedly outraged by the betrayal of trust, and complained over and over to the British Prime Minister that "his *friend* (bitterly repeated again and again), his friend Eisenhower has betrayed him" (Larson, 1997*b*, 715). Failed trust between political leaders can lead to the outbreak of war, abandonment by allies, or to nuclear arms races.

The three contexts I look at, nuclear cooperation, proliferation under deterrence, and alliance formation, capture the result of a leader's decision to trust another. I find that shared background identities between leaders make cooperation more likely, proliferation less likely, and alliance formation more likely. What happens next however? If a partner in the future goes on to break her promise regarding peaceful nuclear activities, to engage in proliferation, or to abrogate a treaty, how does this affect the relationship between the leaders and their propensity to trust? Further, are agreements based on affective interpersonal trust more or less likely to be abrogated compared to agreements made based on strategic incentives to cooperate?

5.2.3 Time Horizons

The concern about the potential for trust backfiring in the future relates to a broad question about the role of time horizons and expectations in leader relationships. Throughout this paper, I assume that leaders have relatively short time horizons, and privilege the current over possible futures. Future research should turn to the question of whether leaders do in fact have short time horizons with regards to decisions about who to cooperate with, and ask whether certain types of leaders or certain contexts lead to more or less concern for the future.

In the context of my argument about trust between pairs of leaders, it may be the case that even if two leaders have a trusting relationship, this may not be important if one cannot expect the other to remain in power in the future. Leaders who are expected to remain in office in the future, or who are expected to be replaced with a very similar leader, may be more capable of working towards cooperation with trusted partners. It may instead be the case that calculations about a leader's tenure only matter in certain issue areas in which the future is weighted highly, or that

calculations about the future involvement of a particular leader matters relatively little if leaders heavily discount the future.

5.2.4 The Role of Culture

Throughout this dissertation I employ country dyadic fixed effects to account for possible unobservable, time invariant factors between two countries. Theoretically, this should account for things like geographic distance and culture. In the future however it may be important to think in more detail about how culture affects trust and cooperation. If trust is understood, built, and maintained differently across cultures, then there could be implications for how leaders interact and make decisions. Additionally, trust can be thought to involve sending signals about one's trustworthiness, which may of course vary across cultures in both meaning and interpretation (Saunders et al., 2010). Thus, understanding how trust is formed and maintained across different cultures may be important for understanding how countries identify and interpret signals. In my statistical analysis I use country dyadic fixed effects which may account for culture to a certain extent. Future work however should consider how culture matters more deeply.

Though the major accounts of trust in political science do not consider cultural differences in how trust is understood, formed, and relied on, it is common in other fields to consider the role of culture in trust.[3] The need to look at trust cross-culturally stems from Knack and Keefer (1997), who found that trust differs across nations. Cross-cultural differences in conceptions of trust are present both in conceptions of generalized trust, as well as in interpersonal and individualistic trust (Zak and Knack, 2001; Levi and Stoker, 2000; Sullivan et al., 1981). Cultural divisions of course do not necessarily follow national boundaries, since culture is shaped by many, often interconnected spheres of influence, but it is common to distinguish among cultures based on geographic boundaries (Dietz, Gillespie, and Chao, 2010, 7).

Scholars have used experiments in multiple countries to compare trust across cultures. Za-

[3]The major exception is Uslaner (2002, 13), who finds that cross-national variations in trust depend on the distribution of income in society: "The same factor that led to the decline in interpersonal trust in the United States – economic inequality – also explains why some nations are more trusting than others." Similarly, some political scientists that use social surveys to examine cross-national levels of generalized trust examine multiple nations, though these efforts have been critiqued (Dietz, Gillespie, and Chao, 2010; Wilson and Eckel, 2010; Levi and Stoker, 2000).

heer and Zaheer (2006) and Yuki et al. (2005) for example find differences in how Americans and Japanese trust. In the United States, trust is more commonly built through shared category memberships. By contrast, in Japan trust is more easily identified based on shared interpersonal links between actors. Thus while Western cultures emphasize categorical differences between ingroups and outgroups, the authors argue that East Asians think about groups as relationship based (see also Yamagashi, Cook, and Watabe, 1998). Other scholars have found differences between Bulgarians and Americans (Koford, 2001), Japanese, Koreans, Chinese, and Americans (Buchan, Croson, and Dawes, 2002), and Chinese and Taiwanese (Shi, 2001).

There have also been numerous within-country experiments to assess the role of trust in different cultures, including in Zimbabwe (Barr, 2003), Thailand and Vietnam (Carpenter, Daniere, and Takahashi, 2004), Peru (Karlan, 2005), Bangladesh (Johansson-Stenman, Mahmud, and Martinsson, 2008), Paraguay (Schechter, 2007), Russia and Post-Soviet countries (Mishler and Rose, 2005, 2001), and Kenya (Greig and Bohnet, 2008). More could be done however to consider how cultural differences affect trust and cooperation between leaders in a cross-national context.

5.2.5 Other Issue Areas

Some scholars hold that the concept of trust can be applied equally across issue areas and to a variety of different actors. Others take more measured approaches to the generalizability of trust, arguing that trust in a particular issue area can lead to trust in others: "as relationships mature through experience in different contexts and around different inter-dependencies, parties accumulate deeper and more extensive knowledge about each others strengths and weaknesses" (Dietz, Gillespie, and Chao, 2010, 11-12).

Other scholars hold that levels of trust are completely contingent on both context and partner, in other words: "to say that I trust you in some context is to say that I think you are or will be trustworthy towards me in that context" (Hardin, 2006, 1).[4] Larson (1997*b*, 715) also holds this opinion, arguing that trust does not imply trusting in every situation, since that would indicate "blind faith". Rather, assessments of trustworthiness many be contingent on particular situations. For example,

[4] And see also Hoffman (2002, 377–378).

"after World War II, the United States generally trusted the Soviets to repay a loan for postwar reconstruction, but not to refrain from moving into the power vacuum in Central Europe." In addition to the outstanding questions discussed above, there are several potentially fruitful contexts in which to test and extend my theory.

5.2.5.1 Nuclear Latency

There has been a massive growth in scholarship on the causes and consequences of nuclear latency, or the technical capability of a state to build nuclear weapons, in recent years. There is huge variation in how states that posses, or have historically possessed nuclear latency through time are treated. Some nations are treated like pariahs, automatically assumed to have malicious intentions, or be unworthy of possessing nuclear latency. Other states are allowed, or even encouraged to develop latent nuclear capabilities by other countries. There may also be variation through time, such that the way a nation's ENR abilities are perceived differ based on the personality and characteristics of the leader in office. Future research could examine American responses to the latent status of other countries based on leadership similarity, asking whether trust by American leaders in other heads of state influences nonproliferation and counterproliferation policies against foreign latent nuclear states.

5.2.5.2 Alliance Reliability and Termination

In Chapter 3 I examined the role of shared backgrounds in decisions by leaders about whether or not to form alliances. Future work could consider the full evolution of an alliance relationship, looking at instances of alliance violation and termination in addition to formation. This analysis would in many ways link to the questions of mistrust and time horizons, since it would involve examining cases of the failure of trust in the future.

5.2.5.3 Non-Security Contexts

The three contexts in which I have tested my theory all exist in the realm of international security. The choice to look at nuclear cooperation and alliances was both theoretical and strategic, based on the importance of risk for trust and cooperation and on my own expertise. Going forward

however it would be useful to think about how these arguments would apply outside the realm of international security. One potentially fruitful context would be to look at trade negotiations.

5.2.6 Further Data Collection

While my primary independent variable is based on theories and evidence from sociology, psychology, and neuroscience, the way I currently construct and conceptualize of SHARED IDENTITY relies on current data availability, for which there are some limitations. While there have been massive strides made on data collection and availability on leaders in recent years (e.g. Ellis, Horowitz, and Stam, 2015; Goemans, Gleditsch, and Chiozza, 2009), this dissertation makes clear that there are some areas that remain under-studied. In particular, more questions about leader relationships and how leaders influence international politics could be answered with better data on leader religion, language, and ethnicity.

With regard to religion, there is evidence from other fields that individuals who are more religious are more trusting (Rotter, 1967). It may also be the case that individuals that share a religion are more trusting of each other (Anderson and Mellor, 2009; Johansson-Stenman, Mahmud, and Martinsson, 2008; Danielson and Holm, 2007). Additional research points to the importance of religion for understanding trust and cooperation (Johansson-Stenman, Mahmud, and Martinsson, 2008; Cronin, 1999; Rotter, 1967). In the future, it would be useful to know whether individual leaders were religious or not, and which religions they ascribed to.

In addition to religion, discussions with diplomats and negotiators make clear that language can be a key barrier to cooperation. If a translator is needed during any sort of negotiation, be it peace talks or nuclear training, understanding and trust may be limited. While many leaders speak more than one language and thus may be able to effectively communicate with others, there are no systematic data currently available coding leader language capabilities. Individuals that share a language may find it easier to communicate and find it easier to trust each other. Not having to rely on a translator, and not having to be unsure of what others are saying may be one reason why shared language makes it easier to trust. A person's native language, as well as the languages they are able to speak may be important to consider in the future as well.

Finally, another important variable to consider in the future is a leaders' ethnicity. Individuals with shared ethnic ties can likely identify more easily and trust each other. Halperin (2015, 41) for example recounts the statements of an individual during an interview discussing feelings towards Palestinians: "They will never change. They were born unfaithful, and they will die this way. Even after 40 years in the grave, you shouldn't trust an Arab" (see also Post and George, 2004; Davies, 1996). Pettigrew (1979) argues that the tendency for members of ethnic and racial out-groups to view each other negatively is due to a so-called "attribution error", which results from attributing antisocial behavior from ingroup members to a specific situation, while attributing similar antisocial behavior from outgroup members to disposition (see also Brewer, 1986; Heradstveit, 1979; Taylor and Jaggi, 1974, for further support of this argument). One of the key difficulties in coding data on ethnicity will be defining ethnicity in a universally accepted manner, while also recognizing how perceptions of ethnic identification may vary cross-culturally and at a more granular level.

5.3 The Last Word

This dissertation argues that relationships between leaders and the way leaders view one another influences patterns of international cooperation. Specifically, leaders who are more similar to each other find it easier to trust, making cooperation on a variety of issues more likely. Empirical analysis of three contexts supports this claim: countries with leaders who share more similar backgrounds are more likely to sign nuclear cooperation agreements and form alliances with each other, and are less likely to worry about the credibility of extended deterrent guarantees. This manuscript contributes to understanding how leaders and identity matter in international politics, and suggests many avenues for continuing research.

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APPENDIX A

ADDITIONAL MATERIAL FOR CHAPTER 2

Table A.1 shows the results of my primary logit analysis of nuclear cooperation agreements. Table A.2 shows the results of a logit analysis of the model utilizing an interaction of IDENTITY SCORE and CONSTRAINT. Table A.3 gives the results of a fixed effect linear probability model of nuclear cooperation agreements.

A.1 Full Results

Table A.1: Logit analysis of nuclear cooperation agreements.

	Coefficient	Standard Error
IDENTITY SCORE	0.240***	(0.0376)
POLITICAL CONSTRAINT	0.683***	(0.192)
SHARED ALLIANCE	1.239***	(0.0965)
DYADIC CONFLICT	-0.681	(0.701)
SHARED RIVAL	0.504***	(0.110)
JOINT DEMOCRACY	0.676***	(0.0840)
RGDP_1	-0.000000927	(0.00000470)
RGDP_2	0.0000513***	(0.00000335)
TIME	-0.131***	(0.0164)
TIME^2	0.00471***	(0.000953)
TIME^3	-0.0000635***	(0.0000150)
CONSTANT	-5.604***	(0.167)
Observations	141025	141025

Clustered standard errors in parentheses.
All variables lagged by one year.
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

Table A.2: Interaction of political constraint and shared identity.

	Coefficient	Standard Error
IDENTITY SCORE	0.388***	(0.0675)
POLITICAL CONSTRAINT	2.481***	(0.655)
IDENTITY×CONSTRAINT	-0.494**	(0.171)
SHARED ALLIANCE	1.230***	(0.0962)
DYADIC CONFLICT	-0.692	(0.696)
SHARED RIVAL	0.509***	(0.109)
JOINT DEMOCRACY	0.675***	(0.0840)
RGDP_1	-0.000000671	(0.00000472)
RGDP_2	0.0000521***	(0.00000340)
TIME	-0.132***	(0.0164)
TIME^2	0.00472***	(0.000952)
TIME^3	-0.0000634***	(0.0000150)
CONSTANT	-6.152***	(0.272)
Observations	141025	141025

Clustered standard errors in parentheses.

All variables lagged by one year.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

Table A.3: Fixed effect linear probability model of nuclear cooperation agreements.

	FE LPM
IDENTITY SCORE	0.00117**
	(0.000401)
POLITICAL CONSTRAINT	-0.00668**
	(0.00228)
SHARED ALLIANCE	0.0185***
	(0.00346)
DYADIC CONFLICT	-0.0119*
	(0.00500)
SHARED RIVAL	-0.00910***
	(0.00194)
JOINT DEMOCRACY	0.00380**
	(0.00119)
RGDP_1	-0.00000121***
	(0.000000119)
RGDP_2	4.72e-08
	(0.000000114)
TIME	0.000506**
	(0.000168)
TIME^2	0.00000525
	(0.00000857)
TIME^3	-0.000000142
	(0.000000123)
CONSTANT	0.0105***
	(0.00186)
Observations	141025

Standard errors in parentheses.

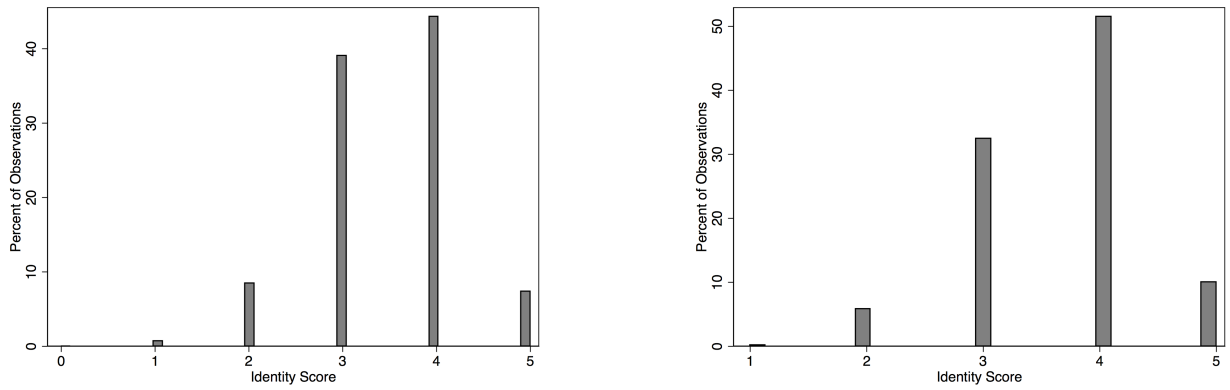
All variables lagged by one year.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

A.2 Distributional Details

Figure A.1 shows the distribution of the IDENTITY SCORE variable in the full sample as well as in the sample of only dyads with NCA's.

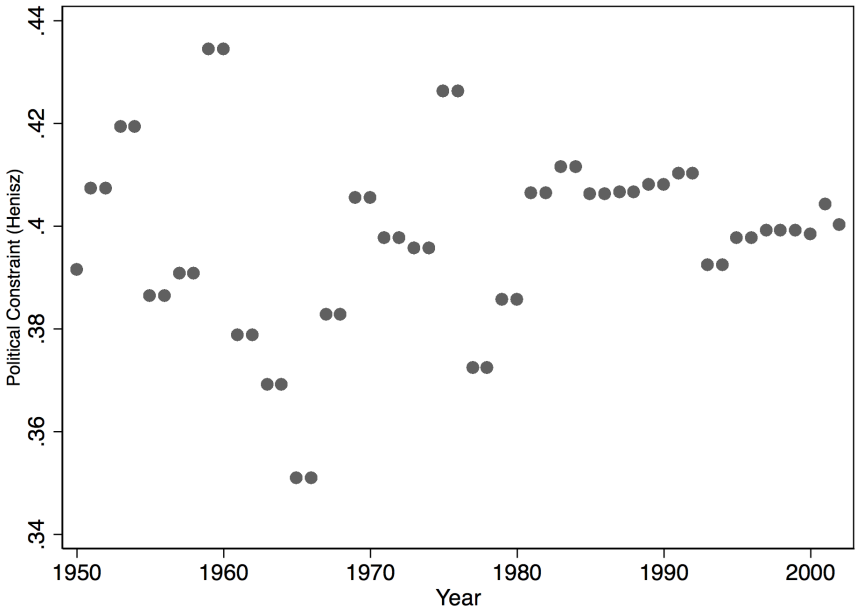
Figure A.1: Distribution of identity score in full sample (left) and in NCA-only dyads (right).



A.3 More Details on Constraint (Henisz, 2002)

Political constraint is coded based on the domestic institutional constraint of the recipient, measured as whether a change in one actor's preferences leads to a change in government policy. In other words, it measures the feasibility of policy change, or the extent to which a change in the preferences of any one actor may lead to a change in government policy. The Henisz (2002) measure begins by examining the number of independent branches of government with veto power over policy change. Henisz (2002) then develops a spatial model of policy interaction to derive a score for the extent of actor constraint in future policy choices. The preferences of each of the branches of government and the status quo policy are assumed to be independently and identically drawn from a uniform, uni-dimensional policy space. This allows for the derivation of a quantitative measure of institutional hazards. The measure is then modified to take into account the extent of alignment across branches of government using data on party composition of the executive and legislative branches. Alignment across branches should increase the feasibility of policy

Figure A.2: US domestic political constraint through time (Polity=10).



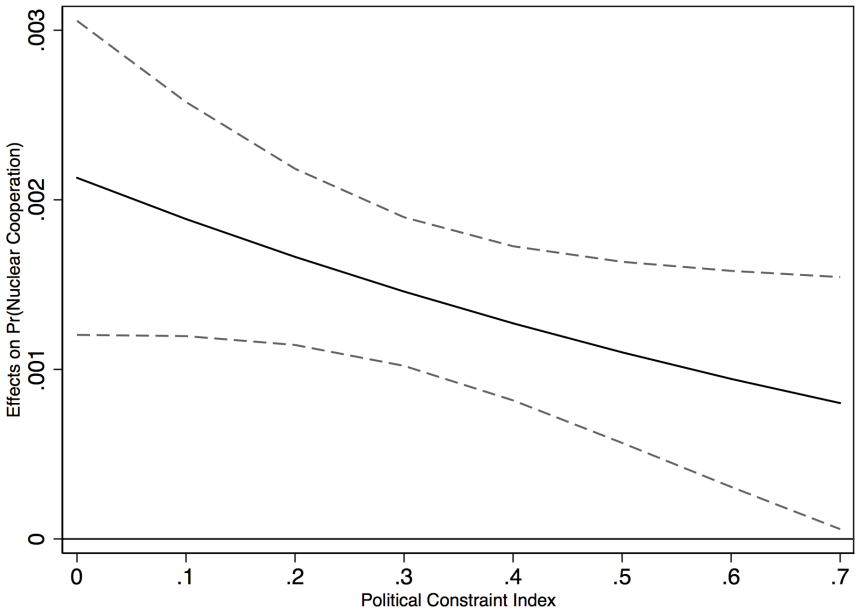
change. The measure is also modified to capture the extent of preference heterogeneity within each legislative branch. Higher levels of heterogeneity should increase the costs of overturning policies.

A potential concern about this measure might be that there may not be enough variation within countries through time, especially for the dyadic fixed effects models. Figure A.2 demonstrates however how the measure of institutional constraint can vary through time, even in a country known to be a consistent democracy (the United States).

There are several reasons why I theorize about the importance of political constraint for leaders in recipient countries rather than about levels of constraint that affect leaders in supplier nations. NCA's are often something that leaders deal with directly, and attach importance to getting through, even when there is opposition from other bodies of government. The personal involvement of leaders in supplier countries can be seen in the case of American assistance to India in 2008, with President Bush making it clear that the deal was a priority for him and that the US was going to sign it despite opposition in Congress. Even more importantly, my theory of when suppliers can trust recipients puts the onus on the supplier country to decide whether or not recipient leaders can keep

their word. That being said, I do test the role of supplier constraint on nuclear cooperation and do not find support for identity affecting NCA's more or less at different levels of supplier constraint, since the effect of identity on the probability of nuclear cooperation is positive and statistically significant at all levels of political constraint (See Figure A.3).

Figure A.3: Average marginal effect of identity score, 95% confidence intervals.



A.4 Additional Tests

Tables A.4, A.5, and A.6 provide the results of additional robustness tests mentioned in Chapter 2.

Table A.4: Additional analysis of nuclear cooperation agreements, Part 1.

	(3) Limited Sample	(4) 5 Year Lag	(5) Country FE	(6) Country & Time FE	(7) Ideology Included	(8) Mundlak Model
IDENTITY SCORE	0.236***	0.183***	0.106**	0.096*		0.001**
	(0.054)	(0.042)	(0.040)	(0.041)		(0.000)
IDENTITY SCORE- 6					0.206***	
					(0.042)	
CONSTRAINT	-0.138	1.092***	-0.750**	-0.788**	0.601**	-0.007**
	(0.331)	(0.196)	(0.257)	(0.258)	(0.224)	(0.002)
SHARED ALLIANCE		1.379***	0.936***	0.929***	1.188***	0.019***
		(0.107)	(0.225)	(0.225)	(0.101)	(0.004)
SHARED RIVAL		0.782***	-0.360**	-0.368**	0.528***	-0.009***
		(0.108)	(0.117)	(0.117)	(0.116)	(0.002)
DYADIC CONFLICT	-1.558	0.423	-1.324+	-1.355+	-0.938	-0.012*
	(0.962)	(0.421)	(0.745)	(0.748)	(0.965)	(0.005)
JOINT DEMOCRACY	0.708***	0.392***	0.157	0.203+	0.739***	0.004***
	(0.138)	(0.0922)	(0.104)	(0.106)	(0.094)	(0.001)
RGDP_1	0.000	-0.000+	-0.000***	-0.000***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
RGDP_2	0.000***	0.000***	0.000	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TIME	-0.134***	-0.125***	0.023	0.017	-0.120***	0.001**
	(0.024)	(0.017)	(0.018)	(0.018)	(0.018)	(0.000)
TIME^2	0.004**	0.005***	-0.001	-0.001	0.004***	0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
TIME^3	-0.000*	-0.000***	0.000***	0.000***	-0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CONSTANT	-3.888***	-5.367***			-5.278***	0.119***
	(0.241)	(0.169)			(0.187)	(0.005)
Observations	15632	131115	26677	26677	82934	141025

Decade dummies in Model 6 omitted for space. Mean values in Model 8 omitted for space.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

Table A.5: Additional analysis of nuclear cooperation agreements, Part 2.

	(9) Rare Event	(10) Affinity	(11) Distance	(12) Trade	(13) Exports	(14) First NCA
IDENTITY SCORE	0.239***	0.264***	0.244***	0.253***	0.254***	0.228***
	(0.037)	(0.042)	(0.038)	(0.037)	(0.037)	(0.055)
CONSTRAINT	0.683***	0.608**	0.670***	0.708***	0.706***	0.755**
	(0.156)	(0.208)	(0.193)	(0.191)	(0.191)	(0.233)
JOINT ALLIANCE	1.238***	1.145***	1.168***	1.237***	1.238***	0.837***
	(0.068)	(0.099)	(0.102)	(0.094)	(0.094)	(0.092)
DYADIC CONFLICT	-0.433	0.153	-0.728	-0.694	-0.693	-0.761
	(0.711)	(0.679)	(0.698)	(0.700)	(0.700)	(1.018)
SHARED RIVAL	0.505***	0.532***	0.512***	0.559***	0.563***	0.412***
	(0.081)	(0.117)	(0.111)	(0.108)	(0.108)	(0.122)
JOINT DEMOC	0.675***	0.564***	0.675***	0.669***	0.670***	0.636***
	(0.073)	(0.084)	(0.085)	(0.083)	(0.083)	(0.099)
rGDP_1	-0.000	-0.000	-0.000	0.000	0.000	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rGDP_2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AFFINITY		0.098				
		(0.084)				
DISTANCE			-0.000*			
			(0.000)			
TOTAL TRADE				-0.000		
				(0.000)		
EXPORTS_S					-0.000	
					(0.000)	(0.000)
CONSTANT	-5.601***	-5.547***	-5.459***	-5.701***	-5.706***	-6.891***
	(0.155)	(0.197)	(0.181)	(0.165)	(0.165)	(0.240)
Observations	141025	109648	141025	138954	138954	134799

Standard errors in parentheses.

Time cubic polynomials omitted for space.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

Table A.6: Additional analysis of nuclear cooperation agreements, Part 3.

	(15) Democracy & Affinity
IDENTITY SCORE	0.248***
	(0.041)
CONSTRAINT	0.491*
	(0.215)
SHARED ALLIANCE	1.147***
	(0.098)
DYADIC CONFLICT	0.148
	(0.659)
SHARED RIVAL	0.517***
	(0.118)
JOINT DEMOCRACY	0.738***
	(0.100)
DEMOCRACY$_S$	-0.464***
	(0.010)
DEMOCRACY$_R$	-0.011
	(0.096)
AFFINITY SCORE	0.089
	(0.081)
rGDP$_1$	0.000
	(0.000)
rGDP$_2$	0.000***
	(0.000)
CONSTANT	-5.275***
	(0.201)
Observations	109648

Standard errors in parentheses.

Time cubic polynomials omitted for space.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

APPENDIX B

ADDITIONAL MATERIAL FOR CHAPTER 3

B.1 Additional Tables and Models

Table B.1 includes the full results for Models 1-6 underlying Figure 3.1. Models 1-3 are the primary models included in Table 3.1. Models 4-6 are the models including including multilateral alliances in addition to bilateral alliances.

Table B.2 includes the results of a full sample of American or Soviet leader dyads with an interaction of bilateral DEFENSE ALLIANCES and IDENTITY SCORE. While sharing an identity with another leader and having a bilateral defense arrangement with either the US or USSR tends to on average increase the probability of ENR activity, when there is a defense alliance, having a shared identity with the patron state leader decreases the likelihood of nuclear activity.

Table B.3 includes the results of four linear probability models (LPMs) with fixed effects. While these models are not designed to deal with binary dependent variables, they do allow for the inclusion of more observations while still employing fixed effects. Models 9 and 10 in Table B.3 replicate the primary models in the body of the paper with a LPM FE specification. Models 11 and 12 in Table B.3 replicate the interaction models in Table B.2 with a LPM FE specification.

Table B.4 includes the results of seven additional robustness tests mentioned in the paper. Model 13 employs country dyadic fixed effects on a linear probability model, allowing for the inclusion of a larger number of observations compared to the primary fixed effect logit specification. Model 14 is a rare events logit model, to account for the fact that nuclear pursuit is a relatively rare phenomena. Model 15 is a logit model without fixed effects. Model 16 omits the 12 bilateral alliances signed prior to nuclear weapon acquisition by the US or USSR.[1] Models 17 and 18 use an alternate dependent variable based on updated data on nuclear pursuit from Singh

[1] In the primary analysis these 12 alliances are included for the years in which they remain active and the patron state has nuclear weapons.

Table B.1: Effect of shared identity on nuclear pursuit (ENR) in bilateral and all alliances.

	(1) Bilateral M1	(2) Bilateral M2	(3) Bilateral M3	(4) All M4	(5) All M5	(6) All M6
IDENTITY SCORE	-0.675*	-1.425***	-1.239*	-0.128	-0.115	-0.00652
	(0.276)	(0.420)	(0.512)	(0.156)	(0.175)	(0.195)
GDP		0.00202***	0.00295***		0.000240***	0.000237**
		(0.000382)	(0.000699)		(0.0000427)	(0.0000776)
DEMOCRACY		-18.53***	-22.35***		1.411*	1.754*
		(3.963)	(6.155)		(0.554)	(0.700)
NPT MEMBERSHIP			-0.985			-0.477
			(1.285)			(0.382)
INDUSTRY			2.307*			1.724***
			(1.133)			(0.424)
TOTAL NCA'S BY YEAR t			-0.00955			0.00418
			(0.135)			(0.0140)
MID: 5 YEAR MOVING AVERAGE			-1.284*			-0.865***
			(0.564)			(0.221)
TIME	3.581***	0.383	-1.024	2.270***	1.011***	0.237
	(0.402)	(0.481)	(0.665)	(0.238)	(0.276)	(0.300)
TIME^2	-0.952***	-0.399***	-0.243*	-0.498***	-0.298***	-0.159**
	(0.127)	(0.104)	(0.117)	(0.0562)	(0.0556)	(0.0545)
TIME^3	0.0442***	0.0225***	0.0163**	0.0118***	0.00788***	0.00438**
	(0.00636)	(0.00512)	(0.00596)	(0.00137)	(0.00147)	(0.00142)
Observations	391	348	346	764	678	676

Standard errors in parentheses.

$^+$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

Table B.2: Interaction of bilateral alliance and shared identity, full sample.

	(7) Interaction, Basic	(8) Interaction, Full
IDENTITY SCORE	0.495*	0.459+
	(0.236)	(0.245)
BILATERAL DEFENSE	6.827***	6.233***
	(1.766)	(1.820)
IDENTITY × DEFENSE	-1.366***	-1.230**
	(0.363)	(0.391)
GDP	0.000261***	0.000236**
	(0.0000449)	(0.0000820)
DEMOCRACY	1.466**	1.582*
	(0.555)	(0.705)
NPT MEMBERSHIP		-0.664+
		(0.395)
INDUSTRY		1.636***
		(0.435)
TOTAL NCA'S BY YEAR t		0.0124
		(0.0149)
MID: 5 YEAR MOVING AVERAGE		-0.852***
		(0.226)
TIME	1.022***	0.306
	(0.284)	(0.313)
TIME^2	-0.318***	-0.188**
	(0.0575)	(0.0583)
TIME^3	0.00848***	0.00521***
	(0.00153)	(0.00152)
Observations	678	676

Standard errors in parentheses.

$^+$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

Table B.3: Linear probability models.

	(9) LPM FE 1	(10) LPM FE 2	(11) LPM FE Interaction 1	(12) LPM FE Interaction 2
IDENTITY SCORE	-0.0648***	-0.0641***	0.0132	0.00946
	(0.0172)	(0.0175)	(0.00991)	(0.00976)
BILATERAL DEFENSE			0.350***	0.373***
			(0.0832)	(0.0827)
IDENTITY × DEFENSE			-0.0624***	-0.0605**
			(0.0187)	(0.0185)
GDP	0.000***	0.000***	0.000***	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
DEMOCRACY	-0.150***	-0.143***	0.0245	0.00468
	(0.0392)	(0.0396)	(0.0178)	(0.0182)
NPT		0.00930		-0.0301*
		(0.0313)		(0.0150)
INDUSTRY		0.0128		0.0762***
		(0.0323)		(0.0187)
TOTAL NCA'S BY YEAR t		-0.00141		0.00378***
		(0.00168)		(0.000585)
MID: 5 YEAR MOVING AVERAGE		-0.0401***		-0.0440***
		(0.00830)		(0.00698)
CONSTANT	0.181*	0.214**	-0.00178	0.0812+
	(0.0719)	(0.0800)	(0.0440)	(0.0442)
Observations	765	755	2277	2267

Standard errors in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

and Way (2004).[2] Model 19 includes year fixed effects to account for possible temporal effects (year dummies omitted for space). Across all seven of these models, the coefficient on IDENTITY SCORE is negative and statistically significant.

B.2 Alliances

Table B.5 lists the bilateral defense alliances included in the analyses signed after the US or USSR became a nuclear weapon state. In the primary analysis, the 12 bilateral alliances signed prior to weaponization are included for the years in which the patron state had nuclear weapons (see "active" column in Table B.9).

B.2.1 Coding Notes

- In the primary analysis, I include all defense alliances active while either the US or USSR had nuclear weapons. A small number of alliances (12 bilateral alliances and one multilateral alliance) were signed prior to either 1945 for the US or 1949 for the USSR, but remained active after each state acquired nuclear weapons. These alliances are included in the primary analysis. For example, in the case of ATOP 2535, while the alliance lasts from 1941 to 1955, it is only coded as a nuclear security commitment in the dataset from 1949 (after the USSR got nuclear weapons) until 1952 (when Britain got nuclear weapons). In a secondary analysis, an alliance is included only if it was signed after 1945 for the US or after 1949 for the USSR, resulting in the loss of 12 bilateral alliances from the analysis. See Table B.9 for additional details.

- The three Soviet successor states that inherited and gave up nuclear weapons are not coded as nuclear weapon states, since there is no indication that they pursued autonomous development of nuclear weapons, and they arranged to promptly give up their inherited warheads and materials at the end of the Cold War.

[2]For further details on this variable, see the next section.

[3]China became a NWS in 1964 and does not appear in the analysis after this time.

[4]Pakistan became a NWS in 1972 and does not appear in the analysis after this time.

[5]While this was signed as a multilateral agreement with New Zealand, it became a bilateral agreement in 1986 when only the US and Australia remained part of the alliance.

Table B.4: Additional models.

	(13) FE LPM	(14) RE Logit	(15) Logit	(16) Post-NW Alliances	(17) SW Pursuit	(18) SW Pursuit, Full	(19) Year FE
IDENTITY SCORE	-0.0641***	-0.658**	-0.681**	-1.406***	-0.0681***	-0.0718***	-1.252**
	(0.0175)	(0.247)	(0.251)	(0.424)	(0.0143)	(0.0147)	(0.451)
GDP	0.000***	0.000	0.000	0.002***	-0.000*	-0.000**	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DEMOCRACY	-0.143***	-0.268	-0.274	-18.47***	-0.0365	-0.0389	-18.78***
	(0.0396)	(0.518)	(0.525)	(3.972)	(0.0327)	(0.0331)	(4.076)
NPT MEMBERSHIP	0.00930	-2.086***	-2.168***			-0.0320	
	(0.0313)	(0.534)	(0.542)			(0.0262)	
INDUSTRY	0.0128	1.023	1.039			0.0373	
	(0.0323)	(0.688)	(0.698)			(0.0272)	
TOTAL NCA'S BY YEAR t	-0.00141	0.103*	0.107*			0.00295*	
	(0.00168)	(0.0424)	(0.0430)			(0.00141)	
MID: 5 YEAR MA	-0.0401***	-0.137	-0.150			-0.0306***	
	(0.00830)	(0.134)	(0.136)			(0.00695)	
TIME		4.295***	4.501***	0.374			-0.0673
		(1.115)	(1.132)	(0.482)			(0.686)
TIME^2		-1.077**	-1.134**	-0.397***			-0.322*
		(0.377)	(0.382)	(0.104)			(0.131)
TIME^3		0.0491**	0.0514**	0.0224***			0.0191**
		(0.0184)	(0.0186)	(0.00513)			(0.00619)
CONSTANT	0.214**	-1.120	-1.143		0.468***	0.557***	
	(0.0800)	(1.123)	(1.140)		(0.0599)	(0.0669)	
Observations	755	755	755	337	763	753	348

Standard errors in parentheses.

$^+$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$

Year dummies omitted from Model 19.

Table B.5: Bilateral security guarantees.

ATOP ID	Patron	Protégé	Signed	Ended
3200	USSR	China	1950	1980[3]
3210	US	Philippines	1951	–
3220	US	Japan	1951	1960
3240	US	South Korea	1953	–
3270	US	Taiwan	1954	1980
3355	US	Pakistan	1959	–[4]
3360	US	Turkey	1959	–
3365	US	Iran	1959	1979
3375	US	Japan	1960	–
3440	USSR/Russia	North Korea	1961	1996
3480	US	Spain	1963	1970
3500	USSR	East Germany	1964	1990
3520	USSR	Poland	1965	1991
3535	USSR/Russia	Mongolia	1966	1993
3560	USSR/Russia	Bulgaria	1967	1992
3580	USSR	Hungary	1967	1991
3630	USSR	Romania	1970	1991
3745	USSR	East Germany	1975	1990
3750	US	Spain	1976	1981
3795	US	Panama	1977	1999
4235	Russia	Kazakhstan	1992	–
4245	Russia	Uzbekistan	1992	–
4255	Russia	Kyrgyzstan	1992	–
4300	Russia	Turkmenistan	1992	2002
4470	Russia	Tajikistan	1993	–
4865	Russia	Belarus	1997	–
4890	Russia	Armenia	1997	–
5075	Russia	Uzbekistan	2005	–
3215	US	Australia	1951	–[5]

- After 1986, the Mutual Defense Agreement between the US and Australia is essentially a bilateral defense agreement because New Zealand was no longer party to the treaty.

- ATOP 2550 is omitted from all analyses. The alliance covered allied states during WWII, but terminated on September 2, 1945, less than a month after the bombings of Hiroshima and Nagasaki and thus was never intended to provide a nuclear guarantee.

B.3 Pursuit

While I primarily uses ENR data from Fuhrmann and Tkach (2015) to measure nuclear interest, the results from a secondary analysis in Table B.4 use an updated measure of nuclear activity from Singh and Way (2004). The updated data through 2012 come from Lanoszka (2018), and are provided in table B.10.

B.4 Signals

B.4.1 Foreign Deployed Nuclear Weapons

Data on the foreign deployment of nuclear weapons from either the US or USSR are from Fuhrmann and Sechser (2014) and cover the period from 1950–2000. "Accidental" deployments from the USSR to successor states after the Cold War (Ukraine, Belarus, and Kazakhstan), deployments of warheads without fissile cores, and US deployments to Japanese occupied territories under American control are not included.

[6]Britain became a NWS in 1952 and therefore does not appear in the analysis after this time.
[7]France became a NWS in 1960 and therefore does not appear in the analysis after this time.
[8]Germany replaces West Germany in 1990.
[9]France became a NWS in 1960 and therefore does not appear in the analysis after this time. France stopped participating militarily in SEATO in 1967 and stopped financial contributions in 1974.
[10]While the alliance did not dissolve until 1955, Britain became a NWS in 1952.
[12]Years of nuclear weapon (NW) activity from revised 2012 list of activities from Singh and Way (2004).
[13]ENR plant activity from Fuhrmann and Tkach (2015).
[14]S: signature; D: deposit; O: withdrawal.

Table B.6: Asymmetric multilateral security guarantees.

Name	ATOP ID	Patron	Protégé	Signed	Ended
Rio Treaty	3075	US	Bahamas	1982	–
Rio Treaty	3075	US	Cuba	1947	1962
Rio Treaty	3075	US	Haiti	1947	–
Rio Treaty	3075	US	Dominican Republic	1947	–
Rio Treaty	3075	US	Trinidad and Tobago	1967	–
Rio Treaty	3075	US	Mexico	1947	2014
Rio Treaty	3075	US	Guatemala	1947	–
Rio Treaty	3075	US	Honduras	1947	–
Rio Treaty	3075	US	El Salvador	1947	–
Rio Treaty	3075	US	Nicaragua	1948	2014
Rio Treaty	3075	US	Costa Rica	1947–	
Rio Treaty	3075	US	Panama	1947	–
Rio Treaty	3075	US	Colombia	1947	–
Rio Treaty	3075	US	Venezuela	1947	2015
Rio Treaty	3075	US	Ecuador	1949	2016
Rio Treaty	3075	US	Peru	1947	–
Rio Treaty	3075	US	Brazil	1947	–
Rio Treaty	3075	US	Bolivia	1947	–
Rio Treaty	3075	US	Paraguay	1947	–
Rio Treaty	3075	US	Chile	1947	–
Rio Treaty	3075	US	Argentina	1947	–
Rio Treaty	3075	US	Uruguay	1947	–
OAS	3150	US	Bahamas	1982	
OAS	3150	US	Cuba	1948	1962
OAS	3150	US	Haiti	1948	–
OAS	3150	US	Dominican Republic	1948	–
OAS	3150	US	Jamaica	1969	–
OAS	3150	US	Trinidad and Tobago	1967	–
OAS	3150	US	Barbados	1967	–
OAS	3150	US	Dominica	1979	–
OAS	3150	US	Grenada	1975	–
OAS	3150	US	St. Lucia	1979	–
OAS	3150	US	St. Vincent and the Grenadines	1981	–
OAS	3150	US	Antigua and Barbuda	1981	–
OAS	3150	US	St. Kitts and Nevis	1984	–
OAS	3150	US	Mexico	1948	–
OAS	3150	US	Belize	1991	–
OAS	3150	US	Guatemala	1948	–
OAS	3150	US	Honduras	1948	–
OAS	3150	US	El Salvador	1948	–
OAS	3150	US	Nicaragua	1948	–

Table B.7: Asymmetric multilateral security guarantees, continued.

Name	ATOP ID	Patron	Protégé	Signed	Ended
OAS	3150	US	Costa Rica	1948	–
OAS	3150	US	Argentina	1948	–
OAS	3150	US	Bolivia	1948	–
OAS	3150	US	Brazil	1948	–
OAS	3150	US	Chile	1948	–
OAS	3150	US	Colombia	1948	–
OAS	3150	US	Ecuador	1948	–
OAS	3150	US	Panama	1948	–
OAS	3150	US	Paraguay	1948	–
OAS	3150	US	Peru	1948	–
OAS	3150	US	Uruguay	1948	–
OAS	3150	US	Venezuela	1948	–
OAS	3150	US	Jamaica	1969	–
OAS	3150	US	Surinam	1977	–
OAS	3150	US	Guyana	1991	–
NATO	3180	US	Canada	1949	–
NATO	3180	US	Britain	1949	–[6]
NATO	3180	US	Netherlands	1949	–
NATO	3180	US	Belgium	1949	–
NATO	3180	US	Luxembourg	1949	–
NATO	3180	US	France	1949	–[7]
NATO	3180	US	Spain	1981	–
NATO	3180	US	Portugal	1949	–
NATO	3180	US	Germany	1990	–[8]
NATO	3180	US	West Germany	1954	1990
NATO	3180	US	Poland	1997	–
NATO	3180	US	Hungary	1997	–
NATO	3180	US	Czech Republic	1997	–
NATO	3180	US	Slovak Republic	2003	–
NATO	3180	US	Italy	1949	–
NATO	3180	US	Albania	2008	–
NATO	3180	US	Montenegro	2016	–
NATO	3180	US	Croatia	2008	–
NATO	3180	US	Slovenia	2003	–
NATO	3180	US	Greece	1951	–
NATO	3180	US	Bulgaria	2003	–
NATO	3180	US	Romania	2003	–
NATO	3180	US	Estonia	2003	–
NATO	3180	US	Latvia	2003	–
NATO	3180	US	Lithuania	2003	–
NATO	3180	US	Norway	1949	–

Table B.8: Asymmetric multilateral security guarantees, continued.

Name	ATOP ID	Patron	Protégé	Signed	Ended
NATO	3180	US	Denmark	1949	–
NATO	3180	US	Iceland	1949	–
NATO	3180	US	Turkey	1951	–
ANZUS	3215	US	Australia	1951	–
ANZUS	3215	US	New Zealand	1951	1986
SEATO	3260	US	Australia	1954	1977
SEATO	3260	US	France	1954	1977[9]
SEATO	3260	US	New Zealand	1954	1977
SEATO	3260	US	Pakistan	1954	1972
SEATO	3260	US	Philippines	1954	1977
SEATO	3260	US	Thailand	1954	1977
Warsaw Pact	3285	USSR	East Germany	1955	1990
Warsaw Pact	3285	USSR	Poland	1955	1991
Warsaw Pact	3285	USSR	Hungary	1955	1991
Warsaw Pact	3285	USSR	Czechoslovakia	1955	1991
Warsaw Pact	3285	USSR	Albania	1955	1968
Warsaw Pact	3285	USSR	Bulgaria	1955	1991
Warsaw Pact	3285	USSR	Romania	1955	1991
CSTO	4220	Russia	Belarus	1994	–
CSTO	4220	Russia	Armenia	1992	–
CSTO	4220	Russia	Georgia	1993	1999
CSTO	4220	Russia	Azerbaijan	1993	1999
CSTO	4220	Russia	Tajikistan	1992	–
CSTO	4220	Russia	Kyrgyzstan	1992	–
CSTO	4220	Russia	Uzbekistan	1992	1999
CSTO	4220	Russia	Uzbekistan	2006	2012
CSTO	4220	Russia	Kazakhstan	1992	–
CIS	4400	Russia	Belarus	1993	–
CIS	4400	Russia	Armenia	1993	–
CIS	4400	Russia	Georgia	1993	2009
CIS	4400	Russia	Azerbaijan	1993	–
CIS	4400	Russia	Tajikistan	1993	–
CIS	4400	Russia	Kyrgyzstan	1993	–
CIS	4400	Russia	Uzbekistan	1993	–
CIS	4400	Russia	Kazakhstan	1993	–

Table B.9: Additional asymmetric security guarantees, signed prior to patron nuclearization.

Bilateral	ATOP ID	Patron	Protégé	Signed	Ended	Active
Yes	2370	USSR	Mongolia	1936	1966	1949-1966
Yes	2535	USSR	UK	1941	1955	1949-1952[10]
Yes	2563	USSR	Czechoslovakia	1943	1970	1949-1960
Yes	2571	US	Portugal	1944	1946	1945-1946
Yes	2575	USSR	France	1944	1955	1949-1955
No	3010	US	Cuba	1945	1947	1945-1947
No	3010	US	Haiti	1945	1947	1945-1947
No	3010	US	Dominican Republic	1945	1947	1945-1947
No	3010	US	Mexico	1945	1947	1945-1947
No	3010	US	Guatemala	1945	1947	1945-1947
No	3010	US	Honduras	1945	1947	1945-1947
No	3010	US	El Salvador	1945	1947	1945-1947
No	3010	US	Nicaragua	1945	1947	1945-1947
No	3010	US	Costa Rica	1945	1947	1945-1947
No	3010	US	Panama	1945	1947	1945-1947
No	3010	US	Colombia	1945	1947	1945-1947
No	3010	US	Venezuela	1945	1947	1945-1947
No	3010	US	Ecuador	1945	1947	1945-1947
No	3010	US	Peru	1945	1947	1945-1947
No	3010	US	Brazil	1945	1947	1945-1947
No	3010	US	Bolivia	1945	1947	1945-1947
No	3010	US	Paraguay	1945	1947	1945-1947
No	3010	US	Chile	1945	1947	1945-1947
No	3010	US	Argentina	1945	1947	1945-1947
No	3010	US	Uruguay	1945	1947	1945-1947
Yes	3020	USSR	Yugoslavia	1945	1949	1949
Yes	3025	USSR	Poland	1945	1965	1949-1965
Yes	3030	USSR	China	1945	1950	1949-1950
Yes	3115	USSR	Romania	1948	1970	1949-1970
Yes	3120	USSR	Hungary	1948	1967	1949-1967
Yes	3135	USSR	Bulgaria	1948	1967	1949-1967
Yes	3140	USSR	Finland	1948	1992	1949-1992

Table B.10: Nuclear proliferation and alliances, 1945–2012 from Lanoszka (2018).

Country	**Patron**[11]	**NW Years**[12]	**ENR Years**[13]	**NPT**[14]
Algeria	USSR	1983–2012	1992–2012	D: 1995
Argentina	US	1968–90	1968–73; 83–89; 93–94	D: 1995
Australia	US	1956–73	1972–83; 92–2007	S: 1970; D: 1973
Belgium	US	–	1966–74	S: 1968; D: 1975
Brazil	US*	1953–90	1979–2012	D: 1998
Canada	US	–	1944–76; 90–93	S: 1968; D: 1969
China	USSR	1955–2012	1960–2012	D:1992
Czechia	Soviet/ US*	–	1977–98	S: 1968; D: 1969
Egypt	Soviet/ US*	1960–74	1982–2012	S: 1968; D: 1981
France	US	1946–2012	1949–2012	D: 1992
W. Germany	US	–	1964–2012	S: 1969; D: 1975
India	–	1954–2012	1964–73; 77–2012	–
Indonesia	None/ US*	1965–67	–	S: 1970; D: 1979
Iran	US*/None	1976–2012	1974–79; 85–2012	S: 1968; D: 1970
Iraq	USSR*	1976–95	1983–91	S: 1968 ;D: 1969
Israel	US*	1949–2012	1963–2012	–
Italy	US	–	1966-90	S:1969; D: 1975
DPRK	USSR/ China	1965–2012	1975–93; 2003-12	S: 1968; O: 2003
ROK	US	1959–78	1979–82; 91–2012	S: 1968; D: 1975
Libya	USSR*	1970–2003	1982–2003	S: 1968; D: 1975
Netherlands	US	–	1973–2012	S: 1968; D: 1975
Norway	US	–	1961–68	S: 1968; D: 1969
Pakistan	US*	1972–2012	1973–2012	–
Romania	USSR	1985–90	1985–89	S: 1968; D: 1970
South Africa	US*	1969–91	1967–2012	D: 1991
Sweden	–	1946–69	1954–72	S: 1968; D: 1970
Switzerland	–	1946–70	–	S: 1969; D: 1977
Syria	USSR	2000-12	–	S: 1968; D: 1969
Taiwan	US/ US*	1967–77; 87–88	1976–78	S: 1968; D: 1970
UK	US	1945–2012	1952–2012	S: 1968; R: 1969
Yugoslavia	–	1954–65; 74–88	1954–78	S: 1968; D: 1970

Table B.11: Foreign deployment of nuclear weapons, 1950–2000.

Host Country	**Nuclear Patron**	**Years**
Belgium	US	1963–2000
Canada	US	1964–1984
Cuba	USSR	1962
Czechoslovakia	USSR	1969–1990
Denmark	US	1958–1965
East Germany	USSR	1958–1991
Great Britain	US	1954–2000
Greece	US	1960–2000
Hungary	USSR	1974–1989
Italy	US	1956–2000
Mongolia	USSR	1967–1992
Morocco	US	1954–1963
Netherlands	US	1960–2000
Philippines	US	1957–1977
Poland	USSR	1967–1990
South Korea	US	1958–1991
Spain	US	1958–1976
Taiwan	US	1958–1974
Turkey	US	1959–2000
(West) Germany	US	1955-2000

APPENDIX C

ADDITIONAL MATERIALS FOR CHAPTER 4

C.1 Replication of Crescenzi et al. (2012)

Table C.1 provides the results of a replication of Crescenzi et al. (2012). Model 1 is the full sample of all alliances in the period from 1816–2000. Models 2 through 4 temporally limit the sample. Model 2 examines the period from 1816–1913, Model 3 examines the period from 1914–1945, and Model 4 examines the period from 1946–2000. Models 5 and 6 limit the sample based on the type of alliance, with Model 5 looking only at bilateral alliances and Model 6 looking only at defense pacts.

Table C.1: Replication of Crescenzi et al. (2012).

	Crescenzi 1 1816 – 2000 All Alliances	Crescenzi 2 1816 – 1913 All Alliances	Crescenzi 3 1914 – 1945 All Alliances	Crescenzi 4 1946 – 2000 All Alliances	Crescenzi 5 1816 – 2000 Bilateral Only	Crescenzi 6 1816 – 2000 Defense Only
ALLIANCE REPUTATION	1.441***	13.38**	-1.085***	2.818***	1.522***	0.564**
	(0.198)	(4.187)	(0.303)	(0.481)	(0.230)	(0.190)
ALLIANCE HISTORY	0.624	-1.331	0.259	1.204	0.632	1.005+
	(0.610)	(6.556)	(0.671)	(2.430)	(0.609)	(0.606)
PORTFOLIO SIMILARITY	0.621***	2.283***	-1.307***	1.297***	0.624***	0.788***
	(0.0419)	(0.463)	(0.0741)	(0.0590)	(0.0419)	(0.0597)
INTERACTION SCORE	0.199**	-0.271+	0.145	0.217*	0.197**	0.445***
	(0.0645)	(0.152)	(0.117)	(0.0873)	(0.0644)	(0.0979)
JOINT ENEMY	0.548***	0.738***	1.099***	0.171***	0.550***	0.804***
	(0.0130)	(0.0514)	(0.0300)	(0.0159)	(0.0130)	(0.0148)
DISTANCE	-0.0118***	-0.0182***	-0.00744***	-0.0164***	-0.0118***	-0.00813***
	(0.000204)	(0.000994)	(0.000461)	(0.000257)	(0.000203)	(0.000250)
MAJOR POWER STATUS	0.120***	0.668***	-0.151***	0.383***	0.123***	0.0445*
	(0.0146)	(0.0611)	(0.0291)	(0.0194)	(0.0145)	(0.0187)
POLITY DIFFERENCE	-0.000911	-0.0237***	-0.00500*	0.00132	-0.000924	-0.0136***
	(0.000857)	(0.00684)	(0.00206)	(0.000999)	(0.000856)	(0.00111)
JOINT DEMOCRACY	0.213***	-0.224*	-0.489***	0.298***	0.213***	-0.0497**
	(0.0131)	(0.112)	(0.0567)	(0.0157)	(0.0131)	(0.0189)
CONSTANT	-2.539***	-4.635***	-1.083***	-2.913***	-2.544***	-2.997***
	(0.0392)	(0.419)	(0.0851)	(0.0537)	(0.0392)	(0.0556)
Observations	1045707	104360	99098	842249	1045707	1045707

Robust standard errors clustered by direct dyad in parentheses.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$, *** $p < .001$